105th Annual Report

2018

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

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Errata

The Federal Reserve revised this report on July 31, 2019, to reflect corrected data. The revisions are listed below.

On p. 45, Figure 4, nonperforming loan ratio, the series "Total" and "Non-residential" had their labels reversed in the legend. The two series are now properly labeled.

On p. 48, several entries in Table 1 were revised:

- Total assets ($ trillions) held by SMBs within LISCC organizations was revised from 0.7 to 0.8.
- The number of large and foreign banking organizations (LFBOs) was revised from 153 to 179, with their total assets ($ trillions) revised from 7.7 to 7.3.
- Foreign banking organizations (FBOs) were split into two subcategories—large foreign banking organizations and less complex foreign banking organizations.
- Total assets ($ trillions) held by SMBs within LFBOs were revised from 0.9 to 1.0.
- The number of community banking organizations (CBOs) was revised from 3912 to 3980, with their total assets ($ trillions) revised from 2.3 to 2.4.

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Letter of Transmittal

Board of Governors of the Federal Reserve System
Washington, D.C.

June 2019

The Speaker of the House of Representatives:

Pursuant to the requirements of section 10 of the Federal Reserve Act, I am pleased to submit the 105th annual report of the Board of Governors of the Federal Reserve System.

This report covers operations of the Board during calendar-year 2018.

Sincerely,

Jerome H. Powell
Chair

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1 Overview

The Federal Reserve, the central bank of the United States, is a federal system composed of a central governmental agency—the Board of Governors—and 12 regional Federal Reserve Banks.

The Board of Governors, located in Washington, D.C., consists of seven members appointed by the President of the United States and supported by a 2,979-person staff. Besides conducting research, analysis, and policymaking related to domestic and international financial and economic matters, the Board plays a major role in the supervision and regulation of U.S. financial institutions and activities, has broad oversight responsibility for the nation's payments system and the operations and activities of the Federal Reserve Banks, and plays an important role in promoting consumer protection, fair lending, and community development.

For More Background on Board Operations

For more information about the Federal Reserve Board and the Federal Reserve System, visit the Board's website at https://www.federalreserve.gov/aboutthefed/default.htm. An online version of this annual report is available at https://www.federalreserve.gov/publications/annual-report/default.htm.

About This Report

This report covers Board and System operations and activities during calendar-year 2018. The report includes the following sections:

- **Monetary policy and economic developments.** Section 2 provides adapted versions of the Board's semiannual monetary policy reports to Congress.
- **Federal Reserve operations.** Section 3 provides a summary of Board and System activities in the areas of financial stability policy and research; section 4, in supervision and regulation; section 5, in consumer and community affairs; and section 6, in Reserve Bank operations.
- **Regulatory developments.** Section 7 summarizes the Board's efforts in 2018 to implement key laws and statutes, such as the Economic Growth, Regulatory Relief, and Consumer Protection Act. The section also discusses the Board's compliance with the Government Performance and Results Act of 1993.
- **Policy actions and litigation.** Section 8 and section 9 provide accounts of policy actions taken by the Board in 2018, including new or amended rules and regulations and other actions as well as the deliberations and decisions of the Federal Open Market Committee (FOMC); section 10 summarizes litigation involving the Board.
- **Statistical tables.** Section 11 includes 14 statistical tables that provide updated historical data concerning Board and System operations and activities.
- **Federal Reserve System audits.** Section 12 provides detailed information on the several levels of audit and review conducted in regards to System operations and activities, including those provided by outside auditors and the Board's Office of Inspector General.
- **Federal Reserve System budgets.** Section 13 presents information on the 2018 budget performance of the Board and Reserve Banks, as well as their 2018 budgets, budgeting processes, and trends in their expenses and employment.
- **Federal Reserve System organization.** Section 14 provides listings of key officials at the Board and in the Federal Reserve System, including the Board of

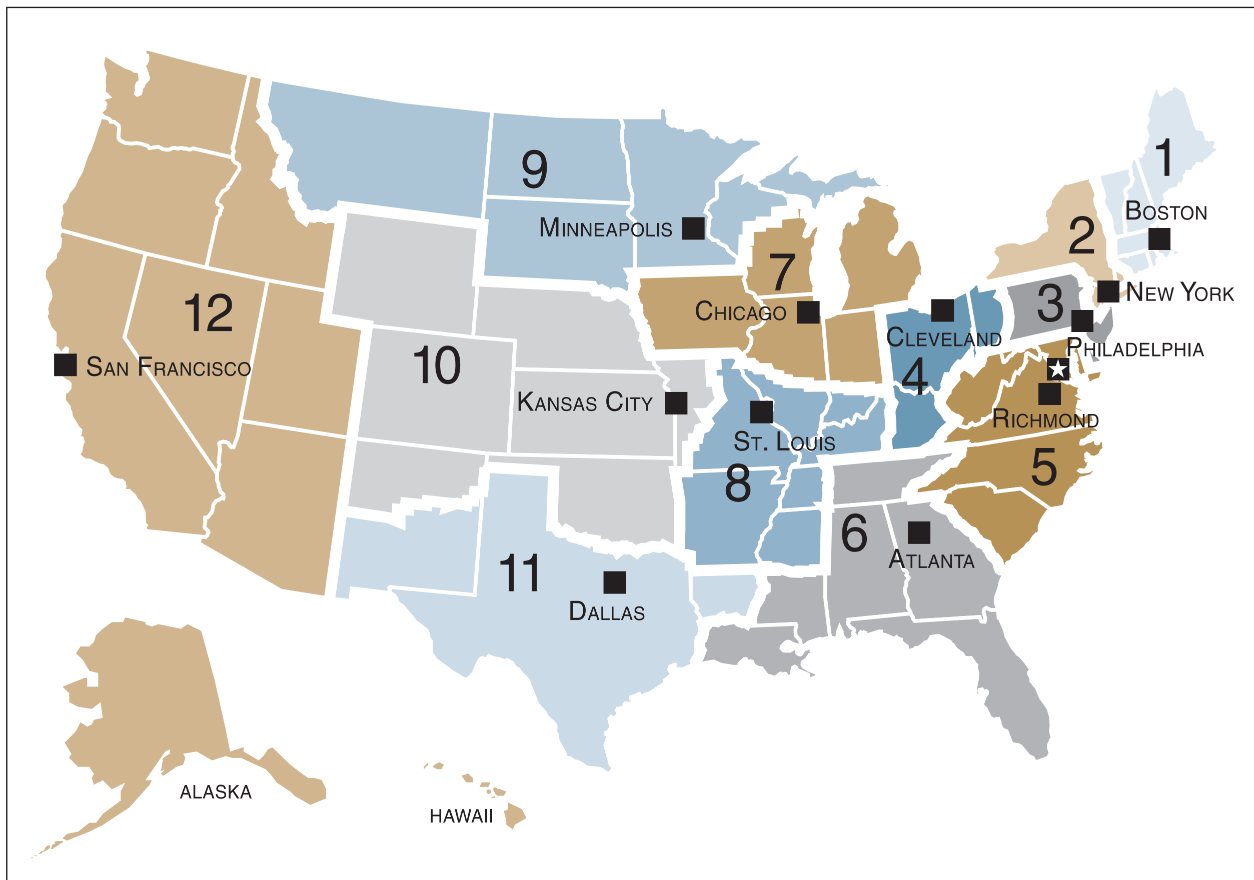
Governors, its officers, FOMC members, several System councils, and Federal Reserve Bank and Branch officers and directors.

About the Federal Reserve System

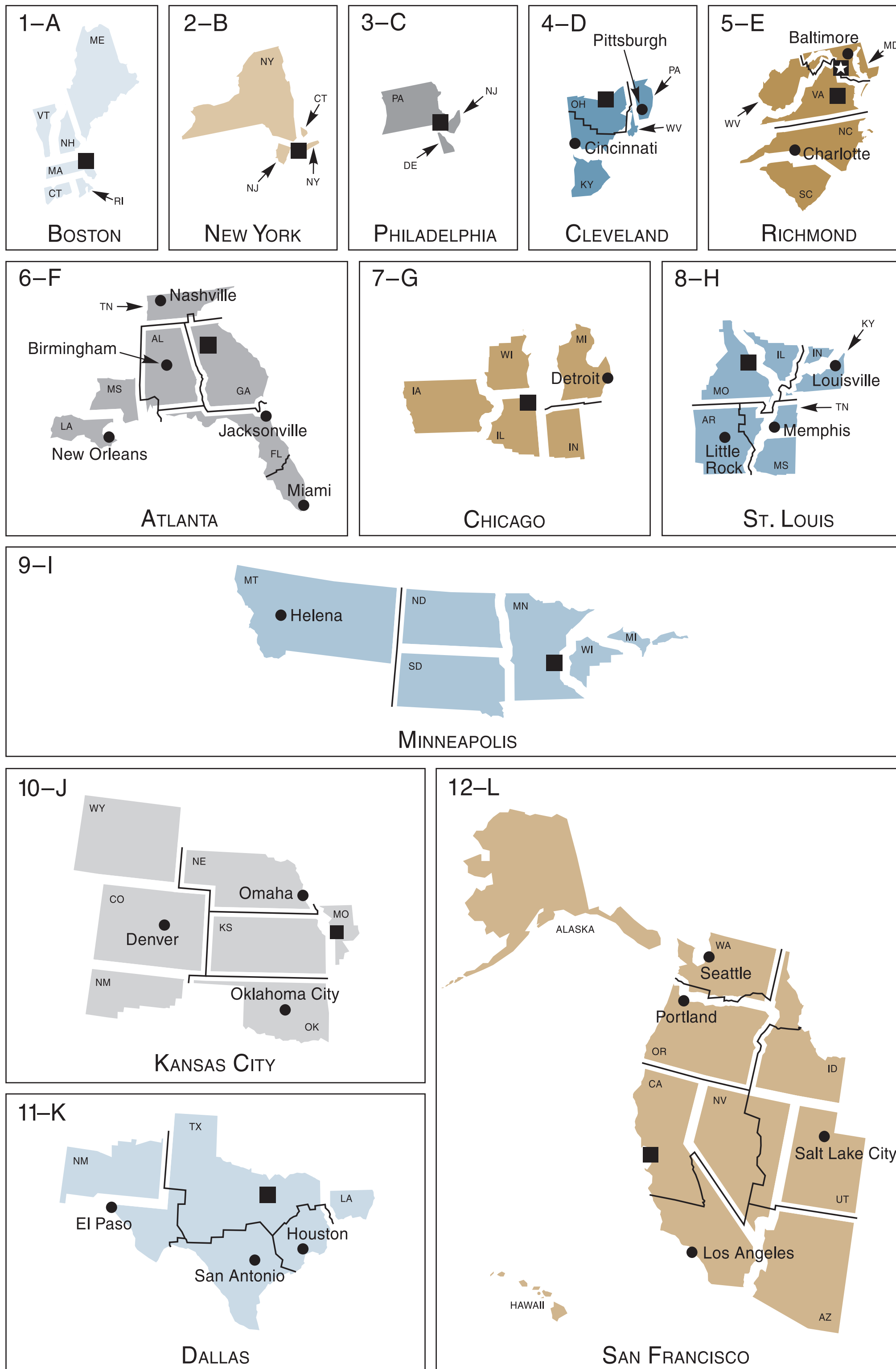
The Federal Reserve System, which serves as the nation's central bank, was created by an act of Congress on December 23, 1913. The System consists of a seven-member Board of Governors with headquarters in Washington, D.C., and the 12 Reserve Banks located in major cities throughout the United States.

The Federal Reserve Banks are the operating arms of the central banking system, carrying out a variety of System functions, including operating a nationwide payment system; distributing the nation's currency and coin; under authority delegated by the Board of Governors, supervising and regulating a variety of financial institutions and activities; serving as fiscal agents of the U.S. Treasury; and providing a variety of financial services for the Treasury, other government agencies, and other fiscal principals.

The following maps identify Federal Reserve Districts by their official number, city, and letter designation.



■ Federal Reserve Bank city
☆ Board of Governors of the Federal Reserve System, Washington, D.C.



■ Federal Reserve Bank city
● Federal Reserve Branch city
✪ Board of Governors of the Federal Reserve System, Washington, D.C.
— Branch boundary

2 | Monetary Policy and Economic Developments

As required by section 2B of the Federal Reserve Act, the Federal Reserve Board submits written reports to the Congress that contain discussions of "the conduct of monetary policy and economic developments and prospects for the future." The *Monetary Policy Report,* submitted semiannually to the Senate Committee on Banking, Housing, and Urban Affairs and to the House Committee on Banking and Financial Services, is delivered concurrently with testimony from the Federal Reserve Board Chair.

The following discussion is a review of U.S. monetary policy and economic developments in 2018, excerpted from the *Monetary Policy Report* published in February 2019 and July 2018. Those complete reports are available on the Board's website at https://www.federalreserve.gov/monetarypolicy/files/20190222_mprfullreport.pdf (February 2019) and https://www.federalreserve.gov/monetarypolicy/files/20180713_mprfullreport.pdf (July 2018).

Monetary Policy Report February 2019

Summary

Economic activity in the United States appears to have increased at a solid pace, on balance, over the second half of 2018, and the labor market strengthened further. Inflation has been near the Federal Open Market Committee's (FOMC) longer-run objective of 2 percent, aside from the transitory effects of recent energy price movements. In this environment, the FOMC judged that, on balance, current and prospective economic conditions called for a further gradual removal of policy accommodation. In particular, the FOMC raised the target range for the federal funds rate twice in the second half of 2018, putting its level at 2¼ to 2½ percent following the December meeting. In light of softer global economic and financial conditions late in the year and muted inflation pressures, the FOMC indicated at its January meeting that it will be patient as it determines what future adjustments to the federal funds rate may be appropriate to support the Committee's congressionally mandated objectives of maximum employment and price stability.

Economic and Financial Developments

The labor market. The labor market has continued to strengthen since the middle of last year. Payroll employment growth has remained strong, averaging 224,000 per month since June 2018. The unemployment rate has been about unchanged over this period, averaging a little under 4 percent—a low level by historical standards—while the labor force participation rate has moved up despite the ongoing downward influence from an aging population. Wage growth has also picked up recently.

Inflation. Consumer price inflation, as measured by the 12-month change in the price index for personal consumption expenditures, moved down from a little above the FOMC's objective of 2 percent in the middle of last year to an estimated 1.7 percent in December, restrained by recent declines in consumer energy prices. The 12-month measure of inflation that excludes food and energy items (so-called core inflation), which historically has been a better indicator of where overall inflation will be in the future than the headline measure that includes those items, is estimated to have been 1.9 percent in December—up ¼ percentage point from a year ago. Survey-based measures of longer-run inflation expectations have generally been stable, though market-based measures of inflation compensation have moved down some since the first half of 2018.

Economic growth. Available indicators suggest that real gross domestic product (GDP) increased at a solid rate, on balance, in the second half of last year and rose a little under 3 percent for the year as a whole—a noticeable pickup from the pace in recent years. Consumer spending expanded at a strong rate for most of the second half, supported by robust job gains, past increases in household wealth, and higher disposable income due in part to the Tax Cuts and

Jobs Act, though spending appears to have weakened toward year-end. Business investment grew as well, though growth seems to have slowed somewhat from a sizable gain in the first half. However, housing market activity declined last year amid rising mortgage interest rates and higher material and labor costs. Indicators of both consumer and business sentiment remain at favorable levels, but some measures have softened since the fall, likely a reflection of financial market volatility and increased concerns about the global outlook.

Financial conditions. Domestic financial conditions for businesses and households have become less supportive of economic growth since July. Financial market participants' appetite for risk deteriorated markedly in the latter part of last year amid investor concerns about downside risks to the growth outlook and rising trade tensions between the United States and China. As a result, Treasury yields and risky asset prices declined substantially between early October and late December in the midst of heightened volatility, although those moves partially retraced early this year. On balance since July, the expected path of the federal funds rate over the next several years shifted down, long-term Treasury yields and mortgage rates moved lower, broad measures of U.S. equity prices increased somewhat, and spreads of yields on corporate bonds over those on comparable-maturity Treasury securities widened modestly. Credit to large nonfinancial firms remained solid in the second half of 2018; corporate bond issuance slowed considerably toward the end of the year but has rebounded since then. Despite increases in interest rates for consumer loans, consumer credit expanded at a solid pace, and financing conditions for consumers largely remain supportive of growth in household spending. The foreign exchange value of the U.S. dollar strengthened slightly against the currencies of the U.S. economy's trading partners.

Financial stability. The U.S. financial system remains substantially more resilient than in the decade preceding the financial crisis. Pressures associated with asset valuations eased compared with July 2018, particularly in the equity, corporate bond, and leveraged loan markets. Regulatory capital and liquidity ratios of key financial institutions, including large banks, are at historically high levels. Funding risks in the financial system are low relative to the period leading up to the crisis. Borrowing by households has risen roughly in line with household incomes and is concentrated among prime borrowers. While debt owed by businesses is high and credit standards—especially within segments of the loan market focused on lower-rated or unrated firms—deteriorated in the second half of 2018, issuance of these loans has slowed more recently.

International developments. Foreign economic growth stepped down significantly last year from the brisk pace in 2017. Aggregate growth in the advanced foreign economies slowed markedly, especially in the euro area, and several Latin American economies continued to underperform. The pace of economic activity in China slowed noticeably in the second half of 2018. Inflation pressures in major advanced foreign economies remain subdued, prompting central banks to maintain accommodative monetary policies.

Financial conditions abroad tightened in the second half of 2018, in part reflecting political uncertainty in Europe and Latin America, trade policy developments in the United States and its trading partners, as well as concerns about moderating global growth. Although financial conditions abroad improved in recent weeks, alongside those in the United States, on balance since July 2018, global equity prices were lower, sovereign yields in many economies declined, and sovereign credit spreads in the European periphery and the most vulnerable emerging market economies increased somewhat. Market-implied paths of policy rates in advanced foreign economies generally edged down.

Monetary Policy

Interest rate policy. As the labor market continued to strengthen and economic activity expanded at a strong rate, the FOMC increased the target range for the federal funds rate gradually over the second half of 2018. Specifically, the FOMC decided to raise the federal funds rate in September and in December, bringing it to the current range of 2¼ to 2½ percent.

In December, against the backdrop of increased concerns about global growth, trade tensions, and volatility in financial markets, the Committee indicated it would monitor global economic and financial developments and assess their implications for the economic outlook. In January, the FOMC stated that it continued to view sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's 2 percent objective as the most likely outcomes. Nonetheless, in light of global economic and financial developments and muted inflation pressures, the Committee noted that it will be patient as it determines what future adjustments to the target range for the federal funds rate may be

appropriate to support these outcomes. FOMC communications continued to emphasize that the Committee's approach to setting the stance of policy should be importantly guided by the implications of incoming data for the economic outlook. In particular, the timing and size of future adjustments to the target range for the federal funds rate will depend on the Committee's assessment of realized and expected economic conditions relative to its maximum-employment objective and its symmetric 2 percent inflation objective.

Balance sheet policy. The FOMC continued to implement the balance sheet normalization program that has been under way since October 2017. Specifically, the FOMC reduced its holdings of Treasury and agency securities in a gradual and predictable manner by reinvesting only principal payments it received from these securities that exceeded gradually rising caps. Consequently, the Federal Reserve's total assets declined by about $260 billion since the middle of last year, ending the period close to $4 trillion.

Together with the January postmeeting statement, the Committee released an updated Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization to provide additional information about its plans to implement monetary policy over the longer run. In particular, the FOMC stated that it intends to continue to implement monetary policy in a regime with an ample supply of reserves so that active management of reserves is not required. In addition, the Committee noted that it is prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments.

Special Topics

Labor markets in urban versus rural areas. The recovery in the U.S. labor market since the end of the recession has been uneven across the country, with rural areas showing markedly less improvement than cities and their surrounding metropolitan areas. In particular, the employment-to-population ratio and labor force participation rate in rural areas remain well below their pre-recession levels, while the recovery in urban areas has been more complete. Differences in the mix of industries in rural and urban areas—a larger share of manufacturing in rural areas and a greater concentration of fast-growing services industries in urban areas—have contributed to the stronger rebound in urban areas. (See the box "Employment Disparities between Rural and Urban Areas" on pages 10–12 of the February 2019 *Monetary Policy Report*.)

Monetary policy rules. In evaluating the stance of monetary policy, policymakers consider a wide range of information on the current economic conditions and the outlook. Policymakers also consult prescriptions for the policy interest rate derived from a variety of policy rules for guidance, without mechanically following the prescriptions of any specific rule. The FOMC's approach for conducting systematic monetary policy provides sufficient flexibility to address the intrinsic complexities and uncertainties in the economy while keeping monetary policy predictable and transparent. (See the box "Monetary Policy Rules and Systematic Monetary Policy" on pages 36–39 of the February 2019 *Monetary Policy Report*.)

Balance sheet normalization and monetary policy implementation. Since the financial crisis, the size of the Federal Reserve's balance sheet has been determined in large part by its decisions about asset purchases for economic stimulus, with growth in total assets primarily matched by higher reserve balances of depository institutions. However, liabilities other than reserves have grown significantly over the past decade. In the longer run, the size of the balance sheet will be importantly determined by the various factors affecting the demand for Federal Reserve liabilities. (See the box "The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet" on pages 41–43 of the February 2019 *Monetary Policy Report*.)

Federal Reserve transparency and accountability. For central banks, transparency provides an essential basis for accountability. Transparency also enhances the effectiveness of monetary policy and a central bank's efforts to promote financial stability. For these reasons, the Federal Reserve uses a wide variety of communications to explain its policymaking approach and decisions as clearly as possible. Through several new initiatives, including a review of its monetary policy framework that will include outreach to a broad range of stakeholders, the Federal Reserve seeks to enhance transparency and accountability regarding how it pursues its statutory responsibilities. (See the box "Federal Reserve Transparency: Rationale and New Initiatives" on pages 45–46 of the February 2019 *Monetary Policy Report*.)

Part 1: Recent Economic and Financial Developments

Domestic Developments

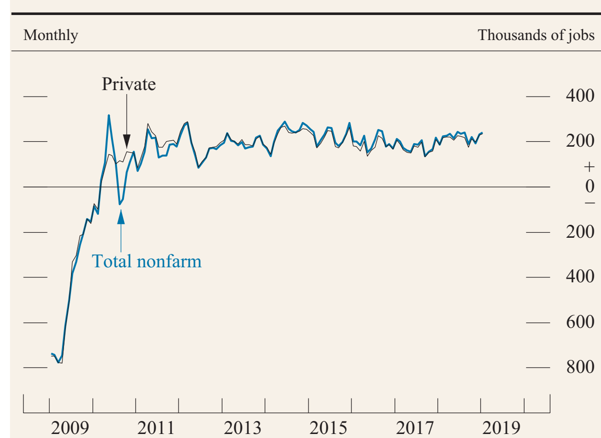
The labor market strengthened further during the second half of 2018 and early this year . . .

Payroll employment gains have remained strong, averaging 224,000 per month since June 2018 (figure 1). This pace is similar to the pace in the first half of last year, and it is faster than the average pace of job gains in 2016 and 2017.

The strong pace of job gains over this period has primarily been manifest in a rising labor force participation rate (LFPR)—the share of the population that is either working or actively looking for work—rather than a declining unemployment rate.[1] Since June 2018, the LFPR has moved up about ¼ percentage point and was 63.2 percent in January—a bit higher than the narrow range it has maintained in recent years (figure 2). The improvement is especially notable because the aging of the population—and, in particular, the movement of members of the baby-boom cohort into their retirement years—has otherwise imparted a downward influence on the LFPR. Indeed, the LFPR for individuals between 25 and 54 years old—which is much less sensitive to population aging—has improved considerably more than the overall LFPR, including a ½ percentage point rise since June 2018.[2]

At the same time, the unemployment rate has remained little changed and has generally been running a little under 4 percent.[3] Nevertheless, the unemployment rate remains at a historically low level and is ½ percentage point below the median of the Federal Open Market Committee (FOMC) participants' estimates of its longer-run normal level (figure 3).[4] Combining the movements in both unemployment and labor force participation, the employment-to-population ratio for individuals 16 and over—the

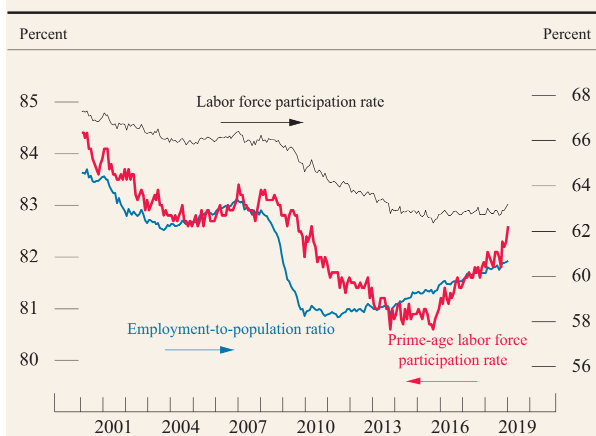
Figure 1. Net change in payroll employment



Note: The data are 3-month moving averages.

Source: Bureau of Labor Statistics via Haver Analytics.

Figure 2. Labor force participation rates and employment-to-population ratio



Note: The data are monthly. The prime-age labor force participation rate is a percentage of the population aged 25 to 54. The labor force participation rate and the employment-to-population ratio are percentages of the population aged 16 and over.

Source: Bureau of Labor Statistics via Haver Analytics.

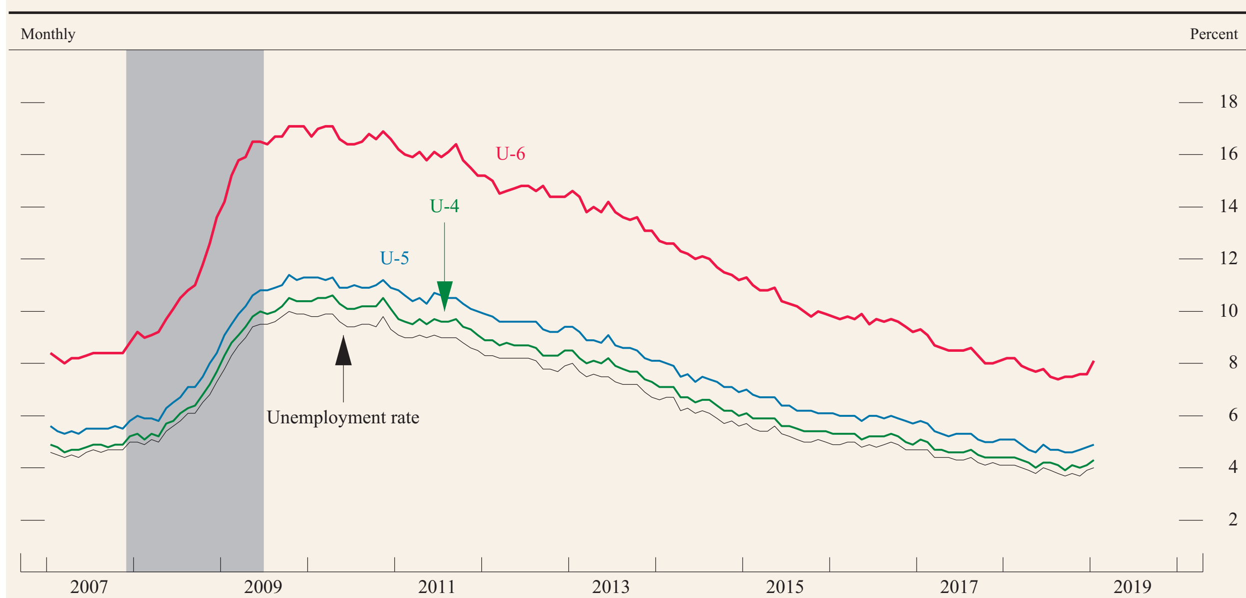
[1] The observed pace of payroll job gains would have been sufficient to push the unemployment rate lower had the LFPR not risen. Indeed, monthly payroll gains in the range of 115,000 to 145,000 appear consistent with an unchanged unemployment rate around 4.0 percent and an unchanged LFPR around 62.9 percent (which are the June 2018 values of these rates). If instead the LFPR were declining 0.2 percentage point per year—roughly the influence of population aging—the range of job gains needed to maintain an unchanged unemployment rate would be about 40,000 per month lower. There is considerable uncertainty around these estimates, as the difference between monthly payroll gains and employment changes from the Current Population Survey (the source of the unemployment rate and LFPR) can be quite volatile over short periods.

[2] Since 2015, the increase in the prime-age LFPR for women was nearly 2 percentage points, while the increase for men was only about 1 percentage point. In January, the LFPR for prime-age women was slightly above where it stood in 2007, whereas for men it was still about 2 percentage points below.

[3] The unemployment rate in January was 4.0 percent, boosted somewhat by the partial government shutdown, as some furloughed federal workers and temporarily laid-off federal contractors are treated as unemployed in the household employment survey.

[4] See the Summary of Economic Projections in Part 3 of the February 2019 *Monetary Policy Report*.

Figure 3. Measures of labor utilization



Note: Unemployment rate measures total unemployed as a percentage of the labor force. U-4 measures total unemployed plus discouraged workers, as a percentage of the labor force plus discouraged workers. Discouraged workers are a subset of marginally attached workers who are not currently looking for work because they believe no jobs are available for them. U-5 measures total unemployed plus all marginally attached to the labor force, as a percentage of the labor force plus persons marginally attached to the labor force. Marginally attached workers are not in the labor force, want and are available for work, and have looked for a job in the past 12 months. U-6 measures total unemployed plus all marginally attached workers plus total employed part time for economic reasons, as a percentage of the labor force plus all marginally attached workers. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research.

Source: Bureau of Labor Statistics via Haver Analytics.

share of that segment of the population who are working—was 60.7 percent in January and has been gradually increasing since 2011.

Other indicators are also consistent with a strong labor market. As reported in the Job Openings and Labor Turnover Survey (JOLTS), the job openings rate has moved higher since the first half of 2018, and in December, it was at its highest level since the data began in 2000. The quits rate in the JOLTS is also near the top of its historical range, an indication that workers have become more confident that they can successfully switch jobs when they wish to. In addition, the JOLTS layoff rate has remained low, and the number of people filing initial claims for unemployment insurance benefits has also remained low. Survey evidence indicates that households perceive jobs as plentiful and that businesses see vacancies as hard to fill.

. . . and unemployment rates have fallen for all major demographic groups over the past several years

The flattening in unemployment since mid-2018 has been evident across racial and ethnic groups. Even so, over the past several years, the decline in the unemployment rates for blacks or African Americans and for Hispanics has been particularly notable, and the unemployment rates for these groups are near their lowest readings since these series began in the early 1970s. Differences in unemployment rates across ethnic and racial groups have narrowed in recent years, as they typically do during economic expansions, after having widened during the recession; on net, unemployment rates for African Americans and Hispanics remain substantially above those for whites and Asians, with differentials generally a bit below pre-recession levels.

The rise in LFPRs for prime-age individuals over the past few years has also been apparent in each of these racial and ethnic groups. Nonetheless, the LFPR for whites remains higher than that for other groups. Important differences in economic outcomes persist across other characteristics as well (see, for example, the box "Employment Disparities between Rural and Urban Areas" on pages 10–12 of the February 2019 *Monetary Policy Report,* which highlights that there has been less improvement since 2010 in the LFPR and employment-to-population ratio for prime-age individuals in rural areas compared with urban areas).

Increases in labor compensation have picked up recently but remain moderate by historical standards . . .

Most available indicators suggest that growth of hourly compensation has stepped up further since June 2018 after having firmed somewhat over the past few years; however, growth rates remain moderate compared with those that prevailed in the decade before the recession. Compensation per hour in the business sector—a broad-based measure of wages and benefits, but one that is quite volatile—rose 2¼ percent over the four quarters ending in 2018:Q3, about the same as the average annual increase over the past seven years or so. The employment cost index, a less volatile measure of both wages and the cost to employers of providing benefits, increased 3 percent over the same period, while average hourly earnings—which do not take account of benefits—increased 3.2 percent over the 12 months ending in January of this year; the annual increases in both of these measures were the strongest in nearly 10 years. The measure of wage growth computed by the Federal Reserve Bank of Atlanta that tracks median 12-month wage growth of individuals reporting to the Current Population Survey showed an increase of 3.7 percent in January, near the upper end of its readings in the past three years and well above the average increase in the preceding few years.[5]

. . . and have likely been restrained by slow growth of labor productivity over much of the expansion

These moderate rates of compensation gains likely reflect the offsetting influences of a strong labor market and productivity growth that has been weak through much of the expansion. From 2008 to 2017, labor productivity increased a little more than 1 percent per year, on average, well below the average pace from 1996 to 2007 of nearly 3 percent and also below the average gain in the 1974–95 period. Although considerable debate remains about the reasons for the slowdown over this period, the weakness in productivity growth may be partly attributable to the sharp pullback in capital investment during the most recent recession and the relatively slow recovery that followed. More recently, however, labor productivity is estimated to have increased almost 2 percent at an annual rate in the first three quarters of 2018—still moderate relative to earlier periods, but its fastest three-quarter gain since 2010. While it is uncertain whether this faster rate of growth will persist, a sustained pickup in productivity growth, as well as additional labor market strengthening, would likely support stronger gains in labor compensation.

Price inflation is close to 2 percent

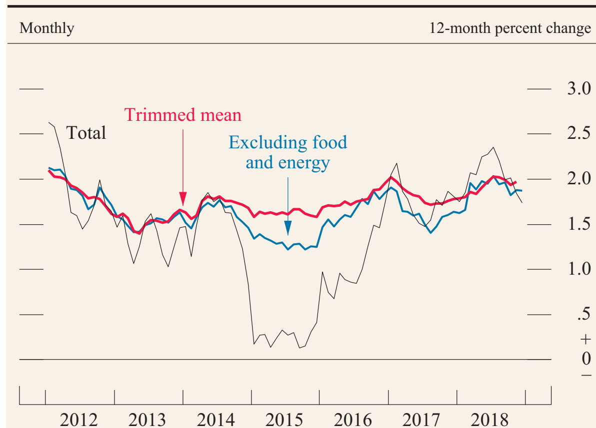
Consumer price inflation has fluctuated around the FOMC's objective of 2 percent, largely reflecting movements in energy prices. As measured by the 12-month change in the price index for personal consumption expenditures (PCE), inflation is estimated to have been 1.7 percent in December after being above 2 percent for much of 2018 (figure 4).[6] Core PCE inflation—that is, inflation excluding consumer food and energy prices—is estimated to have been 1.9 percent in December. Because food and energy prices are often quite volatile, core inflation typically provides a better indication than the total measure of where overall inflation will be in the future. Total inflation was below core inflation for the year as a whole not only because of softness in energy prices, but also because food price inflation has remained relatively low.

Core inflation has moved up since 2017, when inflation was held down by some unusually large price declines in a few relatively small categories of spend-

[5] The Atlanta Fed's measure differs from others in that it measures the wage growth only of workers who were employed both in the current survey month and 12 months earlier.

[6] The partial government shutdown has delayed publication of the Bureau of Economic Analysis's estimate for PCE price inflation in December, and the numbers reported here are estimates based on the December consumer and producer price indexes.

Figure 4. Change in the price index for personal consumption expenditures



Note: The data for total and excluding food and energy extend through December 2018; final values are staff estimates. The trimmed data extend through November 2018.

Source: For trimmed mean, Federal Reserve Bank of Dallas; for all else, Bureau of Economic Analysis; all via Haver Analytics.

ing, such as mobile phone services. The trimmed mean PCE price index, produced by the Federal Reserve Bank of Dallas, provides an alternative way to purge inflation of transitory influences, and it may be less sensitive than the core index to idiosyncratic price movements such as those noted earlier. The 12-month change in this measure did not decline as much as core PCE inflation in 2017, and it was 2.0 percent in November.[7] Inflation likely has been increasingly supported by the strong labor market in an environment of stable inflation expectations; inflation last year was also boosted slightly by the tariffs that were imposed throughout 2018.

Oil prices have dropped markedly in recent months . . .

As noted, the slower pace of total inflation in late 2018 relative to core inflation largely reflected softening in consumer energy prices toward the end of the year. After peaking at about $86 per barrel in early October, the price of crude oil subsequently fell sharply and has averaged around $60 per barrel this year (figure 5). The recent decline in oil prices has led to moderate reductions in the cost of gasoline and heating oil. Supply factors, including surging oil production in Saudi Arabia, Russia, and the United States, appear to be most responsible for the recent price declines, but concerns about weaker global growth likely also played a role.

. . . while prices of imports other than energy have also declined

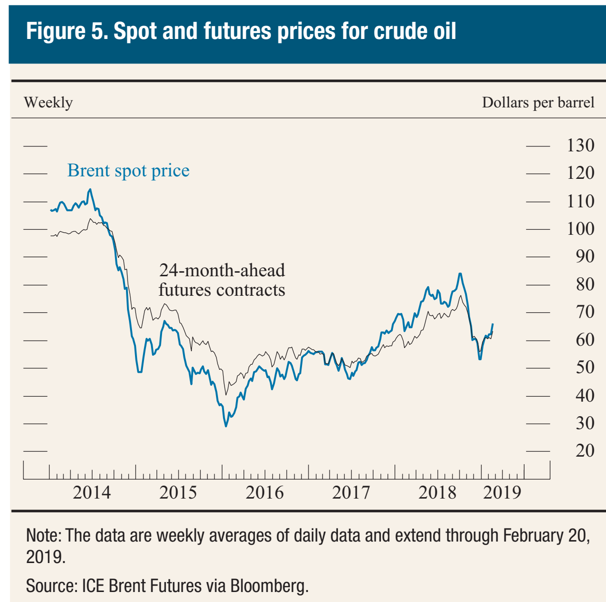
After climbing steadily since their early 2016 lows, nonfuel import prices peaked in May 2018 and declined for much of the rest of 2018 in response to dollar appreciation, lower foreign inflation, and declines in commodity prices. In particular, metal prices fell markedly in the second half of 2018, partly reflecting concerns about prospects for the global economy. Nonfuel import prices, before accounting for the effects of tariffs on the price of imported goods, had roughly a neutral influence on U.S. price inflation in 2018.

Survey-based measures of inflation expectations have been stable . . .

Expectations of inflation likely influence actual inflation by affecting wage- and price-setting decisions. Survey-based measures of inflation expectations at medium- and longer-term horizons have remained generally stable over the second half of 2018. In the Survey of Professional Forecasters, conducted by the Federal Reserve Bank of Philadelphia, the median expectation for the annual rate of increase in the PCE price index over the next 10 years has been very close to 2 percent for the past several years (figure 6). In the University of Michigan Surveys of Consumers, the median value for inflation expectations over the next 5 to 10 years has been around 2½ percent since

[7] The trimmed mean index excludes whichever prices showed the largest increases or decreases in a given month. Note that over the past 20 years, changes in the trimmed mean index have averaged about ¼ percentage point above core PCE inflation and 0.1 percentage point above total PCE inflation.

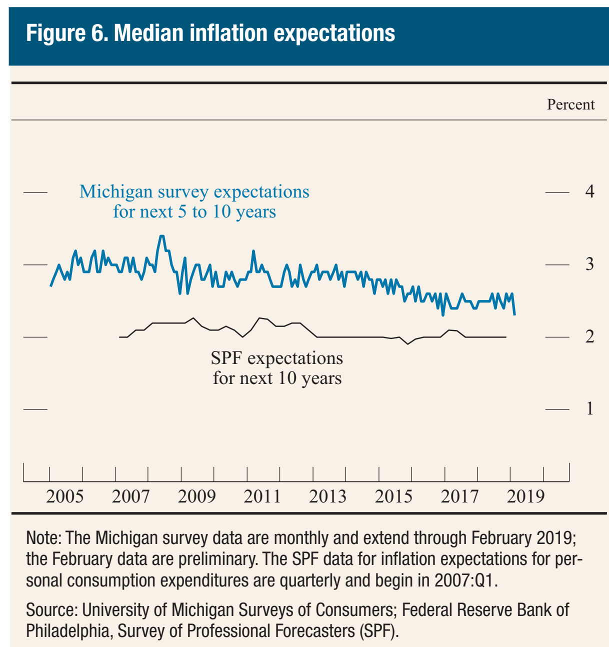
Figure 5. Spot and futures prices for crude oil



Note: The data are weekly averages of daily data and extend through February 20, 2019.

Source: ICE Brent Futures via Bloomberg.

Figure 6. Median inflation expectations



Note: The Michigan survey data are monthly and extend through February 2019; the February data are preliminary. The SPF data for inflation expectations for personal consumption expenditures are quarterly and begin in 2007:Q1.

Source: University of Michigan Surveys of Consumers; Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (SPF).

the end of 2016, though this level is about ¼ percentage point lower than had prevailed through 2014. In contrast, in the Survey of Consumer Expectations, conducted by the Federal Reserve Bank of New York, the median of respondents' expected inflation rate three years hence—while relatively stable around 3 percent since early 2018—is nonetheless at the top of the range it has occupied over the past couple of years.

. . . while market-based measures of inflation compensation have come down since the first half of 2018

Inflation expectations can also be gauged by market-based measures of inflation compensation. However, the inference is not straightforward, because market-based measures can be importantly affected by changes in premiums that provide compensation for bearing inflation and liquidity risks. Measures of longer-term inflation compensation—derived either from differences between yields on nominal Treasury securities and those on comparable-maturity Treasury Inflation-Protected Securities (TIPS) or from inflation swaps—moved down in the fall and are below levels that prevailed earlier in 2018.[8] The TIPS-based measure of 5-to-10-year-forward inflation compensation and the analogous measure from inflation swaps are now about 1¾ percent and 2¼ percent, respectively, with both measures below their respective ranges that persisted for most of the 10 years before the start of the notable declines in mid-2014.[9]

Real gross domestic product growth was solid, on balance, in the second half of 2018

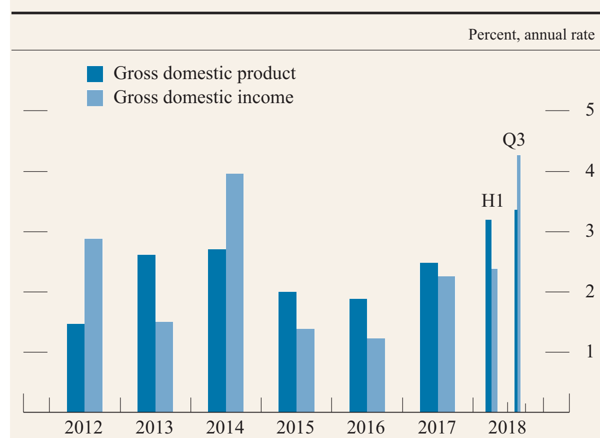
Real gross domestic product (GDP) rose at an annual rate of 3½ percent in the third quarter, and available indicators point to a moderate gain in the fourth quarter.[10] For the year, GDP growth appears to have been a little less than 3 percent, up from the 2½ percent pace in 2017 and the 2 percent pace in the preceding two years (figure 7). Last year's growth reflects, in part, solid growth in household and business spending, on balance, as well as an increase in government purchases of goods and services; by contrast, housing-sector activity turned down last year. Private domestic final purchases—that is, final purchases by households and businesses, which tend to provide a better indication of future GDP growth than most other components of overall spending—likely posted a strong gain for the year.

Some measures of consumer and business sentiment have recently softened—likely reflecting concerns about financial market volatility, the global economic outlook, trade policy tensions, and the government shutdown—and consumer spending appears to have weakened at the end of the year. Nevertheless, the economic expansion continues to be supported by steady job gains, past increases in household wealth, expansionary fiscal policy, and still-favorable domestic financial conditions, including moderate borrowing costs and easy access to credit for many households and businesses.

Ongoing improvements in the labor market continue to support household income and consumer spending . . .

Real consumer spending picked up after some transitory weakness in the first half of 2018, rising at a strong annual rate of 3½ percent in the third quarter and increasing robustly through November (figure 8). However, despite anecdotal reports of favorable holiday sales, retail sales were reported to have declined

Figure 7. Change in real gross domestic product and gross domestic income



Source: Bureau of Economic Analysis via Haver Analytics.

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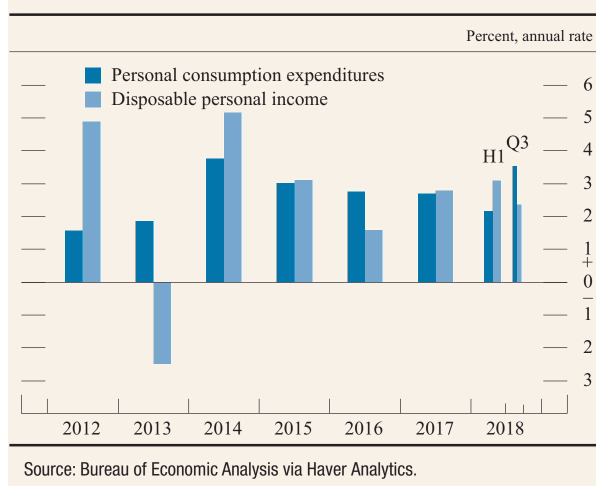
8 Inflation compensation implied by the TIPS breakeven inflation rate is based on the difference, at comparable maturities, between yields on nominal Treasury securities and yields on TIPS, which are indexed to the total consumer price index (CPI). Inflation swaps are contracts in which one party makes payments of certain fixed nominal amounts in exchange for cash flows that are indexed to cumulative CPI inflation over some horizon. Inflation compensation derived from inflation swaps typically exceeds TIPS-based compensation, but week-to-week movements in the two measures are highly correlated.

9 As these measures are based on CPI inflation, one should probably subtract about ¼ percentage point—the average differential with PCE inflation over the past two decades—to infer inflation compensation on a PCE basis.

10 The initial estimate of GDP by the Bureau of Economic Analysis for the fourth quarter was delayed because of the partial government shutdown and will now be released on February 28.

Figure 8. Change in real personal consumption expenditures and disposable personal income



Source: Bureau of Economic Analysis via Haver Analytics.

sharply in December. Real disposable personal income—that is, income after taxes and adjusted for price changes—looks to have increased around 3 percent over the year, boosted by ongoing improvements in the labor market and the reduction in income taxes due to the implementation of the Tax Cuts and Jobs Act (TCJA). With consumer spending rising at about the same rate as gains in disposable income in 2018 through the third quarter (the latest data available), the personal saving rate was roughly unchanged, on net, over this period.

. . . although wealth gains have moderated and consumer confidence has recently softened

While increases in household wealth have likely continued to support consumer spending, gains in net worth slowed last year. House prices continued to move up in 2018, boosting the wealth of homeowners, but the pace of growth moderated. U.S. equity prices are, on net, similar to their levels at the end of 2017. Still, the level of equity and housing wealth relative to income remains very high by historical standards.[11]

Consumer sentiment as measured by the Michigan survey flattened out at a high level through much of 2018, and the sentiment measure from the Conference Board survey climbed through most of the year, with both measures posting their highest annual averages since 2000. However, consumer sentiment has turned down since around year-end, on net, with the declines primarily reflecting consumers' expectations for future conditions rather than their assessment of current conditions. Consumer attitudes about car buying have also weakened. Nevertheless, these indicators of consumers' outlook remain at generally favorable levels, likely reflecting rising income, job gains, and low inflation.

Borrowing conditions for consumers remain generally favorable despite interest rates being near the high end of their post-recession range

Despite increases in interest rates for consumer loans and some reported further tightening in credit card lending standards, financing conditions for consumers largely remain supportive of growth in household spending, and consumer credit growth in 2018 expanded further at a solid pace. Mortgage credit has continued to be readily available for households with solid credit profiles. For borrowers with low credit scores, mortgage underwriting standards have eased somewhat since the first half of 2018 but remain noticeably tighter than before the recession. Financing conditions in the student loan market remain stable, with over 90 percent of such credit being extended by the federal government. Delinquencies on such loans, though staying elevated, continued to improve gradually on net.

Business investment growth has moderated after strong gains early in 2018 . . .

Investment spending by businesses rose rapidly in the first half of last year, and the available data are consistent with growth having slowed in the second half (figure 9). The apparent slowdown reflects, in part, more moderate growth in investment in equipment and intangibles as well as a likely decline in investment in nonresidential structures after strong gains earlier in the year. Forward-looking indicators of business spending—such as business sentiment, capital spending plans, and profit expectations from industry analysts—have softened recently but remain positive overall. And while new orders of capital goods flattened out toward the end of last year, the backlog of unfilled orders for this equipment has continued to rise.

. . . as corporate financing conditions tightened somewhat but remained accommodative overall

Spreads of yields on nonfinancial corporate bonds over those on comparable-maturity Treasury securities widened modestly, on balance, since the middle of 2018 as investors' risk appetite appeared to recede

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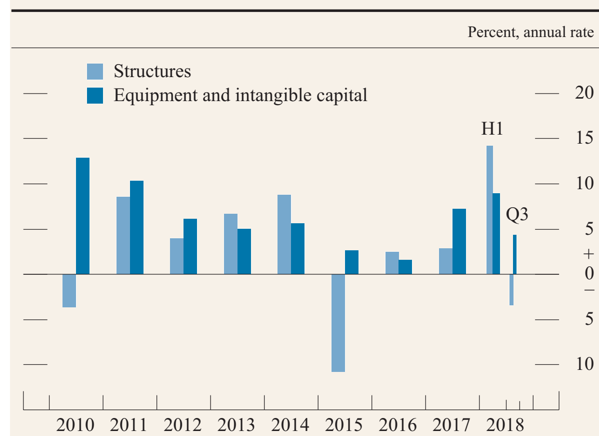
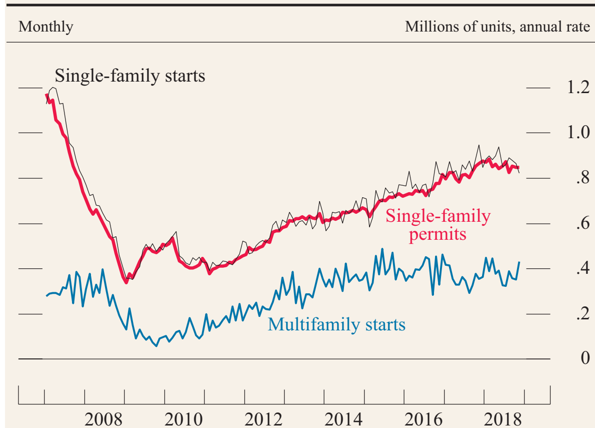
[11] Indeed, in the third quarter of 2018—the most recent period for which data are available—household net worth was seven times the value of disposable income, the highest-ever reading for that ratio, which dates back to 1947. However, following the decline in stock prices since the summer, this ratio has likely fallen somewhat.

Figure 9. Change in real private nonresidential fixed investment



Source: Bureau of Economic Analysis via Haver Analytics.

Figure 10. Private housing starts and permits



Note: The data extend through November 2018.

Source: U.S. Census Bureau via Haver Analytics.

some. Nonetheless, a net decrease in Treasury yields over the past several months has left interest rates on corporate bonds still low by historical standards, and financing conditions appear to have remained accommodative overall. Aggregate net flows of credit to large nonfinancial firms remained solid in the third quarter. The gross issuance of corporate bonds and new issuance of leveraged loans both fell considerably toward the end of the year but have since rebounded, mirroring movements in financial market volatility.

Respondents to the January Senior Loan Officer Opinion Survey on Bank Lending Practices, or SLOOS, reported that lending standards for commercial and industrial (C&I) loans remained basically unchanged in the fourth quarter after having reported easing standards over the past several quarters. However, banks reported tightening lending standards on all categories of commercial real estate (CRE) loans in the fourth quarter on net.

Meanwhile, financing conditions for small businesses have remained generally accommodative. Lending volumes to small businesses rebounded a bit in recent months, and indicators of recent loan performance stayed strong.

Activity in the housing sector has been declining

Residential investment declined in 2018, as housing starts held about flat and sales of existing homes moved lower (figure 10). The drop in residential investment reflects rising mortgage rates—which remain higher than in 2017 despite coming down some recently—as well as higher material and labor building costs, which have likely restrained new home construction. Consumers' perceptions of homebuying conditions deteriorated sharply over 2018, consistent with the decline in the affordability of housing associated with both higher mortgage rates and still-rising house prices.

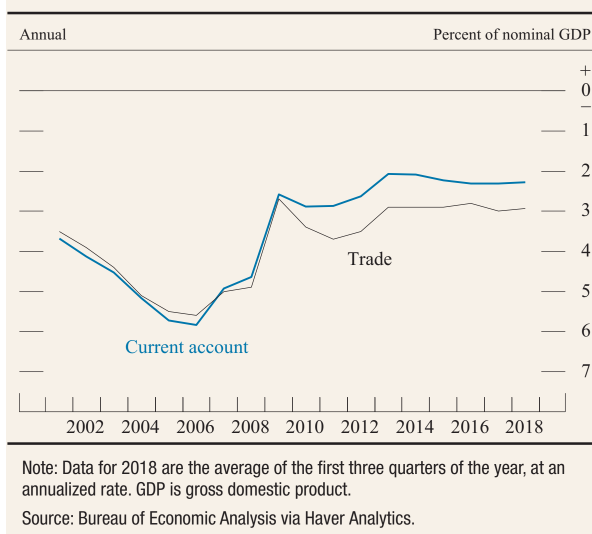
Net exports likely subtracted from GDP growth in 2018

After a strong performance in the first half of last year supported by robust exports of agricultural products, real exports declined in the third quarter, and available indicators suggest only a partial rebound in the fourth quarter. At the same time, growth in real imports seems to have picked up in the second half of 2018. As a result, real net exports—which lifted U.S. real GDP growth during the first half of 2018—appear to have subtracted from growth in the second half. For the year as a whole, net exports likely subtracted a little from real GDP growth, similar to 2016 and 2017. The nominal trade deficit and the current account deficit in 2018 were little changed as a percent of GDP from 2017 (figure 11).

Federal fiscal policy actions boosted economic growth in 2018 . . .

Fiscal policy at the federal level boosted GDP growth in 2018, both because of lower income and business taxes from the TCJA and because federal purchases

Figure 11. U.S. trade and current account balances



Note: Data for 2018 are the average of the first three quarters of the year, at an annualized rate. GDP is gross domestic product.

Source: Bureau of Economic Analysis via Haver Analytics.

appear to have risen significantly faster than in 2017 as a result of the Bipartisan Budget Act of 2018.[12] The partial government shutdown, which was in effect from December 22 through January 25, likely held down GDP growth in the first quarter of this year somewhat, largely because of the lost work of furloughed federal government workers and temporarily affected federal contractors.

The federal unified deficit widened in fiscal year 2018 to 3¾ percent of nominal GDP because receipts moved lower, to roughly 16½ percent of GDP. Expenditures edged down, to 20¼ percent of GDP, but remain above the levels that prevailed in the decade before the start of the 2007–09 recession. The ratio of federal debt held by the public to nominal GDP equaled 78 percent at the end of fiscal 2018 and remains quite elevated relative to historical norms. The Congressional Budget Office projects that this ratio will rise over the next several years.

. . . and the fiscal position of most state and local governments is stable

The fiscal position of most state and local governments is stable, although there is a range of experiences across these governments. After several years of slow growth, revenue gains of state governments strengthened notably as sales and income tax collections have picked up over the past few quarters. At the local level, property tax collections continue to rise at a solid clip, pushed higher by past house price gains. After declining a bit in 2017, real state and local government purchases grew moderately last year, driven largely by a boost in construction but also reflecting modest growth in employment at these governments.

Financial Developments

The expected path of the federal funds rate over the next several years has moved down

Despite the further strengthening in the labor market and continued expansion in the U.S. economy, market-based measures of the expected path for the federal funds rate over the next several years have declined, on net, since the middle of last year. Various factors contributed to this shift, including increased investor concerns about downside risks to the global economic outlook and rising trade tensions, as well as FOMC communications that were viewed as signaling patience and greater flexibility in the conduct of monetary policy in response to adverse macroeconomic or financial market developments.

Survey-based measures of the expected path of the policy rate through 2020 also shifted down, on net, relative to the levels observed in the first half of 2018. According to the results of the most recent Survey of Primary Dealers and Survey of Market Participants, both conducted by the Federal Reserve Bank of New York just before the January FOMC meeting, the median of respondents' modal projections for the path of the federal funds rate implies two additional 25 basis point rate increases in 2019. Relative to the December survey, these increases are expected to occur later in 2019. Looking further ahead, respondents to the January survey forecast no rate increases in 2020 and in 2021.[13] Meanwhile, market-based measures of uncertainty about the policy rate approximately one to two years ahead were little changed, on balance, from their levels at the end of last June.

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[12] The Joint Committee on Taxation estimated that the TCJA would reduce average annual tax revenue by a little more than 1 percent of GDP starting in 2018 and for several years thereafter. This revenue estimate does not account for the potential macroeconomic effects of the legislation.

[13] The results of the Survey of Primary Dealers and the Survey of Market Participants are available on the Federal Reserve Bank of New York's website at https://www.newyorkfed.org/markets/primarydealer_survey_questions.html and https://www.newyorkfed.org/markets/survey_market_participants, respectively.

The nominal Treasury yield curve continued to flatten

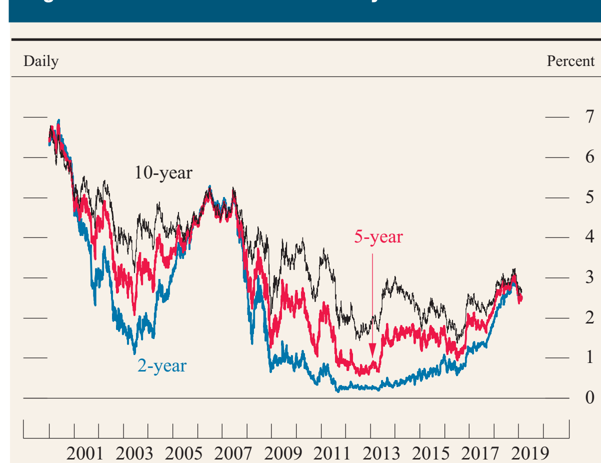
The nominal Treasury yield curve flattened somewhat further since the first half of 2018, with the 2-year nominal Treasury yield little changed and the 5- and 10-year nominal Treasury yields declining about 25 basis points on net (figure 12). At the same time, yields on inflation-protected Treasury securities edged up, leaving market-based measures of inflation compensation moderately lower. In explaining movements in Treasury yields since mid-2018, market participants have pointed to developments related to the global economic outlook and trade tensions, FOMC communications, and fluctuations in oil prices. Option-implied volatility on swap rates—an indicator of uncertainty about Treasury yields—declined slightly on net.

Consistent with changes in yields on nominal Treasury securities, yields on 30-year agency mortgage-backed securities (MBS)—an important determinant of mortgage interest rates—decreased about 20 basis points, on balance, since the middle of last year and remain low by historical standards. Meanwhile, yields on both investment-grade and high-yield corporate debt declined a bit. As a result, the spreads on corporate bond yields over comparable-maturity Treasury yields are modestly wider than at the end of June. The cumulative increases over the past year have left spreads for high-yield and investment-grade corporate bonds close to their historical medians, with both spreads notably above the very low levels that prevailed a year ago.

Broad equity price indexes increased somewhat

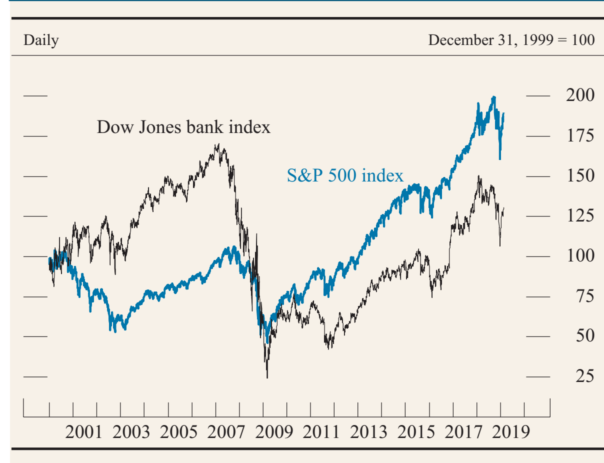
Broad U.S. stock market indexes increased somewhat since the middle of last year, on net, amid substantial volatility (figure 13). Concerns over the sustainability of corporate earnings growth, the global growth outlook, international trade tensions, and some Federal Reserve communications that were perceived as less accommodative than expected weighed on investor sentiment for a time. There were considerable differences in stock returns across sectors, reflecting their varying degrees of sensitivities to energy price declines, trade tensions, and rising interest rates. In particular, stock prices of companies in the utilities sector—which tend to benefit from falling interest rates—and in the health-care sector outperformed broader indexes. Conversely, stock prices in the energy sector substantially underperformed the broad indexes, as oil prices dropped sharply. Basic materials—a sector that was particularly sensitive to concerns about the global growth outlook and trade tensions—also underperformed. Bank stock prices declined slightly, on net, as the yield curve flattened and funding costs rose. Measures of implied and realized stock price volatility for the S&P 500 index—the VIX and the 20-day realized volatility—increased sharply in the fourth quarter of last year to near the high levels observed in early February 2018 amid sharp equity price declines. These volatility measures partially retraced following the turn of the year, with the VIX returning to near the 30th percentile of its historical distribution and with realized volatility ending the period close to the 70th percentile of its historical range (figure 14). (For a discussion of

Figure 12. Yields on nominal Treasury securities



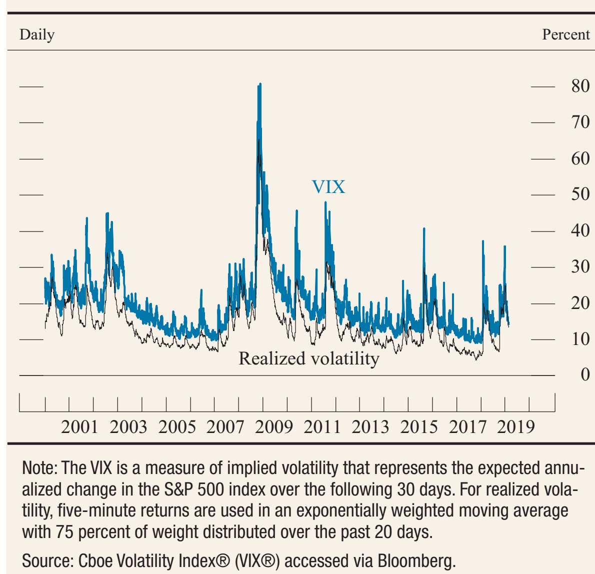
Source: Department of the Treasury via Haver Analytics.

Figure 13. Equity prices



Source: Standard & Poor's Dow Jones Indices via Bloomberg. (For Dow Jones Indices licensing information, see the note on the Contents page.)

Figure 14. S&P 500 volatility



Note: The VIX is a measure of implied volatility that represents the expected annualized change in the S&P 500 index over the following 30 days. For realized volatility, five-minute returns are used in an exponentially weighted moving average with 75 percent of weight distributed over the past 20 days.

Source: Cboe Volatility Index® (VIX®) accessed via Bloomberg.

financial stability issues, see the box "Developments Related to Financial Stability" on pages 26–28 of the February 2019 *Monetary Policy Report*.)

Markets for Treasury securities, mortgage-backed securities, and municipal bonds have functioned well

Available indicators of Treasury market functioning have generally remained stable since the first half of 2018, with a variety of liquidity metrics—including bid-ask spreads, bid sizes, and estimates of transaction costs—displaying few signs of liquidity pressures. Liquidity conditions in the agency MBS market were also generally stable. Overall, the functioning of Treasury and agency MBS markets has not been materially affected by the implementation of the Federal Reserve's balance sheet normalization program over the past year and a half. Credit conditions in municipal bond markets have remained stable since the middle of last year, though yield spreads on 20-year general obligation municipal bonds over comparable-maturity Treasury securities were modestly higher on net.

Money market rates have moved up in line with increases in the FOMC's target range

Conditions in domestic short-term funding markets have also remained generally stable since the beginning of the summer. Increases in the FOMC's target range were transmitted effectively through money markets, with yields on a broad set of money market instruments moving higher in response to the FOMC's policy actions in September and December. The effective federal funds rate moved to parity with the interest rate paid on reserves and was closely tracked by the overnight Eurodollar rate. Other short-term interest rates, including those on commercial paper and negotiable certificates of deposits, also moved up in light of increases in the policy rate.

Bank credit continued to expand, and bank profitability improved

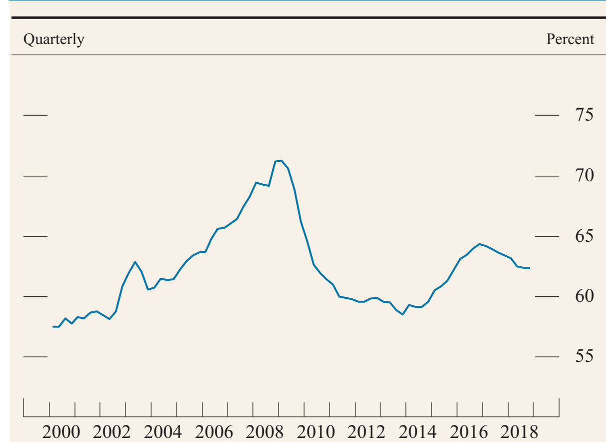
Aggregate credit provided by commercial banks expanded through the second half of 2018 at a stronger pace than the one observed in the first half of last year, as the strength in C&I loan growth more than offset the moderation in the growth in CRE loans and loans to households. In the fourth quarter of last year, the pace of bank credit expansion was about in line with that of nominal GDP, leaving the ratio of total commercial bank credit to current-dollar GDP little changed relative to last June (figure 15). Overall, measures of bank profitability improved further in the third quarter despite a flattening yield curve, but they remain below their precrisis levels.

International Developments

Economic activity in most foreign economies weakened in the second half of 2018

After expanding briskly in 2017, foreign GDP growth moderated in 2018. While part of this slowdown is likely due to temporary factors, it also appears to

Figure 15. Ratio of total commercial bank credit to nominal gross domestic product



Note: Data for 2018:Q4 are estimated.

Source: Federal Reserve Board, Statistical Release H.8, "Assets and Liabilities of Commercial Banks in the United States"; Bureau of Economic Analysis via Haver Analytics.

reflect weaker underlying momentum against the backdrop of somewhat tighter financial conditions, increased policy uncertainty, and ongoing debt deleveraging.

The growth slowdown was particularly pronounced in advanced foreign economies

Real GDP growth in several advanced foreign economies (AFEs) slowed markedly in the second half of the year. This slowdown was concentrated in the manufacturing sector against the backdrop of softening global trade flows. In Japan, real GDP contracted in the second half of 2018, as economic activity, which was disrupted by a series of natural disasters in the third quarter, rebounded only partly in the fourth quarter. Growth in the euro area slowed in the second half of the year: Transportation bottlenecks and complications in meeting tighter emissions standards for new motor vehicles weighed on German economic activity, while output contracted in Italy. Although some of these headwinds appear to be fading, recent indicators—especially for the manufacturing sector—point to only a limited recovery of activity in the euro area at the start of 2019.

Inflation pressures remain contained in advanced foreign economies . . .

In recent months, headline inflation has fallen below central bank targets in many major AFEs, reflecting large declines in energy prices. In the euro area and Japan, low headline inflation rates also reflect subdued core inflation. In Canada and the United Kingdom, instead, core inflation rates have been close to 2 percent.

. . . prompting central banks to withdraw accommodation only gradually

With underlying inflation still subdued, the Bank of Japan and the European Central Bank (ECB) kept their short-term policy rates at negative levels. Although the ECB concluded its asset purchase program in December, it signaled an only very gradual removal of policy accommodation going forward. The Bank of England (BOE) and the Bank of Canada, which both began raising interest rates in 2017, increased their policy rates further in the second half of 2018 but to levels that are still low by historical standards. The BOE noted that elevated uncertainty around the United Kingdom's exit from the European Union (EU) weighed on the country's economic outlook.

Political uncertainty and slower economic growth weighed on AFE asset prices

Moderation in global growth, protracted budget negotiations between the Italian government and the EU, and developments related to the United Kingdom's withdrawal from the EU weighed on AFE asset prices in the second half of 2018. Broad stock price indexes in the AFEs fell, interest rates on sovereign bonds in several countries in the European periphery remained elevated, and European bank shares underperformed, although these moves have partially retraced in recent weeks. Market-implied paths of policy in major AFEs and long-term sovereign bond yields declined somewhat, as economic data disappointed.

Growth slowed in many emerging market economies

Chinese GDP growth slowed in the second half of 2018 as an earlier tightening of credit policy, aimed at restraining the buildup of debt, caused infrastructure investment to fall sharply and squeezed household spending. However, increased concerns about a sharper-than-expected slowdown in growth, as well as prospective effects of trade policies, prompted Chinese authorities to ease monetary and fiscal policy somewhat. Elsewhere in emerging Asia, growth remained well below its 2017 pace amid headwinds from moderating global growth. Tighter financial conditions also weighed on growth in other EMEs—notably, Argentina and Turkey.

Economic activity strengthened somewhat in Mexico and Brazil, but uncertainty about policy developments remains elevated

In Mexico, economic activity increased at a more rapid rate in the third quarter after modest advances earlier in the year. However, growth weakened again in the fourth quarter, as perceptions that the newly elected government would pursue less market-friendly policies led to a sharp tightening in financial conditions. Amid a sharp peso depreciation and above-target inflation, the Bank of Mexico raised its policy rate to 8.25 percent in December. Brazilian real GDP growth rebounded in the third quarter after being held down by a nationwide trucker's strike in May, and financial markets have rallied on expectations that Brazil's new government will pursue economic policies that support growth. However, investors continued to focus on whether the new administration would pass significant fiscal reforms.

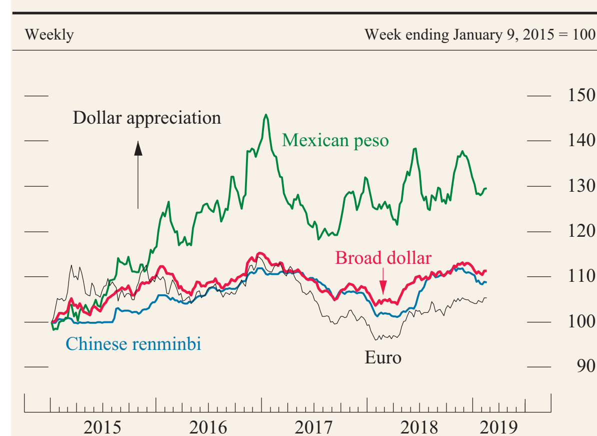
Financial conditions in many emerging market economies were volatile but are, on net, little changed since July

Financial conditions in the EMEs generally tightened in the second half of 2018, as investor concerns about vulnerabilities in several EMEs intensified against the backdrop of higher policy uncertainty, slowing global growth, and rising U.S. interest rates. Trade policy tensions between the United States and China weighed on asset prices, especially in China and other Asian economies. Broad measures of EME sovereign bond spreads over U.S. Treasury yields rose, and benchmark EME equity indexes declined. However, financial conditions improved significantly in recent months, supported in part by more positive policy developments—including the U.S.-Mexico-Canada Agreement and progress on U.S.–China trade negotiations—and FOMC communications indicating a more gradual normalization of U.S. interest rates. EME mutual fund inflows resumed in recent months after experiencing outflows in the middle of 2018. While movements in asset prices and capital flows have been sizable for a number of economies, broad indicators of financial stress in EMEs are below those seen during other periods of stress in recent years.

The dollar appreciated slightly

The foreign exchange value of the U.S. dollar is bit a higher than in July (figure 16). Concerns about the global outlook, uncertainty about trade policy, and monetary policy normalization in the United States contributed to the appreciation of the dollar. The Chinese renminbi depreciated against the dollar slightly, on net, amid ongoing trade negotiations and increased concerns about growth prospects in China. The Mexican peso has been volatile amid ongoing political developments and trade negotiations but has, on net, declined only modestly against the dollar. Sharp declines in oil prices also weighed on the currencies of some energy-exporting economies.

Figure 16. U.S. dollar exchange rate indexes



Note: The data, which are in foreign currency units per dollar, are weekly averages of daily data and extend through February 20, 2019. As indicated by the arrow, increases in the data represent U.S. dollar appreciation, and decreases represent U.S. dollar depreciation.

Source: Federal Reserve Board, Statistical Release H.10, "Foreign Exchange Rates."

Part 2: Monetary Policy

The Federal Open Market Committee continued to gradually increase the federal funds rate in the second half of last year

From late 2015 through the first half of last year, the Federal Open Market Committee (FOMC) gradually increased its target range for the federal funds rate as the economy continued to make progress toward the Committee's congressionally mandated objectives of maximum employment and price stability. In the second half of 2018, the FOMC continued this gradual process of monetary policy normalization, raising the federal funds rate at its September and December meetings, bringing the target range to 2¼ to 2½ percent (figure 17).[14] The FOMC's decisions to increase the federal funds rate reflected the solid performance of the U.S. economy, the continued strengthening of the labor market, and the fact that inflation had moved near the Committee's 2 percent longer-run objective.

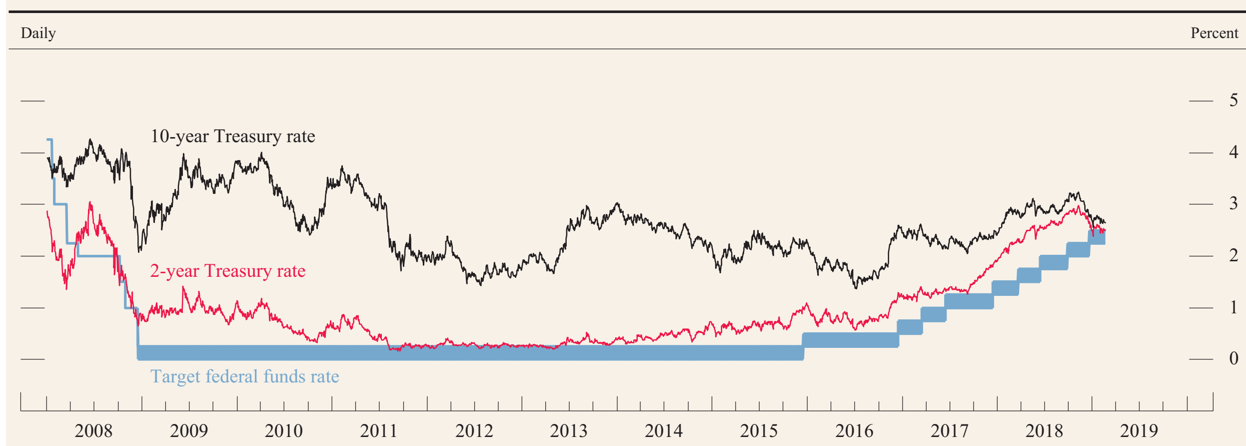
Looking ahead, the FOMC will be patient as it determines what future adjustments to the target range for the federal funds rate may be appropriate

With the gradual reductions in the amount of policy accommodation to date, the federal funds rate is now at the lower end of the range of estimates of its longer-run neutral level—that is, the level of the federal funds rate that is neither expansionary nor contractionary.

Developments at the time of the December FOMC meeting, including volatility in financial markets and increased concerns about global growth, made the

[14] See Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement," press release, September 26, https://www.federalreserve.gov/newsevents/pressreleases/monetary20180926a.htm; and Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement," press release, December 19, https://www.federalreserve.gov/newsevents/pressreleases/monetary20181219a.htm.

Figure 17. Selected interest rates



Note: The 2-year and 10-year Treasury rates are the constant-maturity yields based on the most actively traded securities.

Source: Department of the Treasury; Federal Reserve Board.

appropriate extent and timing of future rate increases more uncertain than earlier. Against that backdrop, the Committee indicated it would monitor global economic and financial developments and assess their implications for the economic outlook. In the Summary of Economic Projections (SEP) from the December meeting—the most recent SEP available—participants generally revised down their individual assessments of the appropriate path for monetary policy relative to their assessments at the time of the September meeting.[15]

In January, the Committee stated that it continued to view sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective as the most likely outcomes. Nonetheless, in light of global economic and financial developments and muted inflation pressures, the Committee will be patient as it determines what future adjustments to the federal funds rate may be appropriate to support these outcomes.

Future changes in the federal funds rate will depend on the economic outlook as informed by incoming data

The FOMC has continued to emphasize that the actual path of monetary policy will depend on the evolution of the economic outlook as informed by incoming data. Specifically, in deciding on the timing and size of future adjustments to the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

In addition to evaluating a wide range of economic and financial data and information gathered from business contacts and other informed parties around the country, policymakers routinely consult prescriptions for the policy interest rate from a variety of rules, which can serve as useful guidance to the FOMC. However, many practical considerations make it undesirable for the FOMC to mechanically follow the prescriptions of any specific rule. Consequently, the FOMC's framework for conducting systematic monetary policy respects key principles of good monetary policy and, at the same time, provides flexibility to address many of the limitations of these policy rules (see the box "Monetary Policy Rules and Systematic Monetary Policy" on pages 36–39 of the February 2019 *Monetary Policy Report*).

The FOMC has continued to implement its program to gradually reduce the Federal Reserve's balance sheet

The Committee has continued to implement the balance sheet normalization program that has been

[15] See the December Summary of Economic Projections, which appeared as an addendum to the minutes of the December 18–19, 2018, meeting of the FOMC and is presented in Part 3 of the February 2019 *Monetary Policy Report.*

under way since October 2017.[16] Under this program, the FOMC has been reducing its holdings of Treasury and agency securities in a gradual and predictable manner by decreasing its reinvestment of the principal payments it received from these securities. Specifically, such payments have been reinvested only to the extent that they exceeded gradually rising caps.

In the third quarter of 2018, the Federal Reserve reinvested principal payments from its holdings of Treasury securities maturing during each calendar month in excess of $24 billion. It also reinvested in agency mortgage-backed securities (MBS) the amount of principal payments from its holdings of agency debt and agency MBS received during each calendar month in excess of $16 billion. In the fourth quarter, the FOMC increased the caps for Treasury securities and for agency securities to their respective maximums of $30 billion and $20 billion. Of note, reinvestments of agency debt and agency MBS ceased in October as principal payments fell below the maximum redemption caps.

The Federal Reserve's total assets have continued to decline from about $4.3 trillion last July to about $4.0 trillion at present, with holdings of Treasury securities at approximately $2.2 trillion and holdings of agency debt and agency MBS at approximately $1.6 trillion (figure 18).

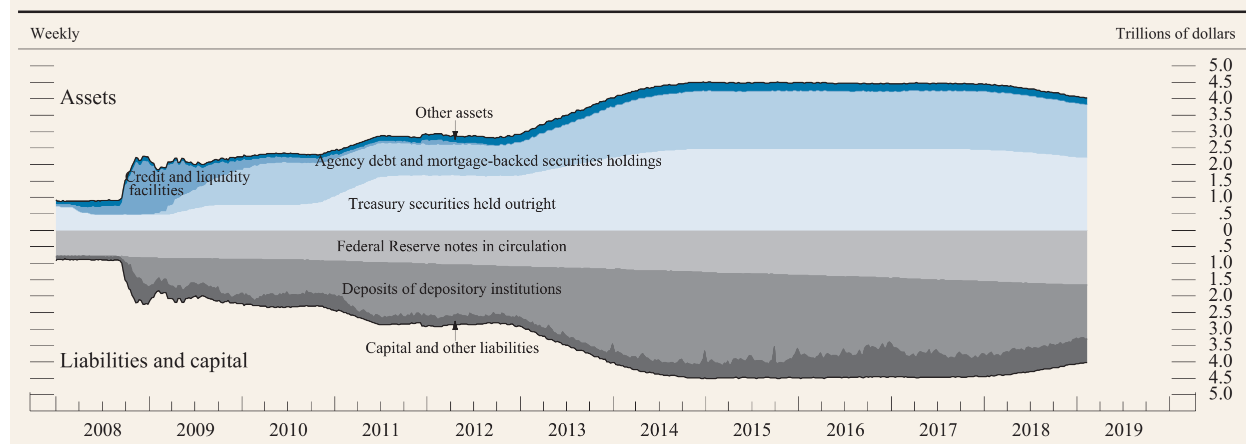
As the Federal Reserve has continued to gradually reduce its securities holdings, the level of reserve balances in the banking system has declined. In particular, the level of reserve balances has decreased by about $350 billion since the middle of last year, and by about $1.2 trillion since its peak in 2014.[17] At the January meeting, the Committee released an updated Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization to provide additional information regarding its plans to implement monetary policy over the longer run.[18] In this statement, the Committee indicated that it intends to continue to implement monetary policy in a regime in which an ample supply of reserves ensures that control over the level of the federal funds rate and other short-term interest rates is exercised primarily through the setting of the Federal Reserve's administered rates, and in which active management of the supply of reserves is not required. This operating procedure is often called a "floor system." The FOMC judges that this approach provides good control of short-term money market rates in a variety of

[16] For more information, see the Addendum to the Policy Normalization Principles and Plans, which is available on the Board's website at https://www.federalreserve.gov/monetarypolicy/files/FOMC_PolicyNormalization.20170613.pdf.

[17] Since the start of the normalization program, reserve balances have dropped by approximately $600 billion.

[18] See the Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization, which is available on the Board's website at https://www.federalreserve.gov/newsevents/pressreleases/monetary20190130c.htm.

Figure 18. Federal Reserve assets and liabilities



Note: "Credit and liquidity facilities" consists of primary, secondary, and seasonal credit; term auction credit; central bank liquidity swaps; support for Maiden Lane, Bear Stearns, and AIG; and other credit facilities, including the Primary Dealer Credit Facility, the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, and the Term Asset-Backed Securities Loan Facility. "Other assets" includes unamortized premiums and discounts on securities held outright. "Capital and other liabilities" includes reverse repurchase agreements, the U.S. Treasury General Account, and the U.S. Treasury Supplementary Financing Account. The data extend through February 13, 2019.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

market conditions and effective transmission of those rates to broader financial conditions. In addition, the FOMC stated that it is prepared to adjust any of the details for completing balance sheet normalization in light of economic and financial developments.

Although reserve balances play a central role in the ongoing balance sheet normalization process, in the longer run, the size of the balance sheet will also be importantly determined by trend growth in nonreserve liabilities. The box "The Role of Liabilities in Determining the Size of the Federal Reserve's Balance Sheet" on pages 41–43 of the February 2019 *Monetary Policy Report* discusses various factors that influence the size of reserve and nonreserve liabilities.

Meanwhile, interest income on the Federal Reserve's securities holdings has continued to support substantial remittances to the U.S. Treasury. Preliminary financial statement results indicate that the Federal Reserve remitted about $65 billion in 2018.

The Federal Reserve's implementation of monetary policy has continued smoothly

As with the previous federal funds rate increases since late 2015, the Federal Reserve successfully raised the effective federal funds rate in September and December by increasing the interest rate paid on reserve balances and the interest rate offered on overnight reverse repurchase agreements (ON RRPs). Specifically, the Federal Reserve raised the interest rate paid on required and excess reserve balances to 2.20 percent in September and to 2.40 percent in December. In addition, the Federal Reserve increased the ON RRP offering rate to 2.00 percent in September and to 2.25 percent in December. The Federal Reserve also approved a ¼ percentage point increase in the discount rate (the primary credit rate) in both September and December. Yields on a broad set of money market instruments moved higher, roughly in line with the federal funds rate, in response to the FOMC's policy decisions in September and December. Usage of the ON RRP facility has remained low, excluding quarter-ends.

The effective federal funds rate moved to parity with the interest rate paid on reserve balances in the months before the December meeting. At its December meeting, the Committee made a second small technical adjustment by setting the interest on excess reserves rate 10 basis points below the top of the target range for the federal funds rate; this adjustment was intended to foster trading in the federal funds market at rates well within the FOMC's target range.

The Federal Reserve will conduct a review of its strategic framework for monetary policy in 2019

With labor market conditions close to maximum employment and inflation near the Committee's 2 percent objective, the FOMC judges it is an opportune time for the Federal Reserve to conduct a review of its strategic framework for monetary policy—including the policy strategy, tools, and communication practices. The goal of this assessment is to identify possible ways to improve the Committee's current policy framework in order to ensure that the Federal Reserve is best positioned going forward to achieve its statutory mandate of maximum employment and price stability.

Specific to the communications practices, the Federal Reserve judges that transparency is essential to accountability and the effectiveness of policy, and therefore the Federal Reserve seeks to explain its policymaking approach and decisions to the Congress and the public as clearly as possible. The box "Federal Reserve Transparency: Rationale and New Initiatives" on pages 45–46 of the February 2019 *Monetary Policy Report* discusses the steps and new initiatives the Federal Reserve has taken to improve transparency.

Monetary Policy Report July 2018

Summary

Economic activity increased at a solid pace over the first half of 2018, and the labor market has continued to strengthen. Inflation has moved up, and in May, the most recent period for which data are available, inflation measured on a 12-month basis was a little above the Federal Open Market Committee's (FOMC) longer-run objective of 2 percent, boosted by a sizable increase in energy prices. In this economic environment, the Committee judged that current and prospective economic conditions called for a further gradual removal of monetary policy accommodation. In line with that judgment, the FOMC raised the target for the federal funds rate twice in the first half of 2018, bringing it to a range of 1¾ to 2 percent.

Economic and Financial Developments

The labor market. The labor market has continued to strengthen. Over the first six months of 2018, payrolls increased an average of 215,000 per month, which is somewhat above the average pace of 180,000 per month in 2017 and is considerably faster than what is needed, on average, to provide jobs for new entrants into the labor force. The unemployment rate edged down from 4.1 percent in December to 4.0 percent in June, which is about ½ percentage point below the median of FOMC participants' estimates of its longer-run normal level. Other measures of labor utilization were consistent with a tight labor market. However, hourly labor compensation growth has been moderate, likely held down in part by the weak pace of productivity growth in recent years.

Inflation. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures, moved up from a little below the FOMC's objective of 2 percent at the end of last year to 2.3 percent in May, boosted by a sizable increase in consumer energy prices. The 12-month measure of inflation that excludes food and energy items (so-called core inflation), which historically has been a better indicator of where overall inflation will be in the future than the total figure, was 2 percent in May. This reading was ½ percentage point above where it had been 12 months earlier, as the unusually low readings from last year were not repeated. Measures of longer-run inflation expectations have been generally stable.

Economic growth. Real gross domestic product (GDP) is reported to have increased at an annual rate of 2 percent in the first quarter of 2018, and recent indicators suggest that economic growth stepped up in the second quarter. Gains in consumer spending slowed early in the year, but they rebounded in the spring, supported by strong job gains, recent and past increases in household wealth, favorable consumer sentiment, and higher disposable income due in part to the implementation of the Tax Cuts and Jobs Act. Business investment growth has remained robust, and indexes of business sentiment have been strong. Foreign economic growth has remained solid, and net exports had a roughly neutral effect on real U.S. GDP growth in the first quarter. However, activity in the housing market has leveled off this year.

Financial conditions. Domestic financial conditions for businesses and households have generally continued to support economic growth. After rising steadily through 2017, broad measures of equity prices are modestly higher, on balance, from their levels at the end of last year amid some bouts of heightened volatility in financial markets. While long-term Treasury yields, mortgage rates, and yields on corporate bonds have risen so far this year, longer-term interest rates remain low by historical standards, and corporate bond issuance has continued at a moderate pace. Moreover, most types of consumer loans remained widely available for households with strong creditworthiness, and credit provided by commercial banks continued to expand. The foreign exchange value of the U.S. dollar has appreciated somewhat against the currencies of our trading partners this year, but it remains below its level at the start of 2017. Foreign financial conditions remain generally supportive of growth despite recent increases in financial stress in several emerging market economies.

Financial stability. The U.S. financial system remains substantially more resilient than during the decade before the financial crisis. Asset valuations continue to be elevated despite declines since the end of 2017 in the forward price-to-earnings ratio of equities and the prices of corporate bonds. In the private nonfinancial sector, borrowing among highly levered and lower-rated businesses remains elevated, although the ratio of household debt to disposable income continues to be moderate. Vulnerabilities stemming from leverage in the financial sector remain low, reflecting in part strong capital positions at banks, whereas some measures of hedge fund leverage have

increased. Vulnerabilities associated with maturity and liquidity transformation among banks, insurance companies, money market mutual funds, and asset managers remain below levels that generally prevailed before 2008.

Monetary Policy

Interest rate policy. Over the first half of 2018, the FOMC has continued to gradually increase the target range for the federal funds rate. Specifically, the Committee decided to raise the target range for the federal funds rate at its meetings in March and June, bringing it to the current range of 1¾ to 2 percent. The decisions to increase the target range for the federal funds rate reflected the economy's continued progress toward the Committee's objectives of maximum employment and price stability. Even with these policy rate increases, the stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

The FOMC expects that further gradual increases in the target range for the federal funds rate will be consistent with a sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Consistent with this outlook, in the most recent Summary of Economic Projections (SEP), which was compiled at the time of the June FOMC meeting, the median of participants' assessments for the appropriate level for the federal funds rate rises gradually over the period from 2018 to 2020 and stands somewhat above the median projection for its longer-run level by the end of 2019 and through 2020. (The June SEP is presented in Part 3 of the July 2018 *Monetary Policy Report*.) However, as the Committee has continued to emphasize, the timing and size of future adjustments to the target range for the federal funds rate will depend on the Committee's assessment of realized and expected economic conditions relative to its maximum-employment objective and its symmetric 2 percent inflation objective.

Balance sheet policy. The FOMC has continued to implement the balance sheet normalization program described in the Addendum to the Policy Normalization Principles and Plans that the Committee issued about a year ago. Specifically, the FOMC has been reducing its holdings of Treasury and agency securities by decreasing, in a gradual and predictable manner, the reinvestment of principal payments it receives from these securities.

Special Topics

Prime-age labor force participation. Labor force participation rates (LFPRs) for men and women between 25 and 54 years old—that is, the share of these individuals either working or actively seeking work—trended lower between 2000 and 2013. Those trends likely reflect numerous factors, including a long-run decline in the demand for workers with lower levels of education and an increase in the share of the population with some form of disability. By contrast, the prime-age LFPR has increased notably since 2013, and the share of nonparticipants who report wanting a job remains above pre-recession levels. Thus, some continuation of the recent increase in the prime-age LFPR may be possible if labor demand remains strong. (See the box "The Labor Force Participation Rate for Prime-Age Individuals" on pages 8–10 of the July 2018 *Monetary Policy Report*.)

Oil prices. Oil prices have climbed rapidly over the past year, reflecting both supply and demand factors. Although higher oil prices are likely to restrain household consumption in the United States, much of the negative effect on GDP from lower consumer spending is likely to be offset by increased production and investment in the growing U.S. oil sector. Consequently, higher oil prices now imply much less of a net overall drag on the economy than they did in the past, although they will continue to have important distributional effects. The negative effect of upward moves in oil prices should get smaller still as U.S. oil production grows and net oil imports decline further. (See the box "The Recent Rise in Oil Prices" on pages 16–17 of the July 2018 *Monetary Policy Report*.)

Monetary policy rules. Monetary policymakers consider a wide range of information on current economic conditions and the outlook when deciding on a policy stance they deem most likely to foster the FOMC's statutory mandate of maximum employment and stable prices. They also routinely consult monetary policy rules that connect prescriptions for the policy interest rate with variables associated with the dual mandate. The use of such rules requires, among other considerations, careful judgments about the choice and measurement of the inputs into the rules such as estimates of the neutral interest rate, which are highly uncertain. (See the box "Complexities of Monetary Policy Rules" on pages 37–41 of the July 2018 *Monetary Policy Report*.)

Interest on reserves. The payment of interest on reserves—balances held by banks in their accounts at the Federal Reserve—is an essential tool for implementing monetary policy because it helps anchor the federal funds rate within the FOMC's target range. This tool has permitted the FOMC to achieve a gradual increase in the federal funds rate in combination with a gradual reduction in the Fed's securities holdings and in the supply of reserve balances. The FOMC judged that removing monetary policy accommodation through first raising the federal funds rate and then beginning to shrink the balance sheet would best contribute to achieving and maintaining maximum employment and price stability without causing dislocations in financial markets or institutions that could put the economic expansion at risk. (See the box "Interest on Reserves and Its Importance for Monetary Policy"on pages 44–46 of the July 2018 *Monetary Policy Report*.)

Part 1: Recent Economic and Financial Developments

Domestic Developments

The labor market strengthened further during the first half of the year . . .

Labor market conditions have continued to strengthen so far in 2018. According to the Bureau of Labor Statistics (BLS), gains in total nonfarm payroll employment averaged 215,000 per month over the first half of the year. That pace is up from the average monthly pace of job gains in 2017 and is considerably faster than what is needed to provide jobs for new entrants into the labor force.[1] Indeed, the unemployment rate edged down from 4.1 percent in December to 4.0 percent in June. This rate is below all Federal Open Market Committee (FOMC) participants' estimates of its longer-run normal level and is about ½ percentage point below the median of those estimates.[2] The unemployment rate in June is close to the lows last reached in 2000.

The labor force participation rate (LFPR), which is the share of individuals aged 16 and older who are either working or actively looking for work, was 62.9 percent in June and has changed little, on net, since late 2013. The aging of the population is an important contributor to a downward trend in the overall participation rate. In particular, members of the baby-boom cohort are increasingly moving into their retirement years, a time when labor force participation is typically low. Indeed, the share of the civilian population aged 65 and over in the United States climbed from 16 percent in 2000 to 19 percent in 2017 and is projected to rise to 24 percent by 2026. Given this trend, the flat trajectory of the LFPR during the past few years is consistent with strengthening labor market conditions. Similarly, the LFPR for individuals between 25 and 54 years old—which is much less sensitive to population aging—has been rising for the past several years. (The box "The Labor Force Participation Rate for Prime-Age Individuals" on pages 8–10 of the July 2018 *Monetary Policy Report* examines the prospects for further increases in participation for these individuals.) The employment-to-population ratio for individuals 16 and over—the share of the total population who are working—was 60.4 percent in June and has been gradually increasing since 2011, reflecting the combination of the declining unemployment rate and the flat LFPR.

Other indicators are also consistent with a strong labor market. As reported in the Job Openings and Labor Turnover Survey (JOLTS), the rate of job openings has remained quite elevated.[3] The rate of quits has stayed high in the JOLTS, an indication that workers are able to successfully switch jobs when they wish to. In addition, the JOLTS layoff rate has been low, and the number of people filing initial claims for unemployment insurance benefits has remained near its lowest level in decades. Other survey evidence indicates that households perceive jobs as plentiful and that businesses see vacancies as hard to fill. Another indicator, the share of workers who are working part time but would prefer to be employed full time—which is part of the U-6 measure of labor underutilization from the BLS—fell further in the first six months of the year and now stands close to its pre-recession level.

. . . and unemployment rates have fallen for all major demographic groups

The continued decline in the unemployment rate has been reflected in the experiences of multiple racial and ethnic groups. The unemployment rates for blacks or African Americans and Hispanics tend to rise considerably more than rates for whites and Asians during recessions but decline more rapidly during expansions. Indeed, the declines in the unem-

[1] Monthly job gains in the range of 130,000 to 160,000 are consistent with an unchanged unemployment rate and an unchanged labor force participation rate.

[2] See the Summary of Economic Projections in Part 3 of the July 2018 *Monetary Policy Report*.

[3] Indeed, the number of job openings now about matches the number of unemployed individuals.

ployment rates for blacks and Hispanics have been particularly striking, and the rates have recently been at or near their lowest readings since these series began in the early 1970s. Although differences in unemployment rates across ethnic and racial groups have narrowed in recent years, they remain substantial and similar to pre-recession levels. The rise in LFPRs for prime-age individuals over the past few years has also been evident in each of these racial and ethnic groups, with increases again particularly notable for African Americans. Even so, the LFPR for whites remains higher than that for the other groups.[4]

Increases in labor compensation have been moderate . . .

Despite the strong labor market, the available indicators generally suggest that increases in hourly labor compensation have been moderate. Compensation per hour in the business sector—a broad-based measure of wages, salaries, and benefits that is quite volatile—rose 2¾ percent over the four quarters ending in 2018:Q1, slightly more than the average annual increase over the preceding seven or so years. The employment cost index—a less volatile measure of both wages and the cost to employers of providing benefits—likewise was 2¾ percent higher in the first quarter of 2018 relative to its year-earlier level; this increase was ½ percentage point faster than its gain a year earlier. Among measures that do not account for benefits, average hourly earnings rose 2¾ percent in June relative to 12 months earlier, a gain in line with the average increase in the preceding few years. According to the Federal Reserve Bank of Atlanta, the median 12-month wage growth of individuals reporting to the Current Population Survey increased about 3¼ percent in May, also similar to its readings from the past few years.[5]

. . . and likely have been restrained by slow growth of labor productivity

Those moderate rates of compensation gains likely reflect the offsetting influences of a strong labor market and persistently weak productivity growth. Since 2008, labor productivity has increased only a little more than 1 percent per year, on average, well below the average pace from 1996 through 2007 of 2.8 percent and also below the average gain in the 1974–95 period of 1.6 percent. The weakness in productivity growth may be partly attributable to the sharp pullback in capital investment during the most recent recession and the relatively slow recovery that followed. However, considerable debate remains about the reasons for the recent slowdown in productivity growth and whether it will persist.[6]

Price inflation has picked up from the low readings in 2017

In 2017, inflation remained below the FOMC's longer-run objective of 2 percent. Partly because the softness in some price categories appeared idiosyncratic, Federal Reserve policymakers expected inflation to move higher in 2018.[7] This expectation appears to be on track so far. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), moved up to 2.3 percent in May. Core PCE inflation, which excludes consumer food and energy prices that are often quite volatile and typically provides a better indication than the total measure of where overall inflation will be in the future, was 2 percent over the 12 months ending in May—0.5 percentage point higher than it had been one year earlier. The total measure exceeded core inflation because of a sizable increase in consumer energy prices. In contrast, food price inflation has continued to be low by historical standards—data through May show the PCE price index for food and beverages having increased less than ½ percent over the past year.

The higher readings in both total and core inflation relative to a year earlier reflect faster price increases for a wide range of goods and services this year and the dropping out of the 12-month calculation of the steep one-month decline in the price index for wireless telephone services in March last year. The 12-month change in the trimmed mean PCE price index—an alternative indicator of underlying infla-

[4] The lower levels of labor force participation for these other groups differ importantly by sex. For African Americans, men have a lower participation rate relative to white men, while the participation rate for African American women is as high as that of white women. By contrast, the lower LFPRs for Hispanics and Asians reflect lower participation among women.

[5] The Atlanta Fed's measure differs from others in that it measures the wage growth only of workers who were employed both in the current survey month and 12 months earlier.

[6] The box "Productivity Developments in the Advanced Economies" in the July 2017 *Monetary Policy Report* provides more information. See Board of Governors of the Federal Reserve System (2017), *Monetary Policy Report* (Washington: Board of Governors, July), pp. 12–13, https://www.federalreserve.gov/monetarypolicy/2017-07-mpr-part1.htm.

[7] Additional details can be found in the June 2017 Summary of Economic Projections, an addendum to the minutes of the June 2017 FOMC meeting. See Board of Governors of the Federal Reserve System (2017), "Minutes of the Federal Open Market Committee, June 13–14, 2017," press release, July 5, https://www.federalreserve.gov/newsevents/pressreleases/monetary20170705a.htm.

tion produced by the Federal Reserve Bank of Dallas that may be less sensitive than the core index to idiosyncratic price movements—slowed by less than core inflation over 2017 and has also increased a bit less this year. This index rose 1.8 percent over the 12 months ending in May, up a touch from the increase over the same period last year.[8]

Oil prices have surged amid supply concerns . . .

As noted, the faster pace of total inflation this year relative to core inflation reflects a substantial rise in consumer energy prices. Retail gasoline prices this year were driven higher by a rise in oil prices. The spot price of Brent crude oil rose from about $65 per barrel in December to around $75 per barrel in early July. Although that increase took place against a backdrop of continued strength in global demand, supply concerns have become more prevalent in recent months. (For a discussion of the reasons behind the oil price increases along with a review of the effects of oil prices on U.S. economic growth, see the box "The Recent Rise in Oil Prices" on pages 16–17 of the July 2018 *Monetary Policy Report*.)

. . . while prices of imports other than energy have also increased

Nonfuel import prices rose sharply in early 2018, partly reflecting the pass-through of earlier increases in commodity prices. In particular, metals prices posted sizable gains late last year due to strong global demand but have retreated somewhat in recent weeks.

Survey-based measures of inflation expectations have been stable . . .

Expectations of inflation likely influence actual inflation by affecting wage- and price-setting decisions. Survey-based measures of inflation expectations at medium- and longer-term horizons have remained generally stable so far this year. In the Survey of Professional Forecasters conducted by the Federal Reserve Bank of Philadelphia, the median expectation for the annual rate of increase in the PCE price index over the next 10 years has been around 2 percent for the past several years. In the University of Michigan Surveys of Consumers, the median value for inflation expectations over the next 5 to 10 years has been about 2½ percent since the end of 2016, though this level is about ¼ percentage point lower than had prevailed through 2014. In contrast, in the Survey of Consumer Expectations conducted by the Federal Reserve Bank of New York, the median of respondents' expected inflation rate three years hence has been moving up recently and is currently at the top of the range it has occupied over the past couple of years.

. . . while market-based measures of inflation compensation have largely moved sideways this year

Inflation expectations can also be gauged by market-based measures of inflation compensation. However, the inference is not straightforward, because market-based measures can be importantly affected by changes in premiums that provide compensation for bearing inflation and liquidity risks. Measures of longer-term inflation compensation—derived either from differences between yields on nominal Treasury securities and those on comparable-maturity Treasury Inflation-Protected Securities (TIPS) or from inflation swaps—have moved sideways for the most part this year after having returned to levels seen in early 2017.[9] The TIPS-based measure of 5-to-10-year-forward inflation compensation and the analogous measure of inflation swaps are now about 2 percent and 2½ percent, respectively, with both measures below the ranges that persisted for most of the 10 years before the start of the notable declines in mid-2014.[10]

Real gross domestic product growth slowed in the first quarter, but spending by households appears to have picked up in recent months

After having expanded at an annual rate of 3 percent in the second half of 2017, real gross domestic product (GDP) is now reported to have increased 2 percent in the first quarter of this year. The step-down in growth during the first quarter was largely attributable to a sharp slowing in the growth of consumer spending that appears transitory, and gains in GDP appear to have rebounded in the second quarter. Meanwhile, business investment has remained strong,

[8] The trimmed mean index excludes whatever prices showed the largest increases or decreases in a given month; for example, the sharp decline in prices for wireless telephone services in March 2017 was excluded from this index.

[9] Inflation compensation implied by the TIPS breakeven inflation rate is based on the difference, at comparable maturities, between yields on nominal Treasury securities and yields on TIPS, which are indexed to the total consumer price index (CPI). Inflation swaps are contracts in which one party makes payments of certain fixed nominal amounts in exchange for cash flows that are indexed to cumulative CPI inflation over some horizon. Focusing on inflation compensation 5 to 10 years ahead is useful, particularly for monetary policy, because such forward measures encompass market participants' views about where inflation will settle in the long term after developments influencing inflation in the short term have run their course.

[10] As these measures are based on CPI inflation, one should probably subtract about ¼ to ½ percentage point—the average differential with PCE inflation over the past two decades—to infer inflation compensation on a PCE basis.

and net exports had little effect on output growth in the first quarter. On balance, over the first half of this year, overall economic activity appears to have expanded at a solid pace.

The economic expansion continues to be supported by favorable consumer and business sentiment, past increases in household wealth, solid economic growth abroad, and accommodative domestic financial conditions, including moderate borrowing costs and easy access to credit for many households and businesses.

Gains in income and wealth continue to support consumer spending . . .

Following exceptionally strong growth in the fourth quarter of 2017, consumer spending in the first quarter of this year was tepid, rising at an annual rate of 0.9 percent. The slowdown in growth was evident in outlays for motor vehicles and in retail sales more generally; moreover, unseasonably warm weather depressed spending on energy services. However, consumer spending picked up in more recent months as retail sales firmed, and PCE in April and May rose at an annual rate of 2¼ percent relative to the average over the first quarter.

Real disposable personal income (DPI), a measure of after-tax income adjusted for inflation, has increased at a solid annual rate of about 3 percent so far this year. Real DPI has been supported by the reduction in income taxes owing to the implementation of the Tax Cuts and Jobs Act (TCJA) as well as the continued strength in the labor market. With consumer spending rising just a little less than the gains in disposable income so far this year, the personal saving rate has edged up after having fallen for the past two years.

Ongoing gains in household net worth likely have also supported consumer spending. House prices, which are of particular importance for the balance sheet positions of a large set of households, have been increasing at an average annual pace of about 6 percent in recent years.[11] Although U.S. equity prices have posted modest gains, on net, so far this year, this flattening followed several years of sizable gains. Buoyed by the cumulative increases in home and equity prices, aggregate household net worth was 6.8 times household income in the first quarter, down just slightly from its ratio in the fourth quarter—the highest-ever reading for that ratio, which dates back to 1947.

. . . and borrowing conditions for consumers remain generally favorable . . .

Financing conditions for consumers are generally favorable and remain supportive of growth in household spending. However, banks have continued to tighten standards for credit cards and auto loans for borrowers with low credit scores, possibly in response to some upward moves in the delinquency rates of those borrowers. Mortgage credit has remained readily available for households with solid credit profiles. For borrowers with low credit scores, mortgage financing conditions have eased somewhat further but remain tight overall. In this environment, consumer credit continued to increase in the first few months of 2018, though the rate of increase moderated some from its robust pace in the previous year.

. . . while consumer confidence remains strong

Consumers have remained upbeat. So far this year, the Michigan survey index of consumer sentiment has been near its highest level since 2000, likely reflecting rising income, job gains, and low inflation. Indeed, households' expectations for real income changes over the next year or two now stand above levels preceding the previous recession.

Business investment has continued to rebound . . .

Investment spending by businesses has continued to increase so far this year, with notable gains for spending, both on equipment and intangibles and on nonresidential structures. Within structures, the rise in oil prices propelled another steep ramp-up in investment in drilling and mining structures—albeit not yet back to the levels recorded from 2012 to 2014—while investment in nonresidential structures outside of the energy sector picked up after declining in 2017. Forward-looking indicators of business investment spending remain favorable on balance. Business sentiment and the profit expectations of industry analysts have been positive overall, while new orders of capital goods have advanced on net this year.

. . . while corporate financing conditions have remained accommodative

Aggregate flows of credit to large nonfinancial firms remained strong in the first quarter, supported in part by relatively low interest rates and accommodative financing conditions. The gross issuance of corporate bonds stayed robust during the first half of 2018, while yields on both investment- and speculative-grade corporate bonds moved up notably

[11] For the majority of households, home equity makes up the largest share of their wealth.

but remained low by historical standards. Despite strong growth in business investment, outstanding commercial and industrial (C&I) loans on banks' books rose only modestly in the first quarter, although their pace of expansion in more recent months has strengthened on average. In April, respondents to the Senior Loan Officer Opinion Survey on Bank Lending Practices, or SLOOS, reported that demand for C&I loans weakened in the first quarter even as lending standards and terms on such loans eased.[12] Respondents attributed this decline in demand in part to firms drawing on internally generated funds or using alternative sources of financing. Meanwhile, growth in commercial real estate loans has moderated some but remains strong. In addition, financing conditions for small businesses appear to have remained generally accommodative, with lending standards little changed at most banks and with most firms reporting that they are able to obtain credit. Although small business credit growth has been subdued, survey data suggest this sluggishness is largely due to continued weak demand for credit by small businesses.

But activity in the housing sector has leveled off

Residential investment, which rose a modest 2½ percent in 2017, appears to have largely moved sideways over the first five months of the year. The slowing in residential investment likely is partly a result of higher mortgage interest rates. Although these rates are still low by historical standards, they have moved up and are near their highest levels in seven years. In addition, higher lumber prices and tight supplies of skilled labor and developed lots reportedly have been restraining home construction. While starts of both single-family and multifamily housing units rose in the fourth quarter, single-family starts have been little changed, on net, since then, whereas multifamily starts continued to climb earlier this year before flattening out. Meanwhile, over the first five months of this year, new home sales have held at around the rate of late last year, but sales of existing homes have eased somewhat. Despite the continued increases in house prices, the pace of construction has not kept up with demand. As a result, the months' supply of inventories of homes for sale has remained at a relatively low level, and the aggregate vacancy rate stands at the lowest level since 2003.

[12] The SLOOS is available on the Board's website at https://www.federalreserve.gov/data/sloos/sloos.htm.

Net exports had a neutral effect on GDP growth in the first quarter

After being a small drag on U.S. real GDP growth last year, net exports had a neutral effect on growth in the first quarter. Real U.S. exports increased about 3½ percent at an annual rate, as exports of automobiles and consumer goods remained robust. Real import growth slowed sharply following a surge late last year. Nominal trade data through May suggest that export growth picked up in the second quarter, led by agricultural exports, while import growth was tepid. All told, the available data suggest that the nominal trade deficit likely narrowed relative to GDP in the second quarter.

Fiscal policy became more expansionary this year . . .

Federal fiscal policy will likely provide a moderate boost to GDP growth this year. The individual and corporate tax cuts in the TCJA should lead to increased private consumption and investment, while the Bipartisan Budget Act of 2018 (BBA) enables increased federal spending on goods and services. As the effects of the BBA had yet to show through, federal government purchases posted only a modest gain in the first quarter.

After narrowing significantly for several years, the federal unified deficit widened from about 2½ percent of GDP in fiscal year 2015 to 3½ percent in fiscal 2017, and it is on pace to move up further in fiscal 2018. Although expenditures as a share of GDP in 2017 were relatively stable at 21 percent, receipts moved lower to roughly 17 percent of GDP and have remained at about the same level so far this year. The ratio of federal debt held by the public to nominal GDP was 76½ percent at the end of fiscal 2017 and is quite elevated relative to historical norms.

. . . and the fiscal position of most state and local governments is stable

The fiscal position of most state and local governments remains stable, although there is a range of experiences across these governments and some states are still struggling. After several years of slow growth, revenue gains of state governments have strengthened notably as sales and income tax collections have picked up over the past few quarters. In addition, house price gains have continued to push up property tax revenues at the local level. But expenditures by state and local governments have been

restrained. Employment growth in this sector has been moderate, while real outlays for construction by these governments have largely been moving sideways at a relatively low level.

Financial Developments

The expected path of the federal funds rate has moved up

Market-based measures of the path of the federal funds rate continue to suggest that market participants expect further gradual increases in the federal funds rate. Relative to the end of last year, the expected policy rate path has moved up, boosted in part by investors' perception of a strengthening in the domestic economic outlook. In particular, the policy path moved higher in response to incoming economic data so far this year, especially the employment reports, which were seen as supporting expectations for a solid pace of growth in domestic economic activity. In addition, investors reportedly interpreted FOMC communications in the first half of 2018 as signaling an upbeat economic outlook and as reinforcing expectations for further gradual removal of monetary policy accommodation.

Survey-based measures of the expected path of the policy rate over the next few years have also increased modestly since the end of last year. According to the results of the most recent Survey of Primary Dealers and Survey of Market Participants, both conducted by the Federal Reserve Bank of New York just before the June FOMC meeting, the median of respondents' projections for the path of the federal funds rate shifted up about 25 basis points for 2018 and beyond, compared with the median of assessments last December.[13] Market-based measures of uncertainty about the policy rate approximately one to two years ahead increased slightly, on balance, from their levels at the end of last year.

The nominal Treasury yield curve has shifted up

The nominal Treasury yield curve has shifted up and flattened somewhat further during the first half of 2018 after flattening considerably in the second half of 2017. In particular, the yields on 2- and 10-year nominal Treasury securities increased about 70 basis points and 45 basis points, respectively, from their levels at the end of 2017. The increase in Treasury yields seems to largely reflect investors' greater optimism about the domestic growth outlook and firming expectations for further gradual removal of monetary policy accommodation. Expectations for increases in the supply of Treasury securities following the federal budget agreement in early February also appear to have contributed to the increase in Treasury yields, while increased concerns about trade policy both domestically and abroad, political developments in Europe, and the foreign economic outlook weighed on longer-dated Treasury yields. Yields on 30-year agency mortgage-backed securities (MBS)—an important determinant of mortgage interest rates—increased about 60 basis points over the first half of the year, a bit more than the rise in the 10-year nominal Treasury yield, but remain low by historical standards. Yields on corporate debt securities—both investment grade and high yield—rose more than Treasury yields, leaving the spreads on corporate bond yields over comparable-maturity Treasury yields notably wider than at the beginning of the year.

Broad equity indexes rose modestly amid some bouts of market volatility

After surging as much as 20 percent in 2017, broad stock market indexes rose modestly, on balance, so far this year amid some bouts of heightened volatility in financial markets. The boost to equity prices from first-quarter earnings reports that generally beat analysts' expectations was reportedly offset by increased uncertainty about trade policy, rising interest rates, and concerns about political developments abroad. While stock prices for companies in the technology and consumer discretionary sectors rose notably, those of companies in the industrial and financial sectors declined modestly. After spiking considerably in early February, the implied volatility for the S&P 500 index—the VIX—declined and ended the period slightly above the low levels that prevailed in 2017. (For a discussion of financial stability issues, see the box "Developments Related to Financial Stability" on pages 26–28 of the July 2018 *Monetary Policy Report*.)

Markets for Treasury securities, mortgage-backed securities, and municipal bonds have functioned well

On balance, indicators of Treasury market functioning remained broadly stable over the first half of 2018. A variety of liquidity metrics—including bid-ask spreads, bid sizes, and estimates of transaction costs—have displayed minimal signs of liquidity

[13] The results of the Survey of Primary Dealers and the Survey of Market Participants are available on the Federal Reserve Bank of New York's website at https://www.newyorkfed.org/markets/primarydealer_survey_questions.html and https://www.newyorkfed.org/markets/survey_market_participants, respectively.

pressures overall, with the exception of a brief period of reduced liquidity in early February amid elevated financial market volatility. Liquidity conditions in the agency MBS market were also generally stable. Overall, the functioning of Treasury and agency MBS markets has not been materially affected by the implementation of the Federal Reserve's balance sheet normalization program, including the accompanying reduction in reinvestment of principal payments from the Federal Reserve's securities holdings. Credit conditions in municipal bond markets have remained stable since the turn of the year. Over that period, yield spreads on 20-year general obligation municipal bonds over comparable-maturity Treasury securities edged up a bit.

Money market rates have moved up in line with increases in the FOMC's target range

Conditions in domestic short-term funding markets have also remained generally stable so far in 2018. Yields on a broad set of money market instruments moved higher in response to the FOMC's policy actions in March and June. Some money market rates rose during the first quarter more than what would normally occur with monetary tightening. For example, the spreads of certificates of deposit and term London interbank offered rates relative to overnight index swap (OIS) rates increased notably, reportedly reflecting increased issuance of Treasury bills and perhaps also the anticipated tax-induced repatriation of foreign earnings by U.S. corporations. The upward pressure on short-term funding rates, beyond that driven by expected monetary policy, eased in recent months, leading to a narrowing of spreads of some money market rates to OIS rates. However, the spreads remain wider than at the beginning of the year.

Bank credit continued to expand and bank profitability improved

Aggregate credit provided by commercial banks continued to increase through the first quarter of 2018 at a pace similar to the one seen in 2017. Its pace was slower than that of nominal GDP, thus leaving the ratio of total commercial bank credit to current-dollar GDP slightly lower than in the previous year. Available data for the second quarter suggest that growth in banks' core loans continued to be moderate. Measures of bank profitability improved in the first quarter of 2018 after having experienced a temporary decline in the last quarter of 2017. Weaker fourth-quarter measures of bank profitability were partly driven by higher write-downs of deferred tax assets in response to the U.S. tax legislation.

International Developments

Political developments and signs of moderating growth weighed on advanced foreign economy asset prices

Since February, political developments in Europe and moderation in economic growth outside of the United States weighed on some risky asset prices in advanced foreign economies (AFEs). Interest rates on sovereign bonds in several countries in the European periphery rose notably relative to core countries, and European bank shares came under pressure, as investors focused on the formation of the Italian government. Nonetheless, peripheral bond spreads remained well below their levels at the height of the euro-area crisis, and the moves partly retraced as a government was put in place. Broad stock price indexes were little changed on net. In contrast to the United States, long-term sovereign yields and market-implied paths of policy rates in the core euro area as well as the United Kingdom declined somewhat, and rates were little changed in Japan.

Heightened investor focus on vulnerabilities in emerging market economies led asset prices to come under pressure

Investor concerns about financial vulnerabilities in several emerging market economies (EMEs) intensified this spring against the backdrop of rising U.S. interest rates. Broad measures of EME sovereign bond spreads over U.S. Treasury yields widened notably, and benchmark EME equity indexes declined, as investors scrutinized macroeconomic policy approaches in several countries. Turkey and Argentina, which faced persistently high inflation, expansionary fiscal policies, and large current account deficits, were among the worst performers. Trade policy developments between the United States and its trading partners also weighed on EME asset prices, especially on stock prices in China and some emerging Asian countries. EME mutual funds saw net outflows in May and June after generally solid inflows earlier in the year. While movements in asset prices and capital flows were notable for a number of economies, broad indicators of financial stress in EMEs remained low relative to levels seen during other periods of stress in recent years.

The dollar appreciated

After depreciating during 2017, the broad exchange value of the U.S. dollar has appreciated moderately in recent months. Factors contributing to the appreciation of the dollar likely include moderating growth in some foreign economies combined with continued

output strength and ongoing policy tightening in the United States, downside risks stemming from political developments in Europe and several EMEs, and the recent developments in trade policy. Several currencies appeared particularly sensitive to trade policy developments, including the Canadian dollar and the Mexican peso, related to the North American Free Trade Agreement negotiations, as well as the Chinese renminbi, which fell notably against the dollar in June.

The pace of economic activity moderated in the AFEs

In the first quarter, real GDP growth decelerated in all major AFEs and turned negative in Japan, down from robust rates of activity in 2017. Part of this slowing is a result of temporary factors, though, including unusually cold weather in Japan and the United Kingdom, labor strikes in the euro area, and disruptions in oil production in Canada. In most AFEs, economic indicators for the second quarter, including purchasing manager surveys and exports, are generally consistent with solid economic growth.

Despite tight labor markets, inflation pressures remain subdued in most AFEs . . .

Sustained increases in oil prices provided upward pressure on consumer price inflation across all AFEs in the first half of the year. However, core inflation has generally remained muted in most AFEs, despite further improvement in labor market conditions. In Canada, in contrast, core inflation picked up amid solid wage growth, pushing the total inflation rate above the central bank target.

. . . prompting central banks to maintain highly accommodative monetary policies

With underlying inflation still subdued, the Bank of Japan and the European Central Bank (ECB) kept their policy rates at historically low levels, although the ECB indicated it would again reduce the pace of its asset purchases starting in October. The Bank of England and the Bank of Canada, which both began raising interest rates last year, signaled that further rate increases will be gradual, given a moderation in the pace of economic activity.

In emerging Asia, growth remained solid . . .

Economic growth in China remained solid in the first quarter of 2018, as a rebound in steel production and strong external demand bolstered a recovery in industrial activity and overall growth. Indicators of investment and retail sales have slowed in recent months, however, suggesting that the authorities' effort to rein in credit may have softened domestic demand. Most other emerging Asian economies registered strong growth in the first quarter of 2018, partly reflecting solid external demand.

. . . while growth in some Latin American economies was mixed

In Mexico, real GDP surged in the first quarter as economic activity rebounded from two major earthquakes and a hurricane last year. Following a brief recovery in the first half of 2017, Brazil's economy stalled in the fourth quarter and grew tepidly in the first quarter, and a truckers' strike paralyzed economic activity in late May.

Part 2: Monetary Policy

The Federal Open Market Committee continued to gradually increase the federal funds target range in the first half of the year . . .

Since December 2015, the Federal Open Market Committee (FOMC) has been gradually increasing its target range for the federal funds rate as the economy has continued to make progress toward the Committee's congressionally mandated objectives of maximum employment and price stability. In the first half of this year, the Committee continued this gradual process of scaling back monetary policy accommodation, increasing its target range for the federal funds rate ¼ percentage point at its meetings in both March and June. With these increases, the federal funds rate is currently in the range of 1¾ to 2 percent.[14] The Committee's decisions reflected the continued strengthening of the labor market and the accumulating evidence that, after many years of running below the Committee's 2 percent longer-run objective, inflation had moved close to 2 percent.

. . . but monetary policy continues to support economic growth

Even after the gradual increases in the federal funds rate over the first half of the year, the Committee judges that the stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation. In particular, the federal funds rate

[14] See Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement," press release, March 21, https://www.federalreserve.gov/newsevents/pressreleases/monetary20180321a.htm; and Board of Governors of the Federal Reserve System (2018), "Federal Reserve Issues FOMC Statement," press release, June 13, https://www.federalreserve.gov/newsevents/pressreleases/monetary20180613a.htm.

remains somewhat below most FOMC participants' estimates of its longer-run value.

The Committee expects that a gradual approach to increasing the target range for the federal funds rate will be consistent with a sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Consistent with this outlook, in the most recent Summary of Economic Projections (SEP), which was compiled at the time of the June FOMC meeting, the median of participants' assessments for the appropriate level of the target range for the federal funds rate at year-end rises gradually over the period from 2018 to 2020 and stands somewhat above the median projection for its longer-run level by the end of 2019 and through 2020.[15]

Future changes in the federal funds rate will depend on the economic outlook as informed by incoming data

The FOMC has continued to emphasize that, in determining the timing and size of future adjustments to the target range for the federal funds rate, it will assess realized and expected economic conditions relative to its maximum-employment objective and its symmetric 2 percent inflation objective. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

In evaluating the stance of monetary policy, policymakers routinely consult prescriptions from a variety of policy rules, which can serve as useful benchmarks. However, the use and interpretation of such prescriptions require, among other considerations, careful judgments about the choice and measurement of the inputs to these rules such as estimates of the neutral interest rate, which are highly uncertain (see the box "Complexities of Monetary Policy Rules" on pages 37–41 of the July 2018 *Monetary Policy Report*).

The FOMC has continued to implement its program to gradually reduce the Federal Reserve's balance sheet

The Committee has continued to implement the balance sheet normalization program described in the June 2017 Addendum to the Policy Normalization Principles and Plans.[16] This program is gradually and predictably reducing the Federal Reserve's securities holdings by decreasing the reinvestment of the principal payments it receives from securities held in the System Open Market Account. Since the initiation of the balance sheet normalization program in October of last year, such payments have been reinvested to the extent that they exceeded gradually rising caps.

In the first quarter, the Open Market Desk at the Federal Reserve Bank of New York, as directed by the Committee, reinvested principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month in excess of $12 billion. The Desk also reinvested in agency mortgage-backed securities (MBS) the amount of principal payments from the Federal Reserve's holdings of agency debt and agency MBS received during each calendar month in excess of $8 billion. Over the second quarter, payments of principal from maturing Treasury securities and from the Federal Reserve's holdings of agency debt and agency MBS were reinvested to the extent that they exceeded $18 billion and $12 billion, respectively. At its meeting in June, the FOMC increased the cap for Treasury securities to $24 billion and the cap for agency debt and agency MBS to $16 billion, both effective in July. The Committee has indicated that the caps for Treasury securities and for agency securities will increase to $30 billion and $20 billion per month, respectively, in October. These terminal caps will remain in place until the Committee judges that the Federal Reserve is holding no more securities than necessary to implement monetary policy efficiently and effectively.

The implementation of the program has proceeded smoothly without causing disruptive price movements in Treasury and MBS markets. As the caps have increased gradually and predictably, the Federal Reserve's total assets have started to decrease, from about $4.4 trillion last October to about $4.3 trillion at present, with holdings of Treasury securities at approximately $2.4 trillion and holdings of agency and agency MBS at approximately $1.7 trillion.

The Federal Reserve's implementation of monetary policy has continued smoothly

To implement the FOMC's decisions to raise the target range for the federal funds rate in March and June of 2018, the Federal Reserve increased the rate

[15] See the June SEP, which appeared as an addendum to the minutes of the June 12–13, 2018, meeting of the FOMC and is presented in Part 3 of the July 2018 *Monetary Policy Report*.

[16] The addendum, adopted on June 13, 2017, is available at https://www.federalreserve.gov/monetarypolicy/files/FOMC_PolicyNormalization.20170613.pdf.

of interest on excess reserves (IOER) along with the interest rate offered on overnight reverse repurchase agreements (ON RRPs). Specifically, the Federal Reserve increased the IOER rate to 1¾ percent and the ON RRP offering rate to 1½ percent in March. In June, the Federal Reserve increased the IOER rate to 1.95 percent—5 basis points below the top of the target range—and the ON RRP offering rate to 1¾ percent. In addition, the Board of Governors approved a ¼ percentage point increase in the discount rate (the primary credit rate) in both March and June. Yields on a broad set of money market instruments moved higher, roughly in line with the federal funds rate, in response to the FOMC's policy decisions in March and June. Usage of the ON RRP facility has declined, on net, since the turn of the year, reflecting relatively attractive yields on alternative investments.

The effective federal funds rate moved up toward the IOER rate in the months before the June FOMC meeting and, therefore, was trading near the top of the target range. At its June meeting, the Committee made a small technical adjustment in its approach to implementing monetary policy by setting the IOER rate modestly below the top of the target range for the federal funds rate. This adjustment resulted in the effective federal funds rate running closer to the middle of the target range since mid-June. In an environment of large reserve balances, the IOER rate has been an essential policy tool for keeping the federal funds rate within the target range set by the FOMC (see the box "Interest on Reserves and Its Importance for Monetary Policy" on pages 44–46 of the July 2018 *Monetary Policy Report*).

3 Financial Stability

A stable financial system promotes economic welfare through many channels: It facilitates household savings to purchase a home, finance a college education, and smooth consumption in response to job loss and other adverse developments; it promotes responsible risk-taking and economic growth by channeling savings to firms to start new businesses and expand existing businesses; and it spreads risk across investors.

A financial system is considered stable when financial institutions—banks, savings and loan associations, and other financial product and service providers—and financial markets are able to provide households, communities, and businesses with the resources, services, and products they need to invest, grow, and participate in a well-functioning economy. Disruptions to these activities of the financial system have arisen during, and contributed to, stressed macroeconomic environments. Accordingly, the Federal Reserve's objective to promote financial stability strongly complements the goals of price stability and full employment. In pursuit of continued financial stability, the Federal Reserve monitors the potential buildup of risks to financial stability; uses such analyses to inform Federal Reserve responses, including the design of stress-test scenarios and decisions regarding other policy tools such as the countercyclical capital buffer; works with other domestic agencies directly and through the Financial Stability Oversight Council (FSOC); and engages with the global community in monitoring, supervision, and regulation that mitigate the risks and consequences of financial instability domestically and abroad.

Moreover, the Federal Reserve promotes financial stability through its supervision and regulation of financial institutions. A central tenet of the Federal Reserve's efforts in promoting financial stability is the adoption of an approach to supervision and regulation that, in addition to a traditional approach focused on the safety and soundness of individual institutions, accounts for the stability of the financial system as a whole. In particular, a supervisory approach accounting for financial stability concerns informs the supervision of systemically important financial institutions (SIFIs), including large bank holding companies (BHCs), the U.S. operations of certain foreign banking organizations, and financial market utilities (FMUs). In addition, the Federal Reserve serves as a "consolidated supervisor" of nonbank financial companies designated by the FSOC as institutions whose distress or failure could pose a threat to the stability of the U.S. financial system as a whole (see "Financial Stability Oversight Council Activities" later in this section). Enhanced standards for the largest, most systemic firms promote the safety of the overall system and minimize the regulatory burden on smaller, less systemic institutions.

This section discusses key financial stability activities undertaken by the Federal Reserve over 2018, which include monitoring risks to financial stability; promoting a perspective on the supervision and regulation of large, complex financial institutions that accounts for the potential spillovers from distress at such institutions to the financial system and broader economy; and engaging in domestic and international cooperation and coordination.

Some of these activities are also discussed elsewhere in this annual report. A broader set of economic and financial developments are discussed in section 2, "Monetary Policy and Economic Developments," with the discussion that follows concerning surveillance of economic and financial developments focused on financial stability. The full range of activities associated with supervision of SIFIs, designated nonbank companies, and designated FMUs is discussed in section 4, "Supervision and Regulation."

Monitoring Risks to Financial Stability

Financial institutions are linked together through a complex set of relationships, and their condition

depends on the economic condition of the nonfinancial sector. In turn, the condition of the nonfinancial sector hinges on the strength of financial institutions' balance sheets, as the nonfinancial sector obtains funding through the financial sector. Monitoring risks to financial stability is aimed at better understanding these complex linkages and has been an important part of Federal Reserve efforts in pursuit of overall economic stability.

A stable financial system, when hit by adverse events or "shocks," is able to continue meeting demands for financial services from households and businesses, such as credit provision and payment services. In contrast, in an unstable system, these same shocks are likely to have much larger effects, disrupting the flow of credit and leading to declines in employment and economic activity.

Consistent with this view of financial stability, the Federal Reserve Board's monitoring framework distinguishes between shocks to and vulnerabilities of the financial system. Shocks, such as sudden changes to financial or economic conditions, are typically surprises and are inherently hard to predict. Vulnerabilities tend to build up over time and are the aspects of the financial system that are most expected to cause widespread problems in times of stress. As a result, the Federal Reserve maintains a flexible, forward-looking financial stability monitoring program focused on assessing the financial system's vulnerabilities to a wide range of potential adverse shocks.

Each quarter, Federal Reserve Board staff assess a set of vulnerabilities relevant for financial stability, including but not limited to asset valuation pressures, borrowing by businesses and households, leverage in the financial sector, and funding risk. These monitoring efforts inform discussions concerning policies to promote financial stability, such as supervision and regulatory policies as well as monetary policy. They also inform Federal Reserve interactions with broader monitoring efforts, such as those by the FSOC and the Financial Stability Board (FSB).

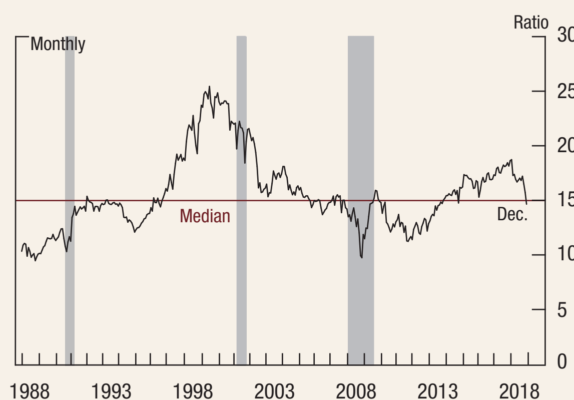
In November 2018, the Federal Reserve Board published its first *Financial Stability Report*.[1] The report, which will be published on a semiannual basis, summarizes the Board's framework for assessing the resilience of the U.S. financial system and presents the Board's current assessment of financial system vulnerabilities. It aims to promote public understanding about Federal Reserve views on this topic and thereby increase transparency and accountability. The report complements the annual report of the FSOC, which is chaired by the Secretary of the Treasury and includes the Federal Reserve Chair and other financial regulators.

Asset Valuation Pressures

Overvalued assets are a fundamental source of vulnerability because the unwinding of high prices can be destabilizing, especially if the assets are widely held and the values are supported by excessive leverage, maturity transformation, or risk opacity. Moreover, stretched asset valuations are likely to be an indicator of a broader buildup in risk-taking. Nonetheless, it is very difficult to judge whether an asset price is overvalued relative to fundamentals. As a result, the Federal Reserve's analysis of asset valuation pressures typically includes a broad range of possible valuation metrics and tracks developments in areas in which asset prices are rising particularly rapidly, into which investor flows have been considerable, or where volatility has been at unusually low or high levels.

Across markets, asset valuations remained elevated through most of 2018, supported by the solid economic expansion and an apparent increase in investors' appetite for risk. However, valuation pressures

Figure 1. Forward price-to-earnings ratio of S&P 500 firms, 1988–2018



Note: The data, based on expected earnings for 12 months ahead, extend through December 2018 and consist of the aggregate forward price-to-earnings ratio of S&P 500 firms. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Source: Federal Reserve Board staff calculations using Refinitiv (formerly Thomson Reuters), IBES Estimates.

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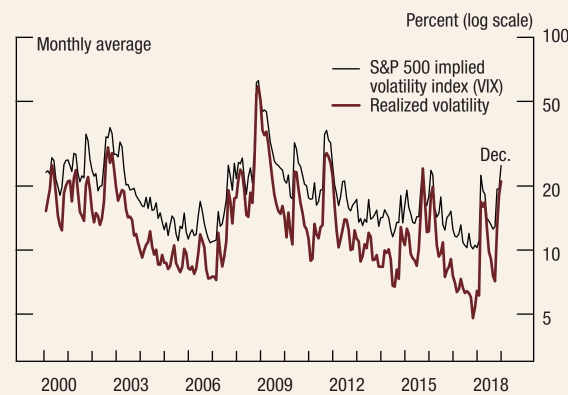
1 See Board of Governors of the Federal Reserve System (2018), *Financial Stability Report* (Washington: Board of Governors, November), https://www.federalreserve.gov/publications/files/financial-stability-report-201811.pdf.

Figure 2. S&P 500 volatility, 2000–18



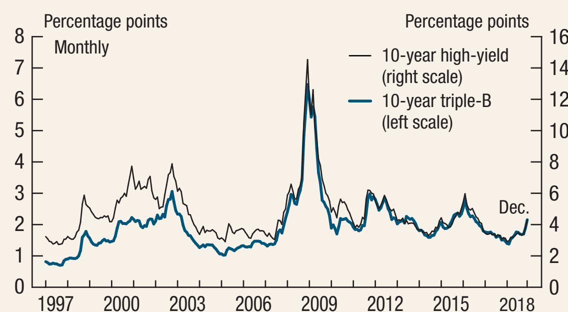
Note: The data extend through December 2018. For realized volatility, five-minute returns used in an exponentially weighted moving average, with 75 percent of the weight distributed over the last 20 days.

Source: Bloomberg Finance LP.

in equity and corporate bond markets moderated in the fourth quarter of 2018 amid a step-up in market volatility.

In equity markets, price fluctuations toward the end of 2018 brought down the forward price-to-earnings ratio of S&P 500 firms, a metric of valuations in equity markets, to a level near the median of its historical distribution (figure 1). At the same time, both realized and option-implied market volatility, which had remained low since mid-2016, jumped back to levels slightly above historical averages (figure 2). In debt markets, corporate bond spreads to comparable-maturity Treasury securities widened slightly through 2018, though spreads on investment- and speculative-grade bonds remained near the lower end of their historical range (figure 3).

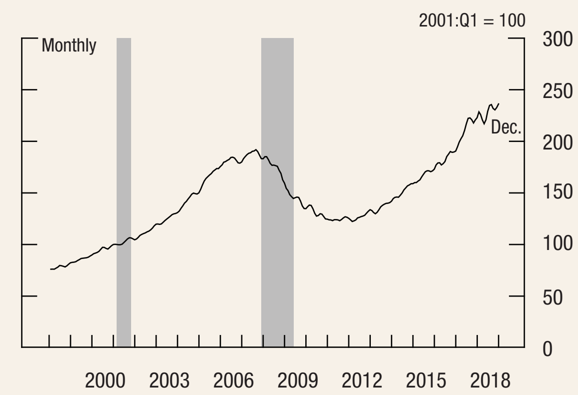
Figure 3. Corporate bond spreads, 1997–2018



Note: The data extend through December 2018. The 10-year triple-B reflects the effective yield of the ICE BofAML 7-to-10-year triple-B U.S. Corporate Index (C4A4), and the 10-year high-yield reflects the effective yield of the ICE BofAML 7-to-10-year U.S. Cash Pay High Yield Index (J4A0). Treasury yields from smoothed yield curve estimated from off-the-run securities.

Source: ICE Data Indices, LLC, used with permission; Department of the Treasury.

Figure 4. Commercial real estate price index, 1998–2018



Note: The data extend through December 2018. Series deflated using the consumer price index for all urban consumers less food and energy and seasonally adjusted by Board staff. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Source: CoStar Group, Inc., CoStar Commercial Repeat Sale Indices (CCRSI); Bureau of Labor Statistics via Haver Analytics, consumer price index.

Property prices continued to be an area of ongoing valuation pressures over the past year. Commercial real estate prices, which had risen substantially over the previous seven years, were about flat last year, although at historical highs (figure 4). Similar patterns were also observed in farmland prices, where price-to-rent ratios also remained at historical highs, and in home prices, with price-to-rent ratios above long-run historical trends but below the extraordinary levels seen before the financial crisis.

Borrowing by Households and Businesses

Excessive borrowing by households and businesses has been an important contributor to past financial crises. Highly indebted households and nonfinancial businesses may be vulnerable to negative shocks to incomes or asset values and may be forced to curtail spending, which could amplify the effects of financial shocks. In turn, losses among households and businesses can lead to mounting losses at financial institutions, creating an adverse feedback loop in which weaknesses among households, nonfinancial businesses, and financial institutions cause further declines in income and accelerate financial losses, potentially leading to financial instability and a sharp contraction in economic activity.

Vulnerabilities associated with household and business borrowing remained moderate overall in 2018.

However, business debt and household debt, which started to diverge following the 2007–09 recession, have continued to trend in opposite directions (figure 5). Business credit continued to grow faster than nominal gross domestic product (GDP), leaving the business-sector credit-to-GDP ratio close to historical highs.

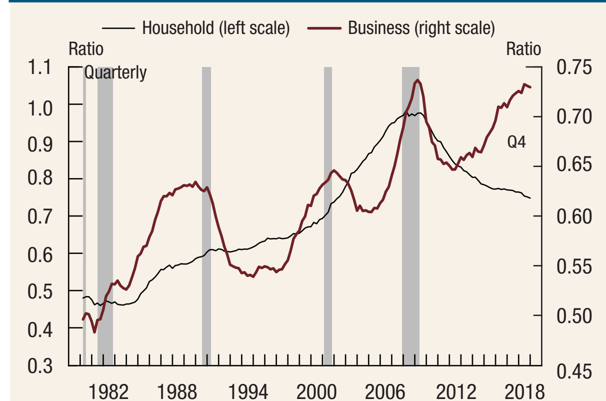
Risky debt issuance picked up in 2017 and 2018 (figure 6). Moreover, highly leveraged corporations, measured by debt-to-EBITDA (earnings before interest, taxes, depreciation, and amortization) ratios above 6, increased their share of large loan issuance to historically high levels, above the previous peak levels observed in 2007 and 2014 (figure 7). Nonetheless, the strong economy and low interest rates helped sustain a solid credit performance of leveraged loans in 2018, with the default rate on such loans near the low end of its historical range. At the same time, the favorable credit performance of the corporate sector recently was likely due in part to the strength of overall economic activity, and high leverage could leave some parts of the corporate sector vulnerable to difficulties should adverse shocks materialize.

Furthermore, the share of bonds rated at the lowest investment-grade level (for example, an S&P rating of triple-B) reached near-record levels. As of December 2018, around 42 percent of corporate bonds outstanding were at the lowest end of the investment-grade segment, amounting to about $3 trillion.

In contrast to the business sector, household debt growth continued to be modest over the past year and remained mostly in line with income growth. Aggregate borrowing relative to income in the household sector has declined significantly from its 2007 peak, with growth skewed mostly toward households with strong credit histories.

The composition of household debt has, however, experienced significant changes over the past 10 years (figure 8). Credit card debt decreased significantly

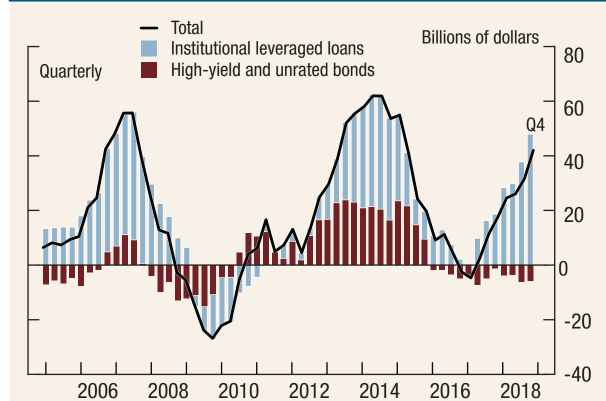
Figure 5. Credit-to-GDP ratio, 1980–2018



Note: The data extend through 2018:Q4. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. GDP is gross domestic product.

Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Bureau of Economic Analysis via Haver Analytics, national income and product accounts, Table 1.1.5: Gross Domestic Product; Board staff calculations.

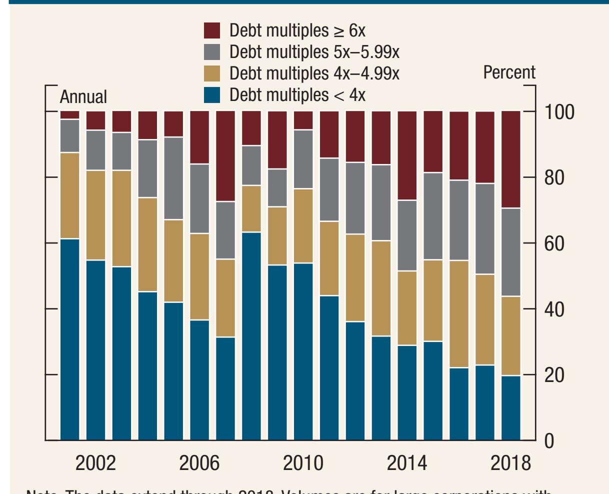
Figure 6. Total net issuance of risky debt, 2005–18



Note: The data extend through 2018:Q4. Total net issuance of risky debt is the sum of the net issuance of speculative-grade and unrated bonds and leveraged loans. The data are four-quarter moving averages.

Source: Mergent, Fixed Investment Securities Database (FISD); S&P Global, Leveraged Commentary & Data.

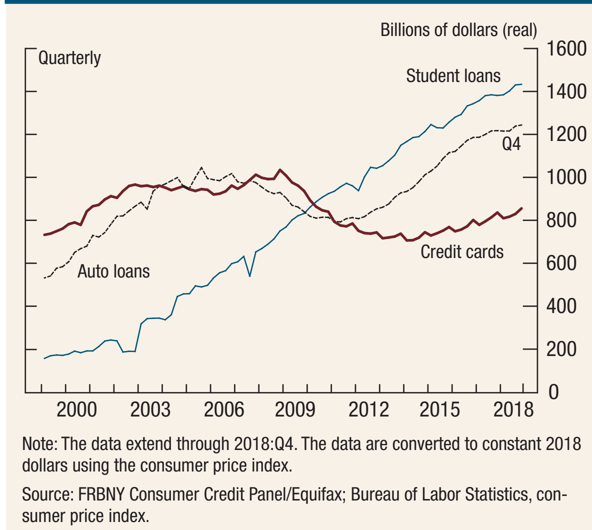
Figure 7. Distribution of large institutional leveraged loan volumes, by debt-to-EBITDA ratio, 2001–18



Note: The data extend through 2018. Volumes are for large corporations with earnings before interest, taxes, depreciation, and amortization (EBITDA) greater than $50 billion and exclude existing tranches of add-ons and amendments and restatements with no new money. Key identifies bar segments in order from top to bottom.

Source: S&P Global, Leveraged Commentary & Data.

Figure 8. Consumer credit balances, 1999–2018



Note: The data extend through 2018:Q4. The data are converted to constant 2018 dollars using the consumer price index.

Source: FRBNY Consumer Credit Panel/Equifax; Bureau of Labor Statistics, consumer price index.

between 2009 and 2011, and its recent level (in real terms) remains well below its 2008 peak. In contrast, student and auto loans have maintained a strong upward trend during the past 10 years.

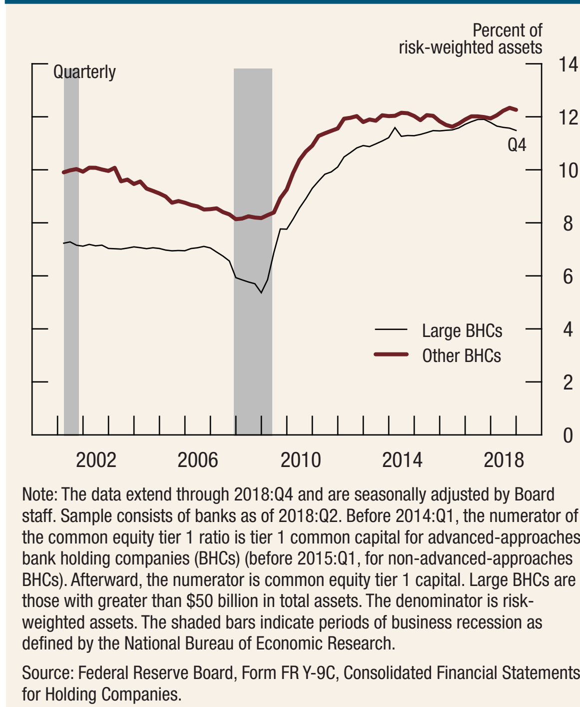
Leverage in the Financial System

Vulnerabilities related to financial-sector leverage appear low, in part because of regulatory reforms enacted since the financial crisis. Core financial intermediaries, including large banks, insurance companies, and broker-dealers, appear well positioned to weather economic stress.

Regulatory capital remained at historically high levels for large domestic banks. The ratio of tier 1 common equity to risk-weighted assets remained around 12 percent, on average, for BHCs in 2018 (figure 9). Moreover, the leverage ratio, which looks at common equity relative to total assets without adjusting for risk, also remained at levels substantially above pre-crisis norms. Finally, all 34 firms participating in the Federal Reserve's supervisory stress tests for 2018 were able to maintain capital ratios above required minimums to absorb losses from a severe macroeconomic shock.[2]

Leverage of broker-dealers has been trending down and, as of 2018, was substantially below pre-crisis levels. At property and casualty insurance firms,

Figure 9. Common equity tier 1 ratio, 2001–18



Note: The data extend through 2018:Q4 and are seasonally adjusted by Board staff. Sample consists of banks as of 2018:Q2. Before 2014:Q1, the numerator of the common equity tier 1 ratio is tier 1 common capital for advanced-approaches bank holding companies (BHCs) (before 2015:Q1, for non-advanced-approaches BHCs). Afterward, the numerator is common equity tier 1 capital. Large BHCs are those with greater than $50 billion in total assets. The denominator is risk-weighted assets. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Source: Federal Reserve Board, Form FR Y-9C, Consolidated Financial Statements for Holding Companies.

leverage has also been falling, while it has been roughly constant over the past decade for life insurance companies. However, hedge fund leverage appears to have been increasing over the past two years. The increased use of leverage by hedge funds exposes their counterparties to risk and raises the possibility that adverse shocks would result in forced asset sales that could exacerbate price declines. That said, hedge funds do not play the same central role in the financial system as banks or other institutions.

Funding Risk

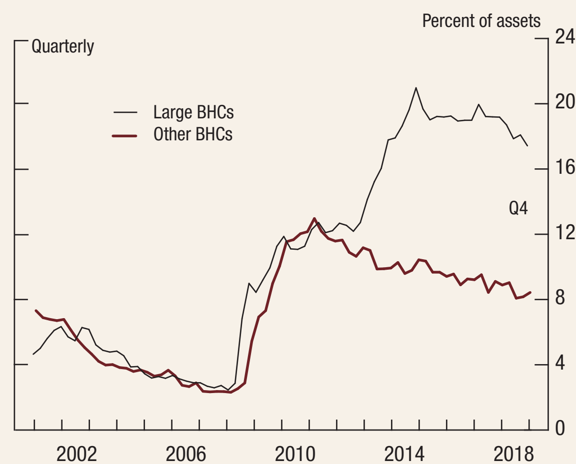
Vulnerabilities associated with funding risk continued to be low in 2018, in part because of the post-crisis implementation of liquidity regulations for banks and the 2016 money market reforms.[3]

In total, liquid assets in the banking system have increased more than $3 trillion since the financial crisis. Large banks, in particular, hold substantial amounts of liquid assets, far exceeding pre-crisis levels and well above regulatory requirements (figure 10). Bank funding is less susceptible to runs now than in the period leading up to the financial crisis—

[2] The 2018 supervisory stress-test methodology and results are available on the Board's website at https://www.federalreserve.gov/publications/2018-june-dodd-frank-act-stress-test-preface.htm.

[3] See Securities and Exchange Commission (2014), "SEC Adopts Money Market Fund Reform Rules," press release, July 23, https://www.sec.gov/news/press-release/2014-143.

Figure 10. High-quality liquid assets, by BHC size, 2001–18



Note: The data extend through 2018:Q4. High-quality liquid assets (HQLA) are excess reserves plus estimates of securities that qualify for HQLA. Haircuts and Level 2 asset caps are incorporated into the estimate. Large bank holding companies (BHCs) are those with greater than $50 billion in total assets.

Source: Federal Reserve Board, Form FR Y-9C (Consolidated Financial Statements for Holding Companies) and Form FR 2900 (Report of Transaction Accounts, Other Deposits and Vault Cash).

further reducing vulnerabilities from liquidity transformation. Core deposits, which include checking accounts, small-denomination time deposits, and other retail deposits that are typically insured, are near historical highs as a share of banks' total liabilities. Core deposits have traditionally been a relatively stable source of funds for banks, in the sense that they have been less prone to runs. In contrast, short-term wholesale funding, a source of funds that proved unreliable during the crisis, is near historical lows as a share of banks' total liabilities.

Money market fund (MMF) reforms implemented in 2016 have reduced run risk in the financial system. The reforms required "prime" MMFs, which have proved vulnerable to runs in the past, to use floating net asset values that adjust with the market prices of the assets they hold, which resulted in a shift by investors into government MMFs. A shift in investments toward short-term vehicles that provide alternatives to MMFs and could also be vulnerable to runs or run-like dynamics would increase risk, but assets in these alternatives have increased only modestly compared with the drop in prime MMF assets.

Domestic and International Cooperation and Coordination

The Federal Reserve cooperated and coordinated with both domestic and international institutions in 2018 to promote financial stability.

Financial Stability Oversight Council Activities

As mandated by the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), the FSOC was created in 2010 and, as noted earlier, is chaired by the Treasury Secretary and includes the Federal Reserve Chair as a member (see box 1). It established an institutional framework for identifying and responding to the sources of systemic risk. Through collaborative participation in the FSOC, U.S. financial regulators monitor not only institutions, but also the financial system as a whole. The Federal Reserve, in conjunction with other participants, assists in monitoring financial risks, analyzes the implications of those risks for financial stability,

Box 1. Regular Reporting on Financial Stability Oversight Council Activities

The Federal Reserve cooperated and coordinated with domestic agencies in 2018 to promote financial stability, including through the activities of the Financial Stability Oversight Council (FSOC).

Meeting minutes. In 2018, the FSOC met eight times, including at least once a quarter. The minutes for each meeting are available on the U.S. Treasury website (https://www.treasury.gov/initiatives/fsoc/council-meetings/Pages/meeting-minutes.aspx).

FSOC annual report. On December 19, 2018, the FSOC released its eighth annual report (https://home.treasury.gov/system/files/261/FSOC2018AnnualReport.pdf), which includes a review of key developments in 2018 and a set of recommended actions that could be taken to ensure financial stability and to mitigate systemic risks that affect the economy.

For more on the FSOC, see https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/fsoc.

and identifies steps that can be taken to mitigate those risks. In addition, when an institution is designated by the FSOC as systemically important, the Federal Reserve assumes responsibility for supervising that institution.

In 2018, the Federal Reserve worked, in conjunction with other FSOC participants, on the following major initiatives:

Application under section 117 of the Dodd-Frank Act. On September 12, 2018, the council announced its decision to grant the appeal of ZB, N.A. (Zions), under section 117 of the Dodd-Frank Act.[4] The action removed the firm's treatment as a nonbank financial company following its merger with Zions Bancorporation. The FSOC found that Zions's potential to pose material financial distress to U.S. financial stability was greatly reduced, as the firm engages in limited capital markets activities, presents minimal fire sale risks, and is subject to extensive regulation and supervision.

Nonbank designations process. On October 17, 2018, the council announced it had voted to rescind its determination that material financial distress at Prudential Financial, Inc. (Prudential), could pose a threat to U.S. financial stability, and that the company should be subject to supervision by the Federal Reserve and enhanced prudential standards.[5] The FSOC made the decision that Prudential's potential to pose material financial distress to U.S. financial stability was substantially reduced following changes to simplify the company's corporate structure and enhanced capital and liquidity management policies. Further, Prudential is subject to a new regulatory regime under New Jersey state law that allows for groupwide supervision.

[4] See U.S. Department of the Treasury (2018), "Financial Stability Oversight Council Announces Final Decision to Grant Petition from ZB, N.A.," press release, September 12, https://home.treasury.gov/news/press-releases/sm478.

[5] See U.S. Department of the Treasury (2018), "Financial Stability Oversight Council Announces Rescission of Nonbank Financial Company Designation," press release, October 17, https://home.treasury.gov/news/press-releases/sm525.

Financial Stability Board Activities

In light of the interconnected global financial system and the global activities of large U.S. financial institutions, the Federal Reserve participates in international bodies, such as the FSB. The FSB monitors the global financial system and promotes financial stability through the adoption of sound policies across countries. The Federal Reserve participates in the FSB, along with the Securities and Exchange Commission and the U.S. Treasury.

In the past year, the FSB has examined several issues, including monitoring of shadow banking activities, coordination of regulatory standards for global systemically important financial institutions, asset management, fintech (emerging financial technologies), evaluating the effects of reforms, and development of effective resolution regimes for large financial institutions. In November, the FSB published its report on incentives to centrally clear over-the-counter derivatives.[6] Also in November, Randal K. Quarles, the Federal Reserve's Vice Chair for Supervision, was appointed chair of the FSB.

[6] See Financial Stability Board (2018), "Incentives to Centrally Clear Over-the-Counter (OTC) Derivatives," press release, November 19, http://www.fsb.org/2018/11/incentives-to-centrally-clear-over-the-counter-otc-derivatives-2.

4 Supervision and Regulation

The Federal Reserve has supervisory and regulatory authority over a variety of financial institutions and activities with the goal of promoting a safe, sound, and efficient financial system that supports the growth and stability of the U.S. economy.

The Federal Reserve carries out its supervisory and regulatory responsibilities and supporting functions primarily by

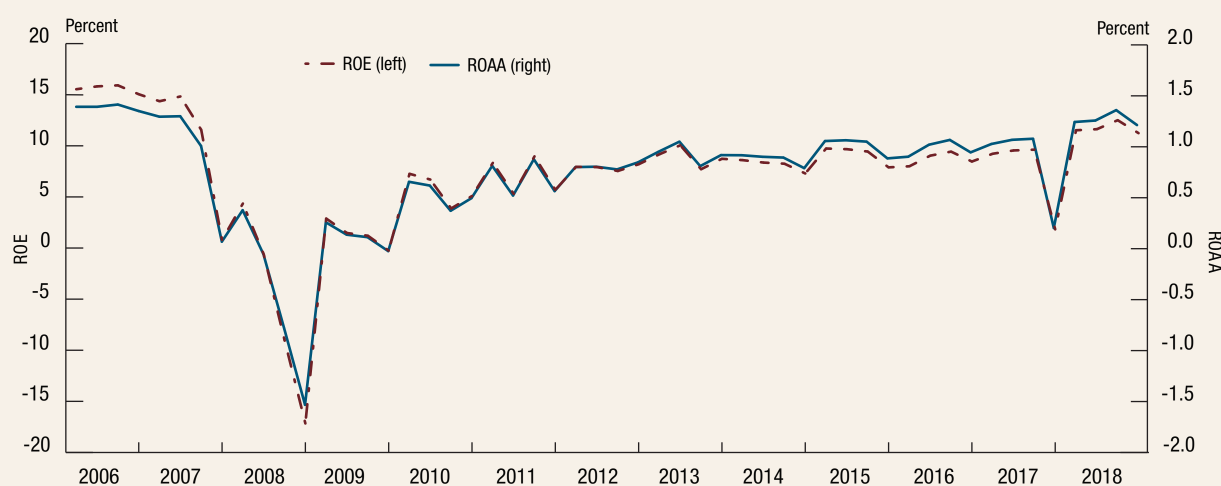
- collecting data, along with the other federal financial regulatory agencies, to monitor trends in the banking sector;
- engaging in supervisory activities that
    - promote the safety and soundness of individual institutions supervised by the Federal Reserve;
    - identify requirements and set priorities for supervisory information technology initiatives; and
    - meet evolving supervisory responsibilities through ongoing staff development; and
- developing regulatory policy (rulemakings, supervision and regulation letters, policy statements, and guidance), and regulating the U.S. banking and financial structure by acting on a variety of proposals.

Banking System Conditions

The financial condition of the U.S. banking system is generally strong. The strong economic trends of the last several years have contributed to improvements in the financial condition of banks. Two important measures of profitability—return on equity (ROE) and return on average assets (ROAA)—have seen steady gains over the past several years and ended the year near a 10-year high (figure 1).[1] Earnings for firms of all sizes have been bolstered by rising net interest income and the recent reduction in effective tax rates. Moderately rising interest rates have been positive for bank earnings and have helped drive increases in net interest income.

[1] The dip in ROE and ROAA in 2017 was driven by a one-time tax effect.

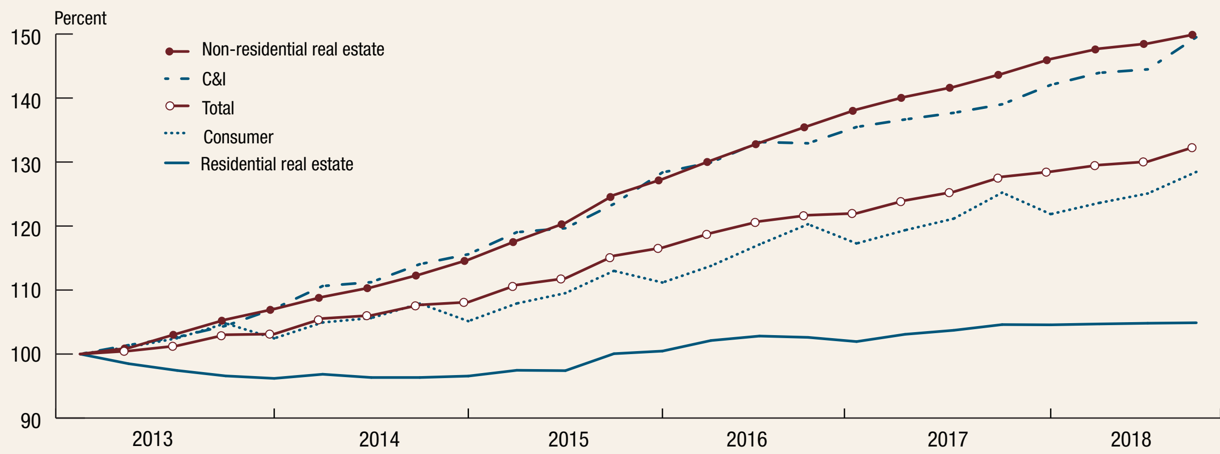
Figure 1. Bank profitability



Note: ROAA is net income/quarterly average assets; ROE is net income/average equity capital. Values are annualized.

Source: Call Report and FR Y-9C.

Figure 2. Loan growth by sector



Source: Call Report and FR Y-9C.

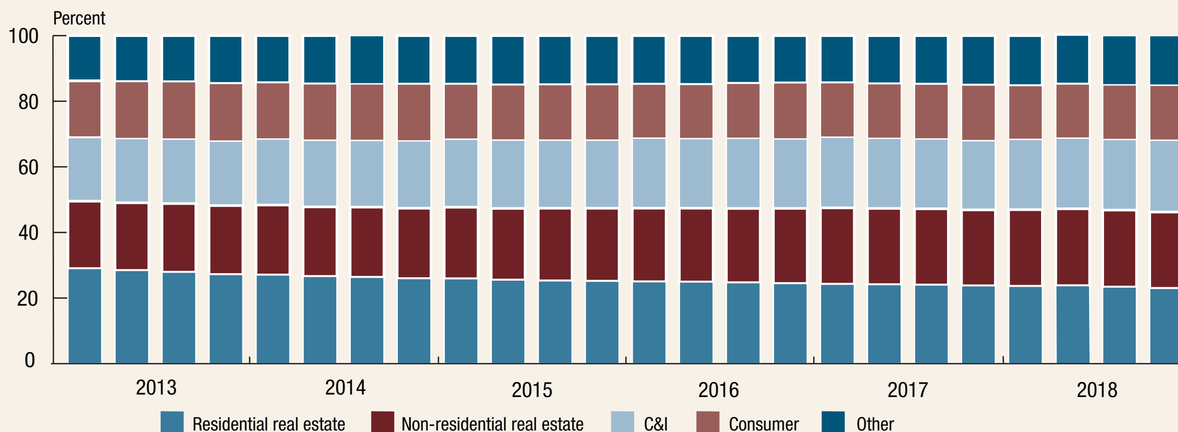
Firms have reported growth in loan volume coupled with lower nonperforming loan ratios. Loan growth remains robust, with total loan volume for the industry growing over 30 percent since 2013 (figure 2). Commercial and industrial (C&I) loans and non-residential real estate loans have experienced the strongest growth. Since 2013, the volume of C&I and non-residential real estate loans has grown by close to 50 percent. Residential real estate lending, which experienced structural changes over this period, exhibited tepid growth.

In recent quarters, nonbank finance companies are increasing their market share in new mortgage originations, and large banks are shifting their mortgage exposures from loans to securities. As a result, the banking industry's overall loan portfolio is shifting away from residential real estate loans toward C&I loans and consumer loans (figure 3).

The nonperforming loan ratio—one measure of asset quality—is generally improving or stable across the banking system (figure 4).[2] Currently, nonperforming loans as a share of total loans and leases are at or near a 10-year low. However, nonperforming consumer loans saw a slight increase in the second half of 2018.

[2] Nonperforming loans, or problem loans, are those loans that are 90 days or more past due, plus loans in nonaccrual status.

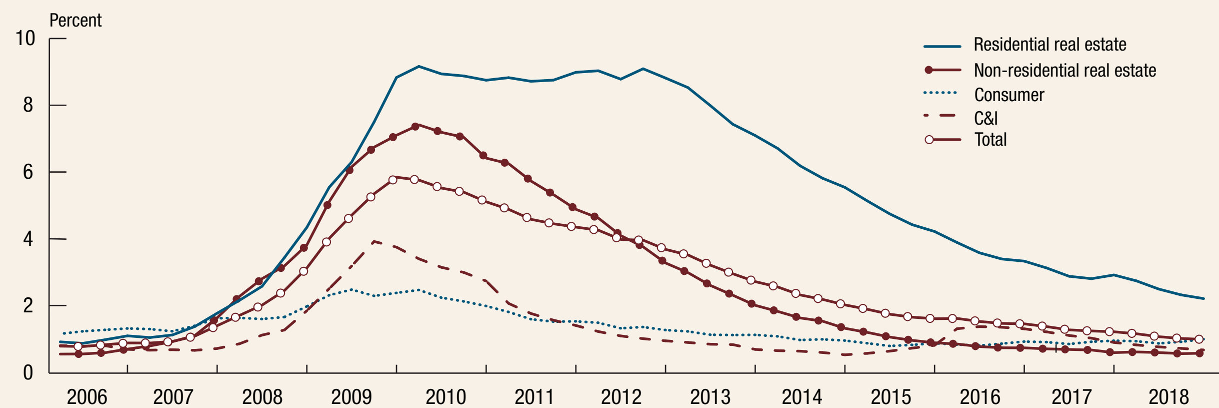
Figure 3. Loan composition



Note: Loan composition is individual loan categories as a share of total loans. Chart key shows bars in order from top to bottom.

Source: Call Report and FR Y-9C.

Figure 4. Nonperforming loan ratio



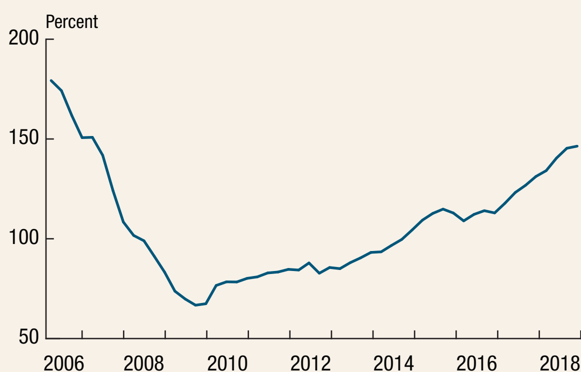
Note: Nonperforming loan ratio is the ratio of loans 90 days or delinquent and nonaccrual loans to total loans.

Source: Call Report and FR Y-9C.

Firms maintain reserves to provide a cushion against losses on loans and leases they are unable to collect. One important financial metric is the ratio of allowance for loan and lease losses (ALLL, which is the amount of reserves banks set aside to absorb losses related to troubled loans) to the volume of nonperforming loans and leases held by a bank, also known as the reserve coverage ratio (figure 5). A higher ratio generally indicates a better ability to absorb future loan losses.

Since 2013, as the volume of nonperforming loans has declined, the industrywide coverage ratio has improved considerably. While the entire industry has seen an improvement in this ratio, the largest firms have seen the greatest improvement. It is important to note that nonperforming loan status is a lagging indicator of loan losses and other factors are considered when estimating the allowance, such as changes in underwriting standards and changes in local or regional economic conditions.

Figure 5. Reserve coverage ratio



Note: Reserve coverage ratio is the ratio of ALLL to loans 90 days or more delinquent and nonaccrual loans. Data adjusted for GNMA guaranteed loans.

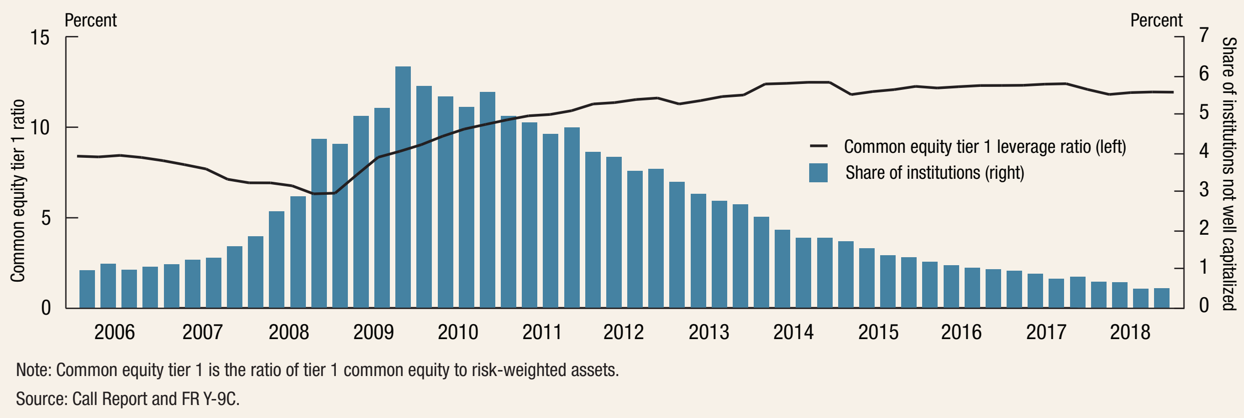
Source: Call Report and FR Y-9C.

As profitability and asset quality continue to improve, firms still maintain high levels of quality capital. Capital provides a buffer to absorb losses that may result from unexpected operational, credit, or market events. Since the financial crisis, the Federal Reserve has implemented new rules that have significantly raised the requirements for the quantity and quality of bank capital, particularly at the largest firms. As a result of the new requirements, capital levels have increased across the industry (figure 6).

Firms have also significantly bolstered their liquidity after coming under funding pressure during the financial crisis. The funding stresses faced by large banks during the financial crisis heavily influenced the subsequent U.S. regulatory framework for addressing funding and liquidity risk. The financial crisis demonstrated the need to ensure that banks hold enough fundamentally sound and reliable liquid assets to survive a stress scenario. Liquidity requirements put in place since the crisis have significantly increased aggregate levels of highly liquid assets (figure 7).

The banking industry remains concentrated, while the market share of the largest banking organizations has declined. Over the past few decades, as the banking system has grown, there has been a trend of increased bank consolidation. During the height of the financial crisis, and immediately after, as the financial system was strained, many banks merged

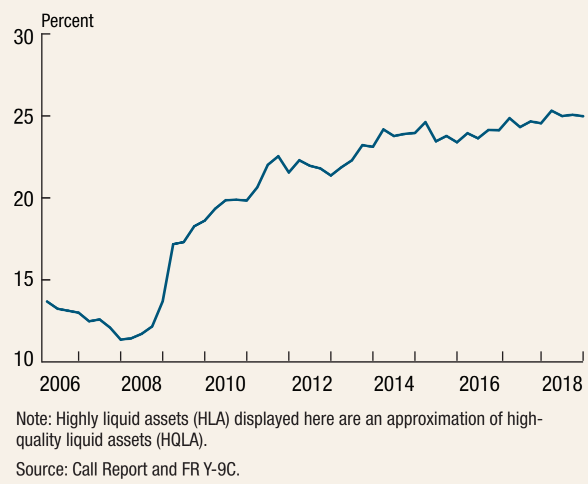
Figure 6. Common equity tier 1 ratio/share of instituions not well capitalized



Note: Common equity tier 1 is the ratio of tier 1 common equity to risk-weighted assets.

Source: Call Report and FR Y-9C.

Figure 7. Highly liquid assets as share of total assets



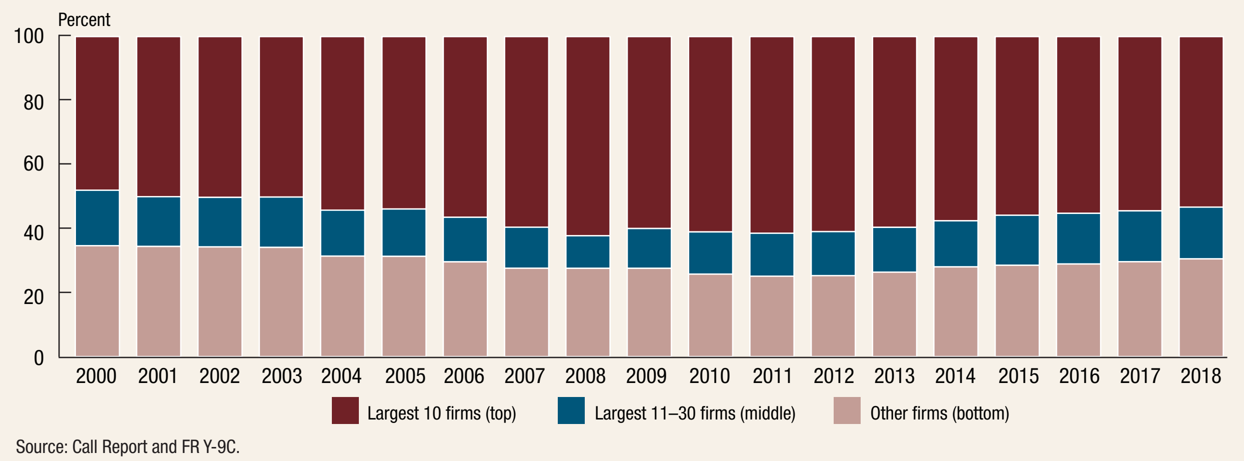
Note: Highly liquid assets (HLA) displayed here are an approximation of high-quality liquid assets (HQLA).

Source: Call Report and FR Y-9C.

with other institutions, or failed. Upon closing, the assets of these failed banks were sold to other, often larger, institutions, and the industry saw a wave of consolidation and growth of the largest institutions. In recent years, however, concentration has slowed by some measures. Even as the total volume of loans and leases has been growing, the distribution of those loans has spread to a broader section of the industry. The market share of loans for the 10 largest banking organizations has declined (figure 8).

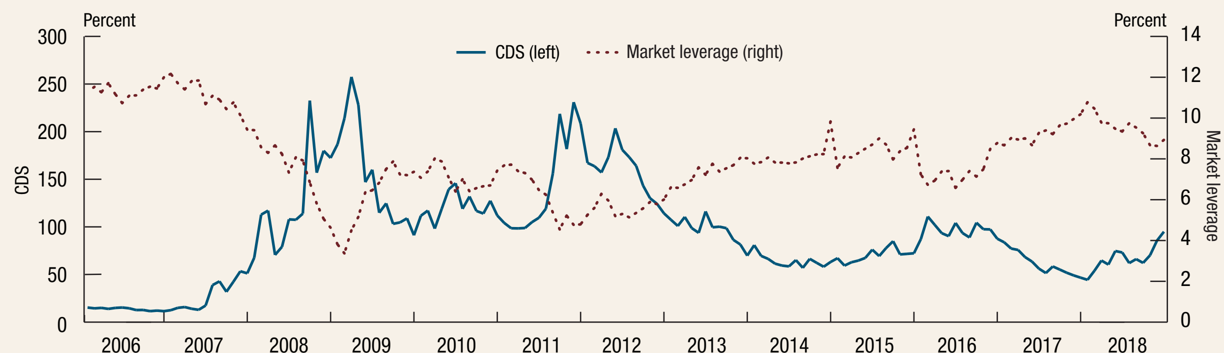
Market indicators generally reflect stronger industry performance. The improvements in overall banking system conditions since the crisis are reflected in market indicators of bank health, such as the market leverage ratio and credit default swap (CDS) spreads. The market leverage ratio is a market-based measure of firm capital, and a higher ratio generally indicates investor confidence in banks' financial strength.

Figure 8. Concentration of banking industry outstanding loans and leases



Source: Call Report and FR Y-9C.

Figure 9. Average credit default swap (CDS) spread and market leverage ratio



Note: Market leverage ratio is the ratio of market value of equity to market value of equity plus total liabilities. CDS values are for the eight U.S. and four FBO LISCC firms only (U.S.: Bank of America; Bank of New York Mellon; Citigroup; Goldman Sachs; JPMorgan Chase; Morgan Stanley; State Street; Wells Fargo; FBO: Barclays; Credit Suisse; Deutsche Bank; UBS).

Source: CDS—IHS Markit; market leverage—Bloomberg, Factset.

Credit default spreads are a measure of market perceptions of bank risk, and a small spread reflects investor confidence in banks' financial health. Both measures are close to pre-crisis levels, despite increased market volatility in the fourth quarter of 2018 (figure 9).[3]

Supervisory Developments

In overseeing the institutions under its authority, the Federal Reserve seeks primarily to promote safety, soundness, and efficiency, including compliance with laws and regulations. For supervisory purposes, the Federal Reserve categorizes institutions into the groups described in table 1.

Safety and Soundness

The Federal Reserve uses a range of supervisory activities to promote the safety and soundness of financial institutions and maintain a comprehensive understanding and assessment of each firm. These activities include horizontal reviews, firm-specific examinations and inspections, continuous monitoring and surveillance activities, and implementation of enforcement or other supervisory actions as necessary. The Federal Reserve also provides training and technical assistance to foreign supervisors and minority-owned and de novo depository institutions.

Examinations and Inspections

The Federal Reserve conducts examinations of state member banks, financial market utilities (FMUs), the U.S. branches and agencies of foreign banks, and Edge Act and agreement corporations. In a process distinct from examinations, it conducts inspections of holding companies and their nonbank subsidiaries. Whether an examination or an inspection is being conducted, the review of financial performance and operations entails

- analysis of financial condition, including capital, asset quality, earnings, and liquidity;
- an assessment of the risk-management and internal control processes in place to identify, measure, monitor, and control risks;
- an evaluation of the adequacy of governance, including oversight by the board and execution by senior management, which incorporates an assessment of internal policies, procedures, risk limits, and controls; and
- a review for compliance with applicable laws and regulations.

Consolidated Supervision

Consolidated supervision, a method of supervision that encompasses the parent company and its subsidiaries, allows the Federal Reserve to understand the organization's structure, activities, resources, risks, and financial and operational resilience. Working with other relevant supervisors and regulators, the Federal Reserve seeks to ensure that financial, operational, or other deficiencies are addressed before they

[3] For definitions of market leverage and credit default swap spreads, see the Federal Reserve Supervision and Regulation report at https://www.federalreserve.gov/publications/2018-11-supervision-and-regulation-report-appendix-a.htm.

Table 1. Summary of organizations supervised by the Federal Reserve

Portfolio	Definition	Number of institutions	Total assets ($ trillions)
Large Institution Supervision Coordinating Committee (LISCC)	Eight U.S. globally systemically important banks (G-SIBs): Bank of America, Bank of New York Mellon, Citigroup, Goldman Sachs, JPMorgan Chase, Morgan Stanley, State Street, and Wells Fargo Four FBOs with large and complex U.S. operations: Barclays, Credit Suisse, Deutsche Bank, and UBS	12	12.1
State member banks (SMBs)	SMBs within LISCC organizations	5	0.8
Large and foreign banking organizations (LFBOs)	Non-LISCC firms with total assets $100 billion and larger and non-LISCC FBOs	179	7.3
Large banking organizations	Non-LISCC U.S. firms with total assets $100 billion and greater	17	3.5
Large foreign banking organizations	Non-LISCC FBOs with combined U.S. assets $100 billion and greater	14	2.7
Less complex foreign banking organizations	FBOs with combined U.S. assets less than $100 billion	148	1.1
State member banks	SMBs within LFBOs	8	1.0
Regional banking organizations (RBOs)	Total assets between $10 billion and $100 billion	82	1.8
State member banks	SMBs within RBOs	50	0.6
Community banking organizations (CBO)	Total assets less than $10 billion	3,980	2.4
State member banks	SMBs within CBOs	731 (includes 663 SMBs with a holding company and 68 without a holding company)	0.5
Insurance and commercial savings and loan holding companies (SLHCs)	SLHCs primarily engaged in insurance or commercial activities	9 insurance SLHCs 4 commercial SLHCs	1.0

Source: Call Report, FFIEC 002, FR 2320, FR Y-7Q, FR Y-9C, FR Y-9SP, and S&P Global Market Intelligence.

pose a danger to the consolidated organization, its banking offices, or to the broader economy.[4]

Capital Planning and Stress Tests

Since the financial crisis, the Board has led a series of initiatives to strengthen the capital positions of the largest banking organizations. Two related initiatives are the Comprehensive Capital Analysis and Review (CCAR) and the Dodd-Frank Act stress tests (DFAST).

CCAR is a supervisory exercise to evaluate capital adequacy, internal capital planning processes, and planned capital distributions simultaneously at all bank holding companies (BHCs) with $100 billion or more in total consolidated assets and U.S. intermediate holding companies (IHCs).[5] In CCAR, the Federal Reserve assesses whether these BHCs have sufficient capital to withstand highly stressful operating environments and be able to continue operations, maintain ready access to funding, meet obligations to creditors and counterparties, and serve as credit intermediaries. Capital is central to a BHC's ability to absorb losses and continue to lend to creditworthy businesses and consumers. Through CCAR, a BHC's capital adequacy is evaluated on a forward-looking, post-stress basis as the BHC is required to demonstrate in its capital plan how it will maintain, throughout a very stressful period, capital above minimum regulatory capital requirements.[6] The 2018 CCAR results are available at https://www.federalreserve.gov/publications/files/2018-ccar-assessment-framework-results-20180628.pdf.

[4] "Banking offices" are defined as U.S. depository institution subsidiaries as well as the U.S. branches and agencies of foreign banking organizations.

[5] On February 5, 2019, the Board announced that it will provide relief to less-complex firms from stress testing requirements and CCAR by effectively moving the firms to an extended stress test cycle this year. The relief applies to firms generally with total consolidated assets between $100 and $250 billion. As a result, these less-complex firms will not be subject to the supervisory stress test during the 2019 cycle and their capital distributions for this year will be largely based on the results from the 2018 supervisory stress test.

[6] For more information on CCAR, see https://www.federalreserve.gov/supervisionreg/ccar.htm.

DFAST is a supervisory stress test conducted by the Federal Reserve to evaluate whether large BHCs and IHCs have sufficient capital to absorb losses resulting from stressful economic and financial market conditions. The Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) also requires BHCs and other financial companies supervised by the Federal Reserve to conduct their own stress tests. Together, the Dodd-Frank Act supervisory stress tests and the company-run stress tests are intended to provide company management and boards of directors, the public, and supervisors with forward-looking information to help gauge the potential effect of stressful conditions on the capital adequacy of these large banking organizations. The 2018 DFAST results are available at https://www.federalreserve.gov/publications/files/2018-dfast-methodology-results-20180621.pdf.

State Member Banks

At the end of 2018, a total of 1,611 banks (excluding nondepository trust companies and private banks) were members of the Federal Reserve System, of which 794 were state chartered. Federal Reserve System member banks operated 53,339 branches, and accounted for 33 percent of all commercial banks in the United States and for 70 percent of all commercial banking offices. State-chartered commercial banks that are members of the Federal Reserve, commonly referred to as state member banks, represented approximately 17 percent of all insured U.S. commercial banks and held approximately 17 percent of all insured commercial bank assets in the United States.

Under section 10 of the Federal Deposit Insurance Act, as amended by section 111 of the Federal Deposit Insurance Corporation Improvement Act of 1991 and by the Riegle Community Development and Regulatory Improvement Act of 1994, the Federal Reserve must conduct a full-scope, on-site examination of state member banks at least once a year.[7] However, qualifying well-capitalized, well-managed state member banks with less than $3 billion in total assets are eligible for an 18-month examination cycle.[8] The Federal Reserve conducted 321 examinations of state member banks in 2017. Table 2 provides information on examinations and inspections conducted by the Federal Reserve during the past five years.

Bank Holding Companies

At year-end 2018, a total of 4,300 U.S. BHCs were in operation, of which 3,848 were top-tier BHCs. These organizations controlled 3,948 insured commercial banks and held approximately 94 percent of all insured commercial bank assets in the United States.

Federal Reserve guidelines call for annual inspections of large BHCs and complex smaller companies. In judging the financial condition of the subsidiary banks owned by holding companies, Federal Reserve examiners consult examination reports prepared by the federal and state banking authorities that have primary responsibility for the supervision of those banks, thereby minimizing duplication of effort and reducing the supervisory burden on banking organizations.

Inspections of BHCs with less than $100 billion in assets, including financial holding companies (FHCs), are built around a rating system introduced in 2005. The system reflects the shift in supervisory practices away from a historical analysis of financial condition toward a more dynamic, forward-looking assessment of risk-management practices and financial factors. Under the system, known as RFI but more fully termed RFI/C(D), holding companies are assigned a composite rating (C) that is based on assessments of three components: Risk Management (R), Financial Condition (F), and the potential Impact (I) of the parent company and its nondepository subsidiaries on the subsidiary depository institution. The fourth component, Depository Institution (D), is intended to mirror the primary supervisor's rating of the subsidiary depository institution.[9] Noncomplex BHCs with consolidated assets of $1 billion or less are subject to a special supervisory program that permits a more flexible approach.[10] In 2018, the Federal Reserve conducted 533 inspections of large

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7 The Office of the Comptroller of the Currency examines nationally chartered banks, and the Federal Deposit Insurance Corporation examines state-chartered banks that are not members of the Federal Reserve.

8 Effective January 28, 2019. 83 Fed. Reg. 67,033 (December 28, 2018).

9 Each of the first two components has four subcomponents: Risk Management—(1) Board and Senior Management Oversight; (2) Policies, Procedures, and Limits; (3) Risk Monitoring and Management Information Systems; and (4) Internal Controls. Financial Condition—(1) Capital, (2) Asset Quality, (3) Earnings, and (4) Liquidity.

10 The special supervisory program was implemented in 1997, most recently modified in 2018 by an interim final rule that increased the asset threshold from $1 billion to $3 billion (83 Fed. Reg. 44,195). See SR letter 13-21 for a discussion of the factors considered in determining whether a BHC is complex or noncomplex (https://www.federalreserve.gov/bankinforeg/srletters/sr1321.htm).

Table 2. State member banks and bank holding companies, 2014–18

Entity/item	2018	2017	2016	2015	2014
State member banks					
Total number	794	815	829	839	858
Total assets (billions of dollars)	2,851	2,729	2,577	2,356	2,233
Number of examinations	563	643	663	698	723
By Federal Reserve System	321	354	406	392	438
By state banking agency	242	289	257	306	285
Top-tier bank holding companies					
Large (assets of more than $1 billion)					
Total number	604	583	569	547	522
Total assets (billions of dollars)	19,233	18,762	17,593	16,961	16,642
Number of inspections	549	597	659	709	738
By Federal Reserve System[1]	533	574	646	669	706
On site	325	394	438	458	501
Off site	208	180	208	211	205
By state banking agency	16	23	13	40	32
Small (assets of $1 billion or less)					
Total number	3,273	3,448	3,682	3,719	3,902
Total assets (billions of dollars)	893	931	914	938	953
Number of inspections	2,216	2,318	2,597	2,783	2,824
By Federal Reserve System	2,132	2,252	2,525	2,709	2,737
On site	81	101	126	123	142
Off site	2,051	2,151	2,399	2,586	2,595
By state banking agency	84	66	72	74	87
Financial holding companies					
Domestic	490	492	473	442	426
Foreign	44	42	42	40	40

[1] For large bank holding companies subject to continuous, risk-focused supervision, includes multiple targeted reviews.

BHCs and 2,132 inspections of small, noncomplex BHCs.

In 2018, the Board adopted a new ratings framework for BHCs with $100 billion or more in assets, which was designed to align with the supervisory program for Large Institution Supervision Coordinating Committee (LISCC) firms and other large financial institutions. Under the system, known as LFI, these firms are assigned ratings for three separate components: Capital Planning and Positions; Liquidity Risk Management and Positions; and Governance and Controls. The Federal Reserve is using the new ratings framework to assign ratings to LISCC firms in 2019, and to other large financial institutions in 2020. (See box 1 for further explanation of the Board's newly adopted ratings system.)

Financial Holding Companies

Under the Gramm-Leach-Bliley Act, BHCs that meet certain capital, managerial, and other requirements may elect to become FHCs and thereby engage in a wider range of financial activities, including full-scope securities underwriting, merchant banking, and insurance underwriting and sales. As of year-end 2018, a total of 490 domestic BHCs and 44 foreign banking organizations had FHC status. Of the domestic FHCs, 25 had consolidated assets of $50 billion or more; 48, between $10 billion and $50 billion; 153, between $1 billion and $10 billion; and 264, less than $1 billion.

Savings and Loan Holding Companies

The Dodd-Frank Act transferred responsibility for supervision and regulation of SLHCs from the former Office of Thrift Supervision to the Federal Reserve in July 2011. At year-end 2018, a total of 379 SLHCs were in operation, of which 194 were top-tier SLHCs. These SLHCs control 203 depository institutions and include 16 companies engaged primarily in nonbanking activities, such as insurance underwriting (9 SLHCs), securities brokerage (3 SLHCs), and commercial activities (4 SLHCs). The 25 largest SLHCs accounted for more than $1.5 trillion of total combined assets. Approximately 91 percent of

Box 1. LFI Ratings Framework

In 2018, the Board adopted a new supervisory ratings framework for large financial institutions (LFIs) that is designed to align with the Federal Reserve's current supervisory programs and practices.[1] For these purposes, LFIs include bank holding companies and non-insurance, non-commercial savings and loan holding companies with total consolidated assets of $100 billion or more, and U.S. intermediate holding companies of foreign banking organizations established under Regulation YY with total consolidated assets of $50 billion or more.

In the years following the 2007-09 financial crisis, the Federal Reserve developed a supervisory program specifically designed to enhance resiliency and address the risks posed by large financial institutions to U.S. financial stability (LFI supervisory program). The LFI supervisory program focuses supervisory attention on capital, liquidity, and governance and controls, which were identified as the core areas that are most likely to threaten the firm's financial and operational strength and resilience.

[1] For more information about the supervisory framework, see SR letter 19-3/CA 19-2, "Large Financial Institution (LFI) Rating System" at https://www.federalreserve.gov/supervisionreg/srletters/sr1903.htm.

The new ratings system is applicable to these firms and is more closely aligned with the LFI supervisory program, so that the ratings more directly communicate the results of the Federal Reserve's supervisory assessment. The new ratings system also provides more transparency related to the supervisory consequences of a given rating.

The Federal Reserve would assign ratings to LFIs in the three core areas of supervision: capital planning and positions, liquidity risk management and positions, and governance and controls. The LFI rating system also uses a new rating scale, which includes the following four ratings categories: Broadly Meets Expectations, Conditionally Meets Expectations, Deficient-1, and Deficient-2. All three component ratings must be rated either "Broadly Meets Expectations" or "Conditionally Meets Expectations" for an LFI to be considered "well managed" for purposes of laws and regulations, including activity restrictions under the Bank Holding Company Act. The "Conditionally Meets Expectations" rating category enables the Federal Reserve to identify certain material issues at a firm and provide a firm with notice and the ability to fix those issues before the firm experiences regulatory consequences as a result of the ratings downgrade.

SLHCs engage primarily in depository activities. These firms hold approximately 20 percent ($331 billion) of the total combined assets of all SLHCs. The Office of the Comptroller of the Currency (OCC) is the primary regulator for most of the subsidiary savings associations of the firms engaged primarily in depository activities. Table 3 provides information on examinations of SLHCs for the past five years.

Several complex policy issues continue to be addressed by the Board, including those related to consolidated capital requirements for insurance SLHCs and issues pertaining to intermediate holding companies for commercial SLHCs. In June 2016, the Board issued an advance notice of proposed rule-making (ANPR) inviting comment on conceptual frameworks for capital standards that could apply to

Table 3. Savings and loan holding companies, 2014–18

Entity/item	2018	2017	2016	2015	2014
Top-tier savings and loan holding companies					
Large (assets of more than $1 billion)					
Total number	55	59	67	67	76
Total assets (billions of dollars)	1,615	1,696	1,664	1,525	1,493
Number of inspections	40	52	54	58	83
By Federal Reserve System	40	52	54	57	82
On site	20	31	34	31	45
Off site	20	21	20	26	37
Small (assets of $1 billion or less)					
Total number	139	164	171	194	221
Total assets (billions of dollars)	38	47	50	55	65
Number of inspections	107	165	181	187	212
By Federal Reserve System	107	165	181	187	212
On site	1	9	9	13	10
Off site	106	156	172	174	202

companies with significant insurance activities.[11] A request for public comment on the adoption of the formal rating system for certain SLHCs closed on February 13, 2017. On November 9, 2018, the Board determined that it would apply the formal rating system to SLHCs that are depository in nature. The determination does not apply the formal rating system to SLHCs engaged in significant insurance or commercial activities. Additionally, SLHCs that are depository in nature and have $100 billion or more in consolidated assets will be rated under the RFI rating system until the Board applies the new rating system for large financial institutions.

Savings and loan holding companies primarily engaged in insurance underwriting activities. The Federal Reserve supervises 9 insurance SLHCs (ISLHCs), with $886 billion in estimated total combined assets, and $151 billion in thrift assets. Of the ten, three firms have total assets greater than $100 billion, four firms have total assets between $10 billion and $100 billion, and three firms have total assets less than $10 billion. With the exception of two ISLHCs, each of which owns a thrift subsidiary that comprises roughly half of the firm's total assets, thrift subsidiary assets for most ISLHCs represent less than 25 percent of total assets.

As the consolidated supervisor of ISLHCs, the Federal Reserve evaluates the organization's risk-management practices, the financial condition of the overall organization, and the impact of the nonbank activities on the depository institution. The Federal Reserve focuses supervisory attention on legal entities and activities that are not directly supervised or regulated by state insurance regulators, including intercompany transactions between the depository institution and its affiliates. The Federal Reserve relies to the fullest extent possible on the work of state insurance regulators as part of the overall supervisory assessment of ISLHCs. The Federal Reserve has been active in engaging with the state departments of insurance and the National Association of Insurance Commissioners (NAIC) on general insurance supervision matters.

Financial Market Utilities

FMUs manage or operate multilateral systems for the purpose of transferring, clearing, or settling payments, securities, or other financial transactions among financial institutions or between financial institutions and the FMU. Under the Federal Reserve Act, the Federal Reserve supervises FMUs that are chartered as member banks or Edge Act corporations and coordinates with other federal banking supervisors to supervise FMUs considered bank service providers under the Bank Service Company Act.

In July 2012, the FSOC voted to designate eight FMUs as systemically important under title VIII of the Dodd-Frank Act. As a result of these designations, the Board assumed an expanded set of responsibilities related to these designated FMUs that include promoting uniform risk-management standards, playing an enhanced role in the supervision of designated FMUs, reducing systemic risk, and supporting the stability of the broader financial system. For certain designated FMUs, the Board established risk-management standards and expectations that are articulated in the Board's Regulation HH. In addition to setting minimum risk-management standards, Regulation HH establishes requirements for the advance notice of proposed material changes to the rules, procedures, or operations of a designated FMU for which the Board is the supervisory agency under title VIII. Finally, Regulation HH also establishes minimum conditions and requirements for a Federal Reserve Bank to establish and maintain an account for, and provide services to, a designated FMU.[12]

The Federal Reserve's risk-based supervision program for FMUs is administered by the FMU Supervision Committee (FMU-SC). The FMU-SC is a multidisciplinary committee of senior supervision, payment policy, and legal staff at the Board of Governors and Reserve Banks who are responsible for, and knowledgeable about, supervisory issues for FMUs. The FMU-SC's primary objective is to provide senior-level oversight, consistency, and direction to the Federal Reserve's supervisory process for FMUs. The FMU-SC coordinates with the LISCC on issues related to the roles of LISCC firms in FMUs as well as the payment, clearing, and settlement activities of LISCC firms and the FMU activities and implications for financial institutions in the LISCC portfolio.

In an effort to promote greater financial market stability and mitigate systemic risk, the Board works closely with the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Com-

[11] The ANPR is available at https://www.gpo.gov/fdsys/pkg/FR-2016-06-14/pdf/2016-14004.pdf. The comment period for this ANPR closed on September 16, 2016.

[12] The Federal Reserve Banks maintain accounts for and provide services to several designated FMUs.

mission (CFTC), both of which also have supervisory authority for certain FMUs. The Federal Reserve's work with these agencies under title VIII, including the sharing of appropriate information and participation in designated FMU examinations, aims to improve consistency in FMU supervision, promote robust FMU risk management, and improve regulators' ability to monitor and mitigate systemic risks.

Designated Nonbank Financial Companies

The Dodd-Frank Act requires the Board to apply enhanced prudential standards to the nonbank financial companies designated by the FSOC for supervision by the Board. There are currently no nonbank financial companies subject to Federal Reserve supervision.

In March 2019, the FSOC sought comment on proposed guidance to prioritize its efforts to identify, assess, and address potential risks and threats to U.S. financial stability through a process that emphasizes an activities-based approach. The proposed guidance indicated that the FSOC would pursue entity-specific determinations under the Dodd-Frank Act only if a potential risk or threat could not be addressed through an activities-based approach. This approach is intended to enable the FSOC to more effectively identify and address the underlying sources of risks to financial stability, rather than addressing risks only at a particular nonbank financial company that may be designated.

International Activities

The Federal Reserve supervises the foreign branches and overseas investments of state member banks, Edge Act and agreement corporations, and BHCs (including the investments by BHCs in export trading companies). In addition, it supervises the activities that foreign banking organizations conduct through entities in the United States, including branches, agencies, representative offices, and subsidiaries.

Foreign operations of U.S. banking organizations. In supervising the international operations of state member banks, Edge Act and agreement corporations, and BHCs, the Federal Reserve generally conducts its examinations or inspections at the U.S. head offices of these organizations, where the ultimate responsibility for the foreign offices resides. Examiners also visit the overseas offices of U.S. banking organizations to obtain financial and operating information and, in some instances, to test their adherence to safe and sound banking practices and compliance with rules and regulations. Examinations abroad are conducted with the cooperation of the supervisory authorities of the countries in which they take place; for national banks, the examinations are coordinated with the OCC.

At the end of 2018, a total of 29 member banks were operating 322 branches in foreign countries and overseas areas of the United States; 14 national banks were operating 271 of these branches, and 15 state member banks were operating the remaining 51. In addition, 6 nonmember banks were operating 14 branches in foreign countries and overseas areas of the United States.

Edge Act and agreement corporations. Edge Act corporations are international banking organizations chartered by the Board to provide all segments of the U.S. economy with a means of financing international business, especially exports. Agreement corporations are similar organizations, state or federally chartered, that enter into agreements with the Board to refrain from exercising any power that is not permissible for an Edge Act corporation. Sections 25 and 25A of the Federal Reserve Act grant Edge Act and agreement corporations permission to engage in international banking and foreign financial transactions. These corporations, most of which are subsidiaries of member banks, may (1) conduct a deposit and loan business in states other than that of the parent, provided that the business is strictly related to international transactions, and (2) make foreign investments that are broader than those permissible for member banks.

At year-end 2018, out of 36 banking organizations chartered as Edge Act or agreement corporations, 3 operated 6 Edge Act and agreement branches. These corporations are examined annually.

U.S. activities of foreign banks. Foreign banks continue to be significant participants in the U.S. banking system. As of year-end 2018, a total of 140 foreign banks from 48 countries operated 155 state-licensed branches and agencies, of which 6 were insured by the Federal Deposit Insurance Corporation (FDIC), and 57 OCC-licensed branches and agencies, of which 4 were insured by the FDIC. These foreign banks also owned 8 Edge Act and agreement corporations. In addition, they held a controlling interest in 39 U.S. commercial banks. Altogether, the U.S. offices of these foreign banks controlled approximately 20 percent of U.S. commercial

banking assets. These 140 foreign banks also operated 79 representative offices; an additional 36 foreign banks operated in the United States through a representative office. The Federal Reserve—in coordination with appropriate state regulatory authorities—examines state-licensed, non-FDIC-insured branches and agencies of foreign banks on site at least once every 18 months.[13] In most cases, on-site examinations are conducted at least once every 12 months, but the period may be extended to 18 months if the branch or agency meets certain criteria. As part of the supervisory process, a review of the financial and operational profile of each organization is conducted to assess the organization's ability to support its U.S. operations and to determine what risks, if any, the organization poses to the banking system through its U.S. operations. The Federal Reserve conducted or participated with state and federal regulatory authorities in 468 examinations of foreign banks in 2018.

Compliance with Regulatory Requirements

The Federal Reserve examines institutions for compliance with a broad range of legal requirements, including anti-money-laundering (AML) and consumer protection laws and regulations, and other laws pertaining to certain banking and financial activities. Most compliance supervision is conducted under the oversight of the Board's Division of Supervision and Regulation (S&R), but consumer compliance supervision is conducted under the oversight of the Division of Consumer and Community Affairs (DCCA).[14] The two divisions coordinate their efforts with each other and also with the Board's Legal Division to ensure consistent and comprehensive Federal Reserve supervision for compliance with legal requirements.

Anti-Money-Laundering Examinations

The Treasury regulations implementing the Bank Secrecy Act (BSA) generally require banks and other types of financial institutions to file certain reports and maintain certain records that are useful in criminal, tax, or regulatory proceedings. The BSA and separate Board regulations require banking organizations supervised by the Board to file reports on suspicious activity related to possible violations of federal law, including money laundering, terrorism financing, and other financial crimes. In addition, BSA and Board regulations require that banks develop written BSA compliance programs and that the programs be formally approved by bank boards of directors. The Federal Reserve is responsible for examining institutions for compliance with applicable AML laws and regulations and conducts such examinations in accordance with the Federal Financial Institutions Examination Council's (FFIEC's) *Bank Secrecy Act/Anti-Money Laundering Examination Manual*.[15]

Specialized Examinations

The Federal Reserve conducts specialized examinations of supervised financial institutions in the areas of information technology, fiduciary activities, transfer agent activities, and government and municipal securities dealing and brokering. The Federal Reserve also conducts specialized examinations of certain nonbank entities that extend credit subject to the Board's margin regulations.

Information Technology Activities

In 2018, the Federal Reserve contributed to FFIEC information systems and technology policy and emerging technology issues, including prescribing principles and guidance for the examination of financial institutions and their technology service providers to promote uniformity in the supervision of these entities. The Federal Reserve chaired the FFIEC's IT Subcommittee of the Task Force on Supervision, the primary interagency group responsible for coordination across member agencies on information technology policy activities. The IT Subcommittee conducted a conference for IT examiners from all of the FFIEC member agencies, which highlighted current and emerging technology issues affecting supervised institutions and their service providers. Additionally, the Federal Reserve contributed updates to the IT Examination Handbook to incorporate a more enterprise-wide, risk-management approach to the assessment of information technology and related risks at supervised institutions in reflection of changes that have occurred in technology and the financial sector.

In October 2018, the Cybersecurity and Critical Infrastructure Working Group (CCIWG) published an interagency joint statement on Office of Foreign

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[13] The OCC examines federally licensed branches and agencies, and the FDIC examines state-licensed FDIC-insured branches in coordination with the appropriate state regulatory authority.

[14] For a detailed discussion of consumer compliance supervision, refer to section 5, "Consumer and Community Affairs."

[15] The FFIEC is an interagency body of financial regulatory agencies established to prescribe uniform principles, standards, and report forms and to promote uniformity in the supervision of financial institutions. The council has six voting members: the Board of Governors of the Federal Reserve System, the FDIC, the National Credit Union Administration, the OCC, the Consumer Financial Protection Bureau, and the chair of the State Liaison Committee.

Assets Control (OFAC) sanctions to raise awareness that entities were targeting U.S. financial institutions with malicious software and services. Because of the nature of the claims under OFAC's Cyber-Related Sanctions Program, financial institutions were advised to assess the risk of having, or continuing to use, sanctioned entities' software and services. In recognition of National Cybersecurity Awareness Month, the CCIWG hosted a webinar on October 31, 2018, to announce free public and private sector resources to help financial institutions enhance their resilience.

Fiduciary Activities

The Federal Reserve has supervisory responsibility for state member banks and some nondepository trust companies, which hold assets in various fiduciary and custodial capacities. On-site examinations of fiduciary and custodial activities are risk-focused and entail the review of an organization's compliance with laws, regulations, and general fiduciary principles, including effective management of conflicts of interest; management of legal, operational, and compliance risk exposures; the quality and level of earnings; the management of fiduciary assets; and audit and control procedures. In 2018, Federal Reserve examiners conducted 95 fiduciary examinations of state member banks and nondepository trust companies.

Transfer Agents

As directed by the Securities Exchange Act of 1934, the Federal Reserve conducts specialized examinations of those state member banks and BHCs that are registered with the Board as transfer agents. Among other things, transfer agents countersign and monitor the issuance of securities, register the transfer of securities, and exchange or convert securities. On-site examinations focus on the effectiveness of an organization's operations and its compliance with relevant securities regulations. During 2018, the Federal Reserve conducted transfer agent examinations at two state member banks that were registered as transfer agents.

Government and Municipal Securities Dealers and Brokers

The Federal Reserve is responsible for examining state member banks and foreign banks for compliance with the Government Securities Act of 1986 and with the Treasury regulations governing dealing and brokering in government securities. Fourteen state member banks and six state branches of foreign banks have notified the Board that they are government securities dealers or brokers not exempt from the Treasury's regulations. During 2018, the Federal Reserve conducted six examinations of broker-dealer activities in government securities at these organizations. These examinations are generally conducted concurrently with the Federal Reserve's examination of the state member bank or branch.

The Federal Reserve is also responsible for ensuring that state member banks and BHCs that act as municipal securities dealers comply with the Securities Act Amendments of 1975. Municipal securities dealers are examined, pursuant to the Municipal Securities Rulemaking Board's rule G-16, at least once every two calendar years. Five entities supervised by the Federal Reserve that dealt in municipal securities were examined during 2018.

Securities Credit Lenders

Under the Securities Exchange Act of 1934, the Board is responsible for regulating credit in certain transactions involving the purchasing or carrying of securities. As part of its general examination program, the Federal Reserve examines the banks under its jurisdiction for compliance with the Board's Regulation U. In addition, the Federal Reserve maintains a registry of persons other than banks, brokers, and dealers who extend credit subject to Regulation U. The Federal Reserve may conduct specialized examinations of these lenders if they are not already subject to supervision by the Farm Credit Administration (FCA) or the National Credit Union Administration (NCUA).

Cybersecurity and Critical Infrastructure

The Federal Reserve collaborated with other financial regulators, the U.S. Treasury, private industry, and international partners to promote effective safeguards against cyber threats to the financial services sector and to bolster the sector's cyber resiliency. Throughout the year, Federal Reserve examiners conducted targeted cybersecurity assessments of the largest and most systemically important financial institutions (SIFIs), FMUs, and technology service providers (TSPs). The Federal Reserve worked closely with the OCC and FDIC to develop and implement improved examination procedures for the cybersecurity assessments of TSPs. Federal Reserve examiners also continued to conduct tailored cybersecurity assessments at community and regional banking organizations.

In October 2018, the Federal Reserve presented a webinar to examiners to inform them of internal

resources to assist financial institutions in meeting their control objectives, regardless of whether they use the FFIEC Cybersecurity Assessment Tool, National Institute for Standards and Technology (NIST) Cybersecurity Framework, Financial Services Sector Specific Cybersecurity Profile, or any other methodology to assess their cybersecurity preparedness. Also, in December 2018, the Federal Reserve issued an advisory letter to examiners and other supervisory staff responsible for responding to cyber and security incidents at supervised institutions. The advisory letter formalizes roles, responsibilities, and process guiding S&R's response to cyber and security incidents, and implements a playbook to guide response actions and interdivisional communication during and after incidents.

In 2018, the Financial and Banking Information Infrastructure Committee (FBIIC) Harmonization Working Group (HWG), chaired by the Federal Reserve, analyzed the cyber terms and definitions used by the FBIIC agencies in published cyber-related laws, regulations, tools, and guidance. The HWG sought to identify instances of the FBIIC agencies using different definitions for the same cyber terms. Going forward, the agencies agreed to use NIST as the primary source of cyber terms and definitions in cyber-related regulations, tools and guidance. Also in 2018, representatives of the HWG conducted outreach to a number of financial institutions with multiple regulators to gather information that would help the HWG identify opportunities to improve regulatory harmonization and the coordination of cyber examinations.

The Federal Reserve actively participated in interagency groups, such as the FFIEC's CCIWG and the FBIIC to share information and collaborate on cybersecurity and critical infrastructure issues impacting the financial sector. In coordination with FBIIC members, the Federal Reserve collaborated with government and industry partners to plan and execute sector-wide and regional tabletop exercises focused on identifying areas where sector resiliency, information sharing, and public-private collaboration can be enhanced with respect to potential cybersecurity incidents. The exercises focused on tactical, strategic, operational, and financial stability considerations that tested both government and private sector processes and capabilities for addressing cyber incidents across the financial services sector.

In addition, the Federal Reserve was actively involved in international policy coordination to address cyber-related risks and efforts to bolster cyber resiliency. The Federal Reserve supported the Group of Seven (G-7) Fundamental Elements of Threat-led Penetration Testing and Third Party Cyber Risk Management in the Financial Sector and the development of incident coordination protocols to enhance international coordination and knowledge sharing. The Federal Reserve also supported the Financial Stability Board's (FSB's) cyber lexicon for the financial sector. Additional information about the FSB cyber lexicon is available at http://www.fsb.org/2018/11/cyber-lexicon/.

Enforcement Actions

The Federal Reserve has enforcement authority over the financial institutions it supervises and their affiliated parties. Enforcement actions may be taken to address unsafe and unsound practices or violations of any law or regulation. Formal enforcement actions include cease and desist orders, written agreements, prompt corrective action directives, removal and prohibition orders, and civil money penalties. In 2018, the Federal Reserve completed 92 formal enforcement actions. Civil money penalties totaling $223,960,223 were assessed. As directed by statute, all civil money penalties are remitted to either the Treasury or the Federal Emergency Management Agency. Enforcement orders and prompt corrective action directives, which are issued by the Board, and written agreements, which are executed by the Reserve Banks, are made public and are posted on the Board's website (https://www.federalreserve.gov/apps/enforcementactions/search.aspx).

In 2018, the Reserve Banks completed 62 informal enforcement actions. Informal enforcement actions include memoranda of understanding (MOU), commitment letters, and board of directors' resolutions.

Surveillance and Off-Site Monitoring

The Federal Reserve uses automated screening systems to monitor the financial condition and performance of state member banks and BHCs in the period between on-site examinations. Such monitoring and analysis helps direct examination resources to institutions that have higher risk profiles. Screening systems also assist in the planning of examinations by identifying companies that are engaging in new or complex activities.

The primary offsite monitoring tool used by the Federal Reserve is the Supervision and Regulation Statistical Assessment of Bank Risk (SR-SABR) model. Drawing mainly on the financial data that banks report on their Reports of Condition and Income

(Call Reports), SR-SABR uses econometric techniques to identify banks that report financial characteristics weaker than those of other banks assigned similar supervisory ratings. To supplement the SR-SABR screening, the Federal Reserve also monitors various market data, including equity prices, debt spreads, agency ratings, and measures of expected default frequency, to gauge market perceptions of the risk in banking organizations. In addition, the Federal Reserve prepares quarterly Bank Holding Company Performance Reports (BHCPRs) for use in monitoring and inspecting supervised banking organizations. The BHCPRs, which are compiled from data provided by large BHCs in quarterly regulatory reports (FR Y-9C and FR Y-9LP), contain, for individual companies, financial statistics and comparisons with peer companies. BHCPRs are made available to the public on the National Information Center (NIC) website, which can be accessed at https://www.ffiec.gov.

Federal Reserve analysts use Performance Report Information and Surveillance Monitoring (PRISM), a querying tool, to access and display financial, surveillance, and examination data. In the analytical module, users can customize the presentation of institutional financial information drawn from Call Reports, Uniform Bank Performance Reports, FR Y-9 statements, BHCPRs, and other regulatory reports. In the surveillance module, users can generate reports summarizing the results of surveillance screening for banks and BHCs. During 2018, one major and five minor upgrades to the web-based PRISM application were completed to enhance the user's experience and provide the latest technology.

The Federal Reserve works through the FFIEC Task Force on Surveillance Systems to coordinate surveillance activities with the other federal banking agencies.

Training and Technical Assistance

The Federal Reserve provides training and technical assistance to foreign supervisors and minority-owned depository institutions.

International Training and Technical Assistance

In 2018, the Federal Reserve continued to provide training and technical assistance on supervisory matters to foreign central banks and supervisory authorities. Technical assistance involves visits by Federal Reserve staff members to foreign authorities as well as consultations with foreign supervisors who visit the Board of Governors or the Reserve Banks.

The Federal Reserve offered a number of training programs for the benefit of foreign supervisory authorities, which were held both in the United States and in many foreign jurisdictions. Federal Reserve staff took part in technical assistance and training assignments led by the International Monetary Fund, the World Bank, and the Financial Stability Institute. The Federal Reserve also contributed to the regional training provided under the Asia-Pacific Economic Cooperation Financial Regulators Training Initiative. Other training partners that collaborated with the Federal Reserve during 2018 to organize regional training programs included the South East Asian Central Banks Research and Training Centre, the Caribbean Group of Banking Supervisors, the Reserve Bank of India, the Arab Monetary Fund, the European Central Bank, and the Association of Supervisors of Banks of the Americas.

Efforts to Support Minority-Owned Depository Institutions

The Federal Reserve System implements its responsibilities under section 367 of the Dodd-Frank Act primarily through its Partnership for Progress (PFP) program. Established in 2008, this program promotes the viability of minority depository institutions (MDIs) by facilitating activities designed to strengthen their business strategies, maximize their resources, and increase their awareness and understanding of supervisory expectations. In addition, the Federal Reserve continues to maintain the PFP website, which supports MDIs by providing them with technical information and links to useful resources (https://www.fedpartnership.gov). Representatives from each of the 12 Federal Reserve Districts, along with staff from the S&R and DCCA divisions at the Board of Governors, continue to offer technical assistance tailored to MDIs by providing targeted supervisory guidance, identifying additional resources, and fostering mutually beneficial partnerships between MDIs and community organizations. As of year-end 2018, the Federal Reserve's MDI portfolio consisted of 14 state member banks.

In 2018, the Federal Reserve System continued to support MDIs through the following activities:

- Staff of the PFP program organized the first biannual MDI Leadership Forum that took place April 19–20, 2018, in Washington, D.C. The MDI Leadership Forum will continue as a biannual opportunity for the Fed to host CEOs of a number of state-member-bank (SMB) MDIs to provide

them with an opportunity to express their experiences and challenges and provide the PFP staff with an opportunity to improve our communication and outreach. In addition, it provides an opportunity for Federal Reserve staff to present on a number of pertinent supervision and regulation and consumer affairs topics. The conference was attended by senior level officers from SMB MDIs supervised by the Federal Reserve. During the course of the Leadership Forum, the senior level officers also had an opportunity to speak with the Vice Chairman of the Federal Reserve Board concerning issues particular to MDIs. The next Leadership Forum will take place in 2020.

- In April 2018, the Federal Reserve System, together with the other federal banking agencies sent representatives to present at the Native Banks Gathering II in Shawnee, Oklahoma. This gathering was a collaborative assembly of native-owned banks sponsored by the Citizen Potawatomi Nation, the Federal Reserve Bank of Minneapolis' Center for Indian Country Development, and the Board of Governors, in conjunction with the Office of Indian Energy and Economic Development, a division under the U.S. Department of Interior's Bureau of Indian Affairs. The Federal Reserve discussed "Banking in Indian Country" and provided "A Washington Perspective on the Banking Industry and the Opportunities of Minority-Owned Banks." The goal of the gathering was to familiarize native-owned banks with the Indian Loan Guarantee Program and to better understand opportunities for growth and diversification of portfolios for all Native American and Alaskan Native businesses. The gathering helped identify new growth strategies and ways to increase revenue streams to contribute to the nurturing of vital, strong economies in Indian Country.
- On August 27, 2018, the Federal Reserve Board of Governors and the Center for Indian Country Development at the Federal Reserve Bank of Minneapolis organized a peer-to-peer meeting for Native American banks, Native American credit unions, and Native American community development financial institutions. The meeting was held at the Flathead Reservation of the Confederated Salish and Kootenai Tribes, Polson, Montana, with the goal of the gathering being one of sharing best banking practices and developing networks to better serve the financial needs of Native Americans and their communities.
- P4P staff and a senior Board employee attended the annual National Bankers Association meeting in October 2018 in Washington, D.C., and hosted an exhibit table.
- System staff provided technical assistance to the industry through the presentation of commissioned research results on a webinar open to the MDI audience; provided examiner training via a Rapid Response Session educating Federal Reserve examiners on the mission of the P4P program.
- The Board of Governors co-sponsored the Forum for Minority Bankers with the Federal Reserve Banks of Kansas City (lead sponsor), Philadelphia, Richmond, Atlanta, Chicago, St. Louis, and Dallas. The forum is a national program that provides minority bank leaders with industry knowledge and professional development. The forum was held in September 2018 in Charlotte, North Carolina.

International Coordination on Supervisory Policies

As a member of several international financial standard-setting bodies, the Federal Reserve actively participates in efforts to advance sound supervisory policies for internationally active financial organizations and to enhance the strength and stability of the international financial system.

Basel Committee on Banking Supervision

During 2018, the Federal Reserve contributed to supervisory policy recommendations, reports, and papers issued for consultative purposes or finalized by the BCBS that are designed to improve the supervision of banking organizations' practices and to address specific issues that emerged during the financial crisis. Of note, the Federal Reserve contributed to the finalization of the capital requirements for market risk, the revised assessment methodology for global systemically important banking organizations, supervisory guidelines related to stress testing and fintech developments, and further updates to the Basel III disclosure requirements. The Federal Reserve also participated in ongoing international initiatives to track the progress of implementation of the BCBS framework in member countries.

Final BCBS documents issued in 2018 include

- *Sound practices: Implications of fintech developments for banks and bank supervisors* (issued in Feb-

ruary and available at https://www.bis.org/bcbs/publ/d431.pdf).

- *Progress report on adoption of the Basel regulatory framework* (issued in April and October and available at https://www.bis.org/bcbs/publ/d440.pdf and https://www.bis.org/bcbs/publ/d452.pdf).
- *Capital treatment for short-term "simple, transparent and comparable" securitizations* (issued in May and available at https://www.bis.org/bcbs/publ/d442.pdf).
- *Treatment of extraordinary monetary policy operations in the Net Stable Funding Ratio* (issued in June and available at https://www.bis.org/bcbs/publ/d444.pdf).
- *Global systemically important banks: revised assessment methodology and the higher loss absorbency requirements* (issued in July and available at https://www.bis.org/bcbs/publ/d445.pdf).
- *Pillar 3 disclosure requirements – regulatory treatment of accounting provisions* (issued in August and available at https://www.bis.org/bcbs/publ/d446.pdf).
- *Stress testing principles* (issued in October and available at https://www.bis.org/bcbs/publ/d450.pdf).
- *Cyber-resilience: Range of practices* (issued in December and available at https://www.bis.org/bcbs/publ/d454.pdf).
- *Pillar 3 disclosure requirements – updated framework* (issued in December and available at https://www.bis.org/bcbs/publ/d455.pdf).
- *Minimum capital requirements for market risk* (issued in December and available at https://www.bis.org/bcbs/publ/d457.pdf).

Consultative BCBS documents issued in 2018 include

- *Leverage ratio treatment of client cleared derivatives* (issued in October and available at https://www.bis.org/bcbs/publ/d451.pdf).
- *Revisions to the leverage ratio disclosure requirements* (issued in December and available at https://www.bis.org/bcbs/publ/d456.pdf).

Financial Stability Board

In 2018, the Federal Reserve continued its participation in the activities of the FSB, an international group that helps coordinate the work of national financial authorities and international standard-setting bodies, and develops and promotes the implementation of financial sector policies in the interest of financial stability.

FSB publications issued in 2018 include

- *Monitoring the technical implementation of the FSB total loss-absorbing capacity (TLAC) standard* (issued in June and available at http://www.fsb.org/wp-content/uploads/P060618.pdf).
- *Crypto-assets: Report to the G20 on the work of the FSB and standard-setting bodies* (issued in July and available at http://www.fsb.org/wp-content/uploads/P160718-1.pdf).
- *Incentives to centrally clear over-the-counter derivatives* (issued jointly by the BCBS, the Committee on Payments and Market Infrastructures, and the International Organization of Securities Commissions in August and available at http://www.fsb.org/wp-content/uploads/P070818.pdf).

Committee on Payments and Market Infrastructures

In 2018, the Federal Reserve continued its active participation in the activities of the CPMI, a forum in which central banks promote the safety and efficiency of payment, clearing and settlement activities and related arrangements. In conducting its work on financial market infrastructure and market-related reforms, the CPMI often coordinated with the International Organization of Securities Commissions (IOSCO). Over the course of 2018, CPMI-IOSCO continued to monitor implementation of the Principles for Financial Market Infrastructures. Additionally, CPMI-IOSCO published a framework for supervisory stress testing of central counterparties as well as two additional reports as part of a series on critical, over-the-counter data elements. The CPMI also issued a report on cross border retail payments, released its final strategy on addressing the risk of wholesale payments fraud related to endpoint security, and, jointly with the Markets Committee, prepared a report on central bank digital currencies. Additional information is available at http://www.bis.org/.

International Association of Insurance Supervisors

The Federal Reserve continued its participation in 2018 in the development of international supervisory standards and guidance to ensure that they are appropriate for the U.S. insurance market. The Federal Reserve continues to participate actively in standard setting at the IAIS in consultation and collabo-

ration with state insurance regulators, the NAIC, and the Federal Insurance Office to present a coordinated U.S. voice in these proceedings. The Federal Reserve's participation focuses on those aspects most relevant to financial stability and consolidated supervision.

In 2018, the IAIS issued for public consultation the revised text of five Insurance Core Principles (ICPs) as well as certain associated standards and guidance specific to supervision of internationally active insurance groups, and adopted revisions to one of these ICPs (covering change of control and portfolio transfers).[16] The IAIS plans to adopt revisions to all of these ICPs by year-end 2019.[17]

The IAIS also issued a second version of its developing Insurance Capital Standard in July 2018.[18] In addition, the IAIS issued several final and consultative reports as well as research reports in 2018.[19]

Papers and reports:

- Issues Paper on Index-based Insurances Particularly in Inclusive Insurance Markets (issued in June and available at https://www.iaisweb.org/page/supervisory-material/issues-papers/file/75169/issues-paper-on-index-based-insurances-particularly-in-inclusive-insurance-markets).
- IAIS and [Sustainable Insurance Forum] Issues Paper on Climate Change Risks to the Insurance Sector (issued in July and available at https://www.iaisweb.org/page/supervisory-material/issues-papers/file/76026/sif-iais-issues-paper-on-climate-changes-risk).
- Issues Paper on Increasing Digitalization in Insurance and its Potential Impact on Consumer Outcomes (issued in November and available at https://www.iaisweb.org/page/supervisory-material/issues-papers/file/77816/issues-paper-on-increasing-digitalisation-in-insurance-and-its-potential-impact-on-consumer-outcomes).
- Application Paper on the Use of Digital Technology in Inclusive Insurance (issued in November and available at https://www.iaisweb.org/page/supervisory-material/application-papers/file/77815/application-paper-on-the-use-of-digital-technology-in-inclusive-insurance).
- Application Paper on Supervision of Insurer Cybersecurity (issued in November and available at https://www.iaisweb.org/page/supervisory-material/application-papers/file/77763/application-paper-on-supervision-of-insurer-cybersecurity).
- Application Paper on the Composition and the Role of the Board (issued in November and available at https://www.iaisweb.org/page/supervisory-material/application-papers/file/77741/application-paper-on-the-composition-and-the-role-of-the-board).

Consultative papers:

- *Holistic Framework for Systemic Risk in the Insurance Sector* (issued in November and available at https://www.iaisweb.org/page/consultations/closed-consultations/2019/holistic-framework-for-systemic-risk-in-the-insurance-sector/file/77862/holistic-framework-for-systemic-risk-consultation-document).
- Application Paper on Proactive Supervision of Corporate Governance (issued in November and available at https://www.iaisweb.org/page/consultations/closed-consultations/2018/application-paper-on-proactive-supervision-of-corporate-governance/file/77733/draft-application-paper-on-proactive-supervision-of-corporate-governance).
- Application Paper on Recovery Planning (issued in November and available at https://www.iaisweb.org/page/consultations/closed-consultations/2018/application-paper-on-recovery-planning/file/77804/draft-application-paper-on-recovery-planning).

Accounting Policy

The Federal Reserve supports sound corporate governance and effective accounting and auditing practices for all regulated financial institutions. Accordingly, the Federal Reserve's accounting policy function is responsible for providing expertise in policy development and implementation efforts, both within and outside the Federal Reserve System, on issues affecting the banking and insurance industries in the areas of accounting, auditing, internal controls over financial reporting, financial disclosure, and supervisory financial reporting.

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[16] This material is addressed in ICP 6.

[17] Additional information is available at https://www.iaisweb.org/page/supervisory-material/insurance-core-principles/file/78064/timeline-of-comframe-development-and-icps-revision.

[18] Additional information is available at https://www.iaisweb.org/page/supervisory-material/insurance-capital-standard/file/76133/ics-version-20-public-consultation-document.

[19] Additional information is available at https://www.iaisweb.org.

Federal Reserve staff regularly consult with key constituents in the accounting and auditing professions, including domestic and international standard-setters, accounting firms, accounting and financial sector trade groups, and other financial sector regulators to facilitate the Board's understanding of domestic and international practices; proposed accounting, auditing, and regulatory standards; and the interactions between accounting standards and regulatory reform efforts. The Federal Reserve also participates in various accounting, auditing, and regulatory forums in order to both formulate and communicate its views.

The Financial Accounting Standards Board (FASB) issued an accounting standard in 2016 that overhauls the accounting for credit losses with a new impairment model based on the Current Expected Credit Losses (CECL) methodology. CECL's implementation will affect a broad range of supervisory activities, including regulatory reports, examinations, and examiner training. During 2018, the Federal Reserve together with the other federal banking agencies continued to monitor the industry's implementation efforts, and provided comments on significant interpretations as observers of the FASB's Transition Resource Group and through outreach and routine discussions with standard setters and other stakeholders, as described above. During 2018, the Board, along with the OCC and FDIC issued a comment letter on the FASB's proposed codification improvements to financial instruments guidance on credit losses.

Other notable outreach efforts during 2018 include the Federal Reserve co-hosting a series of "Ask the Regulators" webinars in February and July on "Practical Examples of How Smaller, Less Complex Community Banks can Implement CECL" and "CECL Q&A for Community Institutions," respectively. In December 2018, the Board, along with the OCC and FDIC, issued a final rule that provides firms with the option to phase in the day-one adverse regulatory capital effects of CECL over a three-year period. Separately, in December 2018, the Board issued a statement on supervisory stress testing, announcing that it will maintain the current modeling framework for loan allowances in its supervisory stress test through 2021.

Federal Reserve staff continued to participate in meetings of the BCBS Accounting Experts Group and the IAIS Accounting and Auditing Working Group. These groups represent their respective organizations at international meetings on accounting, auditing, and disclosure issues affecting global banking and insurance organizations. Working with international bank supervisors, Federal Reserve staff contributed to the development of publications and a comment letter that were issued by the BCBS, including guidelines on identification and management of step-in risk and a comment letter to the International Auditing and Assurance Standards Board on the proposed auditing standard on identifying and assessing the risk of material misstatement. In collaboration with international insurance supervisors, Federal Reserve staff also made contributions to work related to enhancing IAIS standards on disclosures and drafting comment letters to standard setters on accounting and audit exposure documents.

Additionally, Federal Reserve staff provided their accounting and business expertise through participation in other supervisory activities during the past year. These activities included supporting Dodd-Frank Act initiatives related to stress testing of banks as well as various regulatory capital-related issues.

Credit-Risk Management

The Federal Reserve works with the other federal banking agencies to develop guidance on the management of credit risk; to coordinate the assessment of regulated institutions' credit-risk management practices; and to ensure that institutions properly identify, measure, and manage credit risk. The Federal Reserve jointly with other federal banking agencies develops and maintains a regulatory framework covering the use of real estate appraisals in federally related transactions engaged in by regulated institutions; a component in the management of credit risk.

Shared National Credit Program

The Shared National Credit (SNC) program is a key supervisory program employed by the Federal Reserve and the other federal banking agencies to ensure the safety and soundness of the financial system. SNC is a long-standing program used to assess credit risk and trends as well as underwriting and risk-management practices associated with the largest and most complex loans shared by multiple regulated financial institutions. The program also provides for uniform treatment and increased efficiency in shared credit risk analysis and classification.

A SNC is any loan or formal loan commitment—and any asset, such as other real estate, stocks, notes, bonds, and debentures taken as debts previously contracted—extended to borrowers by a supervised institution, its subsidiaries, and affiliates, which has the

following characteristics: an original loan amount that aggregates to $100 million or more[20] and either (1) is shared by three or more unaffiliated supervised institutions under a formal lending agreement, or (2) a portion of which is sold to two or more unaffiliated supervised institutions with the purchasing institutions assuming their pro rata share of the credit risk.

At the end of 2018, the SNC portfolio totaled $4.4 trillion, with 8,567 credit facilities to 5,314 borrowers. Summary examination findings rate the overall risk in the SNC portfolio as moderate, given the asset quality outside of leveraged loans. The percentages of non-pass (aggregate special mention and classified) assets declined from 2017,[21] largely due to improving conditions in the oil and gas sectors. Despite the improvement in the percentage of non-pass commitments, the overall level of criticized assets continued to be higher than observed in previous periods of economic expansion, such that losses could rise considerably in the event of an economic downturn. During prior cycles, non-investment-grade borrowers relied more heavily on the high-yield bond market to finance operations. Today, those borrowers, especially when controlled by financial sponsors, tend to favor the syndicated loan market for their financing needs. As a result, the current portfolio reflects a larger volume of riskier paper in aggregate.

Leveraged lending accounts for a substantial portion of the SNC portfolio and remains a key focus in the agencies' broader effort to evaluate overall safety and soundness of bank underwriting and risk-management practices. Risks associated with leveraged lending activities are building, as contrasted with the SNC portfolio overall. Leveraged loans with supervisory ratings below pass typically reflect borrowers with higher than average leverage levels and weaker repayment capabilities. The SNC review found that many leveraged loan transactions possess weakened transaction structures and increased reliance upon revenue growth or anticipated cost savings/synergies to support borrower repayment capacity. Weaknesses include the prevalence of covenant lite transactions, incremental facilities with limited lending restrictions, and loan agreement language which allows the removal of assets to unrestricted subsidiaries. Borrowers possess greater control over lending relationships and market dynamics are changing. Non-regulated entities have increased their participation in the leveraged lending market via both purchases of loans and/or direct underwriting and syndication of exposure. More leveraged lending risk is being transferred to these non-regulated entities.

For more information on the 2018 SNC review, visit the Board's website at https://www.federalreserve.gov/newsevents/pressreleases/bcreg20190125a.htm

Compliance Risk Management

The Federal Reserve works with international and domestic supervisors to develop guidance that promotes compliance with Bank Secrecy Act and anti-money-laundering compliance (BSA/AML) and counter-terrorism (CFT) laws.

Bank Secrecy Act and Anti-Money-Laundering Compliance

In 2018, the Federal Reserve continued to actively promote the development and maintenance of effective BSA/AML compliance risk-management programs, including developing supervisory strategies and providing guidance to the industry on trends in BSA/AML compliance. For example, the Federal Reserve supervisory staff participated in a number of industry conferences to continue to communicate regulatory expectations and policy interpretations for financial institutions.

The Federal Reserve is a member of the Treasury-led BSA Advisory Group, which includes representatives of regulatory agencies, law enforcement, and the financial services industry and covers all aspects of the BSA. In October 2018, the Federal Reserve, in conjunction with the World Bank and International Monetary Fund, hosted the Seminar for Senior Bank Supervisors from Emerging Economies which was attended by representatives from over 45 foreign jurisdictions. That seminar included a discussion of anti-money-laundering developments for banks designed to promote information sharing and understanding of BSA/AML issues. In addition, the Federal Reserve participated in meetings during the year to discuss BSA/AML issues with delegations from Canada and Japan.

The Federal Reserve participates in the FFIEC BSA/AML working group, a monthly forum for the dis-

[20] In December 2017, the agencies issued a press release and amended the SNC definition to raise the qualifying threshold from $20 million to $100 million from 2018 onwards. See https://www.federalreserve.gov/newsevents/pressreleases/bcreg20171221c.htm.

[21] Results discussed here are based on examinations conducted in the first and third quarters of 2018, and cover loan commitments originated on or before March 31, 2018.

cussion of pending BSA policy and regulatory matters. In addition to the FFIEC agencies, the BSA/AML working group includes the Financial Crimes Enforcement Network (FinCEN) and, on a quarterly basis, the SEC, the CFTC, the Internal Revenue Service, and OFAC. The FFIEC BSA/AML working group is responsible for updating the FFIEC *Bank Secrecy Act/Anti-Money Laundering Examination Manual*. The FFIEC developed this manual as part of its ongoing commitment to provide current and consistent interagency guidance on risk-based policies, procedures, and processes for financial institutions to comply with the BSA and safeguard their operations from money laundering and terrorist financing. Throughout 2018, the Federal Reserve continued to regularly share examination findings and enforcement proceedings with FinCEN as well as with OFAC under the interagency MOUs finalized in 2004 and 2006.

International Coordination on Sanctions, Anti-Money-Laundering, and Counter-Terrorism Financing

The Federal Reserve participates in a number of international coordination initiatives related to sanctions, money laundering, and terrorism financing. The Federal Reserve has a long-standing role in the U.S. delegation to the intergovernmental Financial Action Task Force (FATF) and its working groups, contributing a banking supervisory perspective to the formulation of international standards. The Federal Reserve participated in the development of FATF Guidance on Regulation of Virtual Assets published in October 2018.

The Federal Reserve also continues to participate in committees and subcommittees through the Bank for International Settlements. Specifically, the Federal Reserve actively participates in the AML Experts Group under the BCBS that focuses on AML and CFT issues as well as the CPMI. The Federal Reserve participated in the BCBS, CPMI, FATF, and FSB joint issuance welcoming the Correspondent Banking Due Diligence Questionnaire published by the Wolfsberg Group, as one of the industry initiatives that will help to address the decline in the number of correspondent banking relationships by facilitating due diligence processes.

Incentive Compensation

The Federal Reserve believes that supervision of incentive compensation programs at financial institutions can play an important role in helping safeguard financial institutions against practices that threaten safety and soundness, provide for excessive compensation, or could lead to material financial loss. The Federal Reserve along with the other federal banking agencies adopted interagency guidance oriented to the risk-taking incentives created by incentive compensation arrangements in June 2010. The guidance is based on the principles that incentive compensation arrangements at a banking organization should provide employees incentives that appropriately balance risk and financial results; be compatible with effective controls and risk management; and be supported by strong corporate governance.

Section 956 of the Dodd-Frank Act requires the Board, OCC, FDIC, SEC, NCUA, and FHFA to develop joint regulations or guidelines implementing disclosures and prohibitions concerning incentive-based compensation at covered financial institutions with at least $1 billion in assets. The agencies published a revised proposed rule in 2016.

Guidance on Guidance

The federal banking agencies issue various types of supervisory guidance, including interagency statements advisories, bulletins, policy statements, questions and answers, and frequently asked questions, to their respective supervised institutions. In September 2018, the Federal Reserve—along with other federal financial agencies—issued a statement confirming the proper role of this supervisory guidance. The statement clarified that unlike a law or regulation, supervisory guidance does not have the force and effect of law. Examiners cannot cite a financial institution for a violation of supervisory guidance as they would violation of a law or regulation. To ensure that supervisory guidance is properly applied, the Federal Reserve has taken several steps since issuance of the statement, including conducting several internal training sessions, providing internal examination materials, more closely reviewing draft supervisory communications to institutions, and coordinating with other federal banking agencies. The Federal Reserve remains committed to ensuring the proper role of guidance in the supervisory process going forward.

Regulatory Reports

The Federal Reserve and the other U.S. federal banking agencies have the authority to require banks and holding companies to submit information, on both a solo and a consolidated basis, on their financial condition, performance, and risks, at regular intervals. The Federal Reserve's data collections, reporting, and governance function is responsible for develop-

ing, coordinating, and implementing regulatory reporting requirements for various financial reporting forms filed by domestic and foreign financial institutions subject to Federal Reserve supervision. Federal Reserve staff members interact with other federal agencies, state supervisors, and, as needed, foreign bank supervisors, to recommend and implement appropriate and timely revisions to the reporting forms and the attendant instructions.

Federal Reserve Regulatory Reports

The Federal Reserve requires that U.S. holding companies (HCs) periodically submit reports that provide information about their financial condition and structure.[22] This information is essential to formulating and conducting financial institution regulation and supervision. It is also used to respond to information requests by Congress and the public about HCs and their nonbank subsidiaries. Foreign banking organizations also are required to periodically submit reports to the Federal Reserve. For more information on the various reporting forms, see https://www.federalreserve.gov/apps/reportforms/default.aspx.

During 2018, the following reporting forms had substantive revisions:

- **FR Y-9C**—to implement a number of burden-reducing revisions corresponding to Call Report revisions, as applicable. The revisions, effective June 2018, included deleting certain data items, consolidating existing data items into new data items, and adding new or raising existing reporting thresholds for certain data items. These changes affected approximately 28 percent of the data items collected for holding companies filing the FR Y-9C. Additionally, several reporting schedules were revised in response to changes in the accounting for equity securities, and changes to the definitions of reciprocal deposits brokered deposits and high volatility commercial real estate exposures. Effective September 2018, the reporting threshold was increased from $1 billion or more to $3 billion or more in total consolidated assets, as a result of section 207 of the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA) (box 2). EGRRCPA directed the Board to revise the Small Bank Holding Company Policy Statement (Policy Statement) to raise the total consolidated asset limit in the Policy Statement from $1 billion to $3 billion in total consolidated assets. As a result of this change, nearly 55 percent of holding companies filing the Y-9C quarterly report became eligible to file the significantly shorter semiannual FR Y-9SP report.
- **FR Y-9LP and FR Y-9SP**—to implement revisions in response to changes in the accounting for equity securities, effective March 2018. Effective September 2018, reporting thresholds on these forms were modified as a result of EGRRCPA section 207. The FR Y-9LP reporting threshold was increased to $3 billion or more in total consolidated assets (from $1 billion or more), and the FR Y-9SP threshold was increased to under $3 billion in total consolidated assets (from under $1 billion). As a result, nearly 55 percent of holding companies filing the FR Y-9LP quarterly reports became eligible to file the shorter semiannual FR Y-9SP report.
- **FR Y-14**—to modify several FR Y-14Q schedules to improve consistency of reported data and to enhance supervisory modeling. Additionally, various FR Y-14A, FR Y-1Q, and FR Y-14M schedules were revised to reflect current accounting standards, eliminate a sub-schedule, and streamline reporting. These changes were effective March 2018.
- **FR Y-16**—to discontinue this form and transfer the stress testing information collection for institutions with between $10 billion and $50 billion in total consolidated assets to an FFIEC collection.

FFIEC Regulatory Reports

The law establishing the FFIEC and defining its functions requires the FFIEC to develop uniform reporting systems for federally supervised financial institutions. The Federal Reserve, along with the other member FFIEC agencies, requires financial institutions to submit various uniform regulatory reports. This information is essential to formulating and conducting supervision and regulation and for the ongoing assessment of the overall soundness of the nation's financial system. During 2018, the following FFIEC reporting forms had substantive revisions:

- **FFIEC 031, 041, and 051**—to implement certain burden-reducing revisions to the FFIEC 031, FFIEC 041 and FFIEC 051 Call Reports. See section below on the Call Report Burden Reduction Initiative for more details. Additionally, several reporting schedules were revised in response to changes in the accounting for equity securities.

[22] HCs are defined as BHCs, IHCs, SLHCs, and securities holding companies.

Box 2. The Economic Growth, Regulatory Relief, and Consumer Protection Act: Reducing Regulatory Burden

The Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA), enacted on May 24, 2018, changed several aspects of banking law to reduce regulatory burden on community banks and also required the federal banking agencies to further tailor their regulations to better reflect the character of the different banking firms that the agencies supervise. On October 2, 2018, Vice Chair Quarles testified before the Senate Committee on Banking, Housing, and Urban Affairs on the Federal Reserve's implementation of EGRRCPA (table A). In his testimony, Vice Chair Quarles noted that the Federal Reserve's implementation of EGRRCPA is underway and that progress continues to be made.

Table A. Implementation of EGRRCPA, 2018

Date issued	Rules/guidance
7/6/2018	Federal Reserve Board issues statement describing how, consistent with recently enacted EGRRCPA, the Board will no longer subject primarily smaller, less complex banking organizations to certain Board regulations https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180706b.htm
8/22/2018	Agencies issue interim final rule regarding the treatment of certain municipal securities as high-quality liquid assets https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180822a.htm
8/23/2018	Agencies issue interim final rules expanding examination cycles for qualifying small banks and U.S. branches and agencies of foreign banks https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180823a.htm
8/28/2018	Federal Reserve Board issues interim final rule expanding the applicability of the Board's small bank holding company policy statement https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180828a.htm
9/18/2018	Agencies propose rule regarding the treatment of high volatility commercial real estate https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180918a.htm
10/31/2018	Federal Reserve Board invites public comment on framework that would more closely match regulations for large banking organizations with their risk profiles https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181031a.htm
11/7/2018	Agencies issue proposal to streamline regulatory reporting for qualifying small institutions https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181107a.htm
11/20/2018	Agencies propose amendments to Regulation CC regarding funds availability https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181120a.htm
11/21/2018	Agencies propose community bank leverage ratio for qualifying community banking organizations https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181121c.htm
12/4/2018	Agencies seek public comment on proposal to raise appraisal exemption threshold for residential real estate transactions https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181204a.htm
12/21/2018	Agencies invite comment on a proposal to exclude community banks from the Volcker rule https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181221d.htm
12/21/2018	Agencies issue final rules expanding examination cycles for qualifying small banks and U.S. branches and agencies of foreign banks https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181221c.htm

- **FFIEC 002**—to implement certain burden-reducing revisions corresponding to Call Report revisions, as applicable. Additionally, certain reporting information was revised in response to changes in the accounting for equity securities.
- **FFIEC 016**—to create a new, single FFIEC form to combine the agencies' three separate, yet identical, stress test forms for institutions with between $10 billion and $50 billion in total consolidated assets, with modifications to align the report form with burden-reducing changes made to other financial reports and to collect an institution's legal entity identifier if they already have one. The passage of EGRRCPA in 2018 eliminated the Dodd-Frank Act stress testing requirements for these firms and no data was collected on this form.

Call Report Burden Reduction Initiative

In 2018, the FFIEC concluded a multiyear initiative that began in 2015 to streamline and simplify regulatory reporting requirements for banking institutions, primarily community banks, and reduce their reporting burden. The objectives of this initiative were consistent with feedback the FFIEC received as part of

Table 4. Cumulative data items revised through June 30, 2018

Finalized Call Report revisions	FFIEC 051	FFIEC 041	FFIEC 031
Items removed, net*	1,002	316	244
Change in item frequency to semiannual	113	31	31
Change in item frequency to annual	36	3	3
Items with a new or increased reporting threshold	55	287	395

* "Items removed, net" reflects the effects of consolidating existing items, adding control totals, and, for the FFIEC 051, relocating individual items from other schedules to a new supplemental schedule. In addition, included in this number for the FFIEC 051, approximately 300 items were items that institutions with less than $1 billion in total assets were exempt from reporting due to existing reporting thresholds in the FFIEC 041.

the regulatory review conducted as required by the Economic Growth and Regulatory Paperwork Reduction Act of 1996 to reduce burden.

Through this initiative, the FFIEC implemented burden-reducing changes that removed or consolidated data items, added new or raised certain existing reporting thresholds, or reduced the frequency of reporting data items. Collectively, these changes affected approximately 51 percent of required data items for smaller, less complex institutions filing the FFIEC 051 Call Report, and 28 percent of required data items for all other institutions filing the FFIEC 031 and FFIEC 041 Call Reports, that were included in the Call Reports for December 31, 2016. Table 4 summarizes the overall number of changes finalized and implemented by Call Report form under the burden reduction initiative.

Supervisory Information Technology

The Federal Reserve's supervisory information technology function established a new multiyear IT strategy focused on optimizing our technology spend, simplifying our IT environment and leveraging new or emerging technologies. High priority initiatives included: (1) the completion of the IT strategy, (2) establishing an Enterprise Information Management Program for the Supervision function, (3) developing a Records and Document Management Strategy, and (4) the successful investigation of new technology solutions to improve examiner efficiency while reducing burden for regulated institutions.

Supervisory and support tools. To support examiners and other supervisory staff, IT continues to manage tools to support the collection, use, and storage of supervisory data—both directly within the supervisory programs or to manage resources. There has been increased investment and growth in the advanced quantitative analysis platforms and toolsets, as well as and data visualization software to allow supervisory analysts to glean insights from supervisory data.

Streamlined data access and improved security. For the supervision function, IT continues to enhance its data-access process using a central tool established for managing and granting user access. This central tool provides assurance that user-access is established for important data, applications, and research that will be published externally. The resulting effect of this tool is enhanced prevention and detection controls that reduces information security risks.

IT has implemented information security policies, procedures, and practices designed to safeguard confidential information, including confidential supervisory information and personally identifiable information. A comprehensive, defense-in-depth approach leveraging multiple layers of security are implemented to protect confidential information. IT continually assesses the effectiveness of its information security programs and controls, and implements additional security measures as needed to further enhance the protection of confidential information.

Information sharing and external collaboration. IT provides a Federal Reserve business area representative to the FFIEC Task Force on Information Sharing, and representatives who lead both the Technical Working Group and the Path Forward Working Group, which focuses efforts to work with the business areas to increase capabilities for collaboration between the agencies.

The Federal Reserve exchanges approved regulatory interagency information with several external agencies, managed through interagency sharing agreements for specific data sets, and overseen by the IT area.

Document management. In addition to continued efforts to implement a document and records management strategy, IT continues to improve document tracking, storage, and access through the implementation of document management software. The software eliminates point-to-point interfaces between document management systems and systems uploading or referencing documents. The software also moves and tracks documents between management systems as the documents progress through their life cycle.

National Information Center

IT continues to be responsible for the delivery of the NIC, the Federal Reserve's authoritative source for supervisory, financial, and banking structure data as well as information on supervisory documents. The NIC includes (1) structure, financial, and supervisory data on banking structures throughout the United States and foreign banking concerns (2) national applications on various supervisory programs and the data they capture, (3) data collection processes, and (4) a platform for sharing of the information with external agencies and the public. Thousands of data points are updated on a daily basis and a public version of the data is made available through the NIC's website.

Staff Development

The Federal Reserve's staff development program supports the ongoing development of nearly 3,000 professional supervisory staff, ensuring that they have the requisite skills necessary to meet their evolving supervisory responsibilities. The Federal Reserve also provides course offerings to staff at state banking agencies. Training activities in 2018 are summarized in table 5.

Examiner Commissioning Program

An overview of the Federal Reserve System's Examiner Commissioning Program for assistant examiners is set forth in SR letter 17-6, "Overview of the Federal Reserve's Supervisory Education Programs."[23]

Examiners choose from one of three specialty tracks: (1) safety and soundness, (2) consumer compliance, or (3) large financial institutions. On average, individuals move through a combination of classroom offerings, self-paced learning, virtual instruction, and on-the-job training over a period of two to three years. Achievement is measured by completing the required course content, demonstrating adequate on-the-job knowledge, and passing a professionally validated proficiency examination. In 2018, 58 examiners passed the proficiency examination (35 in safety and soundness and 23 in consumer compliance).

In 2018, the Board enhanced the consumer compliance proficiency examination by adding application-based questions designed to measure performance reflecting the level of knowledge and skills needed to effectively perform in an examiner-in-charge role. In addition, further learning units were released for the Large Financial Institutions Examiner Commissioning Program, which will continue to be developed and deployed in 2019.

Continuing Professional Development

Throughout 2018, the Federal Reserve System continued to enhance its continuing professional development program. Professional development and training content was developed to support several major supervision initiatives, including CECL, Divergent Views, Cybersecurity, and the LISCC program.

[23] SR letter 17-6 is available at https://www.federalreserve.gov/supervisionreg/srletters/sr1706.htm.

Table 5. Training for banking supervision and regulation, 2018

Course sponsor or type	Number of enrollments		Instructional time (approximate training days)[1]	Number of course offerings
	Federal Reserve personnel	State and federal banking agency personnel		
Federal Reserve System	1,299	64	510	102
FFIEC	794	467	324	81
Rapid Response[2]	14,208	897	3	30

[1] Training days are approximate. System courses were calculated using five days as an average, with FFIEC courses calculated using four days as an average.

[2] Rapid Response is a virtual program created by the Federal Reserve System as a means of providing information on emerging topics to Federal Reserve and state bank examiners.

Box 3. Transparency in Supervising and Regulating Financial Institutions

In an effort to increase transparency around the Federal Reserve's work in supervising and regulating financial institutions and activities, the Board of Governors of the Federal Reserve System is issuing a *Supervision and Regulation Report*.[1] The inaugural report was issued on November 2018.

The focus of the report will be key developments and trends in supervision (particularly prudential supervision) and regulation. The report will contain three main sections:

- The **Banking System Conditions** section, which provides an overview of trends in the banking sector based on data collected by the Federal Reserve and other federal financial regulatory agencies as well as market indicators of industry conditions.
- The **Supervisory Developments** section, which provides background information on supervisory programs and approaches as well as an overview of key themes and trends, supervisory findings, and supervisory priorities. The report distinguishes between large financial institutions and regional and community banking organizations because supervisory approaches and priorities for these institutions frequently differ.
- The **Regulatory Developments** section, which provides an overview of the current areas of focus of the Federal Reserve's regulatory policy framework, including pending rules.

[1] See https://www.federalreserve.gov/publications/files/201811-supervision-and-regulation-report.pdf.

Educational efforts specific to financial technology, including use cases and industry perspectives, were also delivered to a national supervision audience.

Regulatory Developments

Post-Crisis Framework

Regulatory policies implemented over the past decade have contributed significantly to improving the safety and soundness of banking organizations and the financial system so they are able to support the needs of the economy through good times and bad. Today, U.S. banking firms are significantly better capitalized and have much stronger liquidity positions. They rely less on short-term wholesale funding, which can evaporate quickly during periods of stress. The largest banking firms have also developed resolution plans that reduce the potential negative systemic impact that could result in the event of their failures.

As the regulatory framework has been strengthened, the Federal Reserve has also focused on the efficiency of financial institution supervision. Compliance burden should be minimized without compromising the safety and soundness gains that have been made in recent years. In addition, the Federal Reserve continues to tailor its regulations, ensuring that the rules vary with the risk of the institution.

In an effort to refine the post-crisis supervisory and regulatory framework, the Board promotes the principles of efficiency, transparency, and simplicity.

Efficiency involves two components. The first is related to methods: efficient methods tailor the requirements and intensity of regulations and supervision programs based on the asset size and complexity of firms. Efficient methods also minimize compliance burdens generally while achieving regulatory objectives. The second is related to goals: we have a strong public interest in an efficient financial system, just as we do in a safe and sound one. We include the efficient operation of the financial sector as one of the goals we seek to promote through our regulation and supervision.[24]

Transparency is not only a core requirement for accountability to the public but also benefits the regulatory process by exposing ideas to a variety of perspectives. Similarly, transparent supervisory principles and guidance allow firms and the public to understand the basis on which supervisory decisions are made and allow firms the ability to respond constructively to supervisors (box 3).

Simplicity complements and reinforces transparency by promoting the public's understanding of the Board's regulatory and supervisory programs. Confusion and unnecessary compliance burden resulting from overly complex regulation do not advance the goal of a safe financial system.

[24] The Federal Reserve's bank holding company supervision program also involves reliance on—and extensive coordination with—the insured depository primary regulator in order to reduce burden and duplicative efforts, thereby promoting efficiency.

Since the crisis, the Federal Reserve has substantially strengthened its supervisory programs for the largest institutions. The financial crisis made clear that policymakers needed to address more substantially the threat to financial stability posed by the largest and most complex banking organizations, in particular those considered systemically important. As a result, the Federal Reserve has strategically shifted supervisory resources to its large bank supervision programs. For SIFIs, LISCC was established in 2010 to oversee a national program for these firms.[25] An increased number of horizontal examinations were introduced, focusing on capital, liquidity, governance and controls, and resolution planning.[26] In addition, financial and management information collections from large institutions increased, giving supervisors more timely and better insight into firms' risk profiles and activities.

The Federal Reserve also enhanced its supervision programs for smaller institutions to address lessons learned during the crisis and has more recently focused on tailoring its supervisory expectations to minimize regulatory burden whenever possible without compromising safety and soundness. During the financial crisis of 2007–09, a large number of regional and community banks failed or experienced financial stress. Accordingly, the Federal Reserve took steps to improve its regional and community bank supervision programs to enhance expectations for examinations, particularly for those conducted at banks with significant concentrations of credit risk in particular loan segments or that relied significantly on less-stable funding sources.

As banking conditions have improved and regulators have gained more experience implementing the post-crisis regulatory regime, the Federal Reserve, along with other regulatory agencies, has recalibrated supervisory programs to ensure they are effectively and efficiently achieving their goals. As a result, the agencies have implemented several burden-reducing supervisory changes, including

- reducing the volume of financial data that smaller, less-risky banks must submit to the agencies each quarter,
- increasing the loan size under which regulations require banks to obtain formal real estate appraisals for commercial loans, and
- proposing changes to simplify regulatory capital rules.

In addition, the Federal Reserve has taken steps to reduce the amount of undue burden associated with examinations, including conducting portions of examinations offsite. There has also been an increased emphasis on risk-focusing examination activities, where more in-depth examinations are conducted for banks identified as high risk or in areas with high-risk activities, and less-intensive examinations are conducted at lower-risk banks, or in lines of businesses at banks that have historically been lower in risk.

U.S. Banking System Structure

The Federal Reserve acts on a variety of applications and notices that directly or indirectly affect the structure of the U.S. banking system at the local, regional, and national levels; the international operations of domestic banking organizations; or the U.S. banking operations of foreign banks. The applications and notices concern BHC and SLHC formations and acquisitions, bank mergers, and other transactions involving banks and savings associations or nonbank firms. In 2018, the Federal Reserve acted on 1,356 applications filed under the six statutes.

In 2018, the Federal Reserve published its *Semiannual Report on Banking Applications Activity*, which provides aggregate information on proposals filed by banking organizations and reviewed by the Federal Reserve. The report includes statistics on the number of proposals that have been approved, denied, withdrawn, mooted, or returned as well as general information about the length of time taken to process proposals and common reasons for proposals to be withdrawn from consideration. The reports are available at https://www.federalreserve.gov/publications/semiannual-report-on-banking-applications-activity.htm

Public Notice of Federal Reserve Decisions and Filings Received

Certain decisions by the Federal Reserve that involve a BHC, SLHC, a bank merger, a change in control, or the establishment of a new U.S. banking presence by a foreign bank are made known to the public by an order or an announcement. Orders state the deci-

[25] See also SR letter 15-7, "Governance Structure of the Large Institution Supervision Coordinating Committee (LISCC) Supervisory Program," at https://www.federalreserve.gov/supervisionreg/srletters/sr1507.htm.

[26] Horizontal examinations are exercises in which several institutions are examined simultaneously. Doing so encompasses both firm-specific supervision and the development of broader perspectives across firms.

sion, the essential facts of the application or notice, and the basis for the decision; announcements state only the decision. All orders are made public immediately and are subsequently reported in the Board's weekly H.2 statistical release. The H.2 release also contains announcements of applications and notices received by the Federal Reserve upon which action has not yet been taken. For each pending application and notice, the related H.2A release gives the deadline for comments. The Board's website provides information on orders and announcements (https://www.federalreserve.gov/newsevents/pressreleases.htm) as well as a guide for U.S. and foreign banking organizations that wish to submit applications (https://www.federalreserve.gov/bankinforeg/afi/afi.htm).

Other Laws and Regulation Enforcement Activity/Actions

The Federal Reserve issued the following rules and guidance in 2018 (table 6).

The Federal Reserve's enforcement responsibilities also extend to the disclosure of financial information by state member banks and the use of credit to purchase and carry securities.

Financial Disclosures by State Member Banks

Under the Securities Exchange Act of 1934 and the Federal Reserve's Regulation H, certain state member banks are required to make financial disclosures to the Federal Reserve using the same reporting forms (such as Form 10K—annual report and Schedule 14A—proxy statement) that are normally used by publicly held entities to submit information to the SEC.[27] As most of the publicly held banking organizations are BHCs and the reporting threshold was recently raised, only two state member banks were required to submit data to the Federal Reserve in 2018. The information submitted by these two small state member banks is available to the public upon request and is primarily used for disclosure to the bank's shareholders and public investors.

[27] Under section 12(g) of the Securities Exchange Act, certain companies that have issued securities are subject to SEC registration and filing requirements that are similar to those imposed on public companies. Per section 12(i) of the Securities Exchange Act, the powers of the SEC over banking entities that fall under section 12(g) are vested with the appropriate banking regulator. Specifically, state member banks with 2,000 or more shareholders and more than $10 million in total assets are required to register with, and submit data to, the Federal Reserve. These thresholds reflect the recent amendments by the Jumpstart Our Business Startups Act (JOBS Act).

Assessments for Supervision and Regulation

The Dodd-Frank Act directs the Board to collect assessments, fees, or other charges equal to the total expenses the Board estimates are necessary or appropriate to carry out the supervisory and regulatory responsibilities of the Board for BHCs and SLHCs with total consolidated assets of $50 billion or more and nonbank financial companies designated for Board supervision by the FSOC. As a collecting entity, the Board does not recognize the supervision and regulation assessments as revenue nor does the Board use the collections to fund Board expenses; the funds are transferred to the Treasury. The Board collected and transferred $564,081,227 in 2018 for the 2017 supervision and regulation assessment.

Securities Credit

Under the Securities Exchange Act of 1934, the Board is responsible for regulating credit in certain transactions involving the purchasing or carrying of securities. The Board's Regulation T limits the amount of credit that may be provided by securities brokers and dealers when the credit is used to purchase debt and equity securities. The Board's Regulation U limits the amount of credit that may be provided by lenders other than brokers and dealers when the credit is used to purchase or carry publicly held equity securities if the loan is secured by those or other publicly held equity securities. The Board's Regulation X applies these credit limitations, or margin requirements, to certain borrowers and to certain credit extensions, such as credit obtained from foreign lenders by U.S. citizens.

Several regulatory agencies enforce the Board's securities credit regulations. The SEC, the Financial Industry Regulatory Authority, and the Chicago Board Options Exchange examine brokers and dealers for compliance with Regulation T. With respect to compliance with Regulation U, the federal banking agencies examine banks under their respective jurisdictions; the FCA and the NCUA examine lenders under their respective jurisdictions; and the Federal Reserve examines other Regulation U lenders.

Table 6. Federal Reserve or interagency rulemakings/statements (proposed and final), 2018

Date issued	Rule/guidance
1/4/2018	Federal Reserve requests comments on proposed guidance that would clarify the Board's supervisory expectations related to risk management for large financial institutions. Federal Register (FR) doc: https://www.gpo.gov/fdsys/pkg/FR-2018-01-11/pdf/2018-00294.pdf
2/5/2018	Agencies seek comment on proposed technical amendments to the swap margin rule. FR doc: https://www.gpo.gov/fdsys/pkg/FR-2018-02-21/pdf/2018-02560.pdf
4/2/2018	Agencies issue final rule to exempt commercial real estate transactions of $500,000 or less from appraisal requirements. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/files/2018-06960.pdf
4/10/2018	Federal Reserve seeks comment on proposal to simplify capital rule for large banks while preserving strong capital levels that would maintain their ability to lend under stressful conditions. FR doc: https://www.gpo.gov/fdsys/pkg/FR-2018-04-25/pdf/2018-08006.pdf
4/11/2018	Federal Reserve and OCC propose rule to tailor enhanced supplementary leverage ratio requirements. Comment period ended 6/25/18. FR doc: https://www.gpo.gov/fdsys/pkg/FR-2018-04-19/pdf/2018-08066.pdf
4/17/2018	Agencies issue proposal to revise regulatory capital rules to address and provide an option to phase in the effects of the new accounting standard for credit losses (CECL). Comment period ended 6/13/18. FR doc: https://www.gpo.gov/fdsys/pkg/FR-2018-05-14/pdf/2018-08999.pdf
5/7/2018	Federal Reserve Board announces approval of final amendments to its Regulation A. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180507a.htm
5/18/2018	Federal Reserve and Office of the Comptroller of the Currency extend comment period for proposed rule tailoring leverage ratio requirements. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180518a.htm
5/30/2018	Federal Reserve Board asks for comment on proposed rule to simplify and tailor compliance requirements relating to the "Volcker rule." FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180530a.htm
6/5/2018	Agencies ask for public comment on a proposed rule to simplify and tailor the Volcker Rule. Comment period ended 10/17/18. FR doc: https://www.gpo.gov/fdsys/pkg/FR-2018-07-17/pdf/2018-13502.pdf
6/14/2018	Federal Reserve approves final rule to prevent concentration of risk between large banking organizations and their counterparties from undermining financial stability. FR doc: https://www.gpo.gov/fdsys/pkg/FR-2018-08-06/pdf/2018-16133.pdf
7/6/2018	Agencies issue statement regarding the impact of the Economic Growth, Regulatory Relief, and Consumer Protection Act. Statement: https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20180706a1.pdf
8/22/2018	Agencies issue interim final rule regarding the treatment of certain municipal securities as high-quality liquid assets. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/files/2018-18610.pdf
8/28/2018	Federal Reserve issues interim final rule expanding the applicability of the Board's Small Bank Holding Company Policy Statement. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/files/2018-18756.pdf
9/11/2018	Agencies issue statement reaffirming the role of supervisory guidance. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180911a.htm
9/14/2018	Federal and state financial regulatory agencies issue interagency statement on supervisory practices regarding financial institutions affected by Hurricane Florence. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180914a.htm
9/18/2018	Agencies issue proposed rule regarding the treatment of high-volatility commercial real estate. Comment period ends 60 days after publication in the FR. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20180918a1.pdf
9/21/2018	Agencies issue final rule to amend swap margin rule. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20180921a.pdf
9/21/2018	Federal Reserve Board seeks public comment on proposal to amend Regulation H and Regulation K to reflect the transferal of the Board's rulemaking for the Secure and Fair Enforcement for Mortgage Licensing Act (S.A.F.E. Act) to the Bureau of Consumer Financial Protection. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180921b.htm
10/3/2018	Federal agencies issue a joint statement on banks and credit unions sharing resources to improve efficiency and effectiveness of Bank Secrecy Act compliance. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181003a.htm
10/10/2018	Federal and state financial regulatory agencies issue interagency statement on supervisory practices regarding financial institutions affected by Hurricane Michael. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181010a.htm
10/30/2018	Agencies propose rule to update calculation of derivative contract exposure amounts under regulatory capital rules. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181030a.htm
10/31/2018	Federal Reserve Board invites public comment on framework that would more closely match regulations for large banking organizations with their risk profiles. Proposed prudential standards for large bank holding companies and savings and loan holding companies (83 Fed. Reg. 61,408 (November 29, 2018)). Proposed changes to applicable threshold for regulatory capital and liquidity requirements (83 Fed. Reg. 66,024 (December 21, 2018)). FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181031a.htm
11/2/2018	Federal Reserve Board finalizes new supervisory rating system for large financial institutions. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181102a.htm

(continued on next page)

Table 6.—*continued*

Date issued	Rule/guidance
11/7/2018	Agencies issue proposal to streamline regulatory reporting for qualifying small institutions. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181107a.htm
11/15/2018	Federal and state financial regulatory agencies issue interagency statement on supervisory practices regarding financial institutions and their customers affected by California wildfires. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181115b.htm
11/21/2018	Agencies propose community bank leverage ratio for qualifying community banking organizations. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181121c.htm
12/3/2018	Federal Reserve Board issues joint statement encouraging depository institutions to explore innovative approaches to meet BSA/anti-money-laundering compliance obligations and to further strengthen the financial system against illicit financial activity. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181203a.htm
12/4/2018	Agencies seek public comment on proposal to raise appraisal exemption threshold for residential real estate transactions. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181204a.htm
12/21/2018	Agencies allow three-year regulatory capital phase-in for new Current Expected Credit Losses (CECL) accounting standard. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181221a.htm
12/21/2018	Federal Reserve Board will maintain current modeling framework for loan allowances in its supervisory stress test through 2021. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181221b.htm
12/21/2018	Agencies issue final rules expanding examination cycles for qualifying small banks and U.S. branches and agencies of foreign banks. FR doc:https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181221c.htm
12/21/2018	Agencies invite comment on a proposal to exclude community banks from the Volcker rule. FR doc: https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181221d.htm

5 Consumer and Community Affairs

The Division of Consumer and Community Affairs (DCCA) has primary responsibility for carrying out the Board of Governors' consumer protection and community development activities to promote fair and transparent financial service markets, protect consumers' rights, and ensure that its policies and research take into account consumer and community perspectives. This charge includes assessing and taking corrective actions to address consumer risks among financial institutions it supervises while also fostering proven programs in consumer compliance and community reinvestment.

Throughout 2018, the division engaged in numerous consumer and community-related functions and policy activities in the following areas:

- **Formulating consumer-focused supervision and examination policy to ensure that financial institutions for which the Federal Reserve has authority comply with consumer protection laws and regulations and meet requirements of community reinvestment laws and regulations.** The Federal Reserve's consumer protection supervision program includes a review of state member banks' performance under the Community Reinvestment Act (CRA) as well as assessment of compliance with and enforcement of a wide range of consumer protection laws and regulations, including those related to fair lending, unfair or deceptive acts or practices (UDAP), and flood insurance. The division developed policies that govern, and provided oversight of, the Reserve Banks' programs for consumer compliance supervision and examination of state member banks and bank holding companies (BHCs). The division's activities also included the development and delivery of examiner training; analysis of bank and BHC applications related to consumer protection, convenience and needs, and the CRA; and processing of consumer complaints.
- **Conducting research, analysis, and data collection to inform Federal Reserve and other policymakers about consumer protection risks and community economic development issues and opportunities.** The division analyzed ongoing and emerging consumer financial services and community risks, practices, issues, and opportunities to understand and act on their implications for supervisory policy as well as to gain insight into consumer decisionmaking related to financial services and access to credit for small businesses.
- **Engaging and convening key stakeholders to identify emerging issues and advance what works in community reinvestment and consumer protection.** The division continued to promote fair and informed access to financial markets for all consumers, particularly underserved populations, by engaging lenders, government officials, and community leaders. Throughout the year, DCCA convened programs to share information on the financial and economic needs in low- and moderate-income (LMI) communities, research on effective community development policies and strategies, and best practices in the management and control of consumer compliance risks.
- **Writing and reviewing regulations that effectively implement consumer protection and community reinvestment laws.** The division manages the Board's regulatory responsibilities with respect to certain entities and specific statutory provisions of the consumer financial services and fair lending laws. In 2018, DCCA participated in drafting interagency regulations and compliance guidance for the industry and the Reserve Banks.

Supervision and Examinations

DCCA develops supervisory policy and examination procedures for consumer protection laws and regulations, as well as for the CRA, as part of its supervision of the organizations for which the Board has authority, including bank and financial holding companies, state member banks, savings and loan holding companies, foreign banking organizations, Edge Act

corporations, and agreement corporations.[1] The division also administers the Federal Reserve System's risk-focused program for assessing consumer compliance risk at the largest banks and financial holding companies in the System, with division staff ensuring that consumer compliance risk is effectively integrated into the consolidated supervision of the holding company. DCCA staff monitor trends in consumer products to inform the risk-based supervisory planning process. Quantitative risk metrics and screening systems use data to assess market activity, consumer complaints, and supervisory findings to assist with the determination of risk levels at firms.

The division oversees the efforts of the 12 Reserve Banks to ensure that the Federal Reserve's consumer compliance supervisory program reflects its commitment to promoting financial inclusion and compliance with applicable federal consumer protection laws and regulations in the 794 state member banks it supervises. Division staff coordinate with the prudential regulators and the Consumer Financial Protection Bureau (CFPB) as part of the supervisory coordination requirements under the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act), and ensure that consumer compliance risk is appropriately incorporated into the consolidated risk-management program of the approximately 159 bank and financial holding companies with assets over $10 billion. Division staff provide guidance and expertise to the Reserve Banks on consumer protection laws and regulations, bank and BHC application analysis and processing, examination and enforcement techniques and policy matters, examiner training, and emerging issues. Finally, staff members participate in interagency activities that promote consistency in examination principles, standards, and processes.

Examinations are the Federal Reserve's primary method of ensuring compliance with consumer protection laws and assessing the adequacy of consumer compliance risk-management systems within regulated entities. During 2018, the Reserve Banks completed 253 consumer compliance examinations of state member banks, 237 CRA examinations of state member banks, 24 examinations of foreign banking organizations, 2 examinations of Edge Act corporations, and no examinations of agreement corporations.

Mortgage Servicing and Foreclosure

Payment Agreement Status

As of 2018, the majority of the enforcement actions that were issued by the Federal Reserve and the Office of the Comptroller of the Currency (OCC) against 16 mortgage loan servicers between April 2011 and April 2012 were terminated. At the time of the enforcement actions, along with other requirements, the two regulators directed servicers to retain independent consultants to conduct comprehensive reviews of foreclosure activity to determine whether eligible[2] borrowers suffered financial injury because of servicer errors, misrepresentations, or other deficiencies. The file review initiated by the independent consultants, combined with a significant borrower outreach process, was referred to as the Independent Foreclosure Review (IFR).

In 2013, the regulators entered into agreements with 15 of the mortgage loan servicers to replace the IFR with direct cash payments to all eligible borrowers and other assistance (the Payment Agreement).[3] The participating servicers agreed to pay an estimated $3.9 billion to 4.4 million borrowers whose primary residence was in a foreclosure process in 2009 or 2010. The Payment Agreement also required the

[1] The Federal Reserve has examination and enforcement authority for federal consumer financial laws and regulations for insured depository institutions with assets of $10 billion or less that are state member banks and not affiliates of covered institutions, as well as for conducting CRA examinations for all state member banks regardless of size. The Federal Reserve Board also has examination and enforcement authority for certain federal consumer financial laws and regulations for insured depository institutions that are state member banks with over $10 billion in assets, while the Consumer Financial Protection Bureau has examination and enforcement authority for many federal consumer financial laws and regulations for insured depository institutions with over $10 billion in assets and their affiliates (covered institutions), as mandated by the Dodd-Frank Act.

Agency and branch offices of foreign banking organizations, Edge Act corporations, and agreement corporations fall under the Federal Reserve's purview for consumer compliance activities. An agreement corporation is a type of bank chartered by a state to engage in international banking. The bank agrees with the Federal Reserve Board to limit its activities to those allowed by an Edge Act corporation. An Edge Act corporation is a banking institution with a special charter from the Federal Reserve to conduct international banking operations and certain other forms of business without complying with state-by-state banking laws. By setting up or investing in Edge Act corporations, U.S. banks are able to gain portfolio exposure to financial investing operations not available under standard banking laws.

[2] Borrowers were eligible if their primary residence was in a foreclosure action with one of the sixteen mortgage loan servicers at any time in 2009 or 2010.

[3] One OCC-regulated servicer elected to complete the Independent Foreclosure Review, and did not, therefore, enter into the Payment Agreement.

servicers to contribute an additional $5.8 billion in other foreclosure prevention assistance, such as loan modifications and forgiveness of deficiency judgments.

A paying agent, Rust Consulting, Inc. (Rust), was retained to administer payments to borrowers on behalf of the participating servicers.

More than $3.5 billion was distributed to eligible borrowers through 3.9 million checks, representing nearly 91 percent of the total value of the funds. Receiving a payment under the agreement did not prevent borrowers from taking any action they may wish to pursue related to their foreclosure. Servicers were not permitted to ask borrowers to sign a waiver of any legal claims they may have against their servicer in connection with receiving payment.[4]

At the Federal Reserve's direction, in August 2016, Rust redistributed any funds remaining after all outstanding initial checks expired, to eligible borrowers of Federal Reserve-supervised servicers who had cashed or deposited their initial checks. This direction applied only to funds related to mortgage servicers supervised by the Federal Reserve and was consistent with the Federal Reserve's intention to distribute the maximum amount of funds to borrowers potentially affected by deficient servicing and foreclosure practices. The redistribution of approximately $80 million in remaining funds resulted in nearly $59 million being cashed or deposited by borrowers of servicers supervised by the Federal Reserve. The borrower payment process concluded at the end of 2016.

In 2018, the audit of the final reconciliation of the payment funds was completed, and funds remaining that were provided by servicers supervised by the Federal Reserve as part of the Payment Agreement have been remitted to the U.S. Treasury. Board staff is currently working with Rust to close the qualified settlement funds.

Foreclosure Prevention Actions

The Payment Agreement also required servicers to undertake well-structured loss-mitigation efforts focused on foreclosure prevention, with preference given to activities designed to keep borrowers in their homes through affordable, sustainable, and meaningful home preservation actions within two years from the date the agreement in principle was reached.

All servicers were required to submit reports detailing the consumer-relief actions they had taken to satisfy these requirements. The foreclosure prevention assistance actions reported included loan modifications, short sales, deeds-in-lieu of foreclosure, debt cancellation, and lien extinguishment. In order to receive credit toward the servicer's total foreclosure prevention obligation, the actions submitted had to be validated by the regulators. A third party completed this validation to ensure that the foreclosure prevention assistance amounts met the requirements of the amendments to the enforcement actions.

Servicer Efforts to Address Deficiencies

In addition to the foreclosure review requirements, the enforcement actions required mortgage servicers to submit acceptable written plans to address various mortgage loan servicing and foreclosure processing deficiencies. In the time since the enforcement actions were issued, the banking organizations have been implementing the action plans, including enhanced controls, and improving systems and processes. The supervisory review of the mortgage servicers' action plans has shown that the banking organizations under the enforcement actions have implemented significant corrective actions with regard to their mortgage servicing and foreclosure processes, and for most servicers, those corrective actions appear to be sustainable. The majority of the enforcement actions were terminated in 2018.[5] For the remaining servicers, the Federal Reserve supervisory team continues to monitor and evaluate the servicers' progress on implementing the action plans to address unsafe and unsound mortgage servicing and foreclosure practices as required by the enforcement actions.

Supervisory Matters

Enforcement Activities

Fair Lending and UDAP Enforcement

Through its Supervision and Enforcement teams, DCCA is committed to ensuring that the institutions it supervises comply fully with the federal fair lending laws—the Equal Credit Opportunity Act (ECOA) and the Fair Housing Act (FHA). The ECOA prohibits creditors from discriminating against any

[4] For more information, see https://www.federalreserve.gov/consumerinfo/independent-foreclosure-review-payment-agreement.htm.

[5] For the press releases, see https://www.federalreserve.gov/newsevents/pressreleases/enforcement20180112a.htm and https://www.federalreserve.gov/newsevents/pressreleases/enforcement20180810a.htm.

applicant, in any aspect of a credit transaction, on the basis of race, color, religion, national origin, sex, marital status, or age. In addition, creditors may not discriminate against an applicant because the applicant receives income from a public assistance program or has exercised, in good faith, any right under the Consumer Credit Protection Act. The FHA prohibits discrimination in residential real-estate-related transactions—including the making and purchasing of mortgage loans—on the basis of race, color, religion, sex, handicap, familial status, or national origin.

The Board supervises all state member banks for compliance with the FHA. The Board and the CFPB both have supervisory authority for compliance with the ECOA. For state member banks with assets of $10 billion or less, the Board has the authority to enforce the ECOA. For state member banks with assets over $10 billion, the CFPB has this authority.

With respect to the Federal Trade Commission Act (FTC Act), which prohibits unfair or deceptive acts or practices, the Board has supervisory and enforcement authority over all state member banks, regardless of asset size. The Board is committed to ensuring that the institutions it supervises comply fully with the prohibition on unfair or deceptive acts or practices as outlined in the FTC Act. An act or practice may be found to be unfair if it causes or is likely to cause substantial injury to consumers that is not reasonably avoidable by consumers and not outweighed by countervailing benefits to consumers or to competition. A representation, omission, or practice is deceptive if it is likely to mislead a consumer acting reasonably under the circumstances and is likely to affect a consumer's conduct or decision regarding a product or service.

Fair lending and UDAP reviews are conducted regularly within the supervisory cycle. Additionally, examiners may conduct fair lending and UDAP reviews outside of the usual supervisory cycle, if warranted by fair lending and UDAP risk. When examiners find evidence of potential discrimination or potential UDAP violations, they work closely with DCCA's Fair Lending and UDAP Enforcement sections, which provide additional legal and statistical expertise and ensure that fair lending and UDAP laws are enforced consistently and rigorously throughout the Federal Reserve System.

With respect to fair lending, pursuant to the ECOA, if the Board has reason to believe that a creditor has engaged in a pattern or practice of discrimination in violation of the ECOA, the matter must be referred to the Department of Justice (DOJ). The DOJ reviews the referral and determines whether further investigation is warranted. A DOJ investigation may result in a public civil enforcement action. Alternatively, the DOJ may decide to return the matter to the Board for administrative enforcement. When a matter is returned to the Board, staff ensure that the institution takes all appropriate corrective action.

If there is a fair lending violation that does not constitute a pattern or practice under the ECOA or a UDAP violation, the Federal Reserve takes action to ensure that the violation is remedied by the bank. Most lenders readily agree to correct fair lending and UDAP violations, often taking corrective action as soon as they become aware of a problem. Thus, the Federal Reserve frequently uses informal supervisory tools (such as memoranda of understanding between banks' boards of directors and the Reserve Banks, or board resolutions) to ensure that violations are corrected. When necessary, the Board can bring public enforcement actions.

The Board brought one public enforcement action for UDAP violations in 2018, issuing a consent order against a bank for unfair practices related to the billing of deposit add-on products administered through third parties. The order required the bank to pay approximately $4.75 million in restitution to approximately 11,000 consumers and take other corrective actions.[6]

Given the complexity of this area of supervision, the Federal Reserve seeks to provide transparency on its perspectives and processes to the industry and the public. Fair Lending and UDAP Enforcement staff meet regularly with consumer advocates, supervised institutions, and industry representatives to discuss fair lending and UDAP issues and receive feedback. Through this outreach, the Board is able to address emerging fair lending and UDAP issues and promote sound fair lending and UDAP compliance. This includes DCCA staff's participation in numerous meetings, conferences, and trainings sponsored by consumer advocates, industry representatives, and interagency groups.

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6 For more information, see https://www.federalreserve.gov/newsevents/pressreleases/enforcement20180726b.htm.

Flood Insurance

The National Flood Insurance Act imposes certain requirements on loans secured by buildings or mobile homes located in, or to be located in, areas determined to have special flood hazards. Under the Federal Reserve's Regulation H, which implements the act, state member banks are generally prohibited from making, extending, increasing, or renewing any such loan unless the building or mobile home, as well as any personal property securing the loan, are covered by flood insurance for the term of the loan. The law requires the Board and other federal financial institution regulatory agencies to impose civil money penalties when they find a pattern or practice of violations of the regulation.

In 2018, the Federal Reserve issued six formal consent orders and assessed $196,000 in civil money penalties against state member banks to address violations of the flood regulations. These statutorily mandated penalties were forwarded to the National Flood Mitigation Fund held by the Treasury for the benefit of the Federal Emergency Management Agency.

Community Reinvestment Act

The CRA requires that the Federal Reserve and other federal banking regulatory agencies encourage financial institutions to help meet the credit needs of the local communities where they do business, consistent with safe and sound operations. To carry out this mandate, the Federal Reserve

- examines state member banks to assess their performance under the CRA;
- considers banks' CRA performance in context with other supervisory information when analyzing applications for mergers and acquisitions; and
- disseminates information about community development practices to bankers and the public through community development offices at the Reserve Banks.[7]

The Federal Reserve assesses and rates the CRA performance of state member banks in the course of examinations conducted by staff at the 12 Reserve Banks. During the 2018 reporting period, the Reserve Banks completed 237 CRA examinations of state member banks. Of those banks examined, 36 were rated "Outstanding," 198 were rated "Satisfactory," 3 were rated "Needs to Improve," and none were rated "Substantial Non-Compliance."

The Federal Reserve is interested in updating the CRA regulations to better reflect structural and technological changes in the banking industry. To help achieve that, in 2018 DCCA established a dedicated team to focus on modernizing the CRA. The Board also held a series of external engagement meetings with bankers and community members to collect information to help identify issues and potential solutions that will inform our work to revise the regulations.

The Federal Reserve also improved its public website to include better information on the CRA, including educational materials; enhanced navigation and functionality; and access to state and component ratings, as well as direct access to bank strategic plans and performance evaluations. The updated website is available at https://www.federalreserve.gov/consumerscommunities/cra_about.htm.

Mergers and Acquisitions

The Federal Reserve analyzes expansionary applications by banks or BHCs, taking into account the likely effects of the acquisition on competition, the convenience and needs of the communities to be served, the financial and managerial resources and future prospects of the companies and banks involved, and the effectiveness of the company's policies to combat money laundering. As part of this process, DCCA evaluates whether the institutions are currently meeting the convenience and needs of their communities and the effectiveness of existing managerial resources, as well as the institutions' ability to meet the convenience and needs of their communities and the adequacy of their managerial resources after the proposed transaction.

The depository institution's CRA record is a critical component of this analysis. The CRA requires the Federal Reserve to consider a bank's record of helping to meet the credit needs of its local communities in evaluating applications for mergers, acquisitions, and branches. An institution's most recent CRA performance evaluation is a particularly important consideration in the mergers and acquisitions process because it represents a detailed on-site evaluation of the institution's performance under the CRA by its federal supervisor.

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[7] For more information on various community development activities of the Federal Reserve System, see https://www.fedcommunities.org/.

As part of the analysis of managerial resources, the Federal Reserve reviews the institution's record of compliance with consumer protection laws and regulations. The institution's most recent consumer compliance rating is central to this review because, like the CRA performance evaluation, it represents the detailed findings of the institution's supervisory agency.

Less-than-satisfactory CRA or consumer compliance ratings or other significant consumer compliance issues can pose an impediment to the processing and approval of the application. Federal Reserve staff gather additional information about CRA and consumer compliance performance in many circumstances, such as when the financial institution(s) involved in a proposed transaction that has a less-than-satisfactory CRA or compliance ratings or recently identified consumer compliance issues, or when the Federal Reserve receives comments from interested parties that raise CRA or consumer compliance issues. To further enhance transparency about this process, the Board issued guidance to the public in 2014 describing the Federal Reserve's approach to applications and notices.[8]

Because these applications are of interest to the public, they often generate comments that raise various issues for Board staff to consider in their analyses of the supervisory and lending records of the applicants. With respect to consumer compliance and community reinvestment, one of the more common allegations is that either or both the target and the acquirer fail to make credit available to certain minority groups and to LMI individuals and communities. Commenters also often express concerns about branch closures or the banks' record of lending to small businesses in LMI geographies.

In evaluating the applications, the Board assesses the merits of the public comments in addition to information provided by applicants and analyzes supervisory information, including examination reports with evaluations of compliance with fair lending and other consumer protection laws and regulations, and confers with other regulators, as appropriate, for their supervisory views. If warranted, the Federal Reserve will also conduct pre-membership exams for a transaction in which an insured depository institution will become a state member bank or in which the surviving entity of a merger would be a state member bank.[9]

The Board provides information on its actions associated with these merger and acquisition transactions, issuing press releases and Board Orders for each.[10] The Federal Reserve also publishes semiannual reports that provide pertinent information on applications and notices filed with the Federal Reserve.[11] The reports include statistics on the number of proposals that had been approved, denied, and withdrawn as well as general information about the length of time taken to process proposals. Additionally, the reports discuss common reasons that proposals have been withdrawn from consideration.

During 2018, the Board considered over 100 applications, with topics ranging from change in control notices, to branching requests, to mergers and acquisitions. DCCA staff analyzed 14 notices and applications for transactions involving bank mergers and branching that involved adverse public comments on CRA issues or consumer compliance issues, such as fair lending, which the Board considered and approved.[12]

Coordination with the Consumer Financial Protection Bureau

During 2018, staff continued to coordinate on supervisory matters with the CFPB in accordance with the Interagency Memorandum of Understanding on Supervision Coordination with the CFPB. The agreement is intended to establish arrangements for coordination and cooperation among the CFPB and the OCC, the FDIC, the National Credit Union Association, and the Board of Governors. The agreement strives to minimize unnecessary regulatory burden and to avoid unnecessary duplication of effort and conflicting supervisory directives amongst the prudential regulators. The regulators work cooperatively to share exam schedules for covered institutions and covered activities to plan simultaneous exams, pro-

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8 For more information, see https://www.federalreserve.gov/supervisionreg/srletters/sr1402.htm.

9 In October 2015, the Federal Reserve issued guidance providing further explanation on its criteria for waiving or conducting such pre-merger or pre-membership examinations. For more information, see https://www.federalreserve.gov/supervisionreg/srletters/SR1511.htm.

10 To access the Board's Orders on Banking Applications, see https://www.federalreserve.gov/newsevents/pressreleases.htm.

11 For these reports, see https://www.federalreserve.gov/supervisionreg/semiannual-reports-banking-applications-activity.htm.

12 Another application on which adverse public comments were received was withdrawn by the applicant. Related notices and applications for which a single Board Order was issued were counted as a single notice or application in this total.

vide final drafts of examination reports for comment, and share supervisory information.

Coordination with Other Federal Banking Agencies

The Board regularly coordinates with other federal banking agencies, including through the development of interagency guidance, in order to clearly communicate supervisory expectations. The Federal Reserve also works with the other member agencies of the Federal Financial Institutions Examination Council (FFIEC) to develop consistent examination principles, standards, procedures, and report formats.[13] In 2018, the banking agencies continued to work together on various initiatives.

Updating Examination Procedures

In June, the Board issued examination procedures with respect to the Protecting Tenants at Foreclosure Act (PTFA), which had previously expired at the end of December 2014 but was restored in May 2018 by the Economic Growth, Regulatory Relief, and Consumer Protection Act. When examiners review PTFA compliance in an examination, they use the examination procedures to evaluate an institution's awareness of the law, its compliance efforts, and its responsiveness to addressing implementation deficiencies.

In December, the Board, working in consultation with the Federal Deposit Insurance Corporation (FDIC) and the OCC developed updated information regarding the key data fields that examiners use in connection with validating the accuracy of Home Mortgage Disclosure Act (HMDA) data collected since January 1, 2018, pursuant to the CFPB's amendments to Regulation C and the Economic Growth, Regulatory Relief, and Consumer Protection Act's amendments to HMDA. The HMDA key data fields are those that the Federal Reserve, the FDIC, and the OCC collectively determined to be most critical to the integrity of analyses of overall HMDA data.

Outreach

The Federal Reserve maintains a comprehensive public outreach program to promote consumer protection, financial inclusion, and community reinvestment. During 2018, the Federal Reserve continued to enhance its program. Box 1 highlights some of the key supervisory-related outreach activities the Board engaged in during 2018.

Examiner Training

The Examiner Training team of DCCA supports the ongoing professional development of the consumer compliance supervisory staff, from an initial introduction to the Federal Reserve System through the development of proficiency in consumer compliance topics sufficient to earn an examiner's commission. The goal of these efforts is to ensure that examiners have the skills necessary to meet their supervisory responsibilities now and in the future.

Consumer Compliance Examiner Commissioning Program

An overview of the Federal Reserve System's Examiner Commissioning Program for assistant examiners is set forth in supervision and regulation (SR)/community affairs (CA) letter SR 17-6/CA 17-1, "Overview of the Federal Reserve's Supervisory Education Programs."[14]

The consumer compliance examiner training curriculum consists of five courses focused on consumer protection laws, regulations, and examining concepts. On average, examiners progress through a combination of classroom offerings, self-paced learning, virtual instruction, and on-the-job training over a period of two to three years. Achievement is measured by completing the required course content, demonstrating adequate on-the-job knowledge, and passing a professionally validated proficiency examination. In 2018, 23 examiners passed the Consumer Compliance Proficiency Examination. The combination of multiple training delivery channels offers learners and Reserve Banks an ability to customize and to meet training demands more individually and cost effectively.

Continuing Professional Development

In addition to providing core examiner training, the Examiner Staff Development function emphasizes the importance of continuing, career-long learning. Opportunities for continuing professional development include special projects and assignments, self-study programs, rotational assignments, instruction at System schools, mentoring programs, and a consumer compliance examiner forum held every 18 months. Additionally, staff have begun to create a resource for examiners moving into examination responsibilities at large financial institutions.

[13] For more information, see https://www.ffiec.gov/.

[14] See https://www.federalreserve.gov/supervisionreg/srletters/sr1706.htm.

Box 1. Federal Reserve Consumer and Community Outreach Highlights in 2018

The Federal Reserve conducts outreach to provide various stakeholders with information and resources that support their roles in consumer protection, financial inclusion, and community reinvestment. In July 2018, the Board launched a new outreach tool, the *Consumer Compliance Supervision Bulletin*, to provide bankers, consumer advocates, and others interested in consumer protection with high-level summaries of examiners' observations. The publication also covers other noteworthy developments related to consumer protection supervisory issues.

The *Bulletin*, which will be published periodically, is intended to enhance transparency regarding the Federal Reserve's consumer compliance supervisory program by highlighting supervisory observations. It also provides practical steps for institutions to consider when managing consumer compliance risks. The inaugural issue of the *Bulletin* focused on the illegal discrimination practice known as "redlining," as well as on discriminatory loan pricing and underwriting. The issue also discussed unfair or deceptive acts or practices involving overdrafts, loan officer misrepresentations, and products and services marketed to students. Finally, the *Bulletin* briefly highlighted recent regulatory and policy developments. The publication is available on the Board's website at https://www.federalreserve.gov/publications/consumer-compliance-supervision-bulletin.htm.

The *Bulletin* complements other Federal Reserve System outreach efforts to banking organizations, consumer and community advocates, and other stakeholders, such as the *Outlook Live* webinar series, the *Consumer Compliance Outlook* publication, and the *Connecting Communities* webinar series.

Outlook Live webinars (https://www.consumercomplianceoutlook.org/outlook-live/) focus on delivering timely, relevant information on current consumer protection and community reinvestment topics to the banking industry, advocates, and other stakeholders. In 2018, the Federal Reserve collaborated with its supervisory agency partners to offer an *Outlook Live* seminar entitled "2018 Interagency Fair Lending Hot Topics."

The Federal Reserve also offered the following *Outlook Live* webinars:

- "Healthy Communities: Opportunities for CRA Collaboration" (https://consumercomplianceoutlook.org/outlook-live/2018/healthy-communities-opportunities-for-cra-collaboration/)
- "Complaints as a Supervisory and Risk Management Tool" (https://consumercomplianceoutlook.org/outlook-live/2018/complaints-as-a-supervisory-and-risk-management-tool/)
- "Keeping Fintech Fair: Thinking About Fair Lending and UDAP Risks" (https://www.consumercomplianceoutlook.org/2017/second-issue/keeping-fintech-fair-thinking-about-fair-lending-and-udap-risks/)

Consumer Compliance Outlook (https://www.consumercomplianceoutlook.org/) discusses consumer compliance topics of interest to compliance professionals. This publication is distributed electronically to state member banks and to bank and savings and loan holding companies supervised by the Federal Reserve, among other subscribers. In 2018, two issues of *Consumer Compliance Outlook* were published, covering topics such as preparing for a consumer compliance exam and understanding how culture drives a bank's mission.

The *Connecting Communities* webinar series (https://bsr.stlouisfed.org/connectingcommunities/) provides timely insights and information on emerging and important community and economic development topics. As the Fed recognizes that stable communities promote stable regions and, thus, a more robust economy overall, its community development offices work to help advance economic growth and financial stability in communities, especially low- and moderate-income neighborhoods. *Connecting Communities* shares information and research with community development practitioners, financial institution representatives, nonprofit organizations, and policymakers, complementing existing Federal Reserve Community Development outreach initiatives conducted by the 12 Reserve Bank regional offices and the Board.

In 2018, the System continued to offer Rapid Response sessions. Introduced in 2008, these sessions offer examiners webinars and case studies on emerging issues or urgent training needs that result from, for example, the implementation of new laws or regulations. Four Rapid Response sessions with an exclusive consumer compliance focus were designed, developed, and presented to System staff during 2018. Additionally, four Rapid Response sessions were offered that addressed a broader range of supervisory issues, including consumer compliance issues.

Responding to Consumer Complaints and Inquiries

The Federal Reserve investigates complaints against state member banks and selected nonbank subsidiaries of BHCs (Federal Reserve regulated entities), and forwards complaints against other creditors and busi-

nesses to the appropriate enforcement agency. Each Reserve Bank investigates complaints against Federal Reserve regulated entities in its District. The Federal Reserve also responds to consumer inquiries on a broad range of banking topics, including consumer protection questions.

Federal Reserve Consumer Help (FRCH) processes consumer complaints and inquiries centrally. In 2018, FRCH processed 32,226 cases. Of these cases, 17,761 were inquiries and the remainder (14,465) were complaints, with most cases received directly from consumers. Approximately 8 percent of cases were referred to the Federal Reserve from other federal and state agencies.

While consumers can contact FRCH by a variety of different channels, more than half of the FRCH consumer contacts occurred by telephone (53 percent). Nevertheless, 47 percent (15,121) of complaint and inquiry submissions were made in writing (via email, online submissions, mail, and fax). The online form page received 20,135 visits during the year.

Consumer Complaints

Complaints against Federal Reserve regulated entities totaled 3,349 in 2018. Of the total, 89 percent (2,990) were investigated. Fifty-four percent (1,606) of the investigated complaints involved unregulated practices, and 46 percent (1,384) involved regulated practices. (Table 1 shows the breakdown of complaints about regulated practices by regulation or act; table 2 shows complaints by product type.)

Approximately 1 percent (33) of the total complaints were closed without investigation, pending the receipt of additional information from consumers. Two percent (64) were withdrawn by the consumer. Eight percent (262) of the total complaints were still under investigation in January 2019.

Table 1. Investigated complaints against state member banks and selected nonbank subsidiaries of bank holding companies about regulated practices, by regulation/act, 2018

Regulation/act	Number
Regulation AA (Unfair or Deceptive Acts or Practices)	33
Regulation B (Equal Credit Opportunity)	24
Regulation BB (Community Reinvestment)	4
Regulation C (Home Mortgage Disclosure Act)	2
Regulation CC (Expedited Funds Availability)	131
Check21	1
Regulation D (Reserve Requirements)	4
Regulation DD (Truth in Savings)	55
Regulation E (Electronic Funds Transfers)	179
Regulation H (National Flood Insurance Act/Insurance Sales)	6
Regulation M (Consumer Leasing Provisions of TILA)	1
Regulation P (Privacy of Consumer Financial Information)	9
Regulation V (Fair and Accurate Credit Transactions)	88
Regulation Z (Truth in Lending)	131
Garnishment Rule	4
Homeownership Counseling	1
Homeowners Protection Act of 1998	4
Fair Credit Reporting Act	644
Fair Debt Collection Practices Act	25
Fair Housing Act	12
Real Estate Settlement Procedures Act	24
Right to Financial Privacy Act	2
Total	**1,384**

Complaints about Regulated Practices

The majority of regulated practices complaints concerned credit card accounts (approximately 54 percent), checking accounts (21 percent), and real estate (6 percent).[15] The most common credit card com-

[15] Real estate loans include adjustable-rate mortgages, residential construction loans, open-end home equity lines of credit, home

Table 2. Investigated complaints against state member banks and selected nonbank subsidiaries of bank holding companies about regulated practices, by product type, 2018

Subject of complaint/product type	All complaints		Complaints involving violations	
	Number	Percent	Number	Percent
Total	**1,384**	**100**	**40**	**3**
Discrimination alleged				
Real estate loans	13	1	0	0
Credit cards	3	<1	0	0
Other loans	6	<1	0	0
Nondiscrimination complaints				
Checking accounts	287	21	17	42
Real estate loans	72	5	9	23
Credit cards	739	53	4	10
Other	264	19	10	25

plaints related to inaccurate credit reporting (75 percent), forgery/fraud (5 percent), and billing error resolution (4 percent). The most common checking account complaints related to deposit error resolution (24 percent), funds availability not as expected (22 percent), and insufficient funds/overdraft charges and procedures (9 percent). The most common real estate complaints by problem code related to debt collection/foreclosure concerns (14 percent), rates and/or fees (13 percent), and escrow problems (7 percent).

Twenty-two regulated practices complaints alleging credit discrimination on the basis of prohibited borrower traits or rights were received in 2018. Thirteen discrimination complaints were related to the race, color, national origin, or ethnicity of the applicant or borrower. Nine discrimination complaints were related to either the age, handicap, familial status, or religion of the applicant or borrower. Of the closed complaints alleging credit discrimination based on a prohibited basis in 2018, there were no violations related to illegal credit discrimination.

In 70 percent of investigated complaints against Federal Reserve regulated entities, evidence revealed that institutions correctly handled the situation. Of the remaining 30 percent of investigated complaints, 12 percent were identified errors that were corrected by the bank; 3 percent were deemed violations of law; and the remainder included matters involving litigation or factual disputes, internally referred complaints, or complaints about matters for which the consumer was provided responsive information.

Complaints about Unregulated Practices

The Board continued to monitor complaints about banking practices not subject to existing regulations. In 2018, the Board received 1,606 complaints against Federal Reserve regulated entities that involved these unregulated practices. The majority of the complaints were related to electronic transactions/prepaid products (45 percent), checking account activity (21 percent), and credit cards (13 percent).

Complaint Referrals

In 2018, the Federal Reserve forwarded 10,998 complaints to other regulatory agencies and government offices for investigation. The Federal Reserve forwarded 12 complaints to the Department of Housing and Urban Development (HUD) that alleged violations of the Fair Housing Act[16] and were closed in 2018. The Federal Reserve's investigation of these complaints revealed no instances of illegal credit discrimination.

Consumer Inquiries

The Federal Reserve received 17,761 consumer inquiries in 2018 covering a wide range of topics. Consumers were typically directed to other resources, including other federal agencies or written materials, to address their inquiries.

Consumer Laws and Regulations

Throughout 2018, DCCA continued to administer the Board's regulatory responsibilities with respect to certain entities and specific statutory provisions of the consumer financial services and fair lending laws. This included drafting regulations and issuing compliance guidance for the industry and the Reserve Banks and fulfilling the division's role in consulting with the CFPB on consumer financial services and fair lending regulations for which it has rulemaking responsibility.

Annual Indexing of Exempt Consumer Credit and Lease Transactions

In November 2018, the Board and the CFPB announced the revised dollar thresholds in Regulation Z (Truth in Lending) and Regulation M (Consumer Leasing) that will apply in 2019 for determining exempt consumer credit and lease transactions. These thresholds are set pursuant to statutory changes enacted by the Dodd-Frank Act that require adjusting these thresholds annually based on the annual percentage increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). Transactions at or below the thresholds are subject to the protections of the regulations.[17]

Threshold for Small Loan Exemption from Appraisal Requirements for Higher-Priced Mortgage Loans

In November 2018, the Board, the CFPB, and the OCC announced that the threshold for exempting loans from special appraisal requirements for higher-

improvement loans, home purchase loans, home refinance/closed-end loans, and reverse mortgages.

[16] A memorandum of understanding between HUD and the federal bank regulatory agencies requires that complaints alleging a violation of the Fair Housing Act be forwarded to HUD.

[17] For more information, see https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181121b.htm.

priced mortgage loans would increase for 2019.[18] The Dodd-Frank Act amended the Truth in Lending Act to add special appraisal requirements for higher-priced mortgage loans, including a requirement that creditors obtain a written appraisal based on a physical visit to the home's interior before making a higher-priced mortgage loan. The rules implementing these requirements contain an exemption for loans of $25,000 or less and also provide that the exemption threshold will be adjusted annually to reflect increases in the CPI-W.

Annual Adjustment to CRA Asset-Size Threshold for Small and Intermediate Small Institutions

In addition, in December the Board and other federal bank regulatory agencies announced the annual adjustment to the asset-size thresholds used to define small bank, small savings association, intermediate small bank, and intermediate small savings association under the CRA regulations.[19]

Financial institutions are evaluated under different CRA examination procedures based upon their asset-size classification. Those meeting the small and intermediate small institution asset-size thresholds are not subject to the reporting requirements applicable to large banks and savings associations unless they choose to be evaluated as a large institution.

Annual adjustments to these asset-size thresholds are based on the change in the average of the CPI-W, not seasonally adjusted, for each 12-month period ending in November, with rounding to the nearest million.

As a result of the 2.59 percent increase in the CPI-W for the period ending in November 2018, the definitions of small and intermediate small institutions for CRA examinations were changed as follows:

- "Small bank" or "small savings association" means an institution that, as of December 31 of either of the prior two calendar years, had assets of less than $1.284 billion.
- "Intermediate small bank" or "intermediate small savings association" means a small institution with assets of at least $321 million as of December 31 of both of the prior two calendar years and less than $1.284 billion as of December 31 of either of the prior two calendar years.

These asset-size threshold adjustments took effect January 1, 2019.

Consumer Research and Analysis of Emerging Issues and Policy

Throughout 2018, DCCA analyzed emerging issues in consumer financial services policies and practices in order to understand their implications for the market-risk surveillance and supervisory policies that are core to the Federal Reserve's functions. This research and analysis also provided insight into consumer financial decisionmaking.

Researching Issues Affecting Consumers and Communities

In 2018, DCCA explored various issues related to consumers and communities by convening experts, conducting original research, and fielding surveys. The information gleaned from these undertakings provided insights into the factors affecting consumers and households.

Household Economics and Decisionmaking

In order to better understand consumer decisionmaking in the rapidly evolving financial services sector, DCCA periodically conducts internet panel surveys to gather data on consumers' experiences and perspectives on various issues of interest.

Results of DCCA's fifth annual Survey of Household Economics and Decisionmaking (SHED) were published in the *Report on the Economic Well-Being of U.S. Households in 2017*, released in May 2018.[20] DCCA launched the survey to better understand consumer decisionmaking in the wake of the Great Recession, with the aim to capture a snapshot of the financial and economic well-being of U.S. households. In doing so, the SHED collects information on households that is not readily available from other sources or is not available in combination with other variables of interest. It also oversamples LMI households in order to obtain additional precision regarding findings among these populations. In 2017, the survey was doubled in size to be able to study smaller subpopulations and geographies.

[18] For more information, see https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181121a.htm.

[19] For more information, see https://www.federalreserve.gov/newsevents/pressreleases/bcreg20181220a.htm.

[20] For more information, see https://www.federalreserve.gov/consumerscommunities/shed.htm.

The survey also asked respondents about specific aspects of their financial lives, including the following areas:

- employment and informal work
- income and savings
- economic preparedness
- banking and credit
- housing and living arrangements
- education and human capital
- education debt and student loans
- retirement

The latest findings underscored the overall economic recovery and expansion over the five years of the survey. When asked about their finances, 74 percent of adults said they were either doing okay or living comfortably in 2017—over 10 percentage points more than in the first survey in 2013. Despite these gains, stark differences in economic well-being remain, in particular, by education and race. Over three-fourths of whites were at least doing okay financially in 2017 versus less than two-thirds of blacks and Hispanics.

The survey also highlights some aspects of subjective well-being and emerging issues that can be missed in long-standing measures of objective outcomes. Our understanding of full employment and how to measure it is a key example. Many workers in the survey have a full-time job with regular hours, pay raises, and good benefits. Others who are also employed describe a very different experience: fewer hours than they want to work, only a few days' notice on work schedules, and little in benefits or pay increases. Still others supplement their income through side jobs and gig work. In an effort to understand how the opioid crisis may relate to economic well-being, the survey asked questions related to opioids for the first time. About one-fifth of adults (and one-quarter of white adults) personally know someone who has been addicted to opioids. Exposure to opioid addiction was much more common among whites—at all education levels—than among minorities. Those who have been exposed to addiction have somewhat less favorable assessments of economic conditions than those who have not been exposed.

Analysis of Emerging Issues

The Policy Analysis function of DCCA provides key insights, information, and analysis on emerging financial services issues that affect the well-being of consumers and communities. To this end, staff analyze and anticipate trends, monitor legislative activity, form working groups, and organize expert roundtables to identify emerging consumer risks and inform supervision, research, and policy.

In 2018, Policy Analysis staff developed a new article series, *Consumer & Community Context*, for policymakers and the public about the financial conditions and experiences of consumers and communities, including traditionally underserved and economically vulnerable households and neighborhoods. The goal of the series is to further understanding of how the financial well-being of consumers and communities affects the broader economy. The first issue, released in January 2019, focused on student loans while subsequent issues will focus on other themes.[21]

In addition, staff developed analyses on a broad range of issues in financial services markets that potentially pose risks to consumers:

- **Auto lending.** Staff has continued to explore developments in the auto finance market and their impact on consumers, especially subprime auto borrowers. Topics of particular focus in 2018 included early payment delinquency rates and loan performance trends.
- **Housing.** In March, the team convened an invitation-only workshop with nationally recognized experts to discuss policies to address the diminished production of new affordable housing units in many areas of the country. Speakers discussed the various factors limiting new housing supply including rising labor and material costs as well as the growth of restrictive local regulations and the dearth of vacant lots for development. Representatives from four Federal Reserve Bank Districts highlighted regional challenges. DCCA will continue monitoring this issue along with general housing market trends.
- **Retail banking.** Policy Analysis team members have been collaborating with colleagues throughout the division to monitor trends in retail banking, such as rising numbers of branch closures and increasing adoption of online and mobile technologies by consumers for their banking needs. In 2019, staff will continue to track technology's influence on access to financial services and monitor the degree

21 For more information, see https://www.federalreserve.gov/publications/consumer-community-context.htm.

to which bank branches and branch alternatives are effectively serving customers.

- **Small business lending.** The Policy Analysis section monitored credit availability and access for smaller firms that often lack the financing options and in-house financial expertise of larger firms. Staff conducted outreach with banks, nonbank lenders, and borrower advocates to stay abreast of developments. In June, the team, together with the Federal Reserve Bank of Cleveland, released a report, *Browsing to Borrow: "Mom and Pop" Small Business Perspectives on Online Lenders,*[22] that analyzes small business owners' perceptions of online lenders and their understanding of information provided by online lenders about credit products.
- **Student lending.** DCCA staff analyzed the relationship between rural-urban migration patterns and student loan balances. This work, presented at the Student Financial Aid Research Network Conference,[23] also was the basis of an article included in the first issue of *Consumer & Community Context* (mentioned above).
- **Gender wealth gap.** Recent media focus on income equality does not fully capture the challenges women experience in building household wealth, especially women of color and those who are lower income. In 2018, the Policy Analysis team gathered Federal Reserve economists specializing in the Survey of Consumer Finances (SCF) and the SHED along with researchers from the Closing the Women's Wealth Gap organization. These discussions have identified areas for further analysis that will enhance understanding of the issues surrounding the gender wealth gap.

Community Development

The Federal Reserve System's Community Development function promotes economic growth and financial stability—particularly for underserved households and communities—by informing research, policy, and action. Soliciting diverse views on issues affecting the economy and financial markets improves the quality of Federal Reserve research, ensures the fairness of its policies, and the transparency of its actions. Raising awareness of emerging economic trends and risks makes regulation and supervision more responsive to evolving consumer financial services markets and technologies.

Community Development is a decentralized function within the Federal Reserve System, and the Community Affairs Officers at each of the 12 Reserve Banks design activities to respond to the specific needs of the communities they serve. Board staff provide oversight for alignment with Board objectives and coordinate System priorities.

Over the next several years, Community Development staff across the System will focus their efforts on advancing the economic resiliency and mobility of LMI and underserved households and communities. The barriers that prevent LMI and underserved households and communities from participating and deriving benefit from the economy are complex and often structural in nature. The Federal Reserve is well positioned to research and analyze the underlying factors of those barriers as well as the policies and practices that can help to overcome them. The Community Development function is committed to engaging practitioners and policymakers in an independent, objective, and nonpartisan manner that will identify shared interests, stimulate new ideas, and foster collective action.

The Community Development function also advances the Federal Reserve's Community Reinvestment Act supervisory responsibilities by analyzing and disseminating information related to local financial needs and successful approaches for attracting and deploying capital. These efforts support both financial institutions and community organizations to meet the needs of the communities they serve.

In addition to providing a richer, more nuanced understanding of current economic and financial conditions, Community Development staff across the System are deeply engaged in helping lower-income and underserved communities overcome their challenges and capitalize on their assets. They foster local partnerships and comprehensive solutions that support building both physical infrastructure and human capital. To recognize the individual and collective efforts of System staff in this mission, the Board announced the Janet L. Yellen Award for Excellence in Community Development. For more information on the inaugural award, see box 2.

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[22] See https://www.federalreserve.gov/publications/files/2018-small-business-lending.pdf.

[23] See http://pellinstitute.org/downloads/sfarn_2018-Tabit_Winters_060718.pdf.

Box 2. Recognizing Outstanding Achievement in Community Development

In 2018, the Board established the Janet L. Yellen Award for Excellence in Community Development. The award honors former Chair Yellen's legacy and her commitment to ensuring that the perspectives of consumers and communities continue to inform Federal Reserve research, policy, and action.[1] Through her leadership at the Federal Reserve, Chair Yellen elevated the importance of economic and financial inclusion, underscoring that a vibrant economy is one that is inclusive. She also recognized the unique role the community development function plays in advancing its mission to facilitate innovative solutions that bring capital to support economic development in lower-income communities.[2]

The award was created by the Division of Consumer and Community Affairs (DCCA) to recognize staff in the Federal Reserve System's community development function who demonstrate exemplary leadership and outstanding achievement through activities that further the System's responsibilities and goals to support community economic development, as Chair Jerome Powell described at the event.[3] Each year, the Federal Reserve Banks and DCCA can nominate staff for consideration.

Ariel Cisneros, senior community development advisor at the Federal Reserve Bank of Kansas City, received the inaugural award on December 3, 2018. DCCA recognized him for his work in establishing innovative and impactful community development resources and programs that benefit low- to moderate-income communities both within the 10th District and at a national level.

1 For more information, see https://www.federalreserve.gov/newsevents/pressreleases/other20181130a.htm.

2 For more information, see https://www.federalreserve.gov/newsevents/speech/files/brainard20181203b.pdf.

3 For more information, see https://www.federalreserve.gov/newsevents/speech/files/powell20181203a.pdf.

Access to Capital and Financial Services in Rural Communities

Rooted in its responsibility to help banks meet their obligations under the CRA, the Federal Reserve's Community Development function strives to understand the ever-changing financial services marketplace and its implications for access to capital, particularly for underserved households and communities. Bank branch locations and the people and communities that they are serving—or, in some cases, not serving adequately—are of particular interest.

Data at the county and national level indicate that most rural markets are well served, but that can mask the impact of bank branch closures in smaller markets. To assess the effects of bank closures on rural communities, the Community Development function conducted a national series of listening sessions with local residents and small business owners to hear what the loss of a bank meant to them and their community.[24] Not surprisingly, small businesses, older people, and people with limited access to transportation are most affected. The listening sessions also revealed that the loss of the branch often means more than the loss of access to financial services; it also means the loss of financial advice, local civic leadership, and an institution that brings needed customer activity to nearby businesses.

Understanding Disparities in the Labor Market

Labor market outcomes vary widely across demographic groups, including those defined by race/ethnicity, gender, and geography. Accordingly, economic analyses that focus exclusively on aggregate outcomes may overlook important disparities in how various groups experience the labor market. In recent years, community development programs across the System dedicated significant resources to identifying disparities in labor market outcomes and understanding policies that could improve economic outcomes for vulnerable workers. Board staff completed an analysis of disparities in job separations across racial groups based on data from the 2018 SHED.

24 For more information, see https://www.federalreserve.gov/newsevents/speech/quarles20181205a.htm.

6 Federal Reserve Banks

The Federal Reserve Banks provide payment services to depository and certain other institutions, distribute the nation's currency and coin to depository institutions, and serve as fiscal agents and depositories for the U.S. government and other entities. The Reserve Banks also contribute to setting national monetary policy and supervision of banks and other financial entities operating in the United States (discussed in sections 2 through 4 of this annual report).

Federal Reserve Priced Services

Reserve Banks provide a range of payment and related services to depository and certain other institutions; these "priced services" include collecting checks, operating an automated clearinghouse (ACH) service, transferring funds and securities, and providing a multilateral settlement service.[1]

The Reserve Banks have been engaged in a number of multiyear technology initiatives that will modernize their priced-services processing platforms. These investments are expected to enhance efficiency, the overall quality of operations, and the Reserve Banks' ability to offer additional services, consistent with the longstanding principles of fostering efficiency and safety, to depository institutions. The Reserve Banks continued to enhance the resiliency and information security posture of the Fedwire Funds, National Settlement Service, and Fedwire Securities Service through the Fedwire Resiliency Program, a multiyear initiative to respond to environmental threats and cyberthreats. The Reserve Banks are also developing and planning to implement a new FedACH-processing platform to improve the efficiency and reliability of their current FedACH operations.

1 The ACH enables depository institutions and their customers to process large volumes of payments through electronic batch processes.

Cost Recovery

The Monetary Control Act of 1980 requires that the Federal Reserve establish fees for priced services to recover, over the long run, all direct and indirect costs actually incurred as well as the imputed costs that would have been incurred—including financing costs, taxes, and certain other expenses—and the return on equity (profit) that would have been earned if a private business firm had provided the services.[2] The imputed costs and imputed profit are collectively referred to as the private-sector adjustment factor (PSAF). From 2009 through 2018, the Reserve Banks recovered 102.6 percent of the total priced services costs, including the PSAF (see table 1).[3]

In 2018, Reserve Banks recovered 102.1 percent of the total priced services costs, including the PSAF.[4] The Reserve Banks' operating expenses and imputed costs totaled $428.1 million. Revenue from operations totaled $442.5 million, resulting in net income from priced services of $14.4 million. The commercial check-collection service and the Fedwire Funds and National Settlement Services achieved full cost recovery; however, the FedACH Service and Fedwire Securities Service did not achieve full cost recovery. FedACH Service did not achieve full cost recovery because of investment costs associated with the multiyear technology initiative to modernize its processing

2 Depository Institutions Deregulation and Monetary Control Act, Pub. L. No. 96-221, 94 Stat. 132 (1980). Financial data reported throughout this section—including revenue, other income, costs, income before taxes, and net income—will reference the "Pro Forma Financial Statements for Federal Reserve Priced Services" at the end of this section.

3 According to the Accounting Standards Codification (ASC) Topic 715 (ASC 715), Compensation–Retirement Benefits, the Reserve Banks recognized a $624.1 million reduction in equity related to the priced services' benefit plans through 2018. Including this reduction in equity, which represents a decline in economic value, results in cost recovery of 104.1 percent for the 10-year period. For details on how implementing ASC 715 affected the pro forma financial statements, refer to note 3 to the pro forma financial statements at the end of this section.

4 Total cost is the sum of operating expenses, imputed costs (income taxes, interest on debt, interest on float, and sales taxes), and the targeted return on equity.

Table 1. Priced services cost recovery, 2009–18
Millions of dollars, except as noted

Year	Revenue from services[1]	Operating expenses and imputed costs[2]	Targeted return on equity[3]	Total costs	Cost recovery (percent)[4]
2009	675.4	707.5	19.9	727.5	92.8
2010	574.7	532.8	13.1	545.9	105.3
2011	478.6	444.4	16.8	461.2	103.8
2012	449.8	423.0	8.9	432.0	104.1
2013	441.3	409.3	4.2	413.5	106.7
2014	433.1	418.7	5.5	424.1	102.1
2015	429.1	397.8	5.6	403.4	106.4
2016	434.1	410.5	4.1	414.7	104.7
2017	441.6	419.4	4.6	424.0	104.1
2018	442.5	428.1	5.2	433.3	102.1
2009–18	4,800.4	4,591.6	88.0	4,679.6	102.6

Note: Here and elsewhere in this section, components may not sum to totals or yield percentages shown because of rounding.

1 For the 10-year period, includes revenue from services of $4,777.8 million and other income and expense (net) of $22.6 million.

2 For the 10-year period, includes operating expenses of $4,444.7 million, imputed costs of $58.5 million, and imputed income taxes of $88.4 million.

3 From 2009 to 2012, the PSAF was adjusted to reflect the actual clearing balance levels maintained; previously, the PSAF had been calculated based on a projection of clearing balance levels.

4 Revenue from services divided by total costs. For the 10-year period, cost recovery is 104.1 percent, including the effect of accumulated other comprehensive income (AOCI) reported by the priced services under ASC 715. For details on changes to the estimation of priced services AOCI and their effect on the pro forma financial statements, refer to note 3 to the “Pro Forma Financial Statements for Federal Reserve Priced Services” at the end of this section.

platform. Fedwire Securities Services did not achieve full cost recovery because of volume declines driven by market changes.

Commercial Check-Collection Service

The commercial check-collection service provides a suite of electronic and paper processing options for forward and return collections. In 2018, the Reserve Banks recovered 102.7 percent of the total costs of their commercial check-collection service, including the related PSAF. Revenue from operations totaled $132.9 million, resulting in net income of $5.1 million. The Reserve Banks’ operating expenses and imputed costs totaled $127.8 million. Reserve Banks handled 4.7 billion checks in 2018, a decrease of 8.0 percent from 2017 (see table 2). The average daily value of checks collected by the Reserve Banks in 2018 was approximately $33.8 billion, a decrease of 0.6 percent from the previous year.

Commercial Automated Clearinghouse Service

The commercial ACH service provides domestic and cross-border batched payment options for same-day and next-day settlement. In 2018, the Reserve Banks recovered 99.2 percent of the total costs of their commercial ACH services, including the related PSAF. Revenue from operations totaled $149.7 million, resulting in a net income of $0.6 million. The Reserve Banks’ operating expenses and imputed costs totaled $149.1 million. The Reserve Banks processed 14.7 billion commercial ACH transactions in 2018, an increase of 6.9 percent from 2017 (see table 2). The average daily value of FedACH transfers in 2018 was approximately $103.0 billion, an increase of 10.5 percent from the previous year.

Fedwire Funds and National Settlement Services

In 2018, the Reserve Banks recovered 105.8 percent of the costs of their Fedwire Funds and National Settlement Services, including the related PSAF. Revenue from operations totaled $132.4 million, resulting in a net income of $8.8 million. The Reserve Banks’ operating expenses and imputed costs totaled $123.7 million in 2018.

Fedwire Funds Service

The Fedwire Funds Service allows its participants to send or receive domestic time-critical payments using their balances at Reserve Banks to transfer funds in real time. From 2017 to 2018, the number of Fedwire funds transfers originated by depository institutions increased 3.9 percent, to approximately 163.0 million (see table 2). The average daily value of Fedwire funds transfers in 2018 was $2.8 trillion, a decrease of 3.2 percent from the previous year.

Table 2. Activity in Federal Reserve priced services, 2016–18
Thousands of items, except as noted

Service	2018	2017	2016	Percent change	
				2017–18	2016–17
Commercial check	4,739,534	5,152,521	5,241,286	-8.0	-1.7
Commercial ACH	14,691,615	13,749,249	12,960,346	6.9	6.1
Fedwire funds transfer	162,980	156,788	151,899	3.9	3.1
National settlement	521	517	501	0.8	3.3
Fedwire securities	3,510	3,465	3,881	1.3	-10.7

Note: Activity in commercial check is the total number of commercial checks collected, including processed and fine-sort items; in commercial ACH, the total number of commercial items processed; in Fedwire funds transfer and securities transfer, the number of transactions originated online and offline; and in national settlement, the number of settlement entries processed.

National Settlement Service

The National Settlement Service is a multilateral settlement system that allows participants in private-sector clearing arrangements to settle transactions using their balances at Reserve Banks. In 2018, the service processed settlement files for 12 local and national private-sector arrangements. The Reserve Banks processed 9,674 files that contained about 521,000 settlement entries for these arrangements in 2018 (see table 2). Settlement file activity in 2018 increased 4.5 percent, and settlement entries increased 0.8 percent.

Fedwire Securities Service

The Fedwire Securities Service allows its participants to transfer electronically to other service participants

Box 1. Improving the U.S. Payment System

The Federal Reserve plays many roles in the payment system, including payment system operator, supervisor of financial institutions and systemically important financial market utilities, regulator, researcher, and catalyst for improvement. Acting primarily in its catalyst role, the Federal Reserve encouraged payment stakeholders to join together to improve the payment system in the United States in its "Strategies for Improving the U.S. Payment System" paper, issued in January 2015. The strategies outlined in the paper included the creation of the Faster Payments Task Force (FPTF) and the Secure Payments Task Force (SPTF) , both of which provided forums for a diverse group of industry participants to collaborate on payment system improvements.

In its final report, released in 2017, the FPTF published a set of consensus recommendations for achieving its vision of ubiquitous, safe, and efficient faster payment capabilities for the United States. One recommendation called for industry development of a governance framework for faster payments, and in response, an industry group called the Governance Framework Formation Team (GFFT) was established with Federal Reserve leadership. The GFFT focused on defining the structure, decision-making, and processes of a governance framework and in late 2018 announced a newly formed, industry-led U.S. Faster Payments Council (FPC) that is intended to develop collaborative approaches to accelerate U.S. adoption of faster payments. The launch of the FPC formally concluded the GFFT's work.

Also as part of its recommendations, the task force asked the Federal Reserve to develop a 24x7x365 settlement service to support faster payments and to explore and assess the need for other Federal Reserve operational roles in faster payments. In response, the Federal Reserve initiated a strategic assessment of its settlement services and, in October 2018, published a *Federal Register* notice requesting public comments on two potential actions the Federal Reserve could take to support real-time gross settlement of faster payments in the United States: a service for 24x7x365 real-time gross interbank settlement of faster payments and a liquidity management tool to support private-sector faster payment settlement services.

The SPTF concluded in 2018, having largely accomplished its objective of identifying and promoting actions that can be taken by payment system participants to promote payment security through developing and publishing two resources: one on shared data sources on payments security and another on risks associated with various payment processes. The Federal Reserve has developed plans through 2020 to continue its engagement with the industry on secure payments topics through research and other collaboration efforts.

certain securities issued by the U.S. Treasury Department, federal government agencies, government-sponsored enterprises, and certain international organizations.[5] In 2018, the Reserve Banks recovered 98.7 percent of the costs of their Fedwire Securities Service, including the related PSAF. Revenue from operations totaled $27.5 million, resulting in a net income of $0.0 million. The Reserve Banks' operating expenses and imputed costs totaled $27.5 million in 2018. In 2018, the number of non-Treasury securities transfers processed via the service increased 1.3 percent from 2017, to approximately 3.5 million (see table 2). The average daily value of Fedwire Securities transfers in 2018 was approximately $1.2 trillion, a decrease of approximately 1.0 percent from the previous year.

Float

In 2018, the Reserve Banks had daily average credit float of $254.6 million, compared with daily average credit float of $379.3 million in 2017.[6]

Currency and Coin

The Federal Reserve Board issues the nation's currency (in the form of Federal Reserve notes) to 28 Federal Reserve Bank offices. The Reserve Banks, in turn, distribute Federal Reserve notes to depository institutions in response to public demand. Together, the Board and Reserve Banks work to maintain the integrity of and confidence in Federal Reserve notes. In 2018, the Board paid Treasury's Bureau of Engraving and Printing (BEP) $804.8 million for costs associated with the production of 8.0 billion Federal Reserve notes. The Reserve Banks also distribute coin to depository institutions on behalf of the United States Mint.[7]

The volume of Federal Reserve notes in circulation at year-end 2018 totaled 43.4 billion pieces, a 4.2 percent increase from 2017. More than half of this growth was attributable to growth in demand for $100 notes, and an additional 32.0 percent was attributable to growth in demand for $1 and $20 notes. In 2018, the Reserve Banks distributed 36.8 billion Federal Reserve notes into circulation and received 35.0 billion Federal Reserve notes from circulation, which is relatively unchanged from 2017.

The value of Federal Reserve notes in circulation at year-end 2018 totaled $1,671.9 billion, a 6.4 percent increase from 2017. The year-over-year increase is attributable largely to increased demand for $100 notes. The Board estimates that at least one-half of the value of Federal Reserve notes in circulation is held abroad, mainly as a store of value.

In addition, the Reserve Banks distributed 69.9 billion coins into circulation, a 2.8 percent decrease from 2017, and received 56.0 billion coins from circulation, a 3.8 percent decrease from 2017.

Other Improvements and Efforts

During 2018, the Federal Reserve continued developmental work to replace the aging high-speed currency processing equipment and sensors at all Reserve Banks by 2026. Through a competitive process, the Federal Reserve selected two vendors to build prototype machines for delivery in 2020. Following the prototype assessments, the Reserve Banks will select one vendor to develop new production machines. In addition to new machine development, the Federal Reserve issued a request for proposals to replace sensors within the replacement high-speed currency processing equipment, and expects to award this contract in 2019.

In 2018, the Board approved a policy change permitting the Reserve Banks to accept and distribute misfaced $50 and $100 notes, improved the quality of $1 notes that the Reserve Banks distribute to circulation, and accelerated the destruction of old-design $5, $10, $20, and $50 notes.[8]

[5] The expenses, revenues, volumes, and fees reported here are for transfers of securities issued by federal government agencies, government-sponsored enterprises, and certain international organizations. Reserve Banks provide Treasury securities services in their role as Treasury's fiscal agent. These services are not considered priced services. For details, see "Treasury Securities Services" later in this section.

[6] Credit float occurs when the Reserve Banks debit the paying bank for checks and other items prior to providing credit to the depositing bank.

[7] The Federal Reserve Board is the issuing authority for Federal Reserve notes, while the United States Mint, a bureau of the U.S. Department of the Treasury, is the issuing authority for coin.

[8] Misfaced notes are notes that are reverse-side up, rather than portrait-side up; in previous years, Reserve Banks destroyed $50 and $100 misfaced notes during processing, even if they were otherwise fit for recirculation. In 2018, Reserve Banks began to pay out misfaced $50 and $100 notes to depository institutions and accept misfaced notes in deposits from depository institutions. This change reduces the number of notes that Reserve Banks destroy and increases the number of fit notes that Reserve Banks can pay out to meet domestic demand.

Based on analysis of circulation patterns and the condition of notes being deposited at the Reserve Banks, the policy changed to improve the quality of $1 notes, tightened the screening for soiling used by high-speed currency processing equipment to

Fiscal Agency and Government Depository Services

In accordance with section 15 of the Federal Reserve Act, the Reserve Banks, upon the direction of the Secretary of the United States Department of the Treasury, act as fiscal agents of the United States government. As fiscal agents, the Reserve Banks auction Treasury securities, process electronic and check payments for the Treasury, collect funds owed to the federal government, maintain the Treasury's operating cash account, and develop, operate, and maintain a number of automated systems to support the Treasury's mission. In addition, the Reserve Banks also provide certain fiscal agency services to other entities. The Treasury and other entities fully reimburse the Reserve Banks for the expense of providing fiscal agency and depository services.

evaluate $1 bank notes for either recirculation or destruction. This change is expected to increase the number of $1 notes destroyed in 2019 for soiling, reduce the number but improve the fitness of $1 notes returned to circulation, and should help ensure that $1 notes in circulation continue to function well in commerce.

The accelerated destruction of $5, $10, $20, and $50 notes reduces the variety of note designs co-circulating and the burden to authenticate a very small population of older design notes. All designs of U.S. currency, however, remain legal tender.

In 2018, the Reserve Banks successfully concluded a Treasury-initiated, multiyear fiscal agent consolidation effort, migrated an information repository to the cloud, and completed efforts to modernize systems that the Reserve Banks operate and maintain on behalf of the Treasury, while strengthening the Treasury's systems against ever-evolving cybersecurity threats.[9] In addition, Reserve Banks provided book-entry securities services and custodial and correspondent banking services to other government agencies, government-sponsored enterprises, official international organizations, and foreign central banks.

The Reserve Banks expenses for providing fiscal agency services in 2018 were $706.0 million, an increase of $7.7 million, or 1.1 percent (see table 3). Support for Treasury programs accounted for 94.4 percent of expenses, and support for other entities accounted for 5.6 percent.

[9] The Federal Reserve migrated the financial information system to the cloud and can be accessed at https://www.transparency.treasury.gov/.

Table 3. Expenses of the Federal Reserve Banks for fiscal agency and depository services, 2016–18
Thousands of dollars

Agency and service	2018	2017	2016
Department of the Treasury			
Payment, cash-management, and collection services			
Payment services	206,809	195,306	177,558
Cash-management services	85,391	82,281	96,455
Collection services	70,326	75,960	75,039
Technology infrastructure development and support[1]	115,850	117,380	96,931
Other services	13,214	12,115	11,708
Total payment, collection, and cash-management services	491,589	483,043	457,691
Treasury securities services			
Treasury wholesale securities			
Treasury auction	46,695	47,227	46,430
Treasury securities safekeeping and transfer	26,564	25,171	22,890
Treasury retail securities	49,249	50,370	54,838
Technology infrastructure development and support[1]	6,140	7,442	6,909
Other services	674	1,573	3,640
Total Treasury securities services	129,321	131,783	134,706
Other Treasury services			
Total other Treasury Services	45,853	45,686	43,312
Total, Treasury	**666,763**	**660,511**	**635,709**
Other entities			
Total, other entities	39,231	37,759	41,270
Total reimbursable expenses	**705,995**	**698,271**	**676,979**

Note: Service costs include reimbursable pension costs, where applicable. Previous versions of the Annual Report provided a separate line item for pension expenses.

[1] These costs include the development and support costs of Treasury technology infrastructure.

Payment Services

The Reserve Banks work closely with the Treasury and other government agencies to process payments to individuals, businesses, institutions, and government agencies. The Reserve Banks process federal payroll payments, Social Security and veterans' benefits, income tax refunds, vendor payments, and other types of payments.

Reserve Bank operating expenses for payment-related activities were $206.8 million in 2018, an increase of 5.9 percent. The most notable programs that contributed to cost changes included the stored-value card program, the post-payment system, the invoice-processing platform, and the U.S. Electronic Payment Solution Center.

The stored-value card program comprises three military cash-management services: EagleCash, EZPay, and Navy Cash. These programs provide electronic payment methods for goods and services on military bases and Navy ships, both domestic and overseas. Stored-value cards can be found on over 80 U.S. military bases and installations in over 19 countries and on over 135 naval ships. In 2018, Reserve Bank operating expenses for the stored-value card program were $48.2 million, an increase of 19.6 percent, primarily driven by the Reserve Banks incurring a full year of operations and maintenance costs based on work that transitioned from a financial agent to the Reserve Banks in mid-2017.

The Reserve Banks continued work on the post-payment system initiative, a multiyear effort to modernize several of the Treasury's legacy post-payment processing systems into a single system to enhance operations, reduce expenses, improve data analytics capabilities, and provide a centralized and standardized set of payment data. In 2018, the program conducted an assessment that resulted in a change in approach and technical architecture. In 2018, program expenses for the post-payment system initiative were $31.1 million, an increase of 32.3 percent, largely because of software development costs and software amortization.

The invoice-processing platform is an electronic invoicing and payment information system that allows vendors to enter invoice data electronically, through either a web-based portal or electronic submission. The system accepts, processes, and presents data from supplier systems related to various stages of a payment transaction, such as the purchase order and invoice. In 2018, expenses for the invoice-processing platform were $21.0 million, a decrease of 31.9 percent, largely because of decreased costs following Treasury's fiscal agent consolidation.

The U.S. Treasury Electronic Payment Solution Support Center provides broad support for Treasury initiatives aimed at eliminating paper check payments and increasing electronic payments to individuals. In fiscal year 2018, Treasury disbursed 98.4 percent of all benefit payments electronically.[10] In 2018, expenses for the U.S. Treasury Electronic Payment Solution Support Center were $20.7 million, an increase of 7.6 percent, largely attributable to increased software amortization and personnel costs.

Treasury Cash-Management Services

The Reserve Banks maintain the Treasury's operating cash account and provide collateral-management and collateral-monitoring services for those Treasury programs that have collateral requirements.

In 2018, Reserve Bank operating expenses related to Treasury cash-management services were $85.4 million, an increase of 3.8 percent. The increase reflects higher application development and operations and maintenance costs associated with the Bank Management System application and the Financial Information Repository.[11] The Bank Management System determines commercial bank compensation for depository services provided to the Treasury. The Financial Information Repository provides information on financial transactions processed by the Treasury.

Collection Services

The Reserve Banks work closely with the Treasury to collect funds, including various taxes, fees for goods and services, and delinquent debts owed to the federal government. In 2018, Reserve Bank expenses related to collection services were $70.3 million, a decrease of 7.4 percent, largely because of decreased staffing costs following Treasury's fiscal agent consolidation program.

The Reserve Banks operate and maintain Pay.gov, an application that allows the public to use the internet to initiate and authorize payments to federal agen-

[10] The U.S. government fiscal year 2018 spanned October 1, 2017, through September 30, 2018.

[11] The Bank Management System also provides analytical tools to review and approve compensation, budgets, and outflows.

cies. Pay.gov expenses were $24.7 million in 2018, an increase of 2.5 percent, primarily because of increased software, personnel, and support costs. During the year, the Pay.gov program expanded to include more than 143 new agency programs and processed more than 205 million online payments totaling over $179 billion.[12]

Treasury Securities Services

The Reserve Banks work closely with the Treasury in support of the borrowing needs to operate the federal government. The Reserve Banks auction, issue, maintain, and redeem securities; provide customer service; and operate the automated systems supporting U.S. savings bonds and marketable Treasury securities (bills, notes, and bonds). Treasury securities services consist of wholesale securities programs, which primarily serve institutional investors, and retail securities programs, which primarily serve individual investors.

Wholesale Securities Programs

The Reserve Banks support wholesale securities services through the sale, issuance, safekeeping, and transfer of marketable Treasury securities for institutional investors. During 2018, the Reserve Banks conducted 284 Treasury securities auctions and issued approximately $10.2 trillion in securities.

In 2018, Reserve Bank operating expenses to support Treasury securities auctions were $46.7 million, a slight decrease of 1.1 percent. Operating expenses reflect upgrades to the application that receives and processes auction bids submitted primarily by wholesale securities auction participants.

Operating expenses associated with Treasury securities safekeeping and transfer activities were $26.6 million in 2018, an increase of 5.5 percent, primarily because of increased activity.

Retail Securities Programs

The Reserve Banks support Treasury's retail securities services, which provide retail securities to institutional and individual customers through electronic systems and provide customer service.[13] Reserve Bank operating expenses to support retail securities services were $49.2 million in 2018, a decrease of 2.2 percent, largely because of the Treasury's July 2017 decision to phase out the myRA retirement savings program.[14] Program expenses included technology enhancements to TreasuryDirect.gov, savings bond processing, and fulfillment center costs such as mail processing and virtual case file management.

Services Provided to Other Entities

The Reserve Banks, when permitted by federal statute or when required by the Secretary of the Treasury, also provide fiscal agency services to other domestic and international entities.

Reserve Bank operating expenses for services provided to other entities were $39.2 million in 2018, an increase of 3.9 percent. Debt servicing activities, which include issuing principal and interest payments on mortgage-backed securities, account for a significant amount of the work performed for other entities, with the majority performed for the Federal Home Loan Mortgage Association (Freddie Mac), the Federal National Mortgage Association (Fannie Mae), and the Government National Mortgage Association (Ginnie Mae).

Use of Federal Reserve Intraday Credit

The Board's Payment System Risk policy governs the use of Federal Reserve Bank intraday credit, also known as daylight overdrafts. A daylight overdraft occurs when an institution's account activity creates a negative balance in the institution's Federal Reserve account at any time in the operating day. Daylight overdrafts enable an institution to send payments more freely throughout the day than if it were limited strictly by its available intraday funds balance, increasing efficiency and reducing payment system risk. The Payment System Risk policy recognizes explicitly the role of the central bank in providing intraday balances and credit to healthy institutions; under the policy, the Reserve Banks provide collateralized intraday credit at no cost.

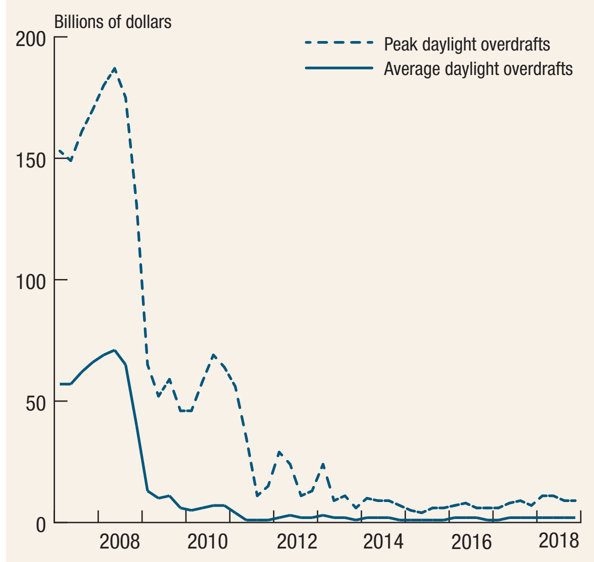
Before the 2007–09 financial crisis, overnight balances were much lower and daylight overdrafts significantly higher than levels observed since late 2008. The use of daylight overdrafts spiked amid the mar-

[12] In 2017, Pay.gov processed more than 189 million online payments, totaling nearly $155 billion.

[13] The retail securities program operates and maintains the TreasuryDirect.gov website.

[14] The Treasury's July 2017 announcement is available at https://www.treasury.gov/press-center/press-releases/Pages/sm0135.aspx.

Figure 1. Aggregate daylight overdrafts, 2008–18



ket turmoil near the end of 2008 but dropped sharply as various liquidity programs initiated by the Federal Reserve, all since terminated, took effect. During this period, the Federal Reserve also began paying interest on balances held at the Reserve Banks, increased its lending under the Term Auction Facility, and began purchasing government-sponsored enterprise mortgage-backed securities. These measures tended to increase balances institutions held at the Banks, which decreased the demand for intraday credit. In 2007, for example, institutions held, on average, less than $20 billion in overnight balances, and total average daylight overdrafts were around $60 billion. In contrast, institutions held historically high levels of overnight balances at the Reserve Banks in 2018, while daylight overdrafts remained historically low, as shown in figure 1.

Daylight overdraft fees are also at historically low levels. In 2018, institutions paid about $111,417 in daylight overdraft fees; in contrast, fees totaled more than $50 million in 2008. The decrease in fees is largely attributable to the elevated level of reserve balances that began to accumulate in late 2008 and to the 2011 policy revision that eliminated fees for daylight overdrafts that are collateralized.

FedLine Access to Reserve Bank Services

The Reserve Banks' FedLine access solutions provide financial institutions with a variety of alternatives for electronically accessing the Banks' payment and information services. For priced services, the Reserve Banks charge fees for these electronic connections and allocate the associated costs and revenue to the various services. There are currently six FedLine channels through which customers can access the Reserve Banks' priced services: FedMail, FedLine Exchange, FedLine Web, FedLine Advantage, FedLine Command, and FedLine Direct. These FedLine channels are designed to meet the individual connectivity, security, and contingency requirements of depository institution customers.

Between 2008 and 2017, Reserve Bank priced FedLine connections decreased nearly 23 percent, while the number of depository institutions in the United States declined 34 percent.

The Reserve Banks continue to advance the safety and security of the FedLine network through key infrastructure upgrades, proactive monitoring of an evolving threat environment, strengthened endpoint security policies, and dedicated customer communication and education programs.

Information Technology

The improvement of the efficiency, effectiveness, and security of information technology (IT) services and operations continued to be a central focus of the Federal Reserve Banks. Led by the Federal Reserve's National IT organization, the 2016–2020 IT System Strategy continued to mature to enhance the delivery of IT services and better support the Federal Reserve business strategies. Elements of the plan focus on IT productivity, simplicity, accountability, and stewardship across the Reserve Banks. Several specific initiatives under the strategy also strengthened the System's information security posture. National IT continues to guide the strategy's implementation and track progress toward the strategy's goals and will refresh the effort in 2020.

The Reserve Banks remained vigilant about their cybersecurity posture, investing in risk-mitigation initiatives and programs and continuously monitoring and assessing cybersecurity risks to operations and protecting systems and data. The Federal Reserve implemented several cybersecurity initiatives that enhanced identity and access management capabilities; enhanced the ability to respond to evolving cybersecurity threats with agility, decisiveness, and speed by streamlining decision making during a

cybersecurity incident; and continue to improve continuous monitoring capabilities of critical assets.

Examinations of the Federal Reserve Banks

The combined financial statements of the Reserve Banks as well as the financial statements of each of the 12 Reserve Banks are audited annually by an independent public accounting firm retained by the Board of Governors.[15] In addition, the Reserve Banks are subject to oversight by the Board of Governors, which performs its own reviews (see box 2).

The Reserve Banks use the 2013 framework established by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) to assess their internal controls over financial reporting, including the safeguarding of assets. The management of each Reserve Bank annually provides an assertion letter to its board of directors that confirms adherence to COSO standards.

The Federal Reserve Board engaged KPMG LLP (KPMG) to audit the 2018 combined and individual financial statements of the Reserve Banks.[16] In 2018, KPMG also conducted audits of the internal controls associated with financial reporting for each of the Reserve Banks. Fees for KPMG's services totaled $7.0 million. To ensure auditor independence, the Board requires that KPMG be independent in all matters relating to the audits. Specifically, KPMG may not perform services for the Reserve Banks or others that would place it in a position of auditing its own work, making management decisions on behalf of the Reserve Banks, or in any other way impairing its audit independence. In 2018, the Reserve Banks did not engage KPMG for significant non-audit services.

The Board's reviews of the Reserve Banks include a wide range of oversight activities, conducted primarily by its Division of Reserve Bank Operations and Payment Systems. Division personnel monitor, on an ongoing basis, the activities of each Reserve Bank, National IT, and the System's Office of Employee Benefits (OEB). The oversight program identifies the most strategically important Reserve Bank current and emerging risks and defines specific approaches to achieve a comprehensive evaluation of the Reserve Banks' controls, operations, and management effectiveness.

The comprehensive reviews include an assessment of the internal audit function's effectiveness and its conformance to the Institute of Internal Auditors' (IIA) International Standards for the Professional Practice of Internal Auditing, applicable policies and guidance, and the IIA's code of ethics.

The Board also reviews System Open Market Account (SOMA) and foreign currency holdings annually to

- determine whether the New York Reserve Bank, while conducting the related transactions and associated controls, complies with the policies established by the Federal Open Market Committee (FOMC); and
- assess SOMA-related IT project management and application development, vendor management, and system resiliency and contingency plans.

In addition, KPMG audits the year-end schedule of SOMA participated asset and liability accounts and the related schedule of participated income accounts. The FOMC is provided with the external audit reports and a report on the Board review.

Income and Expenses

Table 4 summarizes the income, expenses, and distributions of net earnings of the Reserve Banks for 2018 and 2017. Income in 2018 was $112.9 billion, compared with $114.2 billion in 2017.

Expenses totaled $49,383 million, including

- $38,486 million in interest paid to depository institutions on reserve balances and others;
- $4,527 million in Reserve Bank operating expenses;
- $4,559 million in interest expense on securities sold under agreements to repurchase;
- $484 million in net periodic pension expense;
- $838 million in assessments for Board of Governors expenditures;

[15] See "Federal Reserve Banks Combined Financial Statements" in section 12 of this report.

[16] In addition, KPMG audited the Office of Employee Benefits of the Federal Reserve System (OEB), the Retirement Plan for Employees of the Federal Reserve System (System Plan), and the Thrift Plan for Employees of the Federal Reserve System (Thrift Plan). The System Plan and the Thrift Plan provide retirement benefits to employees of the Board, the Federal Reserve Banks, the OEB, and the Consumer Financial Protection Bureau.

Box 2. Oversight

The Board of Governors is authorized by the Federal Reserve Act to exercise general supervision over the Reserve Banks; to examine at its discretion the accounts, books, and affairs of each Reserve Bank; and to require such statements and reports as it may deem necessary. In addition, the Board is required to order an examination of each Reserve Bank at least once each year.

The Act is silent on the form of these annual examinations. In its first *Annual Report* (1914), the Board stated that examinations of Reserve Banks should include compliance with provisions of the Act and Board regulations, competency of management, and adequacy of records, calling attention to any unsafe or unsound condition.

Since the passage of the Act, the management and operational structure of the Reserve Banks has changed significantly. In recent years, critical operations were consolidated into fewer sites, and management decisions have increasingly been made at the System level. For example, before 2005, each Reserve Bank was engaged in the processing of check payments, but now most processing occurs at a single Reserve Bank. In addition, the role and responsibilities of the Reserve Banks' internal audit and the audit committee of each Reserve Bank's board of directors have grown in importance. To address these changes, the Board's Committee on Federal Reserve Bank Affairs and the Division of Reserve Bank Operations and Payment Systems (RBOPS) have continuously refined their oversight strategy to maintain a focus on areas of high risk and strategic importance to the System.

Since 1995, the Board has contracted with a public accounting firm to conduct on-site audits of the financial statements of each Reserve Bank, the System Open Market Account at the Federal Reserve Bank of New York, and the combined financial statements of the Reserve Banks. In 1999, the Act was amended to require that the Board order an annual independent audit of each Reserve Bank. The external auditor also conducts audits of the internal controls associated with financial reporting for each of the Reserve Banks. Before the contract with an external auditor, RBOPS examiners conducted that work.

In 2001, RBOPS reviewed its oversight approach to assess the relevance of its longstanding oversight activities for the current operations and risk profiles of the Reserve Banks. RBOPS staff had been performing annual on-site attentions at each Reserve Bank and annual on-site attentions of critical System functions, such as information technology and markets operations. After reviewing its approach, RBOPS adopted more flexibility, determining the frequency of on-site attentions based on an assessment of risk. In addition to on-site attentions, the revised approach recognized that other oversight activities contribute to the essential elements of an examination. For example, Board staff has access to the Reserve Banks' deliberation and decisionmaking process and documentation through liaison roles on a wide array of Reserve Bank policy committees, advisory groups, and task forces. In addition, Board staff analyzes each Reserve Bank's annual budget, both individually and in the context of System initiatives, and throughout the year monitors actual performance against budgets.

In 2017, RBOPS again reassessed its oversight approach, concluding that the existing approach remained largely relevant and permitted a sufficient degree of flexibility. However, continued evolution of the Reserve Banks, including consolidation and more coordination among functional areas, indicated that increased targeted and System-level oversight focus on specific programs and functions was warranted, supplementing and, in some cases, replacing the focus on each Reserve Bank entity. Another outcome of this assessment was a renewed emphasis on evaluating management effectiveness and the planned introduction of periodic assessments of management culture.

The results of the examination process are reported to the Board throughout the year through a variety of mechanisms. Written reports to the Board's Committee on Federal Reserve Bank Affairs and the examined entity (senior management and boards of directors) are produced for each external audit attention and significant attention by RBOPS staff. Staff members write analyses covering major Reserve Bank initiatives and projects as well as proposals requiring Board approval. The Committee on Federal Reserve Bank Affairs meets with the chairman and deputy chairman of the board of directors, president, and first vice president of each Reserve Bank each year to discuss their Bank's past year's performance and strategic plans. Through this reporting process, the Board members receive a wealth of information and assessments that together constitute a complete and thorough picture of each Reserve Bank.

Table 4. Income, expenses, and distribution of net earnings of the Federal Reserve Banks, 2018 and 2017
Millions of dollars

Item	2018	2017
Current income	112,862	114,194
Loan interest income	3	1
SOMA interest income	112,257	113,592
Other current income[1]	602	601
Net expenses	47,354	33,398
Operating expenses	4,527	4,337
Reimbursements	-706	-698
Net periodic pension expense	484	525
Interest paid on depository institutions deposits and others	38,486	25,862
Interest expense on securities sold under agreements to repurchase	4,559	3,365
Other expenses	4	7
Current net income	65,508	80,796
Net (deductions from) additions to current net income	-383	1,933
Treasury securities gains, net	5	28
Federal agency and government-sponsored enterprise mortgage-backed securities (losses) gains, net	-3	8
Foreign currency translation (losses) gains, net	-390	1,894
Net income from consolidated VIE, net	7	4
Other deductions	-2	-1
Assessments by the Board of Governors	2,024	2,037
For Board expenditures	838	740
For currency costs	849	724
For Consumer Financial Protection Bureau costs[2]	337	573
Net income before providing for remittances to the Treasury	63,101	80,692
Earnings remittances to the Treasury	65,319	80,559
Net income after providing for remittances to the Treasury	-2,218	133
Other comprehensive gain	42	651
Comprehensive (loss) income	-2,176	784
Total distribution of net income	63,143	81,343
Dividends on capital stock	999	784
Transfer to surplus and change in accumulated other comprehensive income	-3,175	0
Earnings remittances to the Treasury	65,319	80,559

[1] Includes income from priced services, compensation received for services provided, and securities lending fees.
[2] The Board of Governors assesses the Reserve Banks to fund the operations of the Consumer Financial Protection Bureau.

- $849 million for the cost of producing, issuing, and retiring currency; and
- $337 million for Consumer Financial Protection Bureau costs.
- The expenses were reduced by $706 million in reimbursements for services provided to government agencies.

Net deductions from current net income totaled $383 million, which includes $390 million in unrealized losses on foreign currency denominated investments revalued to reflect current market exchange rates, $5 million in realized gains on Treasury securities, $3 million in realized losses on federal agency and government-sponsored enterprise mortgage-backed securities (GSE MBS), and $5 million in other net additions.

Net income before remittances to Treasury totaled $63,143 million in 2018 (net income of $63,101 million increased by other comprehensive gain of $42 million). Dividends paid to member banks for 2018 totaled $999 million. Earnings remittances to the Treasury totaled $65,319 million in 2018, inclusive of a $2,500 million payment made in February 2018 as required by the Bipartisan Budget Act of 2018 and a $675 million payment made in June 2018 as required by the Economic Growth, Regulatory Relief, and Consumer Protection Act. The Reserve Banks reported comprehensive loss of $2,176 million in 2018 after providing for remittances to Treasury.

Section 11 of this report, "Statistical Tables," provides more detailed information on the Reserve Banks. Table 9A is a statement of condition for each Reserve Bank; table 10 details the income and

Table 5. System Open Market Account (SOMA) holdings of the Federal Reserve Banks, 2018 and 2017
Millions of dollars, except as noted

Item	Average daily assets (+)/liabilities (–)		Current income (+)/expense (–)*		Average interest rate (percent)	
	2018	2017	2018	2017	2018	2017
U.S. Treasury securities[1]	2,442,075	2,560,796	62,807	64,267	2.57	2.51
Government-sponsored enterprise debt (GSE) securities[1]	3,638	9,932	175	416	4.81	4.19
Federal agency and GSE mortgage-backed securities[2]	1,769,026	1,822,543	49,289	48,912	2.79	2.68
Foreign currency denominated investments[3]	21,335	20,673	-29	-17	-0.14	-0.08
Central bank liquidity swaps[4]	677	858	15	14	2.23	1.63
Other SOMA assets[5]	7	12	*	*	1.50	0.68
Total SOMA assets	4,236,758	4,414,814	112,257	113,592	2.65	2.57
Securities sold under agreements to repurchase: primary dealers and expanded counterparties	-12,552	-145,959	-186	-1,224	1.48	0.84
Securities sold under agreements to repurchase: foreign official and international accounts	-236,818	-241,581	-4,373	-2,141	1.85	0.89
Total securities sold under agreements to repurchase	-249,370	-387,540	-4,559	-3,365	1.83	0.87
Other SOMA liabilities[6]	-302	-878	n/a	n/a	n/a	n/a
Total SOMA liabilities	-249,672	-338,418	-4,559	-3,365	1.83	0.87
Total SOMA holdings	**3,987,086**	**4,026,396**	**107,698**	**110,227**	**2.70**	**2.74**

1 Face value, net of unamortized premiums and discounts.
2 Face value, which is the remaining principal balance of the securities, net of unamortized premiums and discounts. Does not include unsettled transactions.
3 Foreign currency denominated assets are revalued daily at market exchange rates.
4 Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.
5 Cash and short-term investments related to the federal agency and government-sponsored enterprise mortgage-backed securities (GSE MBS) portfolio.
6 Represents the obligation to return cash margin posted by counterparties as collateral under commitments to purchase and sell federal agency and GSE MBS, as well as obligations that arise from the failure of a seller to deliver securities on the settlement date.
n/a Not applicable.
* Less than $500,000.

expenses of each Reserve Bank for 2018; table 11 shows a condensed statement for each Reserve Bank for the years 1914 through 2018; and table 13 gives the number and annual salaries of officers and employees for each Reserve Bank.

A detailed account of the assessments and expenditures of the Board of Governors appears in the Board of Governors Financial Statements (see section 12, “Federal Reserve System Audits”).

SOMA Holdings and Loans

The Reserve Banks’ average net daily SOMA holdings during 2018 amounted to $3,987 billion, a decrease of $39 billion from 2017 (see table 5).

SOMA Securities Holdings

The average daily holdings of Treasury securities decreased by $119 billion, to an average daily amount of $2,442 billion. The average daily holdings of GSE debt securities decreased by $6 billion, to an average daily amount of $4 billion. The average daily holdings of federal agency and GSE MBS decreased by $54 billion, to an average daily amount of $1,769 billion.

Through September 2017, FRBNY continued to reinvest all principal payments from SOMA holdings of GSE debt securities and federal agency and GSE MBS into federal agency and GSE MBS and to roll over maturing Treasury securities at auction. Beginning in October 2017, the FOMC initiated a balance sheet normalization program intended to reduce gradually the SOMA holdings by decreasing the reinvestment of principal payments received from securities held in the SOMA through the implementation of monthly caps. Such principal payments will be reinvested only to the extent that they exceed specified caps.

There were no significant holdings of securities purchased under agreements to resell in 2018 or 2017. Average daily holdings of foreign currency denominated investments in 2018 were $21,335 million, compared with $20,673 million in 2017. The average daily balance of central bank liquidity swap drawings was $677 million in 2018 and $858 million in 2017. The

average daily balance of securities sold under agreements to repurchase was $249,370 million, a decrease of $138,170 million from 2017.

The average rates of interest earned on the Reserve Banks' holdings of Treasury securities increased to 2.57 percent, and the average rates on GSE debt securities increased to 4.81 percent in 2018. The average rate of interest earned on federal agency and GSE MBS increased to 2.79 percent in 2018. The average interest rates paid for securities sold under agreements to repurchase increased to 1.83 percent in 2018. The average rate of interest earned on foreign currency denominated investments decreased to -0.14 percent,[17] while the average rate of interest earned on central bank liquidity swaps increased to 2.23 percent in 2018.

Lending

In 2018, the average daily primary, secondary, and seasonal credit extended by the Reserve Banks to depository institutions increased by $26 million, to $129 million. The average rate of interest earned on primary, secondary, and seasonal credit increased to 2.14 percent in 2018, from 1.16 percent in 2017.

Maiden Lane LLC (ML) is a lending facility established in 2008 under authority of FRA section 13(3) in response to the 2007–09 financial crisis. During 2018, the FRBNY sold all remaining securities from the ML portfolio, and in accordance with the ML agreements, net proceeds were distributed to the Bank. On November 1, 2018, ML LLC was dissolved. While its affairs are being wound up, ML LLC will retain minimal cash to meet any trailing expenses as required by law. The costs to wind up ML LLC are not expected to be material. Net portfolio assets and liabilities at the end of 2018 were immaterial amounts and decreased from $1,722 million and $9 million, respectively, at the end of 2017. ML net income of $7 million in 2018 was composed of interest income of $20 million, loss on investments of $11 million, and operating expenses of $2 million.

[17] As a result of negative interest rates in certain foreign currency denominated investments held in the SOMA, interest income on foreign currency denominated investments, net contains negative interest.

Federal Reserve Bank Premises

Several Reserve Banks took action in 2018 to maintain and renovate their facilities. Multiyear renovation programs at the New York, Cleveland, and San Francisco Reserve Banks' headquarters buildings continued. Many Reserve Banks implemented projects to update building automation systems and uninterruptable power supplies to ensure infrastructure resiliency and continuity of operations. The New York Reserve Bank continued repairs and renovations to the 33 Maiden Lane building, and the Philadelphia Reserve Bank continued development of a building project to replace its entire mechanical and electrical infrastructure, with construction to begin in 2019. The Minneapolis Reserve Bank completed the purchase of land for a new parking ramp and began schematic design for the structure.

For more information on the acquisition costs and net book value of the Reserve Banks and Branches, see table 14 in section 11 ("Statistical Tables") of this annual report.

Pro Forma Financial Statements for Federal Reserve Priced Services

Table 6. Pro forma balance sheet for Federal Reserve priced services, December 31, 2018 and 2017
Millions of dollars

Item	2018		2017	
Short-term assets (note 1)				
Imputed investments	770.1		920.1	
Receivables	38.2		36.4	
Materials and supplies	0.6		0.6	
Prepaid expenses	14.4		12.4	
Items in process of collection	236.2		80.8	
Total short-term assets		1,059.5		1,050.3
Long-term assets (note 2)				
Premises	113.0		139.3	
Furniture and equipment	37.0		39.4	
Leases, leasehold improvements, and long-term prepayments	103.8		105.2	
Deferred tax asset	183.3		184.4	
Total long-term assets		437.1		468.4
Total assets		1,496.6		1,518.7
Short-term liabilities (note 3)				
Deferred-availability items	1,006.2		1,000.9	
Short-term debt	27.6		23.3	
Short-term payables	25.7		26.1	
Total short-term liabilities		1,059.5		1,050.3
Long-term liabilities (note 3)				
Long-term debt	20.2		44.7	
Accrued benefit costs	342.1		347.7	
Total long-term liabilities		362.3		392.4
Total liabilities		1,421.8		1,442.8
Equity (including accumulated other comprehensive loss of $624.1 million and $628.1 million at December 31, 2018 and 2017, respectively)		74.8		75.9
Total liabilities and equity (note 3)		1,496.6		1,518.7

Note: Components may not sum to totals because of rounding. The accompanying notes are an integral part of these pro forma priced services financial statements.

Table 7. Pro forma income statement for Federal Reserve priced services, 2018 and 2017
Millions of dollars

Item	2018		2017	
Revenue from services provided to depository institutions (note 4)		442.5		441.6
Operating expenses (note 5)		421.6		410.7
Income from operations		20.9		30.9
Imputed costs (note 6)				
Interest on debt	3.1		2.0[r]	
Interest on float	-4.7		-3.8[r]	
Sales taxes	3.8	2.3	4.0	2.2
Income from operations after imputed costs		18.7		28.7
Other income and expenses (note 7)				
Investment income	-		-	
Income before income taxes		18.7		28.7
Imputed income taxes (note 6)		4.2		6.5
Net income		14.4		22.2
Memo: Targeted return on equity (note 6)		5.2		4.6

Note: Components may not sum to totals because of rounding. The accompanying notes are an integral part of these pro forma priced services financial statements.
r Revised

Table 8. Pro forma income statement for Federal Reserve priced services, by service, 2018
Millions of dollars

Item	Total	Commercial check collection	Commercial ACH	Fedwire funds	Fedwire securities
Revenue from services (note 4)	442.5	132.9	149.7	132.4	27.5
Operating expenses (note 5)[1]	421.6	124.1	151.3	119.1	27.1
Income from operations	20.9	8.8	-1.6	13.3	0.4
Imputed costs (note 6)	2.3	2.2	-2.4	2.0	0.4
Income from operations after imputed costs	18.7	6.6	0.8	11.3	0
Other income and expenses, net (note 7)	0	0	0	0	0
Income before income taxes	18.7	6.6	0.8	11.3	0
Imputed income taxes (note 6)	4.2	1.5	0.2	2.6	0
Net income	14.4	5.1	0.6	8.8	0
Memo: Targeted return on equity (note 6)	5.2	1.5	1.9	1.5	0.3
Cost recovery (percent) (note 8)	102.1	102.7	99.2	105.8	98.7

Note: Components may not sum to totals because of rounding. The accompanying notes are an integral part of these pro forma priced services financial statements.
1 Operating expenses include pension costs, Board expenses, and reimbursements for certain nonpriced services.

Notes to Pro Forma Financial Statements for Priced Services

(1) Short-Term Assets

Receivables are composed of fees due the Reserve Banks for providing priced services and the share of suspense- and difference-account balances related to priced services.

Items in process of collection are gross Federal Reserve cash items in process of collection (CIPC), stated on a basis comparable to that of a commercial bank. They reflect adjustments for intra-Reserve Bank items that would otherwise be double-counted on the combined Federal Reserve balance sheet and adjustments for items associated with nonpriced items (such as those collected for government agencies). Among the costs to be recovered under the Monetary Control Act is the cost of float, or net CIPC during the period (the difference between gross CIPC and deferred-availability items, which is the portion of gross CIPC that involves a financing cost), valued at the federal funds rate. Investments of excess financing derived from credit float are assumed to be invested in federal funds.

(2) Long-Term Assets

Long-term assets consist of long-term assets used solely in priced services and the priced-service portion of long-term assets shared with nonpriced services, including a deferred tax asset related to the priced services pension and postretirement benefits obligation. The tax rate associated with the deferred tax asset was 22.7 percent for 2018 and 2017.

Long-term assets also consist of an estimate of the assets of the Board of Governors used in the development of priced services.

(3) Liabilities and Equity

Under the matched-book capital structure for assets, short-term assets are financed with short-term payables and imputed short-term debt, if needed. Long-term assets are financed with long-term liabilities, imputed long-term debt, and imputed equity, if needed. To meet the Federal Deposit Insurance Corporation requirements for a well-capitalized institution, in 2018 equity is imputed at 5.0 percent of total assets and 11.3 percent of risk-weighted assets, and 2017 equity is imputed at 5.0 percent of total assets and 11.0 percent of risk-weighted assets.

The Board's Payment System Risk policy reflects the international standards for financial market infrastructures developed by the Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions in the Principles for Financial Market Infrastructures. The policy outlines the expectation that the Fedwire Services will meet or exceed the applicable risk-management standards. Although the Fedwire Funds Service does not face the risk that a business shock would cause the service to wind down in a disorderly manner and disrupt the stability of the financial system, in order to foster competition with private-sector financial market infrastructures, the Reserve Banks' priced services will hold six months of the Fedwire Funds Service's current operating expenses as liquid net financial assets and equity on the pro forma balance sheet and, if necessary, impute additional assets and equity to meet the requirement. The imputed assets held as liquid net financial assets are cash items in process of collection, which are assumed to be invested in federal funds. In 2018 and 2017, there was sufficient assets and equity such that additional imputed balances were not required.

In accordance with Accounting Standards Codification (ASC) Topic 715 (ASC 715), Compensation–Retirement Benefits, the Reserve Banks record the funded status of pension and other benefit plans on their balance sheets. To reflect the funded status of their benefit plans, the Reserve Banks recognize the deferred items related to these plans, which include prior service costs and actuarial gains or losses, on the balance sheet. This results in an adjustment to the pension and other benefit plan liabilities related to priced services and the recognition of an associated deferred tax asset with an offsetting adjustment, net of tax, to accumulated other comprehensive income (AOCI), which is included in equity. The Reserve Bank priced services recognized a pension asset, which is a component of accrued benefit costs, of $19.1 million in 2018 and a pension asset of $32.0 million in 2017. The change in the funded status of the pension and other benefit plans resulted in a corresponding decrease in accumulated other comprehensive loss of $4.0 million in 2018.

(4) Revenue

Revenue represents fees charged to depository institutions for priced services and is realized from each institution through direct charges to an institution's account.

(5) Operating Expenses

Operating expenses consist of the direct, indirect, and other general administrative expenses of the Reserve Banks for priced services and the expenses of the Board related to the development of priced services. Board expenses were $5.1 million in 2018 and $5.4 million in 2017.

In accordance with ASC 715, the Reserve Bank priced services recognized qualified pension-plan operating expenses of $26.5 million in 2018 and $31.9 million in 2017. Operating expenses also include the nonqualified net pension expense of $5.0 million in 2018 and $3.3 million in 2017. The adoption of ASC 715 does not change the systematic approach required by generally accepted accounting principles to recognize the expenses associated with the Reserve Banks' benefit plans in the income statement. As a result, these expenses do not include amounts related to changes in the funded status of the Reserve Banks' benefit plans, which are reflected in AOCI.

The income statement by service reflects revenue, operating expenses, imputed costs, other income and expenses, and cost recovery. The tax rate associated with imputed taxes was 22.7 percent for 2018 and 2017, respectively.

(6) Imputed Costs

Imputed costs consist of income taxes, return on equity, interest on debt, sales taxes, and interest on float. Many imputed costs are derived from the PSAF model. The 2018 cost of short-term debt imputed in the PSAF model is based on nonfinancial commercial paper rates; the cost of imputed long-term debt is based on Merrill Lynch Corporate and High Yield Index returns; and the effective tax rate is derived from U.S. publicly traded firm data, which serve as the proxy for the financial data of a representative private-sector firm. The after-tax rate of return on equity is based on the returns of the equity market as a whole.[18]

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[18] See Federal Reserve Bank Services Private-Sector Adjustment Factor, 77 Fed. Reg. 67,007 (November 8, 2012), www.gpo.gov/fdsys/pkg/FR-2012-11-08/pdf/2012-26918.pdf, for details regarding the PSAF methodology change.

Interest is imputed on the debt assumed necessary to finance priced-service assets. These imputed costs are allocated among priced services according to the ratio of operating expenses, less shipping expenses, for each service to the total expenses, less the total shipping expenses, for all services.

Interest on float is derived from the value of float to be recovered for the check and ACH services, Fedwire Funds Service, and Fedwire Securities Services through per-item fees during the period. Float income or cost is based on the actual float incurred for each priced service.

The following shows the daily average recovery of actual float by the Reserve Banks for 2018, in millions of dollars:

Total float	-254.6
Float not related to priced services[1]	-0.1
Float subject to recovery through per-item fees	-254.5

[1] Float not related to priced services includes float generated by services to government agencies and by other central bank services.

Float that is created by account adjustments due to transaction errors and the observance of nonstandard holidays by some depository institutions was recovered from the depository institutions through charging institutions directly. Float subject to recovery is valued at the federal funds rate. Certain ACH funding requirements and check products generate credit float; this float has been subtracted from the cost base subject to recovery in 2018 and 2017.

(7) Other Income and Expenses

Other income consists of income on imputed investments. Excess financing resulting from additional equity imputed to meet the FDIC well-capitalized requirements is assumed to be invested and earning interest at the 3-month Treasury bill rate.

(8) Cost Recovery

Annual cost recovery is the ratio of revenue, including other income, to the sum of operating expenses, imputed costs, imputed income taxes, and after-tax targeted return on equity.

7 Other Federal Reserve Operations

Regulatory Developments

Passage and Implementation of the Economic Growth, Regulatory Relief, and Consumer Protection Act

On May 24, 2018, the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA) was signed into law.[1] In addition to a number of standalone provisions, EGRRCPA amended the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) as well as other statutes administered by the Board. For example, EGRRCPA provides for additional tailoring of various provisions of federal banking law while maintaining the authority of the federal banking agencies to apply enhanced prudential standards to address financial stability and ensure the safety and soundness of depository institutions and their holding companies.

On July 6, 2018, the Board released two statements regarding regulations and associated reporting requirements that EGRRCPA immediately affected. The Board issued one statement that related to regulations and reporting requirements administered solely by the Board, and a second interagency statement with the Office of the Comptroller of the Currency (OCC) and the Federal Deposit Insurance Corporation (FDIC) (collectively, the agencies). Both statements detailed interim positions that the Board and the agencies would take until the relevant regulations and reporting forms were amended to reflect EGRRCPA's changes. Specifically, in the Board's statement, the Board provided that it would not take action to enforce certain regulations and reporting requirements for firms with less than $100 billion in total consolidated assets, such as rules implementing enhanced prudential standards and the liquidity coverage ratio requirements. Additionally, the interagency statement provided relief regarding company-run stress testing, resolution planning, the Volcker rule, high-volatility commercial real estate exposures, and the treatment of certain municipal obligations as high-quality liquid assets, among other topics mentioned in the statement.

Since issuance of the two statements in July, the Board has made substantial progress in implementing EGRRCPA. The following is a summary of the regulatory initiatives undertaken in response to EGRRCPA's changes that have taken effect, as well as initiatives that have been proposed but are not yet effective. Interim final rules are effective immediately upon publication.

Effective EGRRCPA Initiatives

Treatment of Certain Municipal Securities as High-Quality Liquid Assets (Regulation WW)

In August 2018, the agencies adopted an interim final rule to implement section 403 of EGRRCPA.[2] Section 403 amended section 18 of the Federal Deposit Insurance Act and required the agencies, for purposes of their liquidity coverage ratio (LCR) rules and any other regulation that incorporates a definition of the term "high-quality liquid asset" (HQLA) or another substantially similar term, to treat a municipal obligation as an HQLA if the obligation is "liquid and readily marketable" and "investment grade," as those terms were defined in EGRRCPA.

To effect this change, the interim final rule amended each agency's LCR rule to include a definition of "municipal obligation" that is consistent with the definition in section 403. The interim final rule also amends the HQLA criteria by adding municipal obligations that are both liquid and readily marketable as well as investment grade to the list of assets eligible for treatment as level 2B liquid assets. In addition, the interim final rule rescinds certain amendments the Board made to its LCR rule in 2016 related to the treatment of certain U.S. municipal securities as

[1] Pub. L. No. 115-174, 132 Stat. 1296 (2018).

[2] Liquidity Coverage Ratio Rule: Treatment of Certain Municipal Obligations as High-Quality Liquid Assets, 83 Fed. Reg. 44,451 (August 31, 2018).

HQLA so that municipal obligations under the Board's rule will be treated consistently with section 403.

Small Bank Holding Company and Savings and Loan Holding Company Policy Statement (Regulations Q and Y)

In August 2018, the Board adopted an interim final rule to implement section 207 of EGRRCPA, which directed the Board to revise its Small Bank Holding Company and Savings and Loan Holding Company Policy Statement (Policy Statement).[3] Bank holding companies and savings and loan holding companies that are subject to the Policy Statement are exempt from the Board's regulatory capital rule. Section 207 required the Board to raise the consolidated asset threshold for application of the Policy Statement from $1 billion to $3 billion. In accordance with section 207, the interim final rule increased the Policy Statement's asset size threshold from $1 billion to $3 billion and made other conforming amendments to the Policy Statement.

Expanded Examination Cycles for Qualifying Small Banks and U.S. Branches and Agencies of Foreign Banks (Regulations H and K)

In December 2018, the agencies adopted final rules to implement section 210 of EGRRCPA.[4] Section 210 amended section 10(d) of the Federal Deposit Insurance Act to permit the agencies to conduct on-site examinations of qualifying insured depository institutions with under $3 billion in total assets not less than once during each 18-month period. Prior to EGRRCPA's enactment, qualifying insured depository institutions with less than $1 billion in total assets were eligible for an 18-month on-site examination cycle.

The final rules generally allow qualifying insured depository institutions with under $3 billion in total consolidated assets to benefit from the extended 18-month examination schedule. In addition, the interim final rules make parallel changes to the agencies' regulations governing the on-site examination cycle for U.S. branches and agencies of foreign banks, consistent with the International Banking Act of 1978.

Proposed EGRRCPA Initiatives

Regulatory Capital Treatment for High Volatility Commercial Real Estate Exposures (Regulation Q)

In September 2018, the agencies requested comment on a proposed rule that would amend the regulatory capital rule to revise the definition of "high volatility commercial real estate exposure" (HVCRE) to conform to the statutory definition of "high volatility commercial real estate acquisition, development, or construction (HVCRE ADC) loan," in accordance with section 214 of EGRRCPA.[5] Section 214 amended the Federal Deposit Insurance Act by adding a new section 51 to provide a statutory definition of an HVCRE ADC loan. The statute stated that the agencies may only require a depository institution to assign a heightened risk weight to an HVCRE exposure, as defined under the capital rule, if such exposure is an HVCRE ADC loan under EGRRCPA.

In accordance with section 214 of EGRRCPA, the agencies proposed to revise the HVCRE exposure definition in section 2 of the agencies' capital rule to conform to the statutory definition of an HVCRE ADC loan. Loans that meet the revised definition of an HVCRE exposure would receive a 150 percent risk weight under the capital rule's standardized approach.

Although not expressly required by EGRRCPA, the proposed rule also would apply the revised definition of an HVCRE exposure to all Board-regulated institutions that are subject to the Board's capital rule, including bank holding companies, savings and loan holding companies, and intermediate holding companies of foreign banking organizations. The comment period ended on November 27, 2018.

Prudential Standards for Large Bank Holding Companies and Savings and Loan Holding Companies (Regulations Y, LL, PP, and YY) and Proposed Changes to Applicability Thresholds for Regulatory Capital and Liquidity Requirements (Regulations Q and WW)

In October 2018, the Board requested comment on a Board-only proposal that would establish risk-based categories for determining prudential standards for large U.S. banking organizations, consistent with section 401 of EGRRCPA. At the same time and in connection with the Board-only proposal, the agen-

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3 Small Bank Holding Company and Savings and Loan Holding Company Policy Statement and Related Regulations; Changes to Reporting Requirements, 83 Fed. Reg. 44,195 (August 30, 2018).

4 Expanded Examination Cycle for Certain Small Insured Depository Institutions and U.S. Branches and Agencies of Foreign Banks, 83 Fed. Reg. 67,033 (December 28, 2018).

5 Regulatory Capital Treatment for High Volatility Commercial Real Estate (HVCRE) Exposures, 83 Fed. Reg. 48,990 (September 28, 2018).

cies also requested comment on an interagency proposal that would establish risk-based categories for determining liquidity and capital standards for large U.S. banking organizations, again consistent with section 401 of EGRRCPA.

Section 401 raised the minimum asset threshold from $50 billion to $250 billion for general application of enhanced prudential standards under section 165 of the Dodd-Frank Act. In addition, section 401 authorized the Board to apply such standards to bank holding companies with total consolidated assets of $100 billion or more but less than $250 billion, provided that the Board take into consideration certain statutory factors—capital structure, riskiness, complexity, financial activities (including financial activities of subsidiaries), size, and any other risk-related factors that the Board deems appropriate—when doing so. EGRRCPA also raised the threshold from $10 billion to $50 billion in total consolidated assets for application of risk committee and risk-management standards to publicly traded bank holding companies and required the Board to implement periodic supervisory stress testing for bank holding companies with $100 billion or more but less than $250 billion in total consolidated assets.

The first proposal would establish four categories of prudential standards for large U.S. bank holding companies and certain savings and loan holding companies.[6] Consistent with EGRRCPA, risk-committee and risk-management requirements would be required for all bank holding companies and certain savings and loan holding companies with at least $50 billion in total consolidated assets. Likewise, bank holding companies and certain savings and loan holding companies with at least $100 billion in total consolidated assets would be subject to supervisory stress tests, with the periodicity depending on the applicable category of standards. The first proposal also included proposed changes to related reporting forms, as well as proposed definitional changes in the Board's Regulation PP.

The second proposal, which was proposed by the agencies, would utilize the categories introduced in the Board-only proposal and apply tailored capital and liquidity requirements for banking organizations subject to each category.[7] Specifically, the agencies proposed to amend the scope of certain aspects of the regulatory capital rule and the LCR rule and re-propose the scope of the net stable funding ratio rule to incorporate the four categories of standards and differentiate the application of standards in each category to align with the risk profile of banking organizations.

The comment period for both proposals ended on January 22, 2019.

Reduced Reporting for Covered Depository Institutions (Regulation H)

In November 2018, the agencies requested comment on a proposal to implement section 205 of EGRRCPA.[8] Section 205 amended section 7(a) of the Federal Deposit Insurance Act and required the agencies to issue regulations that allow for a reduced reporting requirement by "covered depository institutions" for the first and third reports of condition in a year. "Covered depository institution" is defined in section 205 as an insured depository institution "that—(i) has less than $5,000,000,000 in total consolidated assets; and (ii) satisfies such other criteria as the [agencies] determine appropriate."

The proposed rule would implement section 205 by (1) authorizing covered depository institutions to file the Federal Financial Institutions Examinations Council (FFIEC) 051 Call Report (the most streamlined version of the Call Report), and (2) reducing the information required to be reported on the FFIEC 051 Call Report by covered depository institutions in the first and third calendar quarters. The proposal would define "covered depository institution" to include certain insured depository institutions that have less than $5 billion in total consolidated assets and satisfy certain other proposed criteria. The OCC and the Board also proposed to establish reduced reporting for certain uninsured institutions under their supervision that have less than $5 billion in total consolidated assets and meet the proposed criteria. In addition, the Board proposed a technical amendment to its Regulation H to implement the requirement in section 9 of the Federal Reserve Act pursuant to which state member banks are required to file Call Reports. The comment period ended on January 18, 2019.

[6] Prudential Standards for Large Bank Holding Companies and Savings and Loan Holding Companies, 83 Fed. Reg. 61,408 (November 29, 2018).

[7] Proposed Changes to Applicability Thresholds for Regulatory Capital and Liquidity Requirements, 83 Fed. Reg. 66,024 (November 21, 2018).

[8] Reduced Reporting for Covered Depository Institutions, 83 Fed. Reg. 58,432 (November 19, 2018).

Regulatory Capital Rule: Capital Simplification for Qualifying Community Banking Organizations (Regulation Q)

In November 2018, the agencies requested comment on a proposal that would provide for a simple measure of capital adequacy for certain community banking organizations, consistent with section 201 of EGRRCPA.[9] Section 201 directed the agencies to develop a community bank leverage ratio of not less than 8 percent and not more than 10 percent for qualifying community banking organizations, which are depository institutions or depository institution holding companies with total consolidated assets of less than $10 billion that the agencies have not determined are ineligible based on the banking organization's risk profile.

Under the proposal, depository institutions and depository institution holding companies that have less than $10 billion in total consolidated assets, meet qualifying criteria, and have a community bank leverage ratio (as defined in the proposal) of greater than 9 percent would be eligible to opt in to a community bank leverage ratio framework. Such banking organizations that elect to use the community bank leverage ratio and maintain a community bank leverage ratio of greater than 9 percent would not be subject to other risk-based and leverage capital requirements. In addition, these banking organizations would be considered to be "well capitalized" for purposes of section 38 of the Federal Deposit Insurance Act and regulations implementing that section, as applicable, and the generally applicable capital requirements under the agencies' capital rule. The comment period ended on April 9, 2019.

Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds (Regulation VV)

In December 2018, the agencies, along with the Securities and Exchange Commission and Commodities Futures Trading Commission, requested comment on a proposal that would amend Regulation VV (known as the Volcker rule) to align with amendments in sections 203 and 204 of EGRRCPA.[10] Section 203 amended section 13 of the Bank Holding Company Act by narrowing the definition of banking entity, and section 204 revised the statutory provisions related to the naming of hedge funds and private equity funds.

The Volcker rule generally restricts banking entities from engaging in proprietary trading and from owning or sponsoring hedge funds or private equity funds. The proposed rule would exclude community banks with $10 billion or less in total consolidated assets, and total trading assets and liabilities of 5 percent or less of total consolidated assets, from the restrictions of the Volcker rule. Additionally, the proposal would, under certain circumstances, permit a hedge fund or private equity fund to share the same name or a variation of the same name with an investment adviser that is not an insured depository institution, company that controls an insured depository institution, or bank holding company. The comment period ends on March 11, 2019.

Real Estate Appraisals (Regulation Y)

In December 2018, the agencies requested comment on a proposal that would raise the transaction value threshold for residential real estate transactions requiring an appraisal from $250,000 to $400,000, as well as align the agencies' appraisal regulations with section 103 of EGRRCPA.[11] Section 103 provided an exemption to the appraisal requirement for certain transactions with values of less than $400,000 involving real property or an interest in real property that is located in a rural area.

The proposal would eliminate the requirement under the agencies' appraisal regulations for regulated financial institutions to obtain an appraisal for real estate-related financial transactions with a transaction value of $400,000 or less, or that are exempted by the rural residential exemption in section 103 of EGRRCPA. Instead, the proposal would require evaluations for such transactions that are consistent with safe and sound banking practices. The comment period ended on February 5, 2019.

Other Dodd-Frank Implementation

Throughout 2018, in addition to implementing EGRRCPA, the Federal Reserve continued to implement the Dodd-Frank Act, which gives the Federal Reserve important responsibilities to issue rules and supervise financial companies to enhance financial

[9] Regulatory Capital Rule: Capital Simplification for Qualifying Community Banking Organizations, 84 Fed. Reg. 3062 (February 8, 2019).

[10] Proposed Revisions to Prohibitions and Restrictions on Proprietary Trading and Certain Interests in, and Relationships with, Hedge Funds and Private Equity Funds, 84 Fed. Reg. 2778 (February 8, 2019).

[11] Real Estate Appraisals, 83 Fed. Reg. 63,110 (February 5, 2019).

stability and preserve the safety and soundness of the banking system.

The following is a summary of the key Dodd-Frank regulatory initiatives that were finalized during 2018 that were not related to EGRRCPA.

Single Counterparty Credit Limits (Regulation YY)

In June 2018, the Board adopted a final rule to establish single-counterparty credit limits for bank holding companies and foreign banking organizations with $250 billion or more in total consolidated assets, including any U.S. intermediate holding company of such a foreign banking organization with $50 billion or more in total consolidated assets and any bank holding company identified as a global systemically important bank holding company (G-SIB) under the Board's capital rules.[12] The final rule implements section 165(e) of the Dodd-Frank Act, which requires the Board to impose limits on the amount of credit exposure that such a bank holding company or foreign banking organization can have to an unaffiliated company in order to reduce the risks arising from the unaffiliated company's possible failure.[13]

Under the final rule, a bank holding company with $250 billion or more in total consolidated assets that is not a G-SIB is prohibited from having aggregate net credit exposure to an unaffiliated counterparty in excess of 25 percent of its tier 1 capital. A U.S. G-SIB is prohibited from having aggregate net credit exposure in excess of 15 percent of its tier 1 capital to an unaffiliated counterparty that is a G-SIB or a nonbank financial company supervised by the Board (major counterparty) and in excess of 25 perfect of its tier 1 capital to any other unaffiliated counterparty. The final rule also includes requirements for any foreign banking organization operating in the United States with $250 billion or more in total global consolidated assets and any U.S. intermediate holding companies of such an organization with $50 billion or more in total assets.

[12] Single-Counterparty Credit Limits for Bank Holding Companies and Foreign Banking Organizations, 83 Fed. Reg. 38,460 (August 6, 2018).

[13] 12 USC 5365(e).

The Board of Governors and the Government Performance and Results Act

Overview

The Government Performance and Results Act (GPRA) of 1993 requires federal agencies to prepare a strategic plan covering a multiyear period and requires each agency to submit an annual performance plan and an annual performance report. Although the Board is not covered by GPRA, the Board follows the spirit of the act and, like other federal agencies, prepares an annual performance plan and an annual performance report.

Strategic Plan, Performance Plan, and Performance Report

On July 7, 2015, the Board approved the *Strategic Plan 2016–19*, which identifies and frames the strategic priorities of the Board. In addition to investing in ongoing operations, the Board identified and prioritized investments and dedicated sufficient resources to six pillars over the 2016–19 period, which will allow the Board to advance its mission and respond to continuing and evolving challenges.

The annual performance plan outlines the planned initiatives and activities that support the framework's long-term objectives and resources necessary to achieve those objectives. The annual performance report summarizes the Board's accomplishments that contributed toward achieving the strategic goals and objectives identified in the annual plan.

The strategic plan, performance plan, and performance report are available on the Federal Reserve Board's website at https://www.federalreserve.gov/publications/gpra.htm.

8 Record of Policy Actions of the Board of Governors

Policy actions of the Board of Governors are presented pursuant to section 10 of the Federal Reserve Act. That section provides that the Board shall keep a record of all questions of policy determined by the Board and shall include in its annual report to Congress a full account of such actions. This section provides a summary of policy actions in 2018, as implemented through (1) rules and regulations, (2) policy statements and other actions, and (3) discount rates for depository institutions. Policy actions were approved by all Board members in office, unless indicated otherwise.[1] More information on the actions is available from the relevant *Federal Register* notices or other documents (see links in footnotes) or on request from the Board's Freedom of Information Office.

For information on the Federal Open Market Committee's policy actions relating to open market operations, see section 9, "Minutes of Federal Open Market Committee Meetings."

Rules and Regulations

Regulation A (Extensions of Credit by Federal Reserve Banks)

On April 30, 2018, the Board approved a final rule (Docket No. R-1585) to (1) revise the provisions regarding the establishment of the primary credit rate in a financial emergency to provide that the primary credit rate will be the target federal funds rate or, if the Federal Open Market Committee has established a target range for the federal funds rate, a rate corresponding to the top of the target range; and (2) delete references to the expired Term Asset-Backed Securities Loan Facility (or TALF).[2] The final rule is effective June 8, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Regulations H (Membership of State Banking Institutions in the Federal Reserve System) and K (International Banking Operations)

On August 21, 2018, the Board approved an interim final rule and request for comment (Docket No. R-1615), published jointly with the Federal Deposit Insurance Corporation (FDIC) and Office of the Comptroller of the Currency (OCC), to increase the asset threshold, from $1 billion to $3 billion in total assets, below which certain small insured depository institutions and U.S. branches and agencies of foreign banks may qualify for an extended on-site examination cycle, from 12 to 18 months, in accordance with the Economic Growth, Regulatory Relief, and Consumer Protection Act (EGRRCPA).[3] The interim final rule is effective August 29, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

On December 20, 2018, the Board approved a final rule (Docket No. R-1615), published jointly with the FDIC and OCC, to adopt without change the interim final rule establishing an 18-month on-site examination cycle for insured depository institutions and U.S. branches and agencies of foreign banks with total assets of less than $3 billion, consistent with the EGRRCPA.[4] The final rule is effective January 28, 2019.

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1 Jerome Powell was sworn in as Chair on February 5, and Richard Clarida was sworn in as Vice Chair and a member of the Board on September 17, 2018. Michelle Bowman was sworn in as a member of the Board on November 26, 2018.

2 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-05-09/html/2018-09805.htm.

3 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-08-29/html/2018-18685.htm.

4 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-12-28/html/2018-28267.htm.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governors Brainard and Bowman.

Regulation J (Collection of Checks and Other Items by Federal Reserve Banks and Funds Transfers through Fedwire)

On November 14, 2018, the Board approved a final rule (Docket No. R-1599) to clarify and simplify certain provisions of the regulation and remove obsolete provisions; align the rights and obligations of sending banks, paying banks, and Federal Reserve Banks with provisions in the Board's 2017 amendments to Regulation CC (Availability of Funds and Collection of Checks) to reflect the virtually all-electronic check collection and return environment; and clarify that financial messaging standards for Fedwire funds transfers, such as the international common format standard ISP 20022, do not confer or connote legal status to the funds transfers.[5] The final rule is effective January 1, 2019.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governor Brainard.

Regulation Q (Capital Adequacy of Bank Holding Companies, Savings and Loan Holding Companies, and State Member Banks)

On December 20, 2018, the Board approved a final rule (Docket No. R-1605) to revise its regulatory capital rule to address upcoming changes to credit loss accounting under U.S. generally accepted accounting principles, including banking organizations' implementation of the Current Expected Credit Losses (CECL) methodology.[6] The final rule would (1) identify which credit loss allowances under CECL are eligible for inclusion in firms' tier 2 capital and (2) provide firms with the option to phase in, over three years, any immediate adverse effects of CECL on regulatory capital. In addition, the rule would direct firms that have adopted CECL to include provisions calculated under CECL in their stress testing projections, starting with the 2020 stress test cycle. The final rule was published jointly with the FDIC and OCC, both of which similarly amended their respective capital rules. The final rule, which also made conforming changes to other Board regulations, is effective April 1, 2019. Banking organizations may choose to early-adopt the final rule as of the first quarter of 2019.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governors Brainard and Bowman.

Regulation Y (Bank Holding Companies and Change in Bank Control)

On March 23, 2018, the Board approved a final rule (Docket No. R-1568), published jointly with the FDIC and OCC (together with the Board, "the agencies"), to increase, from $250,000 to $500,000, the dollar threshold at or below which appraisals are not required for commercial real estate transactions under the agencies' appraisal regulations.[7] Regulated institutions would be required to obtain evaluations for such transactions at or below the threshold, rather than an appraisal. The agencies determined that the higher threshold would reduce regulatory burden without posing a threat to the safety and soundness of financial institutions. The final rule is effective April 9, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

On August 21, 2018, the Board approved an interim final rule and request for comment (Docket No. R-1619) to raise the asset-size threshold, from $1 billion to $3 billion of total consolidated assets, for determining applicability of the Small Bank Holding Company and Savings and Loan Holding Company Policy Statement, in accordance with the EGRRCPA.[8] The Policy Statement facilitates the transfer of ownership of small community banks by allowing their holding companies to operate with higher levels of debt than would normally be permitted. The interim final rule, which also makes conforming changes to Regulation Q, is effective August 30, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

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5 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-11-30/html/2018-25267.htm.

6 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2019-02-14/html/2018-28281.htm.

7 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-04-09/html/2018-06960.htm.

8 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-08-30/html/2018-18756.htm.

Regulation CC (Availability of Funds and Collection of Checks)

On September 4, 2018, the Board approved final amendments (Docket No. R-1620) to address disputes between banks on whether a substitute or an electronic check has been altered or was issued with an unauthorized signature, when the original check is not available for inspection.[9] The final rule is effective January 1, 2019.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Regulation KK (Swaps Margin and Swaps Push-Out)

On September 18, 2018, the Board approved a final rule (Docket No. R-1596) amending its swap margin requirements to conform with recently adopted restrictions on certain qualified financial contracts of systemically important banking organizations (QFC Rules).[10] The rule provides that legacy swaps entered into before the applicable compliance date will not become subject to swap margin requirements if they are amended solely to comply with the requirements of the QFC Rules. The final rule was published jointly with the FDIC, OCC, Farm Credit Administration, and Federal Housing Finance Agency, all of which similarly amended their respective swap margin requirements. The final rule also harmonizes the definition of "Eligible Master Netting Agreement" in the swap margin requirements with recent changes to the definition of "Qualifying Master Netting Agreement" in the capital and liquidity regulations of the Board, OCC, and FDIC by recognizing the restrictions that were adopted by those agencies with respect to the QFC Rules. The final rule is effective November 9, 2018.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governor Brainard.

Regulation WW (Liquidity Risk Measurement Standards)

On August 21, 2018, the Board approved an interim final rule and request for comment (Docket No. R-1616), published jointly with the FDIC and OCC, to modify its liquidity coverage ratio rule to treat certain eligible municipal obligations as high-quality liquid assets, in accordance with the EGRRCPA.[11] The interim final rule is effective August 31, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Regulation YY (Enhanced Prudential Standards)

On June 14, 2018, the Board approved a final rule (Docket No. R-1534) to establish single-counterparty credit limits for large banking organizations.[12] The final rule implements section 165(e) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which requires the Board to impose limits on the amount of credit exposure a domestic bank holding company that has $250 billion or more in total consolidated assets, including bank holding companies identified as global systemically important banking organizations (G-SIBs) under the Board's capital rules (together, "covered companies"), can have to an unaffiliated counterparty in order to reduce the risks that an individual company's failure or distress might pose to the stability of the U.S. financial system. Under the final rule, a covered company is prohibited from having an aggregate net credit exposure of more than 25 percent of its tier 1 capital to a single unaffiliated counterparty. G-SIBs are subject to an additional restriction—15 percent of tier 1 capital—on their aggregate net credit exposures to another systemically important financial firm. Foreign banking organizations operating in the United States that have $250 billion or more in total global consolidated assets, as well as their intermediate holding companies (IHCs) that have $50 billion or more in total U.S. consolidated assets, would also be subject to credit exposure limits. The scope and application of all the credit exposure limits in the final rule are consistent with the EGRRCPA. The final rule is effective October 5, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Rules Regarding Delegation of Authority

On February 27, 2018, the Board approved a final rule (Docket No. R-1600) amending its delegation of

9 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-09-17/html/2018-20029.htm.

10 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-10-10/html/2018-22021.htm.

11 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-08-31/html/2018-18610.htm.

12 See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-08-06/html/2018-16133.htm.

authority rules to delegate authority to the Secretary of the Board to review and determine appeals of denial of access to Board records under the Freedom of Information Act, the Privacy Act, and the Board's rules regarding access to such records.[13] The rule would repeal the existing delegation of authority on these matters to any Board member designated by the Chair. The final rule is effective March 6, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Policy Statements and Other Actions

Policy Statement on Interagency Notification of Formal Enforcement Actions

On April 2, 2018, the Board approved a policy statement (Docket No. OP-1609), published jointly with the FDIC and OCC, to promote notification of, and coordination on, formal enforcement actions among the three agencies at the earliest practicable date.[14] The final policy statement incorporates and reflects current practices and replaces the Federal Financial Institutions Examination Council's rescinded policy statement, "Interagency Coordination of Formal Corrective Action by the Federal Bank Regulatory Agencies." The final policy statement is effective June 12, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Determination on New Markets Tax Credit Investments as Public Welfare Investments

On June 28, 2018, the Board determined that an investment made by a state member bank in a "qualified community development entity" eligible for the U.S. Department of the Treasury's New Markets Tax Credit program is an investment "designed primarily to promote the public welfare" within the meaning of section 9(23) of the Federal Reserve Act and section 208.22(b)(1)(i) of Regulation H, provided all other statutory and regulatory criteria are met.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Statements on the Impact of the Economic Growth, Regulatory Relief, and Consumer Protection Act

On July 4, 2018, the Board approved two public statements to provide information on regulations and associated reporting requirements that the EGRRCPA immediately affected. Enacted in May 2018, EGRRCPA amended various provisions of banking law to reduce regulatory requirements or provide additional tailoring for certain banking organizations. The first statement describes statutory changes that do not require Board action to have an immediate effect as well as other Board actions that would be consistent with EGRRCPA's provisions.[15] In particular, the statement describes how the Board will not take action to require certain smaller, less complex banking organizations to comply with certain Board regulations, including those relating to stress testing and liquidity. The second statement, issued jointly with the FDIC and OCC, provides similar relief for depository institutions.[16]

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

Customer Identification Program

On August 30, 2018, the Board approved an order, issued jointly with the FDIC, OCC, Financial Crimes Enforcement Network, and National Credit Union Administration, granting an exemption to banks from the requirements in the customer identification program (CIP) rules under the Bank Secrecy Act (BSA) when a bank extends loans to commercial customers to facilitate the purchase of property and casualty insurance.[17] Under the CIP rules, banks are generally required to obtain certain identifying information from a customer at account opening in order to verify the true identity of the customer. The CIP rules permit exemptions from these requirements, provided any exemption is consistent with the purposes of the BSA and safety and soundness. The order is effective September 27, 2018.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

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[13] See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-03-06/html/2018-04385.htm.

[14] See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-06-12/html/2018-12556.htm.

[15] See press release at https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180706b.htm.

[16] See press release at https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180706a.htm.

[17] See interagency order at https://www.federalreserve.gov/supervisionreg/srletters/sr1806a1.pdf.

Large Financial Institution Rating System

On November 1, 2018, the Board approved a new supervisory rating system for large financial institutions (LFIs) to align with the Federal Reserve's current supervisory programs and practices for these firms.[18] The new rating system applies to (1) bank holding companies and non-insurance, non-commercial savings and loan holding companies (SLHCs) with at least $100 billion in total consolidated assets and (2) U.S. IHCs of foreign banking organizations established under Regulation YY that have at least $50 billion in total consolidated assets. The rating system will assign component ratings for capital planning and positions, liquidity risk management and positions, and governance and controls, and will introduce a new rating scale. Initial LFI ratings will be assigned to institutions under the Large Institution Supervision Coordinating Committee framework beginning in early 2019 and to other LFIs in early 2020. Conforming revisions were also made to Regulations K and LL (Docket No. R-1569), which are effective February 1, 2019.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governor Brainard.

Application of the RFI/C(D) Rating System to Savings and Loan Holding Companies

On November 1, 2018, the Board approved a notice (Docket No. OP-1631) to apply the RFI/C(D) rating system (the RFI rating system) to SLHCs that are depository in nature.[19] However, SLHCs that are depository in nature and have at least $100 billion in total consolidated assets will be rated under the RFI rating system only until the Board applies its new LFI rating system to them, beginning in early 2020. SLHCs that are depository in nature but have less than $100 billion in total consolidated assets would remain subject to the RFI rating system. The RFI rating system would not apply to SLHCs that meet certain criteria to be considered commercial or insurance SLHCs. Commercial SLHCs and insurance SLHCs would continue to receive "indicative ratings," which describe how the firm would be rated if subject to the RFI rating system. The notice is effective February 1, 2019.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governor Brainard.

Conversion Triggers in Eligible Long-Term Debt

On December 10, 2018, the Board identified criteria for evaluating whether a proposed internal debt "conversion trigger" of a U.S. intermediate holding company of a foreign global systemically important banking organization (a covered IHC) is consistent with the requirements of the Board's total loss-absorbing capacity (TLAC) regulation, in connection with its approval of the proposed internal debt "conversion triggers" of two covered IHCs.[20] Under the TLAC regulation, covered IHCs are required to maintain outstanding a minimum amount of long-term debt that meets certain eligibility factors, beginning on January 1, 2019. In addition, eligible long-term debt issued by a covered IHC to its foreign affiliates must include a conversion trigger, a contractual provision that permits the Board to order the conversion of the debt into equity. The Board also approved a delegation of authority to the General Counsel, in consultation with the Director of the Division of Supervision and Regulation, to approve proposed conversion triggers for other covered IHCs, provided the triggers meet the eligibility criteria and do not raise significant legal, policy, or supervisory issues.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governors Brainard and Bowman.

Resolution Plan Guidance

On December 19, 2018, the Board approved final guidance (Docket No. OP-1644), published jointly with the FDIC, for the eight largest, most complex U.S. banking organizations regarding their future resolution plan submissions.[21] The joint final guidance consolidates prior resolution plan guidance provided to these institutions and describes the two agencies' expectations regarding a number of key vulnerabilities for an orderly resolution under the

[18] See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-11-21/html/2018-25350.htm.

[19] See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2018-11-09/html/2018-24496.htm.

[20] See the Board's letters to UBS Group AG and Credit Suisse AG: https://www.federalreserve.gov/supervisionreg/legalinterpretations/bhc_changeincontrol20181213g.pdf and https://www.federalreserve.gov/supervisionreg/legalinterpretations/bhc_changeincontrol20181213c.pdf.

[21] See *Federal Register* notice at https://www.govinfo.gov/content/pkg/FR-2019-02-04/html/2019-00800.htm.

U.S. Bankruptcy Code. This includes updated expectations regarding payment, clearing, and settlement services and on derivatives and trading activities.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governors Brainard and Bowman.

Interest on Reserves

On March 21, 2018, the Board approved raising the interest rate paid on required and excess reserve balances from 1½ percent to 1¾ percent, effective March 22, 2018.[22] This action was taken to support the Federal Open Market Committee's (FOMC's) decision on March 21 to raise the target range for the federal funds rate by 25 basis points, to a range of 1½ percent to 1¾ percent.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

On June 13, 2018, the Board approved raising the interest rate paid on required and excess reserve balances from 1¾ percent to 1.95 percent, effective June 14, 2018.[23] This action was taken to support the FOMC's decision on June 13 to raise the target range for the federal funds rate by 25 basis points, to a range of 1¾ percent to 2 percent. Setting the interest rate paid on required and excess reserve balances 5 basis points below the top of the target range for the federal funds rate was intended to foster trading in the federal funds market at rates well within the FOMC's target range.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

On September 26, 2018, the Board approved raising the interest rate paid on required and excess reserve balances from 1.95 percent to 2.20 percent, effective September 27, 2018.[24] This action was taken to support the FOMC's decision on September 26 to raise the target range for the federal funds rate by 25 basis points, to a range of 2 percent to 2¼ percent.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governor Brainard.

On December 19, 2018, the Board approved raising the interest rate paid on required and excess reserve balances from 2.20 percent to 2.40 percent, effective December 20, 2018.[25] This action was taken to support the FOMC's decision on December 19 to raise the target range for the federal funds rate by 25 basis points, to a range of 2¼ percent to 2½ percent. Setting the interest rate paid on required and excess reserve balances 10 basis points below the top of the target range for the federal funds rate was intended to foster trading in the federal funds market at rates well within the FOMC's target range.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governors Brainard and Bowman.

Discount Rates for Depository Institutions in 2018

Under the Federal Reserve Act, the boards of directors of the Federal Reserve Banks must establish rates on discount window loans to depository institutions at least every 14 days, subject to review and determination by the Board of Governors. Periodically, the Board considers proposals by the 12 Reserve Banks to establish the primary credit rate and approves proposals to maintain the formulas for computing the secondary and seasonal credit rates.

Primary, Secondary, and Seasonal Credit

Primary credit, the Federal Reserve's main lending program for depository institutions, is extended at the primary credit rate, which is set above the usual level of short-term market interest rates. It is made available, with minimal administration and for very short terms, as a backup source of liquidity to depository institutions that, in the judgment of the lending Federal Reserve Bank, are in generally sound financial condition. During 2018, the Board approved four increases in the primary credit rate, bringing the rate from 2 percent to 3 percent. The Board reached these determinations on the primary credit rate recommendations of the Reserve Bank boards of directors. The Board's actions were taken

[22] See press release at https://www.federalreserve.gov/newsevents/pressreleases/monetary20180321a1.htm.

[23] See press release at https://www.federalreserve.gov/newsevents/pressreleases/monetary20180613a1.htm.

[24] See press release at https://www.federalreserve.gov/newsevents/pressreleases/monetary20180926a1.htm.

[25] See press release at https://www.federalreserve.gov/newsevents/pressreleases/monetary20181219a1.htm.

in conjunction with the FOMC's decisions to raise the target range for the federal funds rate by 100 basis points, to 2¼ percent to 2½ percent. Monetary policy developments are reviewed more fully in other parts of this report (see section 2, "Monetary Policy and Economic Developments").

Secondary credit is available in appropriate circumstances to depository institutions that do not qualify for primary credit. The secondary credit rate is set at a spread above the primary credit rate. Throughout 2018, the spread was set at 50 basis points. At year-end, the secondary credit rate was 3½ percent.

Seasonal credit is available to smaller depository institutions to meet liquidity needs that arise from regular swings in their loans and deposits. The rate on seasonal credit is calculated every two weeks as an average of selected money market yields, typically resulting in a rate close to the target range for the federal funds rate. At year-end, the seasonal credit rate was 2.40 percent.[26]

Votes on Changes to Discount Rates for Depository Institutions

Details on the four actions by the Board to approve increases in the primary credit rate are provided below.

March 21, 2018. Effective March 22, 2018, the Board approved actions taken by the boards of directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, St. Louis, Kansas City, Dallas, and San Francisco to increase the primary credit rate from 2 percent to 2¼ percent. On March 22, 2018, the Board approved identical actions subsequently taken by the boards of directors of the Federal Reserve Banks of Chicago and Minneapolis, effective immediately.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

[26] For current and historical discount rates, see https://www.frbdiscountwindow.org/.

June 13, 2018. Effective June 14, 2018, the Board approved actions taken by the boards of directors of the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas, and San Francisco to increase the primary credit rate from 2¼ percent to 2½ percent. On June 14, 2018, the Board approved an identical action subsequently taken by the board of directors of the Federal Reserve Bank of New York, effective immediately.

Voting for this action: Chair Powell, Vice Chair for Supervision Quarles, and Governor Brainard.

September 26, 2018. Effective September 27, 2018, the Board approved actions taken by the boards of directors of the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City, Dallas, and San Francisco to increase the primary credit rate from 2½ percent to 2¾ percent. On September 27, 2018, the Board approved identical actions subsequently taken by the boards of directors of the Federal Reserve Banks of New York and Minneapolis, effective immediately.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governor Brainard.

December 19, 2018. Effective December 20, 2018, the Board approved actions taken by the boards of directors of the Federal Reserve Banks of Boston, Cleveland, Richmond, Atlanta, Chicago, and San Francisco to increase the primary credit rate from 2¾ percent to 3 percent. On December 20, 2018, the Board approved identical actions subsequently taken by the boards of directors of the Federal Reserve Banks of New York, Philadelphia, St. Louis, Minneapolis, Kansas City, and Dallas, effective immediately.

Voting for this action: Chair Powell, Vice Chair Clarida, Vice Chair for Supervision Quarles, and Governors Brainard and Bowman.

9 Minutes of Federal Open Market Committee Meetings

The policy actions of the Federal Open Market Committee, recorded in the minutes of its meetings, are presented in the Annual Report of the Board of Governors pursuant to the requirements of section 10 of the Federal Reserve Act. That section provides that the Board shall keep a complete record of the actions taken by the Board and by the Federal Open Market Committee on all questions of policy relating to open market operations, that it shall record therein the votes taken in connection with the determination of open market policies and the reasons underlying each policy action, and that it shall include in its annual report to Congress a full account of such actions.

The minutes of the meetings contain the votes on the policy decisions made at those meetings, as well as a summary of the information and discussions that led to the decisions. In addition, four times a year, a Summary of Economic Projections is published as an addendum to the minutes. The descriptions of economic and financial conditions in the minutes and the Summary of Economic Projections are based solely on the information that was available to the Committee at the time of the meetings.

Members of the Committee voting for a particular action may differ among themselves as to the reasons for their votes; in such cases, the range of their views is noted in the minutes. When members dissent from a decision, they are identified in the minutes and a summary of the reasons for their dissent is provided.

Policy directives of the Federal Open Market Committee are issued to the Federal Reserve Bank of New York as the Bank selected by the Committee to execute transactions for the System Open Market Account. In the area of domestic open market operations, the Federal Reserve Bank of New York operates under instructions from the Federal Open Market Committee that take the form of an Authorization for Domestic Open Market Operations and a Domestic Policy Directive. (A new Domestic Policy Directive is adopted at each regularly scheduled meeting.) In the foreign currency area, the Federal Reserve Bank of New York operates under an Authorization for Foreign Currency Operations and a Foreign Currency Directive. Changes in the instruments during the year are reported in the minutes for the individual meetings.[1]

[1] As of January 1, 2018, the Federal Reserve Bank of New York was operating under the Domestic Policy Directive approved at the December 12–13, 2017, Committee meeting. The other policy instruments (the Authorization for Domestic Open Market Operations, the Authorization for Foreign Currency Operations, and the Foreign Currency Directive) in effect as of January 1, 2018, were approved at the January 31–February 1, 2017, meeting.

Meeting Held on January 30–31, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, January 30, 2018, at 10:00 a.m. and continued on Wednesday, January 31, 2018, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Lael Brainard

Loretta J. Mester

Jerome H. Powell

Randal K. Quarles

John C. Williams

James Bullard, Charles L. Evans, Esther L. George, Michael Strine, and Eric Rosengren
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

David Altig, Kartik B. Athreya, Thomas A. Connors, Mary Daly, David E. Lebow, Trevor A. Reeve, Argia M. Sbordone, Ellis W. Tallman, William Wascher, and Beth Anne Wilson
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Ann E. Misback
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Maryann F. Hunter
Deputy Director, Division of Supervision and Regulation, Board of Governors

David Reifschneider and John M. Roberts
Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Joseph W. Gruber
Senior Associate Director, Division of International Finance, Board of Governors

Michael G. Palumbo
Senior Associate Director, Division of Research and Statistics, Board of Governors

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1 The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

2 Attended through the discussion of developments in financial markets and open market operations.

Antulio N. Bomfim, Ellen E. Meade, Stephen A. Meyer, Edward Nelson, and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jeremy B. Rudd
Senior Adviser, Division of Research and Statistics, Board of Governors

William F. Bassett
Associate Director, Division of Financial Stability, Board of Governors

Andrew Figura
Assistant Director, Division of Research and Statistics, Board of Governors

Jason Wu
Assistant Director, Division of Monetary Affairs, Board of Governors

Penelope A. Beattie[3]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Dana L. Burnett and Michele Cavallo
Section Chiefs, Division of Monetary Affairs, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Andrea Ajello, Kurt F. Lewis, and Bernd Schlusche
Principal Economists, Division of Monetary Affairs, Board of Governors

Ekaterina Peneva and Daniel J. Vine
Principal Economists, Division of Research and Statistics, Board of Governors

Camille Bryan
Lead Financial Analyst, Division of International Finance, Board of Governors

Ellen J. Bromagen
First Vice President, Federal Reserve Bank of Chicago

Jeff Fuhrer and Daniel G. Sullivan
Executive Vice Presidents, Federal Reserve Banks of Boston and Chicago, respectively

Todd E. Clark,[3] **Evan F. Koenig, Keith Sill, and Mark L. J. Wright**
Senior Vice Presidents, Federal Reserve Banks of Cleveland, Dallas, Philadelphia, and Minneapolis, respectively

[3] Attended Tuesday session only.

Carlos Garriga and Jonathan L. Willis
Vice Presidents, Federal Reserve Banks of St. Louis and Kansas City, respectively

Annual Organizational Matters[4]

In the agenda for this meeting, it was reported that advices of the election of the following members and alternate members of the Federal Open Market Committee for a term beginning January 30, 2018, had been received and that these individuals had executed their oaths of office.

The elected members and alternate members were as follows:

William C. Dudley
President of the Federal Reserve Bank of New York, with

Michael Strine
First Vice President of the Federal Reserve Bank of New York, as alternate.

Thomas I. Barkin
President of the Federal Reserve Bank of Richmond, with

Eric Rosengren
President of the Federal Reserve Bank of Boston, as alternate.

Loretta J. Mester
President of the Federal Reserve Bank of Cleveland, with

Charles L. Evans
President of the Federal Reserve Bank of Chicago, as alternate.

Raphael W. Bostic
President of the Federal Reserve Bank of Atlanta, with

James Bullard
President of the Federal Reserve Bank of St. Louis, as alternate.

John C. Williams
President of the Federal Reserve Bank of San Francisco, with

Esther L. George
President of the Federal Reserve Bank of Kansas City, as alternate.

By unanimous vote, the Committee selected Janet L. Yellen to serve as Chairman through February 2,

[4] Committee organizational documents are available at www.federalreserve.gov/monetarypolicy/rules_authorizations.htm.

2018, and Jerome H. Powell to serve as Chairman, effective February 3, 2018, until the selection of his successor at the first regularly scheduled meeting of the Committee in 2019.

By unanimous vote, the following officers of the Committee were selected to serve until the selection of their successors at the first regularly scheduled meeting of the Committee in 2019:

William C. Dudley
Vice Chairman

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Richard M. Ashton
Assistant General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

David Altig

Kartik B. Athreya

Thomas A. Connors

Mary Daly

David E. Lebow

Trevor A. Reeve

Argia M. Sbordone

Ellis W. Tallman

William Wascher

Beth Anne Wilson
Associate Economists

By unanimous vote, the Federal Reserve Bank of New York was selected to execute transactions for the System Open Market Account (SOMA).

By unanimous vote, the Committee selected Simon Potter and Lorie K. Logan to serve at the pleasure of the Committee as manager and deputy manager of the SOMA, respectively, on the understanding that these selections were subject to their being satisfactory to the Federal Reserve Bank of New York.

> Secretary's note: Advice subsequently was received that the manager and deputy manager selections indicated above were satisfactory to the Federal Reserve Bank of New York.

By unanimous vote, the Authorization for Domestic Open Market Operations was approved with revisions to incorporate transactions of securities lending into the existing operational readiness testing provision and to improve the document's readability. The Guidelines for the Conduct of System Open Market Operations in Federal-Agency Issues remained suspended.

Authorization for Domestic Open Market Operations (As Amended Effective January 30, 2018)

Open Market Transactions

1. The Federal Open Market Committee (the "Committee") authorizes and directs the Federal Reserve Bank selected by the Committee to execute open market transactions (the "Selected Bank"), to the extent necessary to carry out the most recent domestic policy directive adopted by the Committee:

   A. To buy or sell in the open market securities that are direct obligations of, or fully guaranteed as to principal and interest by, the United States, and securities that are direct obligations of, or fully guaranteed as to principal and interest by, any agency of the United States, that are eligible for purchase or sale under Section 14(b) of the Federal Reserve Act ("Eligible Securities") for the System Open Market Account ("SOMA"):

      i. As an outright operation with securities dealers and foreign and international accounts maintained at the Selected Bank: on a same-day or deferred delivery basis (including such transactions as are commonly referred to as dollar rolls and coupon swaps) at market prices; or

ii. As a temporary operation: on a same-day or deferred delivery basis, to purchase such Eligible Securities subject to an agreement to resell ("repo transactions") or to sell such Eligible Securities subject to an agreement to repurchase ("reverse repo transactions") for a term of 65 business days or less, at rates that, unless otherwise authorized by the Committee, are determined by competitive bidding, after applying reasonable limitations on the volume of agreements with individual counterparties;

B. To allow Eligible Securities in the SOMA to mature without replacement;

C. To exchange, at market prices, in connection with a Treasury auction, maturing Eligible Securities in the SOMA with the Treasury, in the case of Eligible Securities that are direct obligations of the United States or that are fully guaranteed as to principal and interest by the United States; and

D. To exchange, at market prices, maturing Eligible Securities in the SOMA with an agency of the United States, in the case of Eligible Securities that are direct obligations of that agency or that are fully guaranteed as to principal and interest by that agency.

Securities Lending

2. In order to ensure the effective conduct of open market operations, the Committee authorizes the Selected Bank to operate a program to lend Eligible Securities held in the SOMA to dealers on an overnight basis (except that the Selected Bank may lend Eligible Securities for longer than an overnight term to accommodate weekend, holiday, and similar trading conventions).

A. Such securities lending must be:

i. At rates determined by competitive bidding;

ii. At a minimum lending fee consistent with the objectives of the program;

iii. Subject to reasonable limitations on the total amount of a specific issue of Eligible Securities that may be auctioned; and

iv. Subject to reasonable limitations on the amount of Eligible Securities that each borrower may borrow.

B. The Selected Bank may:

i. Reject bids that, as determined in its sole discretion, could facilitate a bidder's ability to control a single issue;

ii. Accept Treasury securities or cash as collateral for any loan of securities authorized in this paragraph 2; and

iii. Accept agency securities as collateral only for a loan of agency securities authorized in this paragraph 2.

Operational Readiness Testing

3. The Committee authorizes the Selected Bank to undertake transactions of the type described in paragraphs 1 and 2 from time to time for the purpose of testing operational readiness, subject to the following limitations:

A. All transactions authorized in this paragraph 3 shall be conducted with prior notice to the Committee;

B. The aggregate par value of the transactions authorized in this paragraph 3 that are of the type described in paragraph 1.A.i shall not exceed $5 billion per calendar year; and

C. The outstanding amount of the transactions described in paragraphs 1.A.ii and 2 shall not exceed $5 billion at any given time.

Transactions with Customer Accounts

4. In order to ensure the effective conduct of open market operations, while assisting in the provision of short-term investments or other authorized services for foreign central bank and international accounts maintained at a Federal Reserve Bank (the "Foreign Accounts") and accounts maintained at a Federal Reserve Bank as fiscal agent of the United States pursuant to section 15 of the Federal Reserve Act (together with the Foreign Accounts, the "Customer Accounts"), the Committee authorizes the following when undertaken on terms comparable to those available in the open market:

A. The Selected Bank, for the SOMA, to undertake reverse repo transactions in Eligible Securities held in the SOMA with the Customer Accounts for a term of 65 business days or less; and

B. Any Federal Reserve Bank that maintains Customer Accounts, for any such Customer Account, when appropriate and subject to all other necessary authorization and approvals, to:

  i. Undertake repo transactions in Eligible Securities with dealers with a corresponding reverse repo transaction in such Eligible Securities with the Customer Accounts; and

  ii. Undertake intra-day repo transactions in Eligible Securities with Foreign Accounts.

Transactions undertaken with Customer Accounts under the provisions of this paragraph 4 may provide for a service fee when appropriate. Transactions undertaken with Customer Accounts are also subject to the authorization or approval of other entities, including the Board of Governors of the Federal Reserve System and, when involving accounts maintained at a Federal Reserve Bank as fiscal agent of the United States, the United States Department of the Treasury.

Additional Matters

5. The Committee authorizes the Chairman of the Committee, in fostering the Committee's objectives during any period between meetings of the Committee, to instruct the Selected Bank to act on behalf of the Committee to:

A. Adjust somewhat in exceptional circumstances the stance of monetary policy and to take actions that may result in material changes in the composition and size of the assets in the SOMA; or

B. Undertake transactions with respect to Eligible Securities in order to appropriately address temporary disruptions of an operational or highly unusual nature in U.S. dollar funding markets.

Any such adjustment described in subparagraph A of this paragraph 5 shall be made in the context of the Committee's discussion and decision about the stance of policy at its most recent meeting and the Committee's long-run objectives to foster maximum employment and price stability, and shall be based on economic, financial, and monetary developments since the most recent meeting of the Committee. The Chairman, whenever feasible, will consult with the Committee before making any instruction under this paragraph 5.

The Committee voted unanimously to reaffirm without revision the Authorization for Foreign Currency Operations and the Foreign Currency Directive as shown below.

Authorization for Foreign Currency Operations (As Reaffirmed Effective January 30, 2018)

In General

1. The Federal Open Market Committee (the "Committee") authorizes the Federal Reserve Bank selected by the Committee (the "Selected Bank") to execute open market transactions for the System Open Market Account as provided in this Authorization, to the extent necessary to carry out any foreign currency directive of the Committee:

A. To purchase and sell foreign currencies (also known as cable transfers) at home and abroad in the open market, including with the United States Treasury, with foreign monetary authorities, with the Bank for International Settlements, and with other entities in the open market. This authorization to purchase and sell foreign currencies encompasses purchases and sales through standalone spot or forward transactions and through foreign exchange swap transactions. For purposes of this Authorization, foreign exchange swap transactions are: swap transactions with the United States Treasury (also known as warehousing transactions), swap transactions with other central banks under reciprocal currency arrangements, swap transactions with other central banks under standing dollar liquidity and foreign currency liquidity swap arrangements, and swap transactions with other entities in the open market.

B. To hold balances of, and to have outstanding forward contracts to receive or to deliver, foreign currencies.

2. All transactions in foreign currencies undertaken pursuant to paragraph 1 above shall, unless otherwise authorized by the Committee, be conducted:

   A. In a manner consistent with the obligations regarding exchange arrangements under Article IV of the Articles of Agreement of the International Monetary Fund (IMF).[1]

   B. In close and continuous cooperation and consultation, as appropriate, with the United States Treasury.

   C. In consultation, as appropriate, with foreign monetary authorities, foreign central banks, and international monetary institutions.

   D. At prevailing market rates.

Standalone Spot and Forward Transactions

3. For any operation that involves standalone spot or forward transactions in foreign currencies:

   A. Approval of such operation is required as follows:

      i. The Committee must direct the Selected Bank in advance to execute the operation if it would result in the overall volume of standalone spot and forward transactions in foreign currencies, as defined in paragraph 3.C of this Authorization, exceeding $5 billion since the close of the most recent regular meeting of the Committee. The Foreign Currency Subcommittee (the "Subcommittee") must direct the Selected Bank in advance to execute the operation if the Subcommittee believes that consultation with the Committee is not feasible in the time available.

      ii. The Committee authorizes the Subcommittee to direct the Selected Bank in advance to execute the operation if it would result in the overall volume of standalone spot and forward transactions in foreign currencies, as defined in paragraph 3.C of this Authorization, totaling $5 billion or less since the close of the most recent regular meeting of the Committee.

   B. Such an operation also shall be:

      i. Generally directed at countering disorderly market conditions; or

      ii. Undertaken to adjust System balances in light of probable future needs for currencies; or

      iii. Conducted for such other purposes as may be determined by the Committee.

   C. For purposes of this Authorization, the overall volume of standalone spot and forward transactions in foreign currencies is defined as the sum (disregarding signs) of the dollar values of individual foreign currencies purchased and sold, valued at the time of the transaction.

Warehousing

4. The Committee authorizes the Selected Bank, with the prior approval of the Subcommittee and at the request of the United States Treasury, to conduct swap transactions with the United States Exchange Stabilization Fund established by section 10 of the Gold Reserve Act of 1934 under agreements in which the Selected Bank purchases foreign currencies from the Exchange Stabilization Fund and the Exchange Stabilization Fund repurchases the foreign currencies from the Selected Bank at a later date (such purchases and sales also known as warehousing).

Reciprocal Currency Arrangements, and Standing Dollar and Foreign Currency Liquidity Swaps

5. The Committee authorizes the Selected Bank to maintain reciprocal currency arrangements established under the North American Framework Agreement, standing dollar liquidity swap arrangements, and standing foreign currency liquidity swap arrangements as provided in this

[1] In general, as specified in Article IV, each member of the IMF undertakes to collaborate with the IMF and other members to assure orderly exchange arrangements and to promote a stable system of exchange rates. These obligations include seeking to direct the member's economic and financial policies toward the objective of fostering orderly economic growth with reasonable price stability. These obligations also include avoiding manipulating exchange rates or the international monetary system in such a way that would impede effective balance of payments adjustment or to give an unfair competitive advantage over other members.

Authorization and to the extent necessary to carry out any foreign currency directive of the Committee.

A. For reciprocal currency arrangements all drawings must be approved in advance by the Committee (or by the Subcommittee, if the Subcommittee believes that consultation with the Committee is not feasible in the time available).

B. For standing dollar liquidity swap arrangements all drawings must be approved in advance by the Chairman. The Chairman may approve a schedule of potential drawings, and may delegate to the manager, System Open Market Account, the authority to approve individual drawings that occur according to the schedule approved by the Chairman.

C. For standing foreign currency liquidity swap arrangements all drawings must be approved in advance by the Committee (or by the Subcommittee, if the Subcommittee believes that consultation with the Committee is not feasible in the time available).

D. Operations involving standing dollar liquidity swap arrangements and standing foreign currency liquidity swap arrangements shall generally be directed at countering strains in financial markets in the United States or abroad, or reducing the risk that they could emerge, so as to mitigate their effects on economic and financial conditions in the United States.

E. For reciprocal currency arrangements, standing dollar liquidity swap arrangements, and standing foreign currency liquidity swap arrangements:

   i. All arrangements are subject to annual review and approval by the Committee;

   ii. Any new arrangements must be approved by the Committee; and

   iii. Any changes in the terms of existing arrangements must be approved in advance by the Chairman. The Chairman shall keep the Committee informed of any changes in terms, and the terms shall be consistent with principles discussed with and guidance provided by the Committee.

Other Operations in Foreign Currencies

6. Any other operations in foreign currencies for which governance is not otherwise specified in this Authorization (such as foreign exchange swap transactions with private-sector counterparties) must be authorized and directed in advance by the Committee.

Foreign Currency Holdings

7. The Committee authorizes the Selected Bank to hold foreign currencies for the System Open Market Account in accounts maintained at foreign central banks, the Bank for International Settlements, and such other foreign institutions as approved by the Board of Governors under Section 214.5 of Regulation N, to the extent necessary to carry out any foreign currency directive of the Committee.

   A. The Selected Bank shall manage all holdings of foreign currencies for the System Open Market Account:

      i. Primarily, to ensure sufficient liquidity to enable the Selected Bank to conduct foreign currency operations as directed by the Committee;

      ii. Secondarily, to maintain a high degree of safety;

      iii. Subject to paragraphs 7.A.i and 7.A.ii, to provide the highest rate of return possible in each currency; and

      iv. To achieve such other objectives as may be authorized by the Committee.

   B. The Selected Bank may manage such foreign currency holdings by:

      i. Purchasing and selling obligations of, or fully guaranteed as to principal and interest by, a foreign government or agency thereof ("Permitted Foreign Securities") through outright purchases and sales;

      ii. Purchasing Permitted Foreign Securities under agreements for repurchase of such Permitted Foreign Securities and selling

such securities under agreements for the resale of such securities; and

iii. Managing balances in various time and other deposit accounts at foreign institutions approved by the Board of Governors under Regulation N.

C. The Subcommittee, in consultation with the Committee, may provide additional instructions to the Selected Bank regarding holdings of foreign currencies.

Additional Matters

8. The Committee authorizes the Chairman:

   A. With the prior approval of the Committee, to enter into any needed agreement or understanding with the Secretary of the United States Treasury about the division of responsibility for foreign currency operations between the System and the United States Treasury;

   B. To advise the Secretary of the United States Treasury concerning System foreign currency operations, and to consult with the Secretary on policy matters relating to foreign currency operations;

   C. To designate Federal Reserve System persons authorized to communicate with the United States Treasury concerning System Open Market Account foreign currency operations; and

   D. From time to time, to transmit appropriate reports and information to the National Advisory Council on International Monetary and Financial Policies.

9. The Committee authorizes the Selected Bank to undertake transactions of the type described in this Authorization, and foreign exchange and investment transactions that it may be otherwise authorized to undertake, from time to time for the purpose of testing operational readiness. The aggregate amount of such transactions shall not exceed $2.5 billion per calendar year. These transactions shall be conducted with prior notice to the Committee.

10. All Federal Reserve banks shall participate in the foreign currency operations for System Open Market Account in accordance with paragraph 3G(1) of the Board of Governors' Statement of Procedure with Respect to Foreign Relationships of Federal Reserve Banks dated January 1, 1944.

11. Any authority of the Subcommittee pursuant to this Authorization may be exercised by the Chairman if the Chairman believes that consultation with the Subcommittee is not feasible in the time available. The Chairman shall promptly report to the Subcommittee any action approved by the Chairman pursuant to this paragraph.

12. The Committee authorizes the Chairman, in exceptional circumstances where it would not be feasible to convene the Committee, to foster the Committee's objectives by instructing the Selected Bank to engage in foreign currency operations not otherwise authorized pursuant to this Authorization. Any such action shall be made in the context of the Committee's discussion and decisions regarding foreign currency operations. The Chairman, whenever feasible, will consult with the Committee before making any instruction under this paragraph.

Foreign Currency Directive (As Reaffirmed Effective January 30, 2018)

1. The Committee directs the Federal Reserve Bank selected by the Committee (the "Selected Bank") to execute open market transactions, for the System Open Market Account, in accordance with the provisions of the Authorization for Foreign Currency Operations (the "Authorization") and subject to the limits in this Directive.

2. The Committee directs the Selected Bank to execute warehousing transactions, if so requested by the United States Treasury and if approved by the Foreign Currency Subcommittee (the "Subcommittee"), subject to the limitation that the outstanding balance of United States dollars provided to the United States Treasury as a result of these transactions not at any time exceed $5 billion.

3. The Committee directs the Selected Bank to maintain, for the System Open Market Account:

A. Reciprocal currency arrangements with the following foreign central banks:

Foreign central bank	Maximum amount (millions of dollars or equivalent)
Bank of Canada	2,000
Bank of Mexico	3,000

B. Standing dollar liquidity swap arrangements with the following foreign central banks:

Bank of Canada
Bank of England
Bank of Japan
European Central Bank
Swiss National Bank

C. Standing foreign currency liquidity swap arrangements with the following foreign central banks:

Bank of Canada
Bank of England
Bank of Japan
European Central Bank
Swiss National Bank

4. The Committee directs the Selected Bank to hold and to invest foreign currencies in the portfolio in accordance with the provisions of paragraph 7 of the Authorization.

5. The Committee directs the Selected Bank to report to the Committee, at each regular meeting of the Committee, on transactions undertaken pursuant to paragraphs 1 and 6 of the Authorization. The Selected Bank is also directed to provide quarterly reports to the Committee regarding the management of the foreign currency holdings pursuant to paragraph 7 of the Authorization.

6. The Committee directs the Selected Bank to conduct testing of transactions for the purpose of operational readiness in accordance with the provisions of paragraph 9 of the Authorization.

By unanimous vote, the Committee revised its Program for Security of FOMC Information with a set of technical changes to update references to other documents.

In the Committee's annual reconsideration of the Statement on Longer-Run Goals and Monetary Policy Strategy, participants agreed that only a minor revision was required at this meeting, which was to update the reference to the median of FOMC participants' estimates of the longer-run normal rate of unemployment from 4.8 percent to 4.6 percent. All participants supported the statement with the revision, and the Committee voted unanimously to approve the updated statement.

Statement on Longer-Run Goals and Monetary Policy Strategy (As Amended Effective January 30, 2018)

The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Moreover, monetary policy actions tend to influence economic activity and prices with a lag. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. The Committee would be concerned if inflation were running persistently above or below this objective. Communicating this symmetric inflation goal clearly to the public helps keep longer-term inflation expectations firmly anchored, thereby fostering price stability and moderate long-term interest rates and enhancing the Committee's ability to promote maximum employment in the face of significant economic disturbances. The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the

labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments. Information about Committee participants' estimates of the longer-run normal rates of output growth and unemployment is published four times per year in the FOMC's Summary of Economic Projections. For example, in the most recent projections, the median of FOMC participants' estimates of the longer-run normal rate of unemployment was 4.6 percent.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to reaffirm these principles and to make adjustments as appropriate at its annual organizational meeting each January.

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) provided a summary of developments in domestic and global financial markets over the intermeeting period. Financial conditions eased further over recent weeks with market participants pointing to increasing appetites for risk and perceptions of diminished downside risks as factors buoying market sentiment. In this environment, yields on safe assets such as U.S. Treasury securities moved up some while corporate risk spreads narrowed and equity prices recorded further significant gains. Breakeven measures of inflation compensation derived from Treasury Inflation Protected Securities (TIPS) moved up but remained low. Survey measures of longer-term inflation expectations showed little change. Judging from interest rate futures, the expected path of the federal funds rate shifted up over the period but continued to imply a gradual expected pace of policy firming. The deputy manager followed with a discussion of recent developments in money markets and FOMC operations. Year-end pressures were evident in the market for foreign exchange basis swaps, but conditions returned to normal early in 2018. Yields on Treasury bills maturing in early March were elevated, reflecting investors' concerns about the possibility that a failure to raise the federal debt ceiling could affect the timing of principal payments for these securities. The Open Market Desk continued to execute reinvestment operations for Treasury and agency securities in the SOMA in accordance with the procedure specified in the Committee's directive to the Desk. The deputy manager also reported on the volume of overnight reverse repurchase agreement operations over the intermeeting period and discussed the Desk's plans for small-value operational tests of various types of open market operations over the coming year.

By unanimous vote, the Committee ratified the Open Market Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Inflation Analysis and Forecasting

The staff presented three briefings on inflation analysis and forecasting. The presentations reviewed a number of commonly used structural and reduced-form models. These included structural models in which the rate of inflation is linked importantly to measures of resource slack and a measure of expected inflation relevant for wage and price setting—so-called Phillips curve specifications—as well as statistical models in which inflation is primarily determined by a time-varying inflation trend or longer-run inflation expectations. The briefings noted several factors beyond those captured in the models that appeared to have put downward pressure on prices in recent years. These included structural changes in price setting for some items, such as medical care, and the effects of idiosyncratic price shocks, such as the unusual drop in prices of wireless telephone services in 2017. The staff found little compelling evidence for the possible influence of other factors such as a more competitive pricing environment or a change in the markup of prices over unit labor costs. Overall, for the set of models presented, the prediction errors in recent years were larger than those observed during the 2001–07 period but were

consistent with historical norms and, in most models, did not appear to be biased.

The staff presentations considered two key channels by which monetary policy influences inflation—the response of inflation to changes in resource utilization and the role of inflation expectations, or trend inflation, in the price-setting process. In part because inflation was importantly influenced by a number of short-lived factors, the effects of current and expected resource utilization gaps on inflation were not easy to discern empirically. Estimates of the strength of those effects had diminished noticeably in recent years. The briefings highlighted a number of other challenges associated with estimating the strength and timing of the linkage between resource utilization and inflation, including the reliability of and changes over time in estimates of the natural rate of unemployment and potential output and the ability to adequately account for supply shocks. In addition, some research suggested that the relationship between resource utilization and inflation may be nonlinear, with the response of inflation increasing as rates of utilization rise to very high levels.

With regard to inflation expectations, two of the briefings presented findings that the longer-run trend in inflation, absent cyclical disturbances or transitory fluctuations, had been stable in recent years at a little below 2 percent. The briefings reported that the average forecasting performance of models employing either statistical estimates of inflation trends or survey-based measures of inflation expectations as proxies for inflation expectations appeared comparable, even though different versions of such models could yield very different forecasts at any given point in time. Moreover, although survey-based measures of longer-run inflation expectations tended to move in parallel with estimated inflation trends, the empirical research provided no clear guidance on how to construct a measure of inflation expectations that would be the most useful for inflation forecasting. The staff noted that although reduced-form models in which inflation tends to revert toward longer-run inflation trends described the data reasonably well, those models offered little guidance to policymakers on how to conduct policy so as to achieve their desired outcome for inflation.

Following the staff presentations, participants discussed how the inflation frameworks reviewed in the briefings informed their views on inflation and monetary policy. Almost all participants who commented agreed that a Phillips curve–type of inflation framework remained useful as one of their tools for understanding inflation dynamics and informing their decisions on monetary policy. Policymakers pointed to a number of possible reasons for the difficulty in estimating the link between resource utilization and inflation in recent years. These reasons included an extended period of low and stable inflation in the United States and other advanced economies during which the effects of resource utilization on inflation became harder to identify, the shortcomings of commonly used measures of resource gaps, the effects of transitory changes in relative prices, and structural factors that had made business pricing more competitive or prices more flexible over time. It was noted that research focusing on inflation across U.S. states or metropolitan areas continued to find a significant relationship between price or wage inflation and measures of resource gaps. A couple of participants questioned the usefulness of a Phillips curve–type framework for policymaking, citing the limited ability of such frameworks to capture the relationship between economic activity and inflation.

Participants generally agreed that inflation expectations played a fundamental role in understanding and forecasting inflation, with stable inflation expectations providing an important anchor for the rate of inflation over the longer run. Participants acknowledged that the causes of movements in short- and longer-run inflation expectations, including the role of monetary policy, were imperfectly understood. They commented that various proxies for inflation expectations—readings from household and business surveys or from economic forecasters, estimates derived from market prices, or estimated trends—were imperfect measures of actual inflation expectations, which are unobservable. That said, participants emphasized the critical need for the FOMC to maintain a credible longer-run inflation objective and to clearly communicate the Committee's commitment to achieving that objective. Several participants indicated that they viewed the available evidence as suggesting that longer-run inflation expectations remained well anchored; one cited recent research finding that inflation expectations had become better anchored following the Committee's adoption of a numerical inflation target. However, a few saw low levels of inflation over recent years as reflecting, in part, slippage in longer-run inflation expectations below the Committee's 2 percent objective. In that regard, a number of participants noted the importance of continuing to emphasize that the Committee's 2 percent inflation objective is symmetric. A couple of participants suggested that the Committee

might consider expressing its objective as a range rather than a point estimate. A few other participants suggested that the FOMC could begin to examine whether adopting a monetary policy framework in which the Committee would strive to make up for past deviations of inflation from target might address the challenge of achieving and maintaining inflation expectations consistent with the Committee's inflation objective, particularly in an environment in which the neutral rate of interest appeared likely to remain low.

Staff Review of the Economic Situation

The information reviewed for the January 30–31 meeting indicated that labor market conditions continued to strengthen through December and that real gross domestic product (GDP) expanded at about a 2½ percent pace in the fourth quarter of last year. Growth of real final domestic purchases by households and businesses, generally a good indicator of the economy's underlying momentum, was solid. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), remained below 2 percent in December. Survey-based measures of longer-run inflation expectations were little changed on balance.

Total nonfarm payroll employment increased solidly in December, and the national unemployment rate remained at 4.1 percent. The unemployment rates for Hispanics, for Asians, and for African Americans were lower than earlier in the year and close to the levels seen just before the most recent recession. The national labor force participation rate held steady in December; relative to the declining trend suggested by an aging population, this sideways movement in the participation rate represented a further strengthening in labor market conditions. The participation rate for prime-age (defined as ages 25 to 54) men edged up in December, while the rate for prime-age women declined slightly. The share of workers who were employed part time for economic reasons was little changed in December and was close to its prerecession level. The rates of private-sector job openings and quits were little changed in November, and the four-week moving average of initial claims for unemployment insurance benefits continued to be at a low level in mid-January. Recent readings showed that gains in hourly labor compensation remained modest. Both the employment cost index for private-sector workers and average hourly earnings for all employees rose about 2½ percent over the 12 months ending in December.

Total industrial production increased over the two months ending in December, with broad-based gains in manufacturing, mining, and utilities output. Automakers' schedules indicated that assemblies of light motor vehicles would likely move up over the coming months. Broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, pointed to further solid increases in factory output in the near term.

Real PCE increased strongly in the fourth quarter. Recent readings on key factors that influence consumer spending—including gains in employment, real disposable personal income, and households' net worth—continued to be supportive of further solid growth of real PCE in the near term. Consumer sentiment in early January, as measured by the University of Michigan Surveys of Consumers, remained upbeat.

Real residential investment rose briskly in the fourth quarter after having declined in the previous two quarters. Both starts and issuance of building permits for new single-family homes increased in the fourth quarter as a whole, and starts for multifamily units also moved up. Moreover, sales of both new and existing homes rose in the fourth quarter.

Real private expenditures for business equipment and intellectual property increased at a solid pace in the fourth quarter. Recent indicators of business equipment spending—such as rising new orders of nondefense capital goods excluding aircraft and upbeat readings on business sentiment from national and regional surveys—pointed to further gains in equipment spending in the near term. Firms' real spending for nonresidential structures rose modestly in the fourth quarter, as an increase in outlays for drilling and mining structures was largely offset by a decline in expenditures for other business structures. The number of crude oil and natural gas rigs in operation—an indicator of spending for structures in the drilling and mining sector—continued to edge up through late January.

Total real government purchases rose modestly in the fourth quarter. Increased federal government purchases mostly reflected a rise in defense spending, and the gains in purchases by state and local govern-

ments were led by an increase in construction spending in this sector.

The nominal U.S. international trade deficit widened further in November after widening sharply in October. Exports of goods and services picked up in November, while imports, particularly of consumer goods, increased robustly. Available data for goods trade in December suggested that import growth again outpaced export growth. All told, real net exports were estimated to be a substantial drag on real GDP growth in the fourth quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased about 1¾ percent over the 12 months ending in December. Core PCE price inflation, which excludes changes in consumer food and energy prices, was 1½ percent over that same period. The consumer price index (CPI) rose around 2 percent over the same period, while core CPI inflation was 1¾ percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Incoming data suggested that economic activity abroad continued to expand at a solid pace and that this expansion was broad based across countries. In the advanced foreign economies (AFEs), real GDP in the euro area and the United Kingdom expanded at a moderate pace in the fourth quarter. In the emerging market economies (EMEs), Mexico's economy rebounded after being held back by natural disasters in the third quarter. Economic growth remained solid in China but cooled off a bit in some emerging Asian economies after a very strong third-quarter performance. Inflation in both AFEs and EMEs picked up significantly in the fourth quarter, largely reflecting a boost from rising oil prices. Inflation excluding food and energy prices remained well below central bank targets in several economies, including the euro area and Japan.

Staff Review of the Financial Situation

Domestic financial market conditions eased considerably further over the intermeeting period. A strengthening outlook for economic growth in the United States and abroad, along with recently enacted tax legislation, appeared to boost investor sentiment. U.S. equity prices, Treasury yields, and market-based measures of inflation compensation rose, and spreads of yields on investment- and speculative-grade nonfinancial corporate bonds over those for comparable-maturity Treasury securities narrowed further. In addition, the dollar depreciated broadly amid strong foreign economic data and monetary policy communications by some foreign central banks that investors reportedly viewed as less accommodative than expected.

FOMC communications over the intermeeting period were generally characterized by market participants as consistent with their expectations for continued gradual removal of monetary policy accommodation. The Committee's decision to raise the target range for the federal funds rate at the December meeting was widely expected, and the probability of an increase in the target range for the federal funds rate occurring at the January meeting, as implied by quotes on federal funds futures contracts, remained essentially zero. Over the intermeeting period, the futures-implied probability of policy firming at the March meeting rose to about 85 percent; respondents to the Desk's Survey of Primary Dealers and Survey of Market Participants assigned, on average, similarly high odds to a rate increase at the March meeting. Levels of the federal funds rate at the end of 2018 and 2019 implied by overnight index swap rates moved up moderately.

The nominal Treasury yield curve shifted up over the intermeeting period amid an improved outlook for domestic and foreign economic growth. Yields on both 2- and 10-year Treasury securities moved up about 30 basis points. Measures of inflation compensation based on TIPS fell in response to the soft reading on core inflation in the November CPI release but subsequently moved up against the backdrop of an improving global growth outlook, higher commodity prices, depreciation of the dollar, and the stronger-than-expected reading on core inflation in the December CPI release. On net, inflation compensation moved up at both the 5-year and the 5-to-10-year horizons, and both measures returned to levels seen in early 2017 before the string of generally weaker-than-expected inflation readings.

Broad equity price indexes rose substantially over the intermeeting period, with investors pointing to a stronger global economic outlook and the supportive effect of the recently enacted tax legislation on risk sentiment. The VIX, an index of option-implied volatility for one-month returns on the S&P 500 index, increased but remained low by historical standards. Spreads of both investment- and speculative-grade corporate bond yields over comparable-

maturity Treasury yields declined slightly and remained well below their historical averages.

The FOMC's decision at its December meeting to raise the target range for the federal funds rate was transmitted smoothly to money market rates. The effective federal funds rate held steady at a level near the middle of the target range except at year-end. While borrowing costs moved up briefly in offshore dollar funding markets over year-end, conditions in money markets were reported to be orderly. In line with recent year-end experiences, rates and volumes in the federal funds and Eurodollar markets declined, while in secured markets, rates on Treasury repurchase agreements increased. After year-end, pressures in money markets abated quickly and rates and volumes returned to recent ranges.

The broad nominal dollar index declined nearly 4 percent relative to its value at the time of the December FOMC meeting; the decline was most pronounced against AFE currencies, but the dollar depreciated notably against most EME currencies as well. EME equity prices registered substantial gains, in part supported by a significant rise in commodity prices; emerging market bond spreads narrowed moderately, and flows into EME equity and bond funds strengthened substantially.

Market-based measures of policy expectations and longer-term sovereign yields moved up in most AFEs. The Bank of Canada raised its policy rate at its January meeting, largely in response to better-than-expected economic data. The Bank of England, the Bank of Japan, and the European Central Bank (ECB) left their monetary policy stances unchanged, as expected. Nonetheless, the ECB president's optimistic assessment of the euro-area economy at the press conference following the January meeting was interpreted by market participants as a signal that monetary policy would be less accommodative than expected. Following those remarks, the euro appreciated notably against the dollar and core euro-area sovereign yields moved higher. That said, market-based measures of policy expectations continued to indicate that investors anticipate a gradual pace of monetary policy normalization in the euro area.

Financing conditions for nonfinancial businesses and households remained generally accommodative over the intermeeting period and continued to be supportive of economic activity. Respondents to the January Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS) reported easing standards and narrowing loan spreads for large and middle-market firms and attributed this easing to more aggressive competition from other bank or nonbank lenders. Net debt financing by investment-grade nonfinancial corporations turned negative in December, but the weakness appeared to reflect a softening in the demand for credit, possibly related to the anticipation of higher after-tax cash flows and repatriation of foreign earnings. In contrast, gross issuance of speculative-grade bonds and institutional leveraged loans remained strong. Credit market conditions for small businesses remained relatively accommodative despite sluggish credit growth among these firms. Credit conditions in municipal bond markets also remained accommodative.

In commercial real estate (CRE) markets, growth of loans held by banks slowed further in the fourth quarter, though CRE loans held by small banks and some types of CRE loans held by large banks—construction and land development loans in particular—expanded at a more robust pace. Financing conditions in the commercial mortgage-backed securities (CMBS) market remained accommodative as issuance continued at a robust pace and spreads on CMBS remained near their lowest levels since the financial crisis. Credit conditions in the residential mortgage market remained accommodative for most borrowers, though credit standards remained tight for borrowers with low credit scores or hard-to-document incomes. Mortgage rates increased in tandem with rates on longer-term Treasury securities but remained quite low by historical standards.

Conditions in consumer credit markets remained largely supportive of economic activity. Consumer credit increased notably in November, exceeding the more moderate volume of borrowing observed earlier in the year. Revolving credit expanded in November, while nonrevolving credit grew robustly, mainly driven by expansion in student and other consumer loans. In contrast, growth of auto lending slowed in recent months, consistent with the weakening demand for such loans in the fourth quarter as reported in the January SLOOS. For subprime borrowers, conditions remained tight, particularly in the market for credit cards and auto loans.

The staff provided its latest report on the potential risks to financial stability; the report continued to characterize the financial vulnerabilities of the U.S. financial system as moderate on balance. This overall assessment incorporated the staff's judgment that vulnerabilities associated with asset valuation pres-

sures continued to be elevated; asset valuation pressures apparently reflected, in part, a broad-based appetite for risk among investors. The staff judged that vulnerabilities from leverage in the nonfinancial sector appeared to remain moderate, while vulnerabilities stemming from financial-sector leverage and from maturity and liquidity transformation continued to be viewed as low.

Staff Economic Outlook

The U.S. economic projection prepared by the staff for the January FOMC meeting was stronger than the staff forecast at the time of the December meeting. Real GDP was estimated to have risen in the fourth quarter of last year by somewhat more than the staff had previously expected, as gains in both household and business spending were larger than anticipated. Beyond 2017, the forecast for real GDP growth was revised up, reflecting a reassessment of the recently enacted tax cuts, along with higher projected paths for equity prices and foreign economic growth and a lower assumed path for the foreign exchange value of the dollar. Real GDP was projected to increase at a somewhat faster pace than potential output through 2020; the staff continued to assume that the recently enacted tax cuts would boost real GDP growth moderately over the medium term. The unemployment rate was projected to decline further over the next few years and to continue to run well below the staff's estimate of its longer-run natural rate over this period.

Estimates of total and core PCE price inflation for 2017 were in line with the staff's previous forecast. The projection for inflation over the medium term was revised up slightly, primarily reflecting tighter resource utilization in the January forecast. Total PCE price inflation in 2018 was projected to be somewhat faster than in 2017 despite a slower projected pace of increases in consumer energy prices; core PCE prices were forecast to rise notably faster in 2018, importantly reflecting both the expected waning of transitory factors that held down 12-month measures of inflation in 2017 as well as the projected further tightening in resource utilization. The staff projected that core inflation would reach 2 percent in 2019 and that total inflation would be at the Committee's 2 percent objective in 2020.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. On the one hand, many indicators of uncertainty about the macroeconomic outlook remained subdued; on the other hand, considerable uncertainty remained about a number of federal government policies relevant for the economic outlook. The staff saw the risks to the forecasts for real GDP growth and the unemployment rate as balanced. The risks to the projection for inflation also were seen as balanced. Downside risks included the possibilities that longer-term inflation expectations may have edged lower or that the run of soft core inflation readings this year could prove to be more persistent than the staff expected. These downside risks were seen as essentially counterbalanced by the upside risk that inflation could increase more than expected in an economy that was projected to move further above its potential.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants agreed that information received since the FOMC met in December indicated that the labor market continued to strengthen and that economic activity expanded at a solid rate. Gains in employment, household spending, and business fixed investment were solid, and the unemployment rate stayed low. On a 12-month basis, both overall inflation and inflation for items other than food and energy continued to run below 2 percent. Market-based measures of inflation compensation increased in recent months but remained low; survey-based measures of longer-term inflation expectations were little changed, on balance.

Participants generally saw incoming information on economic activity and the labor market as consistent with continued above-trend economic growth and a further strengthening in labor market conditions, with the recent solid gains in household and business spending indicating substantial underlying economic momentum. They pointed to accommodative financial conditions, the recently enacted tax legislation, and an improved global economic outlook as factors likely to support economic growth over coming quarters. Participants expected that with further gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would remain strong. Near-term risks to the economic outlook appeared roughly balanced. Inflation on a 12-month basis was expected to move up this year and to stabilize around the Committee's 2 percent objective over the medium term. However, participants judged that it was

important to continue to monitor inflation developments closely.

Participants expected the recent solid growth in consumer spending to continue, supported by further gains in employment and income, increased household wealth resulting from higher asset prices, and high levels of consumer confidence. It was noted that spending on durable goods to replace those damaged during the hurricanes in September may have provided a temporary boost to consumer spending. In connection with solid growth in consumer spending, a couple of participants noted that the household saving rate had declined to its lowest level since 2005, likely driven by buoyant consumer sentiment or expectations that the rise in household wealth would be sustained.

Participants characterized their business contacts as generally upbeat about the economy; their contacts cited the recent tax cuts and notable improvements in the global economic outlook as positive factors. Manufacturers in a number of Districts had responded to increased orders by boosting production. Against a backdrop of higher energy prices and increased global demand for crude oil, a couple of participants revised up their forecasts for energy production in their respective Districts. Businesses in a number of Districts reported plans to further increase investment in coming quarters in order to expand capacity. Even so, several participants expressed considerable uncertainty about the degree to which changes to corporate taxes would support business investment and capacity expansion; according to these participants, firms may be only just beginning to determine how they might allocate their tax savings among investment, worker compensation, mergers and acquisitions, returns to shareholders, or other uses.

The labor market had strengthened further in recent months, as indicated by continued solid payroll gains, a small increase in average hours worked, and a labor force participation rate that had held steady despite the longer-run declining trend implied by an aging population. Many participants reported that labor market conditions were tight in their Districts, evidenced by low unemployment rates, difficulties for employers in filling open positions or retaining workers, or some signs of upward pressure on wages. The unemployment rate, at 4.1 percent, had remained near the lowest level seen in the past 20 years. It was noted that other labor market indicators—such as the U-6 measure of unemployment or the share of involuntary part-time employment—had returned to their pre-recession levels. A few participants judged that while the labor market was close to full employment, some margins of slack remained; these participants pointed to the employment-to-population ratio or the labor force participation rate for prime-age workers, which remained below pre-recession levels, as well as the absence to date of clear signs of a pickup in aggregate wage growth.

During their discussion of labor market conditions, participants expressed a range of views about recent wage developments. While some participants heard more reports of wage pressures from their business contacts over the intermeeting period, participants generally noted few signs of a broad-based pickup in wage growth in available data. With regard to how firms might use part of their tax savings to boost compensation, a few participants suggested that such a boost could be in the form of onetime bonuses or variable pay rather than a permanent increase in wage structures. It was noted that the pace of wage gains might not increase appreciably if productivity growth remains low. That said, a number of participants judged that the continued tightening in labor markets was likely to translate into faster wage increases at some point.

In their discussion of inflation developments, many participants noted that inflation data in recent months had generally pointed to a gradual rise in inflation, as the 12-month core PCE price inflation rose to 1.5 percent in December, up 0.2 percentage point from the low recorded in the summer. Meanwhile, total PCE price inflation was 1.7 percent over the same 12-month period. Participants anticipated that inflation would continue to gradually rise as resource utilization tightened further and as wage pressures became more apparent; several expected that declines in the foreign exchange value of the dollar in recent months would also likely help return inflation to 2 percent over the medium term. Business contacts in a few Districts reported that they had begun to have some more ability to raise prices to cover higher input costs. That said, a few participants posited that the recently enacted corporate tax cuts might lead firms to cut prices in order to remain competitive or to gain market share, which could result in a transitory drag on inflation.

With regard to inflation expectations, available readings from surveys had been steady and TIPS-based measures of inflation compensation had moved up, although they remained low. Many participants

thought that inflation expectations remained well anchored and would support the gradual return of inflation to the Committee's 2 percent objective over the medium term. However, a few other participants pointed to the record of inflation consistently running below the Committee's 2 percent objective over recent years and expressed the concern that longer-run inflation expectations may have slipped below levels consistent with that objective.

Many participants noted that financial conditions had eased significantly over the intermeeting period; these participants generally viewed the economic effects of the decline in the dollar and the rise in equity prices as more than offsetting the effects of the increase in nominal Treasury yields. One participant reported that financial market contacts did not see the relatively flat slope of the yield curve as signaling an increased risk of recession. A few others judged that it would be important to continue to monitor the effects of policy firming on the slope of the yield curve, noting the strong association between past yield curve inversions and recessions.

Regulatory actions and improved risk management in recent years had put the financial system in a better position to withstand adverse shocks, such as a substantial decline in asset prices, than in the past. However, amid elevated asset valuations and an increased use of debt by nonfinancial corporations, several participants cautioned that imbalances in financial markets may begin to emerge as the economy continued to operate above potential. In this environment, increased use of leverage by non-bank financial institutions might be difficult to detect in a timely manner. It was also noted that the Committee should regularly reassess risks to the financial system and their implications for the economic outlook in light of the potential for changes in regulatory policies over time.

In their consideration of monetary policy, participants discussed the implications of recent economic and financial developments for the outlook for economic growth, labor market conditions, and inflation and, in turn, for the appropriate path of the federal funds rate. Participants agreed that a gradual approach to raising the target range for the federal funds rate remained appropriate and reaffirmed that adjustments to the policy path would depend on their assessments of how the economic outlook and risks to the outlook were evolving relative to the Committee's policy objectives. While participants continued to expect economic activity to expand at a moderate pace over the medium term, they anticipated that the rate of economic growth in 2018 would exceed their estimates of its sustainable longer-run pace and that labor market conditions would strengthen further. A number of participants indicated that they had marked up their forecasts for economic growth in the near term relative to those made for the December meeting in light of the strength of recent data on economic activity in the United States and abroad, continued accommodative financial conditions, and information suggesting that the effects of recently enacted tax changes—while still uncertain—might be somewhat larger in the near term than previously thought. Several others suggested that the upside risks to the near-term outlook for economic activity may have increased. A majority of participants noted that a stronger outlook for economic growth raised the likelihood that further gradual policy firming would be appropriate.

Almost all participants continued to anticipate that inflation would move up to the Committee's 2 percent objective over the medium term as economic growth remained above trend and the labor market stayed strong; several commented that recent developments had increased their confidence in the outlook for further progress toward the Committee's 2 percent inflation objective. A couple noted that a step-up in the pace of economic growth could tighten labor market conditions even more than they currently anticipated, posing risks to inflation and financial stability associated with substantially overshooting full employment. However, some participants saw an appreciable risk that inflation would continue to fall short of the Committee's objective. These participants saw little solid evidence that the strength of economic activity and the labor market was showing through to significant wage or inflation pressures. They judged that the Committee could afford to be patient in deciding whether to increase the target range for the federal funds rate in order to support further strengthening of the labor market and allow participants to assess whether incoming information on inflation showed that it was solidly on a track toward the Committee's objective.

Some participants also commented on the likely evolution of the neutral federal funds rate. By most estimates, the neutral level of the federal funds rate had been very low in recent years, but it was expected to rise slowly over time toward its longer-run level. However, the outlook for the neutral rate was uncertain and would depend on the interplay of a number of forces. For example, the neutral rate, which

appeared to have fallen sharply during the Global Financial Crisis when financial headwinds had restrained demand, might move up more than anticipated as the global economy strengthened. Alternatively, the longer-run level of the neutral rate might remain low in the absence of fundamental shifts in trends in productivity, demographics, or the demand for safe assets.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in December indicated that the labor market had continued to strengthen and that economic activity had been rising at a solid rate. Gains in employment, household spending, and business fixed investment had been solid, and the unemployment rate had stayed low. On a 12-month basis, both overall inflation and inflation for items other than food and energy had continued to run below 2 percent. Market-based measures of inflation compensation had increased in recent months but remained low; survey-based measures of longer-term inflation expectations were little changed, on balance.

Members expected that, with further gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would remain strong. In their discussion of the economic outlook, most members viewed the recent data bearing on real economic activity as suggesting a modestly stronger near-term outlook than they had anticipated at their meeting in December. In addition, financial conditions had remained accommodative, and the details of the tax legislation suggested that its effects on consumer and business spending—while still uncertain—might be a bit greater in the near term than they had previously thought. Although several saw increased upside risks to the near-term outlook for economic activity, members generally continued to judge the risks to that outlook as remaining roughly balanced.

Most members noted that recent information on inflation along with prospects for a continued solid pace of economic activity provided support for the view that inflation on a 12-month basis would likely move up in 2018 and stabilize around the Committee's 2 percent objective over the medium term. However, a couple of members expressed concern about the outlook for inflation, seeing little evidence of a meaningful improvement in the underlying trend in inflation, measures of inflation expectations, or wage growth. Several members commented that they saw both upside and downside risks to the inflation outlook, and members agreed to continue to monitor inflation developments closely.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, members voted to maintain the target range for the federal funds rate at 1¼ to 1½ percent. They indicated that the stance of monetary policy remained accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend on their assessments of realized and expected economic conditions relative to the Committee's objectives of maximum employment and 2 percent inflation. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. Members also agreed to carefully monitor actual and expected inflation developments relative to the Committee's symmetric inflation goal. Members expected that economic conditions would evolve in a manner that would warrant further gradual increases in the federal funds rate. They judged that a gradual approach to raising the target range would sustain the economic expansion and balance the risks to the outlook for inflation and unemployment. Members agreed that the strengthening in the near-term economic outlook increased the likelihood that a gradual upward trajectory of the federal funds rate would be appropriate. They therefore agreed to update the characterization of their expectation for the evolution of the federal funds rate in the postmeeting statement to point to "further gradual increases" while maintaining the target range at the current meeting. Members continued to anticipate that the federal funds rate would likely remain, for some time, below levels that were expected to prevail in the longer run. Nonetheless, they again stated that the actual path for the federal funds rate would depend on the economic outlook as informed by the incoming data.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise,

to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective February 1, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of 1¼ to 1½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 1.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $12 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $8 billion. Small deviations from these amounts for operational reasons are acceptable.
>
> The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in December indicates that the labor market has continued to strengthen and that economic activity has been rising at a solid rate. Gains in employment, household spending, and business fixed investment have been solid, and the unemployment rate has stayed low. On a 12-month basis, both overall inflation and inflation for items other than food and energy have continued to run below 2 percent. Market-based measures of inflation compensation have increased in recent months but remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.
>
> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with further gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market conditions will remain strong. Inflation on a 12-month basis is expected to move up this year and to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.
>
> In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1¼ to 1½ percent. The stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.
>
> In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant further gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data."

Voting for this action: Janet L. Yellen, William C. Dudley, Thomas I. Barkin, Raphael W. Bostic, Lael Brainard, Loretta J. Mester, Jerome H. Powell, Randal K. Quarles, and John C. William

Voting against this action: None.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors voted unanimously to leave the interest rates on required and excess reserve balances unchanged at 1½ percent and voted unanimously to approve establishment of the primary credit rate (discount rate) at the existing level of 2 percent.[5]

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, March 20–21, 2018. The meeting adjourned at 10:50 a.m. on January 31, 2018.

[5] The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Notation Vote

By notation vote completed on January 2, 2018, the Committee unanimously approved the minutes of the Committee meeting held on December 12–13, 2017.

James A. Clouse
Secretary

Meeting Held on March 20–21, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, March 20, 2018, at 1:00 p.m. and continued on Wednesday, March 21, 2018, at 9:00 a.m.[1]

Present

Jerome H. Powell
Chairman

William C. Dudley
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Lael Brainard

Loretta J. Mester

Randal K. Quarles

John C. Williams

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine[2]
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Thomas Laubach
Economist

David W. Wilcox
Economist

David Altig, Kartik B. Athreya, Thomas A. Connors, Trevor A. Reeve, Ellis W. Tallman, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Ann E. Misback
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[3]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Supervision and Regulation, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Michael T. Kiley
Deputy Director, Division of Financial Stability, Board of Governors

Antulio N. Bomfim
Special Adviser to the Chairman, Office of Board Members, Board of Governors

Joseph W. Gruber and John M. Roberts[2]
Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Shaghil Ahmed, Brian M. Doyle, and Christopher J. Erceg
Senior Associate Directors, Division of International Finance, Board of Governors

Eric M. Engen and Diana Hancock
Senior Associate Directors, Division of Research and Statistics, Board of Governors

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1 The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

2 Attended Tuesday session only.

3 Attended through the discussion of developments in financial markets and open market operations.

Ellen E. Meade, Stephen A. Meyer, Edward Nelson, and Robert J. Tetlow
Senior Advisers, Division of Monetary Affairs, Board of Governors

Stacey Tevlin
Associate Director, Division of Research and Statistics, Board of Governors

Glenn Follette and Karen M. Pence[2]
Assistant Directors, Division of Research and Statistics, Board of Governors

Eric C. Engstrom
Adviser, Division of Monetary Affairs, and
Adviser, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[2]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Etienne Gagnon
Section Chief, Division of Monetary Affairs, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Kurt F. Lewis
Principal Economist, Division of Monetary Affairs, Board of Governors

Anna Orlik
Senior Economist, Division of Monetary Affairs, Board of Governors

Valerie Hinojosa
Information Manager, Division of Monetary Affairs, Board of Governors

Meredith Black
First Vice President, Federal Reserve Bank of Dallas

Michael Dotsey, Glenn D. Rudebusch, and Daniel G. Sullivan
Executive Vice Presidents, Federal Reserve Banks of Philadelphia, San Francisco, and Chicago, respectively

Marc Giannoni, Luke Woodward, and Mark L. J. Wright
Senior Vice Presidents, Federal Reserve Banks of Dallas, Kansas City, and Minneapolis, respectively

David Andolfatto, Jonathan P. McCarthy, Giovanni Olivei, and Jonathan L. Willis
Vice Presidents, Federal Reserve Banks of St. Louis, New York, Boston, and Kansas City, respectively

Developments in Financial Markets and Open Market Operations

The deputy manager of the System Open Market Account (SOMA) provided a summary of developments in domestic and global financial markets over the intermeeting period; she also reported on open market operations and related issues. Financial markets experienced a notable bout of volatility early in the intermeeting period; volatility was particularly pronounced in equity markets. Market participants pointed to incoming economic data released in early February—particularly data on average hourly earnings—as raising concerns about the prospects for higher inflation and higher interest rates. These concerns reportedly contributed to a steep decline in equity prices and an associated rise in measures of volatility. Some reports suggested that the increase in volatility was amplified by the unwinding of trading positions based on various types of volatility trading strategies. Measures of equity market volatility declined over subsequent weeks but remained above levels that prevailed earlier in the year, and stock prices finished lower, on net, over the intermeeting period. Interest rates rose modestly over the period. Respondents to the Open Market Desk's surveys of primary dealers and market participants suggested that revisions in investors' views regarding the fiscal outlook were an important factor boosting yields and contributing to a slightly steeper expected trajectory of the federal funds rate. The deputy manager noted that a rapid and sizable increase in Treasury bill issuance over recent weeks had put upward pressure on money market yields over the period. Three-month Treasury bill yields moved up significantly and those increases passed through to rates on other short-term instruments such as three-month Eurodollar deposits and commercial paper. The spread of market rates on overnight repurchase agreements over the offering rate at the Federal Reserve's overnight reverse repurchase (ON RRP) facility widened, and take-up at the facility fell to quite low levels as a result. Rates on overnight federal funds and Eurodollar transactions edged higher relative to the interest rate on excess reserves. The Desk continued to execute the FOMC's balance sheet normalization plan initiated in October of last year.

By unanimous vote, the Committee ratified the Open Market Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the March 20–21 meeting indicated that labor market conditions continued to strengthen through February and suggested that real gross domestic product (GDP) was rising at a moderate pace in the first quarter. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), remained below 2 percent in January. Survey-based measures of longer-run inflation expectations were little changed on balance.

Gains in total nonfarm payroll employment were strong over the two months ending in February. The labor force participation rate held steady in January and then stepped up markedly in February, with the participation rates for prime-age (defined as ages 25 to 54) women and men moving up on net. The national unemployment rate remained at 4.1 percent. Similarly, the unemployment rates for African Americans, Asians, and Hispanics were roughly flat, on balance, in recent months. The share of workers employed part time for economic reasons edged up but remained close to its pre-recession levels. The rates of private-sector job openings and quits increased slightly, on net, over the two months ending in January, and the four-week moving average of initial claims for unemployment insurance benefits continued to be low in early March. Recent readings showed that increases in labor compensation remained modest. Compensation per hour in the nonfarm business sector advanced 2¾ percent over the four quarters of last year, and average hourly earnings for all employees rose 2½ percent over the 12 months ending in February.

Total industrial production expanded, on net, in January and February, with gains in both manufacturing and mining. Automakers' schedules indicated that assemblies of light motor vehicles would likely edge down in coming months. However, broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, pointed to further solid increases in factory output in the near term.

Consumer expenditures appeared likely to rise at a modest pace in the first quarter following a strong gain in the preceding quarter. Real PCE edged down in January, and the components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE rose somewhat in February while the pace of light motor vehicle sales declined slightly. However, household spending was probably held back somewhat in February because of a delay in many federal tax refunds, and the subsequent delivery of those refunds would likely contribute to an increase in consumer spending in March. Moreover, the lower tax withholding resulting from the tax cuts enacted late last year, which was beginning to show through in consumers' paychecks, would likely provide some impetus to spending in coming months. More broadly, recent readings on key factors that influence consumer spending—including gains in employment and real disposable personal income, along with households' elevated net worth—continued to be supportive of solid real PCE growth in the near term. In addition, consumer sentiment in early March, as measured by the University of Michigan Surveys of Consumers, was at its highest level since 2004.

Real residential investment looked to be slowing in the first quarter after rising briskly in the fourth quarter. Starts of new single-family homes increased in January and February, although building permit issuance moved down somewhat. Starts of multifamily units jumped in January but fell back in February. Sales of both new and existing homes declined in January.

Growth in real private expenditures for business equipment and intellectual property appeared to be moderating in the first quarter after increasing at a solid pace in the preceding quarter. Nominal shipments of nondefense capital goods excluding aircraft edged down in January. However, recent forward-looking indicators of business equipment spending—such as the backlog of unfilled capital goods orders, along with upbeat readings on business sentiment from national and regional surveys—pointed to further solid gains in equipment spending in the near term. Firms' nominal spending for nonresidential structures outside of the drilling and mining sector declined in January. In contrast, the number of crude oil and natural gas rigs in operation—an indicator of business spending for structures in the drilling and mining sector—continued to move up through mid-March.

Total real government purchases seemed to be flattening out, on balance, in the first quarter after rising solidly in the fourth quarter. Nominal defense spending in January and February was consistent with a decline in real federal purchases. In contrast, real purchases by state and local governments looked to be rising, as the payrolls of these governments increased

in January and February and nominal state and local construction spending advanced somewhat in January.

The change in net exports was a significant drag on real GDP growth in the fourth quarter of 2017, as imports grew rapidly. The nominal U.S. international trade deficit widened in January; exports declined, led by lower exports of capital goods and industrial supplies, while imports were about flat. The slowing of real import growth following the rapid increase in the fourth quarter suggested that the drag on real GDP growth from net exports would lessen in the first quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased 1¾ percent over the 12 months ending in January. Core PCE price inflation, which excludes changes in consumer food and energy prices, was 1½ percent over that same period. The consumer price index (CPI) rose 2¼ percent over the 12 months ending in February, while core CPI inflation was 1¾ percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey, the Survey of Professional Forecasters, and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Foreign economic activity expanded at a moderate pace in the fourth quarter. Real GDP growth picked up in Mexico but slowed a bit in some advanced foreign economies (AFEs) and in emerging Asia. Recent indicators pointed to solid economic growth abroad in the first quarter of this year. Inflation abroad continued to be boosted by the pass-through to consumer prices of past increases in oil prices. However, excluding food and energy prices, inflation remained subdued in many foreign economies, including the euro area and Japan.

Staff Review of the Financial Situation

Financial markets were turbulent over the intermeeting period, and market volatility increased notably. On net, U.S. equity prices declined, corporate bond spreads widened, and nominal Treasury yields rose.

Broad equity price indexes decreased over the intermeeting period. Market participants pointed to a larger-than-expected increase in average hourly earnings in the January employment report as a factor triggering increased investor concerns about inflation and the associated pace of interest rate increases. Those concerns appeared to induce a substantial decline in equity prices. The decline may have been exacerbated by broader concerns about the level of stock market valuations. On February 5, the VIX—an index of option-implied volatility for one-month returns on the S&P 500 index—rose to its highest level since 2015, reportedly driven in part by the unwinding of investment strategies designed to profit from low volatility. Subsequently, equity prices recovered about half of their decline, and the VIX partially retraced its earlier increase.

Monetary policy communications over the intermeeting period—including the January FOMC statement, the minutes of the January FOMC meeting, and the Chairman's semiannual testimony to the Congress—were generally viewed by market participants as signaling a somewhat stronger economic outlook and thus reinforced expectations for further gradual increases in the target range for the federal funds rate. The probability of the next rate hike occurring at the March FOMC meeting, as implied by quotes on federal funds futures contracts, increased to near certainty. Conditional on a March rate hike, the market-implied probability of another increase in the federal funds rate target range at the June FOMC meeting edged up to just above 70 percent. Expectations for the federal funds rate at the end of 2019 and 2020, derived from overnight index swap (OIS) quotes, moved up somewhat since late January.

On net, the nominal Treasury yield curve shifted up and flattened a bit. Monetary policy communications, higher-than-expected domestic price data, and expectations for increases in the supply of Treasury securities following the federal budget agreement in early February contributed to the increase in Treasury yields. Measures of inflation compensation derived from Treasury Inflation-Protected Securities were little changed on net. Option-implied volatility on longer-term rates rose notably following the jump in equity market volatility on February 5 but mostly retraced that increase by the end of the intermeeting period. On balance, spreads on investment- and speculative-grade corporate bond yields over comparable-maturity Treasury yields widened but remained near the lower end of their historical ranges.

In short-term funding markets, increased issuance of Treasury bills lifted Treasury bill yields above comparable-maturity OIS rates for the first time in almost a decade. The rise in bill yields was a factor that pushed up money market rates and widened the spreads of certificates of deposit and term London

interbank offered rates relative to OIS rates. The upward pressure on money market rates also showed up in slight increases in the effective federal funds rate and the overnight bank funding rate relative to the interest rate on excess reserves. The rise in market rates on overnight repurchase agreements relative to the offering rate on the Federal Reserve's ON RRP facility resulted in low levels of take-up at the facility. Reductions in the size of the Federal Reserve's balance sheet continued as scheduled without a notable effect on markets.

Despite the recent volatility in some financial markets, financing conditions for nonfinancial corporations and households remained accommodative over the intermeeting period and continued to support further expansion of economic activity. Gross issuance of investment- and speculative-grade bonds was slightly lower than usual in January and February, while gross issuance of institutional leveraged loans stayed strong. The provision of bank-intermediated credit to businesses slowed further, likely reflecting weak loan demand rather than tight supply. Small business owners continued to report accommodative credit supply conditions but also weak demand for credit. Credit conditions in municipal bond markets remained accommodative.

In commercial real estate markets, loan growth at banks slowed further in January and February. Financing conditions in commercial mortgage-backed securities (CMBS) markets remained accommodative, as issuance was robust (relative to the usual seasonal slowdown) and CMBS spreads continued to be at low levels. Financing conditions in the residential mortgage market remained accommodative for most borrowers, though credit conditions stayed tight for borrowers with low credit scores or with hard-to-document incomes. Mortgage rates moved up, on net, over the period, along with the rise in other long-term rates.

Consumer credit grew at a solid pace in January following a rapid expansion in the fourth quarter. Aggregate credit card balances continued to expand steadily in January. Nonetheless, for subprime borrowers, conditions remained tight, with credit limits and balances still low by historical standards. Auto lending continued to grow at a moderate pace in recent months; although underwriting standards in the subprime segment continued to tighten, there were few signs of a significant restriction in credit supply for auto loans.

Since the January FOMC meeting, foreign equity prices moved notably lower, on net, and generally declined more in the AFEs than in the United States. Longer-term yields on sovereign debt in AFEs either decreased moderately or ended the period little changed, in contrast to the increase in U.S. Treasury yields. Weaker-than-expected economic data weighed on market-based measures of expected policy rate paths and on longer-term yields in Canada and in the euro area. Communications from the Bank of Canada also seemed to contribute to the decline in Canadian yields. In the United Kingdom, longer-term yields were little changed, on net, although the market-based path of expected policy rates moved up moderately in response to Bank of England communications. In emerging market economies (EMEs), sovereign yield spreads widened modestly, and flows into EME mutual funds were volatile over the period.

The broad nominal dollar index appreciated moderately over the period, largely reflecting an outsized depreciation of the Canadian dollar and a massive devaluation of the Venezuelan bolivar. (The Venezuelan government devalued the official Venezuelan exchange rate by more than 99 percent against the dollar, bringing the official rate closer to its black market value.) Lower oil prices, weaker-than-expected economic data, and uncertainty over U.S. trade policy likely contributed to the weakness in the Canadian dollar. In contrast, the Japanese yen appreciated against the dollar, in part supported by safe-haven demand. Late in the intermeeting period, the British pound was boosted by news of a preliminary agreement between U.K. and European Union authorities regarding the transition period of the Brexit process, but the pound still ended the intermeeting period modestly weaker against the dollar.

Staff Economic Outlook

The staff projection for U.S. economic activity prepared for the March FOMC meeting was somewhat stronger, on balance, than the forecast at the time of the January meeting. The near-term forecast for real GDP growth was revised down a little; the incoming spending data were a bit softer than the staff had expected, and the staff judged that the softness was not associated with residual seasonality in the data. However, the slowing in the pace of spending in the first quarter was expected to be transitory, and the medium-term projection for GDP growth was revised up modestly, largely reflecting the expected boost to GDP from the federal budget agreement enacted in

February. Real GDP was projected to increase at a faster pace than potential output through 2020. The unemployment rate was projected to decline further over the next few years and to continue to run below the staff's estimate of its longer-run natural rate over this period.

The projection for inflation over the medium term was revised up a bit, reflecting the slightly tighter resource utilization in the new forecast. The rates of both total and core PCE price inflation were projected to be faster in 2018 than in 2017. The staff projected that inflation would reach the Committee's 2 percent objective in 2019.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The staff saw the risks to the forecasts for real GDP growth and the unemployment rate as balanced. On the upside, recent fiscal policy changes could lead to a greater expansion in economic activity over the next few years than the staff projected. On the downside, those fiscal policy changes could yield less impetus to the economy than the staff expected if the economy was already operating above its potential level and resource utilization continued to tighten, as the staff projected. Risks to the inflation projection also were seen as balanced. An upside risk was that inflation could increase more than expected in an economy that was projected to move further above its potential. Downside risks included the possibilities that longer-term inflation expectations may have edged lower or that the run of low core inflation readings last year could prove to be more persistent than the staff expected.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real GDP growth, the unemployment rate, and inflation for each year from 2018 through 2020 and over the longer run, based on their individual assessments of the appropriate path for the federal funds rate. The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections and policy assessments are described in the Summary of Economic Projections (SEP), which is an addendum to these minutes.

In their discussion of economic conditions and the outlook, meeting participants agreed that information received since the FOMC met in January indicated that economic activity had been rising at a moderate rate and that the labor market had continued to strengthen. Job gains had been strong in recent months, and the unemployment rate had stayed low. On a 12-month basis, both overall inflation and inflation for items other than food and energy continued to run below 2 percent. Market-based measures of inflation compensation had increased in recent months but remained low; survey-based measures of longer-term inflation expectations were little changed, on balance.

Participants noted incoming data suggesting some slowing in the rate of growth of household spending and business fixed investment after strong fourth-quarter readings. However, they expected that the first-quarter softness would be transitory, pointing to a variety of factors, including delayed payment of some personal tax refunds, residual seasonality in the data, and more generally to strong economic fundamentals. Among the fundamentals that participants cited were high levels of consumer and business sentiment, supportive financial conditions, improved economic conditions abroad, and recent changes in fiscal policy. Participants generally saw the news on spending and the labor market over the past few quarters as being consistent with continued above-trend growth and a further strengthening in labor markets. Participants expected that, with further gradual increases in the federal funds rate, economic activity would expand at a solid rate during the remainder of this year and a moderate pace in the medium term, and that labor market conditions would remain strong. Inflation on a 12-month basis was expected to move up in coming months and to stabilize around the Committee's 2 percent objective over the medium term. Several participants noted that the 12-month PCE price inflation rate would likely shift upward when the March data are released because the effects of the outsized decline in the prices of cell phone service plans in March of last year will drop out of that calculation. Near-term risks to the economic outlook appeared to be roughly balanced, but participants agreed that it would be important to continue to monitor inflation developments closely.

Many participants reported considerable optimism among the business contacts in their Districts, consis-

tent with a firming in business expenditures. Respondents to District surveys in both the manufacturing and service sectors were generally upbeat about the economic outlook. In some Districts, reports from business contacts or evidence from surveys pointed to continuing shortages of workers in segments of the labor market. Activity in the energy sector continued to expand, with contacts suggesting that further increases were likely, provided that sufficient labor resources were forthcoming. In contrast, contacts in the agricultural sector reported that farm income continued to experience downward pressure due to low crop prices.

A number of participants reported concern among their business contacts about the possible ramifications of the recent imposition of tariffs on imported steel and aluminum. Participants did not see the steel and aluminum tariffs, by themselves, as likely to have a significant effect on the national economic outlook, but a strong majority of participants viewed the prospect of retaliatory trade actions by other countries, as well as other issues and uncertainties associated with trade policies, as downside risks for the U.S. economy. Contacts in the agricultural sector reported feeling particularly vulnerable to retaliation.

Tax changes enacted late last year and the recent federal budget agreement, taken together, were expected to provide a significant boost to output over the next few years. However, participants generally regarded the magnitude and timing of the economic effects of the fiscal policy changes as uncertain, partly because there have been few historical examples of expansionary fiscal policy being implemented when the economy was operating at a high level of resource utilization. A number of participants also suggested that uncertainty about whether all elements of the tax cuts would be made permanent, or about the implications of higher budget deficits for fiscal sustainability and real interest rates, represented sources of downside risk to the economic outlook. A few participants noted that the changes in tax policy could boost the level of potential output.

Most participants described labor market conditions as strong, noting that payroll gains had remained well above the pace regarded as consistent with absorbing new labor force entrants over time, the unemployment rate had stayed low, job openings had been high, or that initial claims for unemployment insurance benefits had been low. Many participants observed that the labor force participation rate had been higher recently than they had expected, helping to keep the unemployment rate flat over the past few months despite strong payroll gains. The firmness in the overall participation rate—relative to its demographically driven downward trend—and the rising participation rate of prime-age adults were regarded as signs of continued strengthening in labor market conditions. A few participants thought that these favorable developments could continue for a time, whereas others expressed doubts. A few participants warned against inferring too much from comparisons of the current low level of the unemployment rate with historical benchmarks, arguing that the much higher levels of education of today's workforce—and the lower average unemployment rate of more highly educated workers than less educated workers—suggested that the U.S. economy might be able to sustain lower unemployment rates than was the case in the 1950s or 1960s.

In some Districts, reports from business contacts or evidence from surveys pointed to a pickup in wages, particularly for unskilled or entry-level workers. However, business contacts or national surveys led a few participants to conclude that some businesses facing labor shortages were changing job requirements so that they matched more closely the skills of available workers, increasing training, or offering more flexible work arrangements, rather than increasing wages in a broad-based fashion. Regarding wage growth at the national level, several participants noted a modest increase, but most still described the pace of wage gains as moderate; a few participants cited this fact as suggesting that there was room for the labor market to strengthen somewhat further.

In some Districts, surveys or business contacts reported increases in nonwage costs, particularly in the cost of materials, and in a few Districts, contacts reported passing on some of those costs in the form of higher prices. Contacts in a few Districts suggested that widely known, observable cost increases—such as those associated with rising commodity prices—would be more likely to be accepted and passed through to final goods prices than would less observable costs such as wage increases. A few participants argued that either an absence of pricing power among at least some firms—perhaps stemming from globalization and technological innovations, including ones that facilitate price comparisons—or the ability of firms to find ways to cut costs of production has been damping inflationary pressures. Many participants stated that recent readings from indicators on inflation and inflation expecta-

tions increased their confidence that inflation would rise to the Committee's 2 percent objective in coming months and then stabilize around that level; others suggested that downside risks to inflation were subsiding. In contrast, a few participants cautioned that, despite increases in market-based measures of inflation compensation in recent months and the stabilization of some survey measures of inflation expectations, the levels of these indicators remained too low to be consistent with the Committee's 2 percent inflation objective.

In their discussion of developments in financial markets, some participants observed that financial conditions remained accommodative despite the rise in market volatility and repricing of assets that had occurred in February. Many participants reported that their contacts had taken the previous month's turbulence in stride, although a few participants suggested that financial developments over the intermeeting period highlighted some downside risks associated with still-high valuations for equities or from market volatility more generally. A few participants expressed concern that a lengthy period in which the economy operates beyond potential and financial conditions remain highly accommodative could, over time, pose risks to financial stability.

In their consideration of monetary policy, participants discussed the implications of recent economic and financial developments for the appropriate path of the federal funds rate. All participants agreed that the outlook for the economy beyond the current quarter had strengthened in recent months. In addition, all participants expected inflation on a 12-month basis to move up in coming months. This expectation partly reflected the arithmetic effect of the soft readings on inflation in early 2017 dropping out of the calculation; it was noted that the increase in the inflation rate arising from this source was widely expected and, by itself, would not justify a change in the projected path for the federal funds rate. Most participants commented that the stronger economic outlook and the somewhat higher inflation readings in recent months had increased the likelihood of progress toward the Committee's 2 percent inflation objective. A few participants suggested that a modest inflation overshoot might help push up longer-term inflation expectations and anchor them at a level consistent with the Committee's 2 percent inflation objective. A number of participants offered their views on the potential benefits and costs associated with an economy operating well above potential for a prolonged period while inflation remained low. On the one hand, the associated tightness in the labor market might help speed the return of inflation to the Committee's 2 percent goal and induce a further increase in labor force participation; on the other hand, an overheated economy could result in significant inflation pressures or lead to financial instability.

Based on their current assessments, almost all participants expressed the view that it would be appropriate for the Committee to raise the target range for the federal funds rate 25 basis points at this meeting. These participants agreed that, even after such an increase in the target range, the stance of monetary policy would remain accommodative, supporting strong labor market conditions and a sustained return to 2 percent inflation. A couple of participants pointed to possible benefits of postponing an increase in the target range for the federal funds rate until a subsequent meeting; these participants suggested that waiting for additional data to provide more evidence of a sustained return of the 12-month inflation rate to 2 percent might more clearly demonstrate the data dependence of the Committee's decisions and its resolve to achieve the price-stability component of its dual mandate.

With regard to the medium-term outlook for monetary policy, all participants saw some further firming of the stance of monetary policy as likely to be warranted. Almost all participants agreed that it remained appropriate to follow a gradual approach to raising the target range for the federal funds rate. Several participants commented that this gradual approach was most likely to be conducive to maintaining strong labor market conditions and returning inflation to 2 percent on a sustained basis without resulting in conditions that would eventually require an abrupt policy tightening. A number of participants indicated that the stronger outlook for economic activity, along with their increased confidence that inflation would return to 2 percent over the medium term, implied that the appropriate path for the federal funds rate over the next few years would likely be slightly steeper than they had previously expected. Participants agreed that the longer-run normal federal funds rate was likely lower than in the past, in part because of secular forces that had put downward pressure on real interest rates. Several participants expressed the judgment that it would likely become appropriate at some point for the Committee to set the federal funds rate above its longer-run normal value for a time. Some participants suggested that, at some point, it might become necessary to revise statement language to acknowledge that, in

pursuit of the Committee's statutory mandate and consistent with the median of participants' policy rate projections in the SEP, monetary policy eventually would likely gradually move from an accommodative stance to being a neutral or restraining factor for economic activity. However, participants expressed a range of views on the amount of policy tightening that would likely be required over the medium term to achieve the Committee's goals. Participants agreed that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in January indicated that the labor market had continued to strengthen and that economic activity had been rising at a moderate rate. Job gains had been strong in recent months, and the unemployment rate had stayed low. Recent data suggested that growth rates of household spending and business fixed investment had moderated from their strong fourth-quarter readings. On a 12-month basis, both overall inflation and inflation for items other than food and energy had continued to run below 2 percent. Market-based measures of inflation compensation had increased in recent months but remained low; survey-based measures of longer-term inflation expectations were little changed, on balance.

All members viewed the recent data and other developments bearing on real economic activity as suggesting that the outlook for the economy beyond the current quarter had strengthened in recent months. In addition, notwithstanding increased market volatility over the intermeeting period, financial conditions had stayed accommodative, and developments since the January meeting had indicated that fiscal policy was likely to provide greater impetus to the economy over the next few years than members had previously thought. Consequently, members expected that, with further gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace in the medium term, and labor market conditions would remain strong. Members generally continued to judge the risks to the economic outlook as remaining roughly balanced.

Most members noted that recent readings on inflation, along with the strengthening of the economic outlook, provided support for the view that inflation on a 12-month basis would likely move up in coming months and stabilize around the Committee's 2 percent objective over the medium term. Members agreed to continue to monitor inflation developments closely.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, members voted to raise the target range for the federal funds rate to 1½ to 1¾ percent. They indicated that the stance of monetary policy remained accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend on their assessments of realized and expected economic conditions relative to the Committee's objectives of maximum employment and 2 percent inflation. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. Members also agreed that they would carefully monitor actual and expected developments in inflation in relation to the Committee's symmetric inflation goal. Members expected that economic conditions would evolve in a manner that would warrant further gradual increases in the federal funds rate. They judged that raising the target range gradually would balance the risks to the outlook for inflation and unemployment and was most likely to support continued economic expansion. Members agreed that the strengthening in the economic outlook in recent months increased the likelihood that a gradual upward trajectory of the federal funds rate would be appropriate. Members continued to anticipate that the federal funds rate would likely remain, for some time, below levels that were expected to prevail in the longer run. Nonetheless, they again stated that the actual path for the federal funds rate would depend on the economic outlook as informed by incoming data.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective March 22, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to

maintain the federal funds rate in a target range of 1½ to 1¾ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 1.50 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.

The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during March that exceeds $12 billion, and to continue reinvesting in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during March that exceeds $8 billion. Effective in April, the Committee directs the Desk to roll over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $18 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $12 billion. Small deviations from these amounts for operational reasons are acceptable.

The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

"Information received since the Federal Open Market Committee met in January indicates that the labor market has continued to strengthen and that economic activity has been rising at a moderate rate. Job gains have been strong in recent months, and the unemployment rate has stayed low. Recent data suggest that growth rates of household spending and business fixed investment have moderated from their strong fourth-quarter readings. On a 12-month basis, both overall inflation and inflation for items other than food and energy have continued to run below 2 percent. Market-based measures of inflation compensation have increased in recent months but remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The economic outlook has strengthened in recent months. The Committee expects that, with further gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace in the medium term and labor market conditions will remain strong. Inflation on a 12-month basis is expected to move up in coming months and to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate to 1½ to 1¾ percent. The stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant further gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data."

Voting for this action: Jerome H. Powell, William C. Dudley, Thomas I. Barkin, Raphael W. Bostic, Lael Brainard, Loretta J. Mester, Randal K. Quarles, and John C. Williams.

Voting against this action: None.

To support the Committee's decision to raise the target range for the federal funds rate, the Board of Governors voted unanimously to raise the interest rates on required and excess reserve balances ¼ percentage point, to 1¾ percent, effective March 22, 2018. The Board of Governors also voted unanimously to approve a ¼ percentage point increase in the primary credit rate (discount rate) to 2¼ percent, effective March 22, 2018.[4]

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, May 1–2, 2018. The meeting adjourned at 9:55 a.m. on March 21, 2018.

Notation Vote

By notation vote completed on February 20, 2018, the Committee unanimously approved the minutes of the Committee meeting held on January 30–31, 2018.

James A. Clouse
Secretary

[4] In taking this action, the Board approved requests submitted by the boards of directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, St. Louis, Kansas City, Dallas, and San Francisco. This vote also encompassed approval by the Board of Governors of the establishment of a 2¼ percent primary credit rate by the remaining Federal Reserve Banks, effective on the later of March 22, 2018, and the date such Reserve Banks informed the Secretary of the Board of such a request. (Secretary's note: Subsequently, the Federal Reserve Banks of Chicago and Minneapolis were informed by the Secretary of the Board of the Board's approval of their establishment of a primary credit rate of 2¼ percent, effective March 22, 2018.) The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on March 20–21, 2018, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2018 to 2020 and over the longer run.[1] Each participant's projections were based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy—including a path for the federal funds rate and its longer-run value—and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.[2] "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the statutory mandate to promote maximum employment and price stability.

All participants who submitted longer-run projections expected that real GDP in 2018 would expand at a pace exceeding their individual estimates of the longer-run growth rate of real GDP. Participants generally saw real GDP growth moderating somewhat in each of the following two years, with almost all participants who submitted longer-run projections anticipating that real GDP growth in 2020 would be at or within a few tenths of a percentage point of their longer-run estimates. All participants who submitted longer-run projections expected that, throughout the projection period, the unemployment rate would run below their estimates of its longer-run level. All participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would rise to or toward the Committee's 2 percent objective this year and would be at or a little above that objective by 2020. Compared with the Summary of Economic Projections (SEP) from December, a substantial majority of participants marked up their projections for real GDP growth and lowered their projections for the unemployment rate; participants indicated that these revisions reflected a number of factors, such as changes in fiscal policy, a stronger outlook for economic growth abroad, or recent strong job gains. For inflation, a majority of participants made slight upward revisions to their projections; these revisions were attributed to recent price data and the effects of a stronger economic outlook than in the December SEP. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, participants generally continued to expect that the evolution of the economy relative to their objectives of maximum employment and 2 percent inflation would likely warrant further gradual increases in the federal funds rate. Although the median of participants' projections for the federal funds rate at the end of 2018 was unchanged relative to the December SEP, a number of participants marked up their projections for this year. Moreover, a substantial majority of participants revised up their federal funds rate projections for 2019 and 2020. The median of participants' projections for the longer-run level of the federal funds rate was slightly higher relative to the December SEP. Nearly all participants who submitted longer-run projections expected that evolving economic conditions would make it appropriate for the federal funds rate to move above their estimates of its longer-run level during part of the projection period.

In general, participants continued to view the uncertainty attached to their economic projections as broadly similar to the average of the past 20 years. As in December, most participants judged the risks around their projections for real GDP growth, the unemployment rate, and inflation to be broadly balanced.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP, conditional on their individual assessments of appropriate monetary policy, was 2.7 percent for this year and 2.4 percent for next year. The median projection for real GDP growth in 2020 was 2.0 percent, a touch above the 1.8 percent median of participants' longer-run estimates. Most participants cited federal fiscal policy developments—specifically, the enactment of the Tax Cuts and Jobs Act and the Bipartisan Budget Act of 2018—as boosting their projections for economic activity over the next couple of years. Several partici-

[1] Three members of the Board of Governors were in office at the time of the March 2018 meeting, one member fewer than in December 2017.

[2] One participant did not submit longer-run projections for real GDP growth, the unemployment rate, or the federal funds rate.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, March 2018

Percent

Variable	Median[1]				Central tendency[2]				Range[3]			
	2018	2019	2020	Longer run	2018	2019	2020	Longer run	2018	2019	2020	Longer run
Change in real GDP	2.7	2.4	2.0	1.8	2.6–3.0	2.2–2.6	1.8–2.1	1.8–2.0	2.5–3.0	2.0–2.8	1.5–2.3	1.7–2.2
December projection	2.5	2.1	2.0	1.8	2.2–2.6	1.9–2.3	1.7–2.0	1.8–1.9	2.2–2.8	1.7–2.4	1.1–2.2	1.7–2.2
Unemployment rate	3.8	3.6	3.6	4.5	3.6–3.8	3.4–3.7	3.5–3.8	4.3–4.7	3.6–4.0	3.3–4.2	3.3–4.4	4.2–4.8
December projection	3.9	3.9	4.0	4.6	3.7–4.0	3.6–4.0	3.6–4.2	4.4–4.7	3.6–4.0	3.5–4.2	3.5–4.5	4.3–5.0
PCE inflation	1.9	2.0	2.1	2.0	1.8–2.0	2.0–2.2	2.1–2.2	2.0	1.8–2.1	1.9–2.3	2.0–2.3	2.0
December projection	1.9	2.0	2.0	2.0	1.7–1.9	2.0	2.0–2.1	2.0	1.7–2.1	1.8–2.3	1.9–2.2	2.0
Core PCE inflation[4]	1.9	2.1	2.1		1.8–2.0	2.0–2.2	2.1–2.2		1.8–2.1	1.9–2.3	2.0–2.3	
December projection	1.9	2.0	2.0		1.7–1.9	2.0	2.0–2.1		1.7–2.0	1.8–2.3	1.9–2.3	
Memo: Projected appropriate policy path												
Federal funds rate	2.1	2.9	3.4	2.9	2.1–2.4	2.8–3.4	3.1–3.6	2.8–3.0	1.6–2.6	1.6–3.9	1.6–4.9	2.3–3.5
December projection	2.1	2.7	3.1	2.8	1.9–2.4	2.4–3.1	2.6–3.1	2.8–3.0	1.1–2.6	1.4–3.6	1.4–4.1	2.3–3.0

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The December projections were made in conjunction with the meeting of the Federal Open Market Committee on December 12–13, 2017. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the December 12–13, 2017, meeting, and one participant did not submit such projections in conjunction with the March 20–21, 2018, meeting.

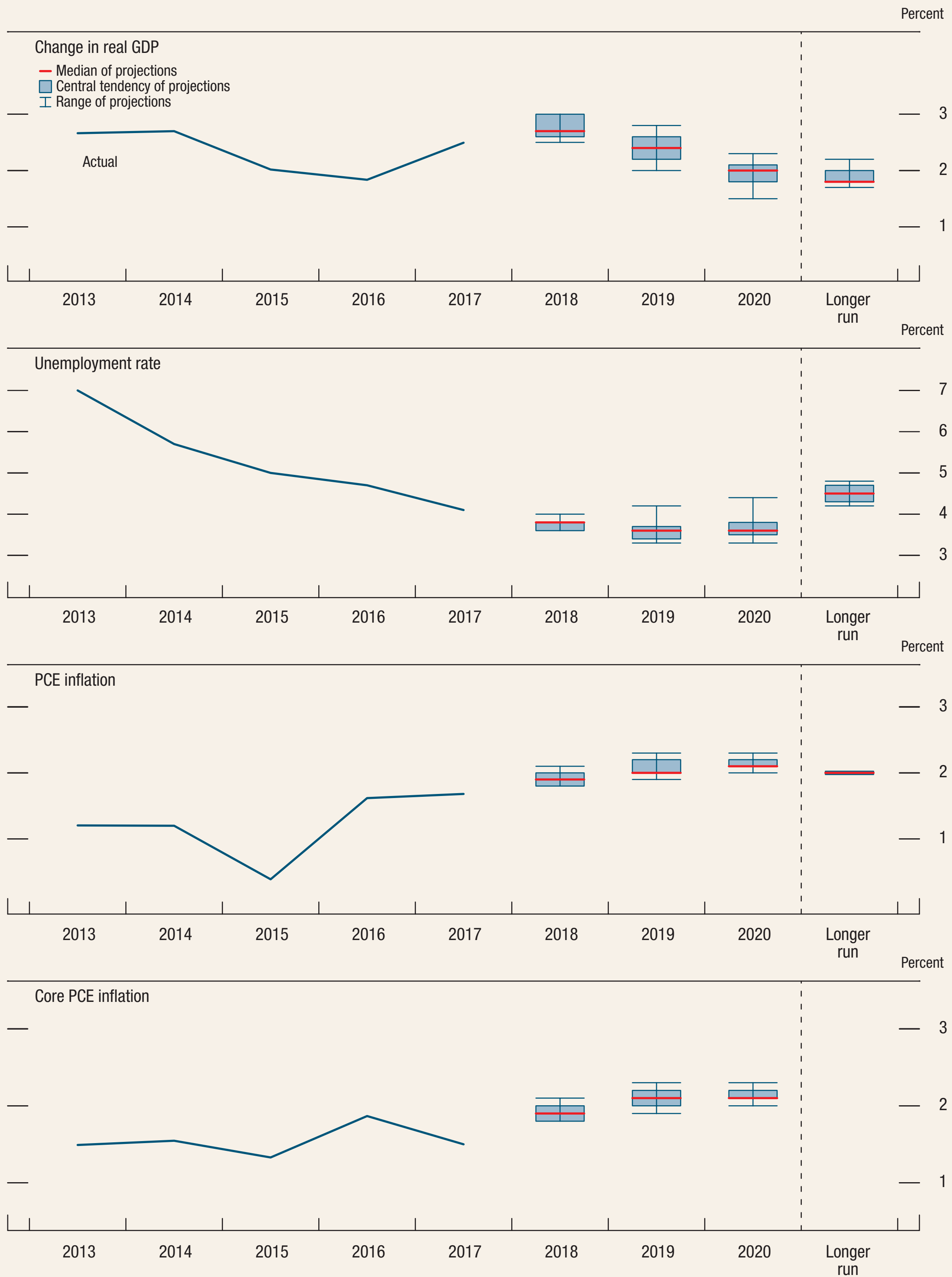
[1] For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

[2] The central tendency excludes the three highest and three lowest projections for each variable in each year.

[3] The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

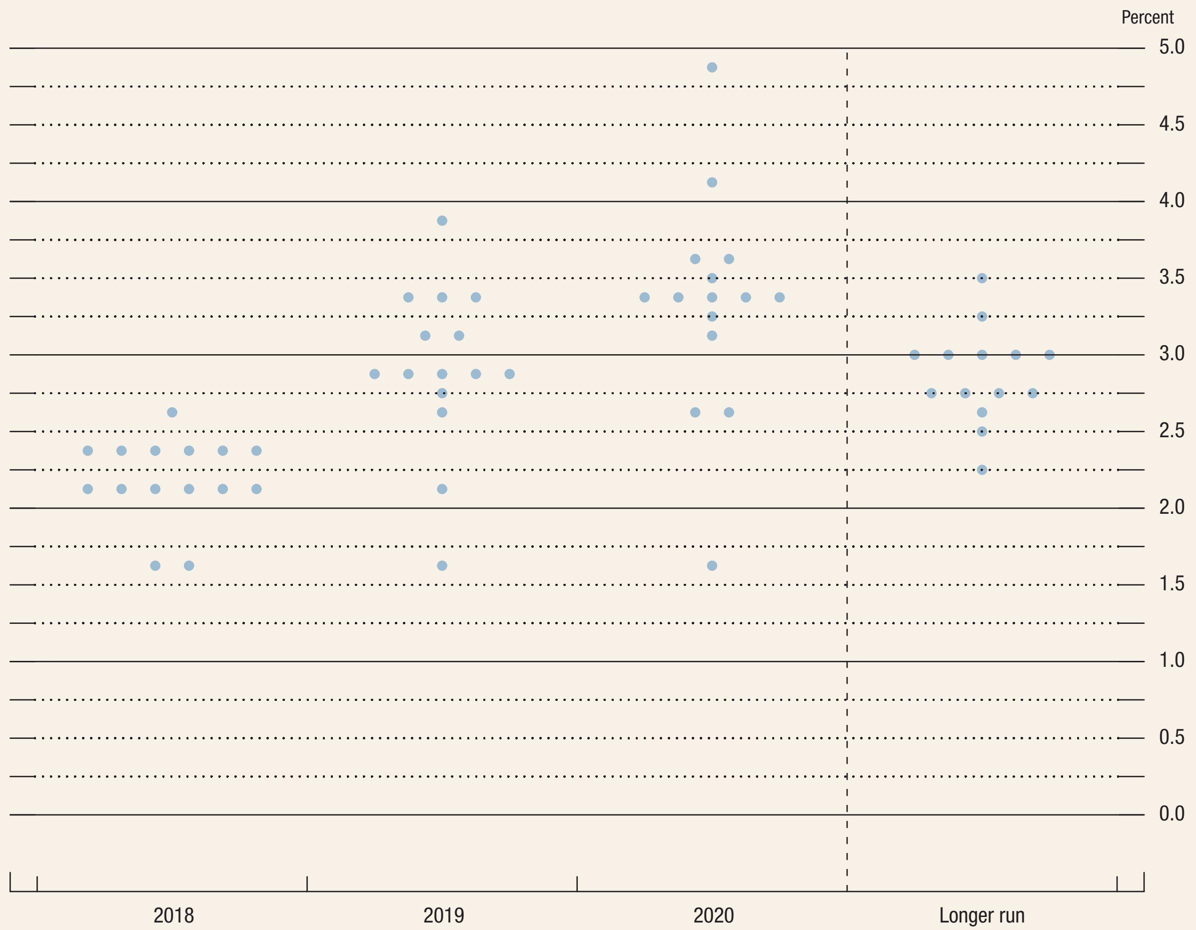
[4] Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2018–20 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

pants mentioned other factors that influenced their economic projections, including accommodative monetary policy and financial conditions, strength in the global economic outlook, and continued momentum in the labor market. Compared with the December SEP, the medians of participants' projections for real GDP growth this year and next year were up a few tenths of a percentage point.

Consistent with their projections for economic activity, almost all participants expected labor market conditions to strengthen further over the projection period. The medians of projections for the unemployment rate showed that rate stepping down from 4.1 percent in the final quarter of 2017 to 3.8 percent in the final quarter of this year, and then to 3.6 percent in the final quarters of 2019 and 2020. The median of participants' estimates of the longer-run unemployment rate was 4.5 percent. Compared with the December SEP, almost all participants marked down their unemployment rate projections. Some participants also lowered their estimates of the longer-run level of the unemployment rate, leading to a small decline in the corresponding median projection.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2018 to 2020 and in the longer run. The distributions of individual projections for real GDP growth this year and next year shifted up noticeably from those in the December SEP; participants' projections ranged from 2.5 to 3.0 percent in 2018 and from 2.0 to 2.8 percent in 2019. By contrast, the distributions of projected real GDP growth in 2020 and in the longer run shifted up modestly since December. Consistent with participants' generally more upbeat outlook for real GDP growth, the distributions of individual projections for the unemployment rate were lower than the corresponding distributions in December for each year of the projection period.

The Outlook for Inflation

The medians of participants' projections for both total and core PCE price inflation were 1.9 percent in 2018—with all participants anticipating that each measure would rise from its 2017 rate—and 2.1 percent by 2020. Compared with the December SEP, the medians of participants' projections for each measure were unchanged this year and up 0.1 percentage point in 2020.

Figures 3.C and 3.D provide information on the distributions of participants' views about the outlook for inflation. Participants generally made minor upward adjustments to their inflation projections, resulting in slight shifts of the distributions to the right relative to the distributions in December. Participants generally expected each measure to increase to no more than 2 percent this year and to rise to, or edge above, 2 percent in 2019 and 2020.

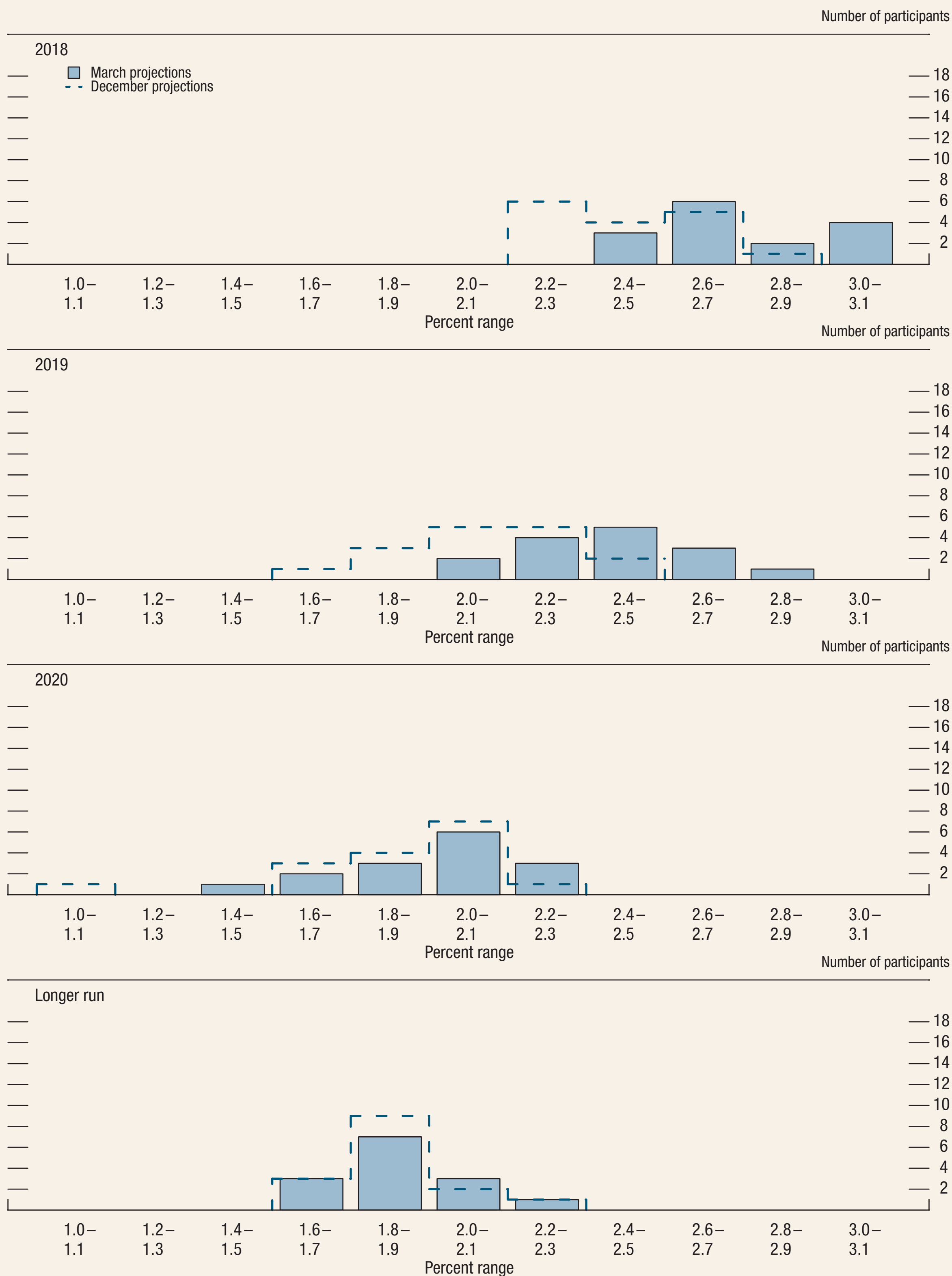
Appropriate Monetary Policy

Figure 3.E provides the distribution of participants' judgments regarding the appropriate target—or midpoint of the target range—for the federal funds rate at the end of each year from 2018 to 2020 and in the longer run. The distributions of projected policy rates through 2020 shifted modestly higher, consistent with the revisions to participants' projections of real GDP growth, the unemployment rate, and inflation. For 2018, there was a notable reduction in the dispersion of participants' views, with most participants now regarding the appropriate target at the end of the year as being between 2.13 and 2.62 percent. For each subsequent year, the dispersion of participants' year-end projections was somewhat greater than that in the December SEP, and the range of participants' projections was noticeably larger than for 2018.

The median of participants' projections of the federal funds rate rises gradually to a level of 2.1 percent at the end of this year, 2.9 percent at the end of 2019, and 3.4 percent at the end of 2020. The median of participants' longer-run estimates, at 2.9 percent, was a bit higher than in the December SEP. Nearly all participants projected that it would likely be appropriate for the federal funds rate to rise above their individual longer-run estimates at some point over the forecast period.

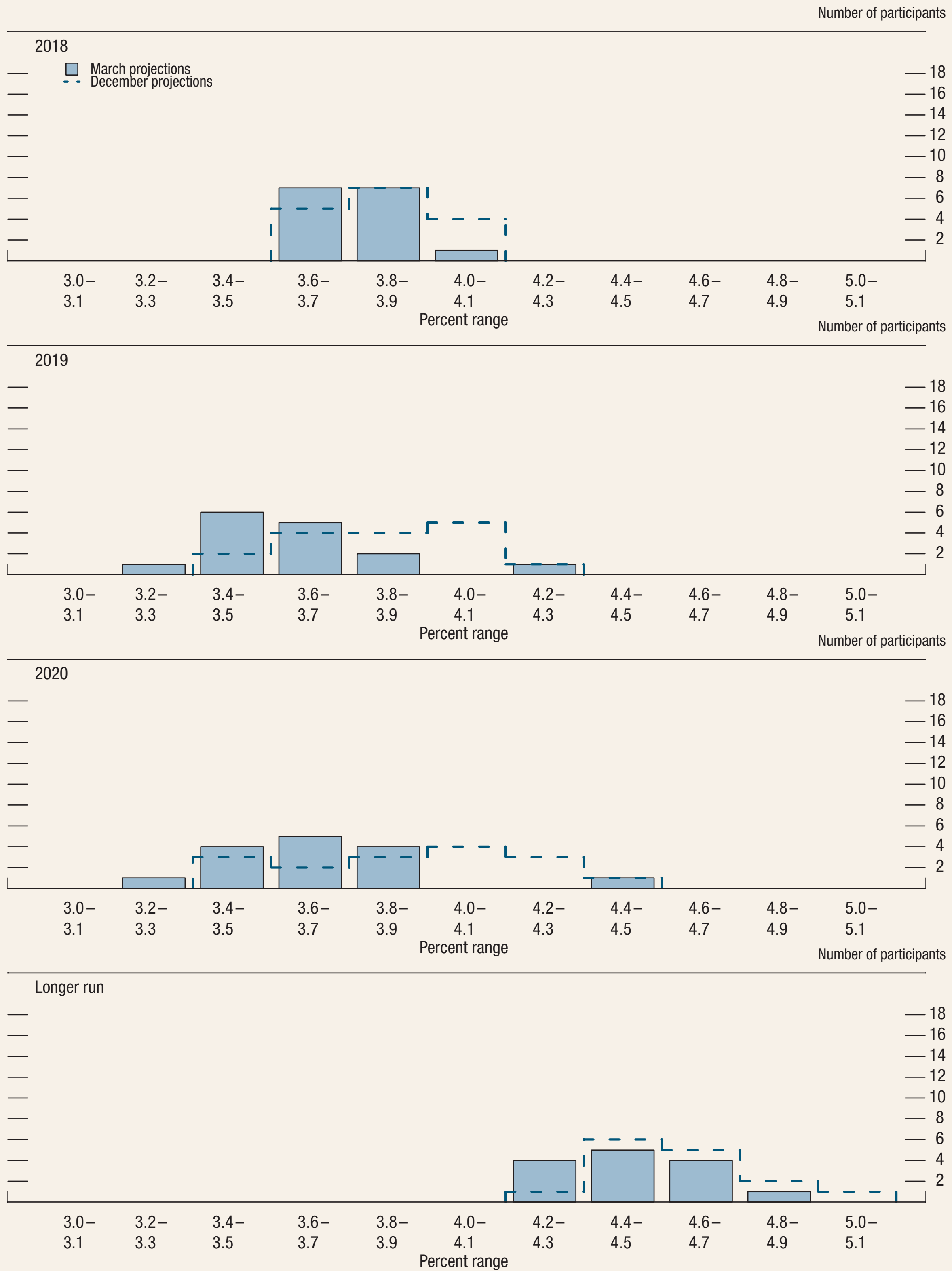
In discussing their projections, many participants continued to express the view that the appropriate trajectory of the federal funds rate over the next few years would likely involve gradual increases. This view was predicated on several factors, including a judgment that a gradual path likely would appropriately balance the risks associated with, among other considerations, the possibility that inflation pressures and financial imbalances could build if economic activity were to run well above its long-run sustainable level and the possibility that the forces depressing inflation could prove to be more persistent than currently anticipated. Another factor mentioned was

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2018–20 and over the longer run



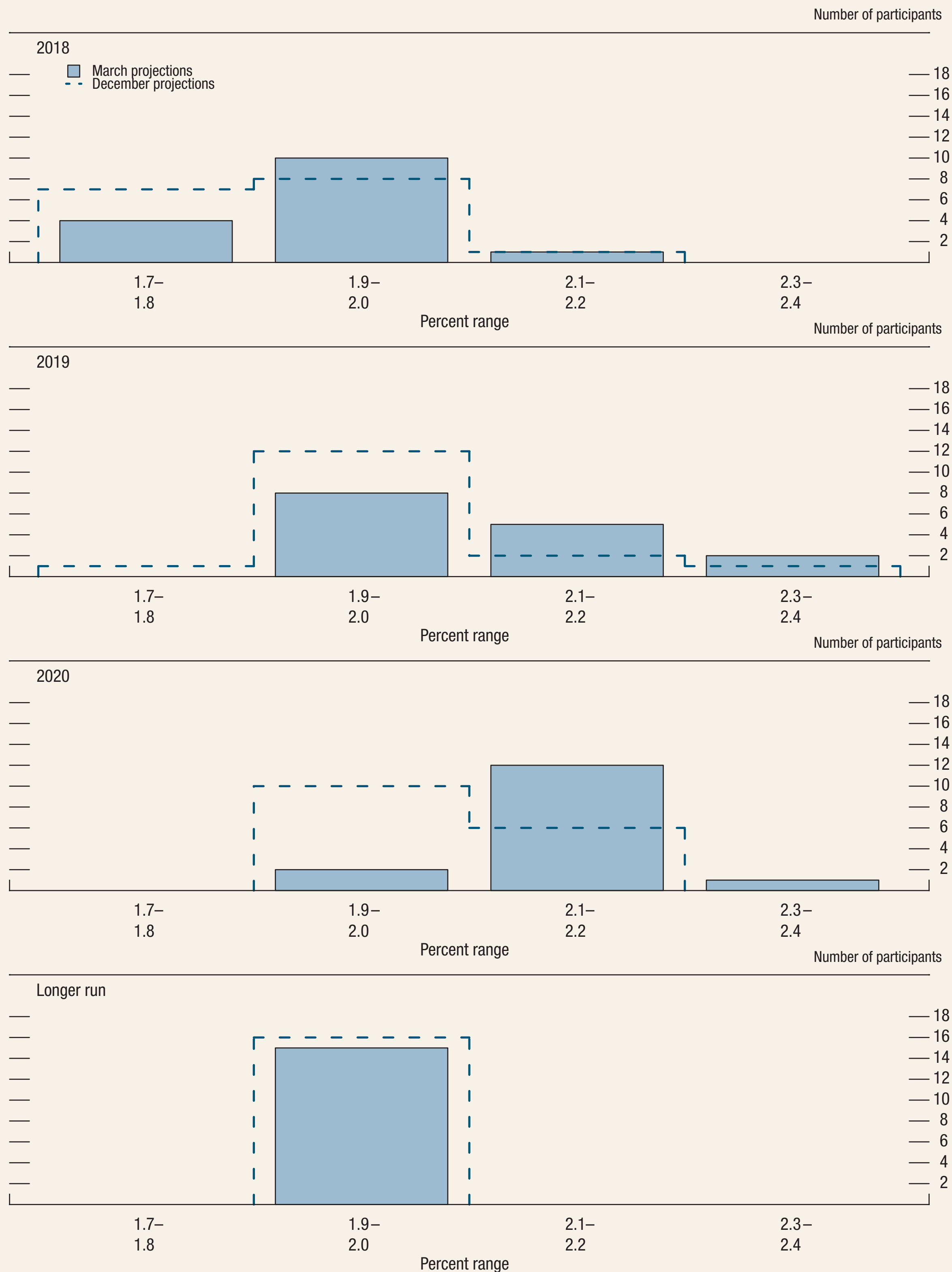
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2018–20 and over the longer run



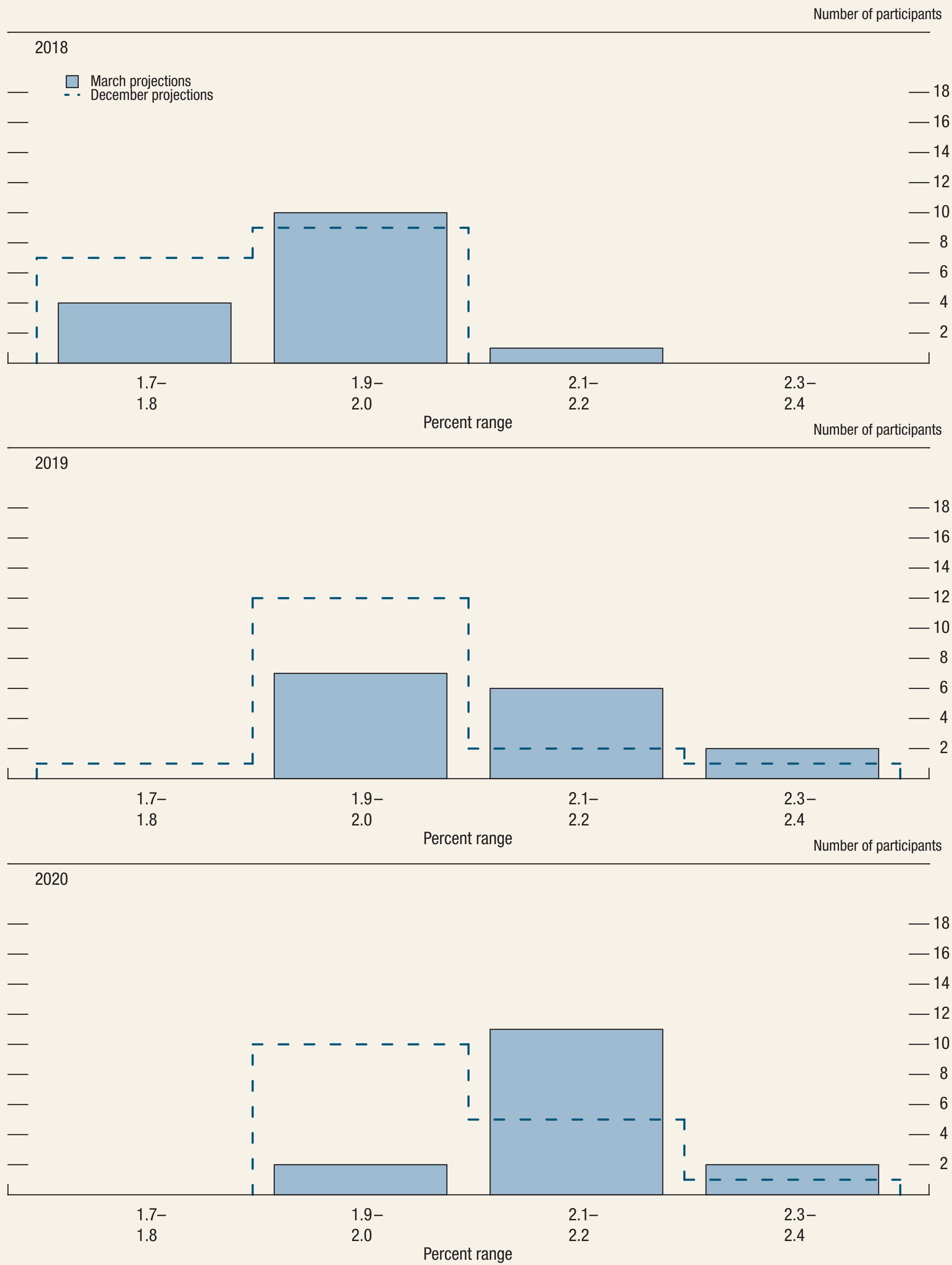
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2018–20 and over the longer run



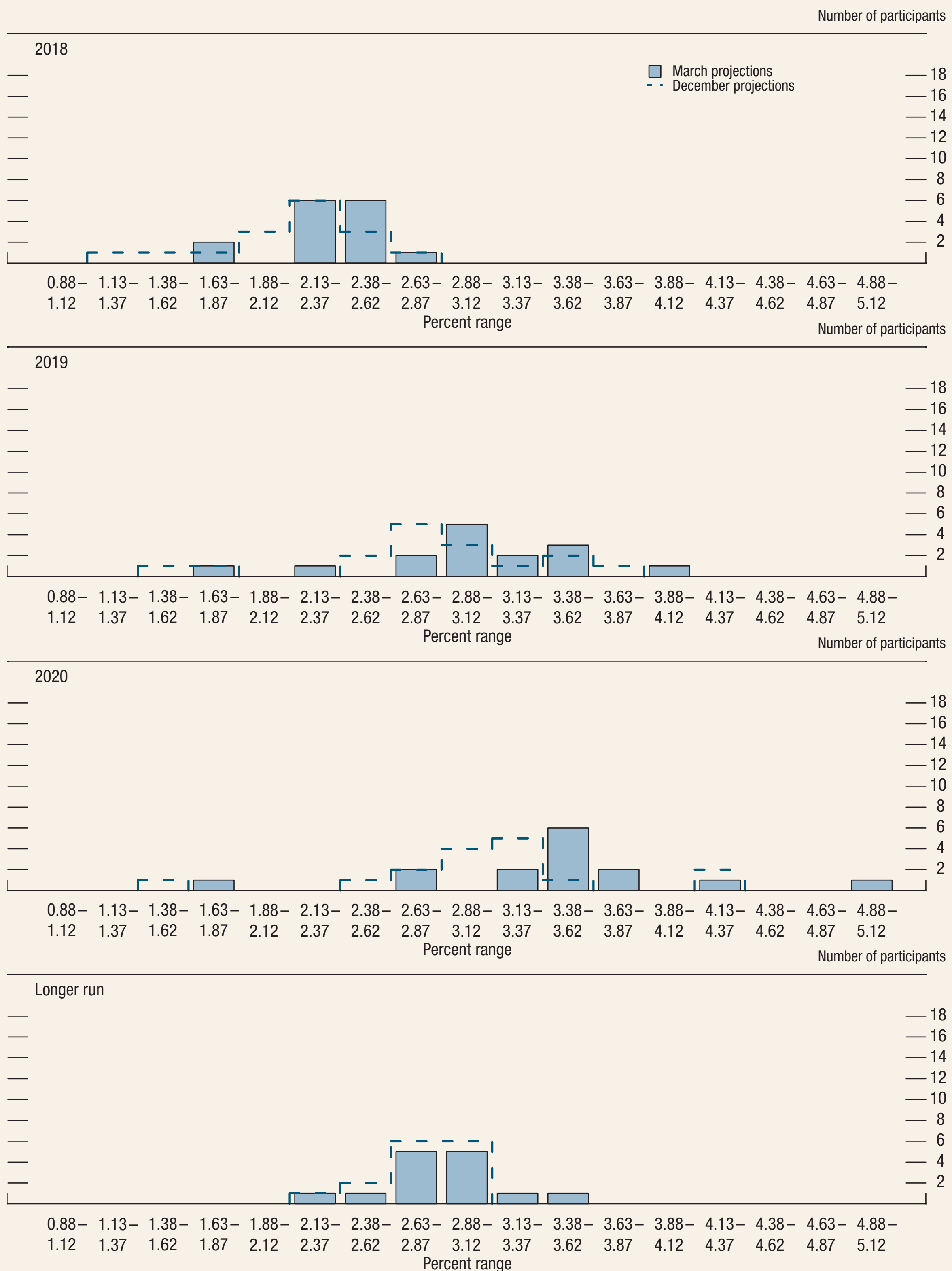
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2018–20



Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2018–20 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1.

Table 2. Average historical projection error ranges
Percentage points

Variable	2018	2019	2020
Change in real GDP[1]	±1.5	±2.0	±2.0
Unemployment rate[1]	±0.5	±1.3	±1.7
Total consumer prices[2]	±0.9	±1.0	±1.1
Short-term interest rates[3]	±0.9	±2.0	±2.5

Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1998 through 2017 that were released in the spring by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2017), "Gauging the Uncertainty of the Economic Outlook Using Historical Forecasting Errors: The Federal Reserve's Approach," Finance and Economics Discussion Series 2017-020 (Washington: Board of Governors of the Federal Reserve System, February), www.federalreserve.gov/econresdata/feds/2017/files/2017020pap.pdf.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projections are percent changes on a fourth quarter to fourth quarter basis.

3 For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Projection errors are calculated using average levels, in percent, in the fourth quarter.

the view that the neutral real interest rate was historically low and would likely move up only slowly. As always, the appropriate path of the federal funds rate would depend on evolving economic conditions and their implications for participants' economic outlooks and assessments of risks.

Uncertainty and Risks

In assessing the path for the federal funds rate that, in their view, is likely to be appropriate, FOMC participants take account of the range of possible economic outcomes, the likelihood of those outcomes, and the potential benefits and costs should they occur. As a reference, table 2 provides measures of forecast uncertainty, based on the forecast errors of various private and government forecasts over the past 20 years, for real GDP growth, the unemployment rate, and total PCE inflation. Those measures are represented graphically in the "fan charts" shown in the top panels of figures 4.A, 4.B, and 4.C. The fan charts display the median SEP projections for the three variables surrounded by symmetric confidence intervals derived from the forecast errors reported in table 2. If the degree of uncertainty attending these projections is similar to the typical magnitude of past forecast errors and the risks around the projections are broadly balanced, then future outcomes of these variables would have about a 70 percent probability of being within these confidence intervals. For all three variables, this measure of uncertainty is substantial and generally increases as the forecast horizon lengthens.

Participants' assessments of the level of uncertainty surrounding their individual economic projections are shown in the bottom-left panels of figure 4.A, 4.B, and 4.C. Nearly all participants viewed the degree of uncertainty attached to their economic projections about real GDP growth, the unemployment rate, and inflation as broadly similar to the average of the past 20 years, a view that was essentially unchanged from December.[3]

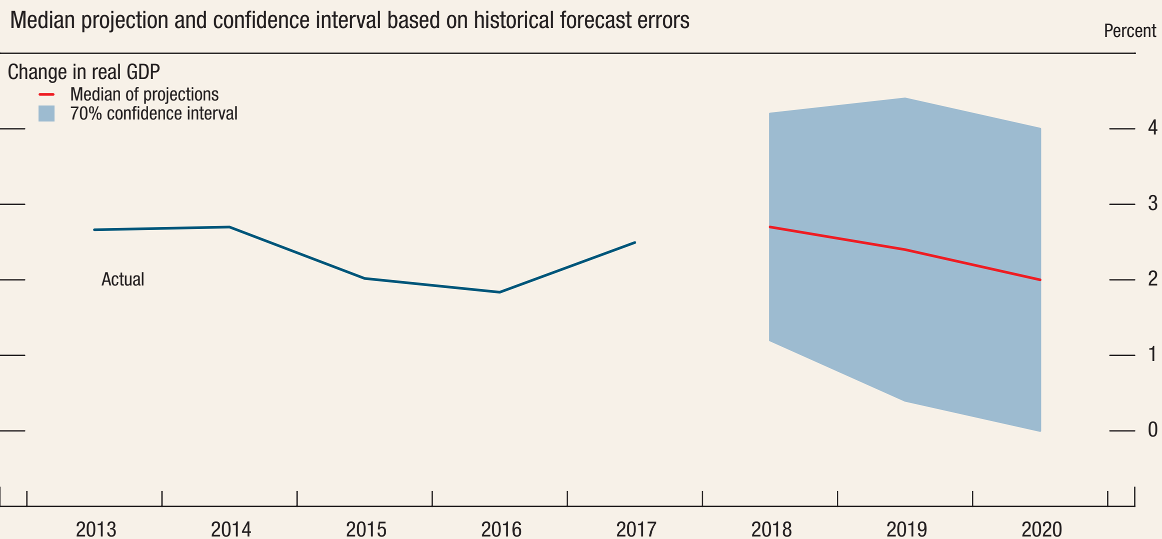
Because the fan charts are constructed to be symmetric around the median projections, they do not reflect any asymmetries in the balance of risks that participants may see in their economic projections. Participants' assessments of the balance of risks to their economic projections are shown in the bottom-right panels of figures 4.A, 4.B, and 4.C. As in December, most participants judged the risks to their projections of real GDP growth, the unemployment rate, total inflation, and core inflation as broadly balanced—in other words, as broadly consistent with a symmetric fan chart. Participants who saw the risks as skewed typically judged that the balance of risks was tilted toward stronger GDP growth, lower unemployment rates, and higher inflation. Compared with the December SEP, participants' assessments of the balance of risks attending their projections were little changed overall, with one more participant reporting that the risks to the unemployment rate were weighted to the downside and two fewer participants reporting that the risks to either total or core PCE inflation were weighted to the downside.

In discussing the uncertainty and risks surrounding their projections, most participants noted that the magnitude and timing of the economic effects of recent changes in fiscal policy were uncertain or that fiscal policy developments posed upside risks to real economic activity. Most participants also cited trade policy as a source of either uncertainty or downside risk. A few participants noted that a prolonged period of tight labor markets posed risks of higher inflation, could fuel financial imbalances, and might contribute to heightened recession risks.

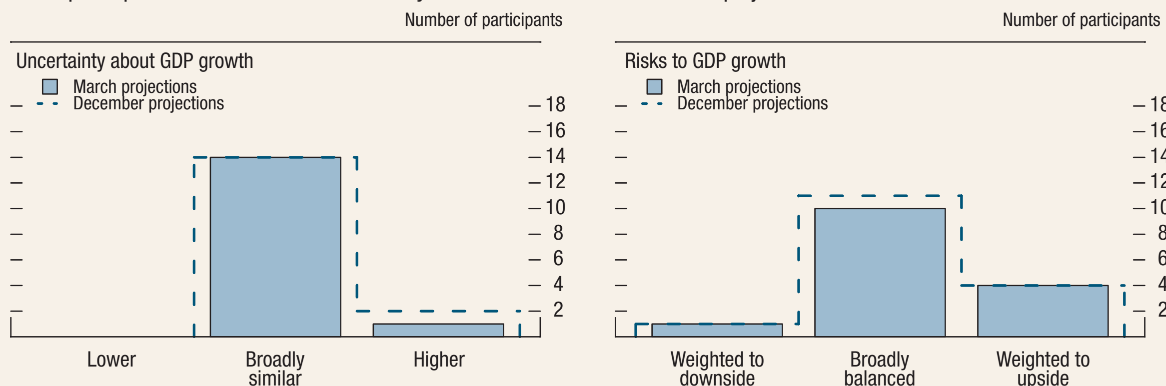
3 At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty surrounding the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4.A. Uncertainty and risks in projections of GDP growth

Median projection and confidence interval based on historical forecast errors

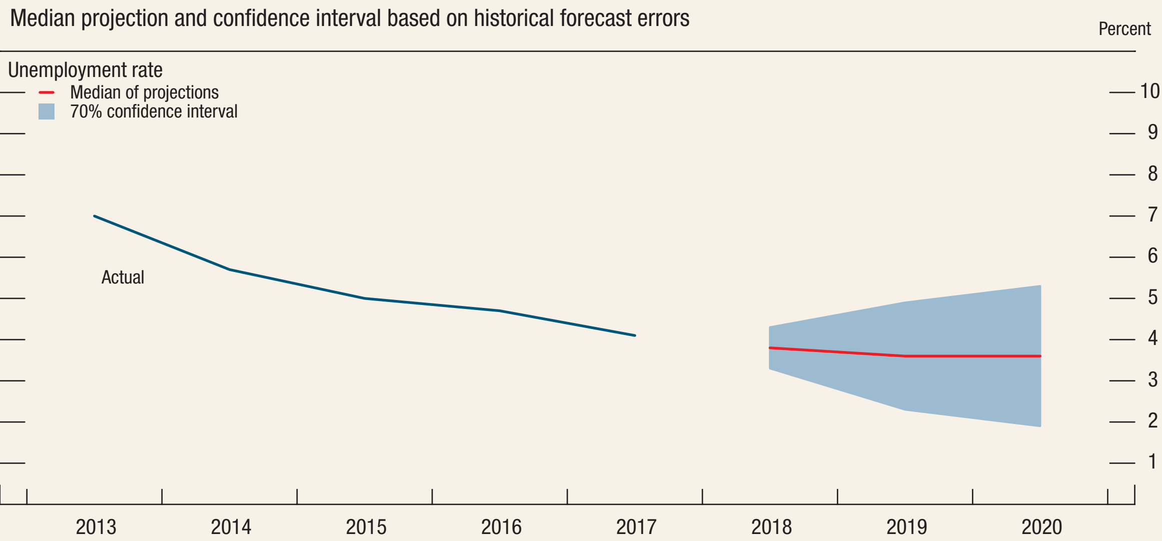


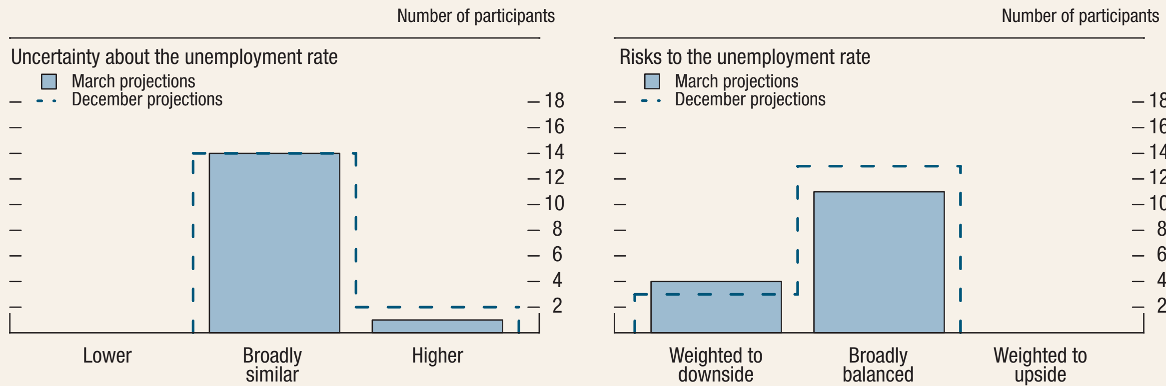
FOMC participants' assessments of uncertainty and risks around their economic projections



Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.B. Uncertainty and risks in projections of the unemployment rate

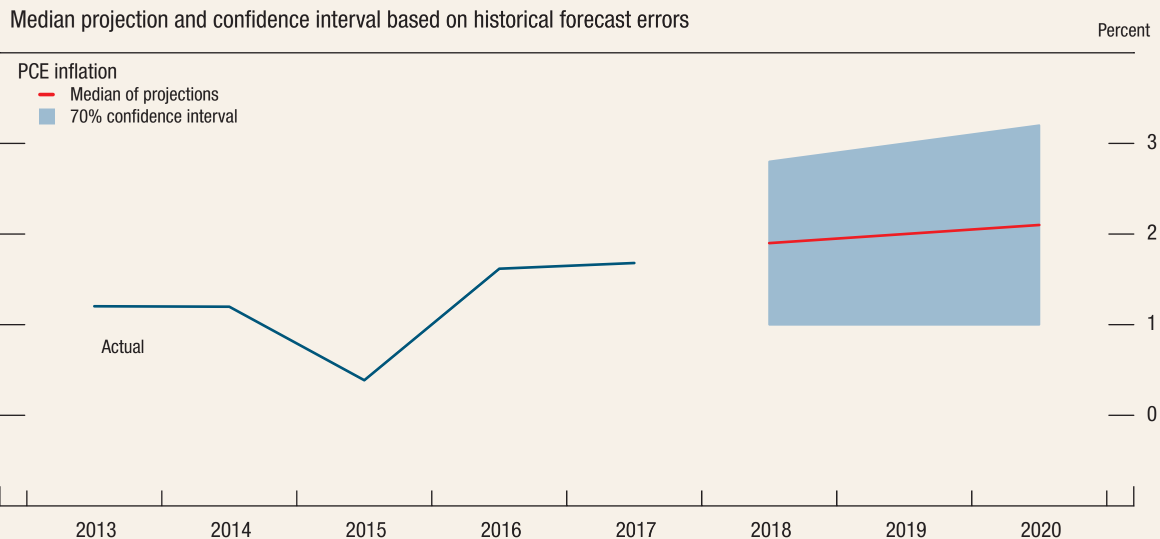




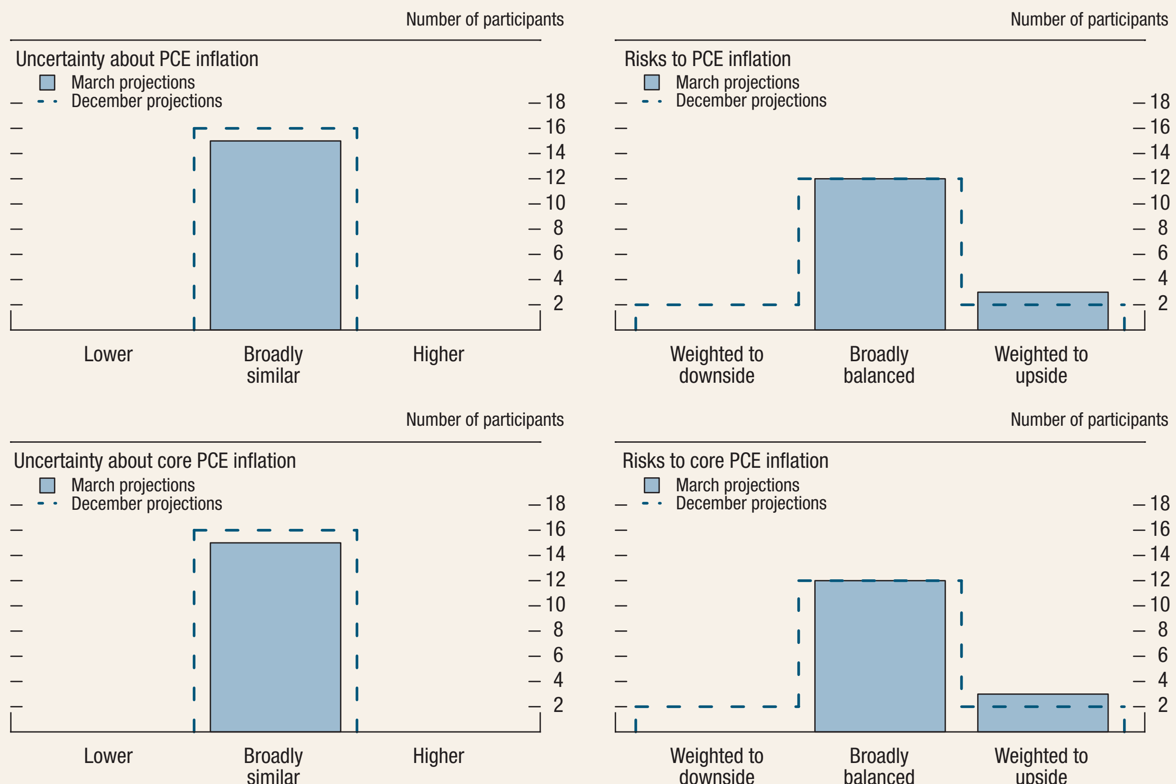
Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.C. Uncertainty and risks in projections of PCE inflation

Median projection and confidence interval based on historical forecast errors



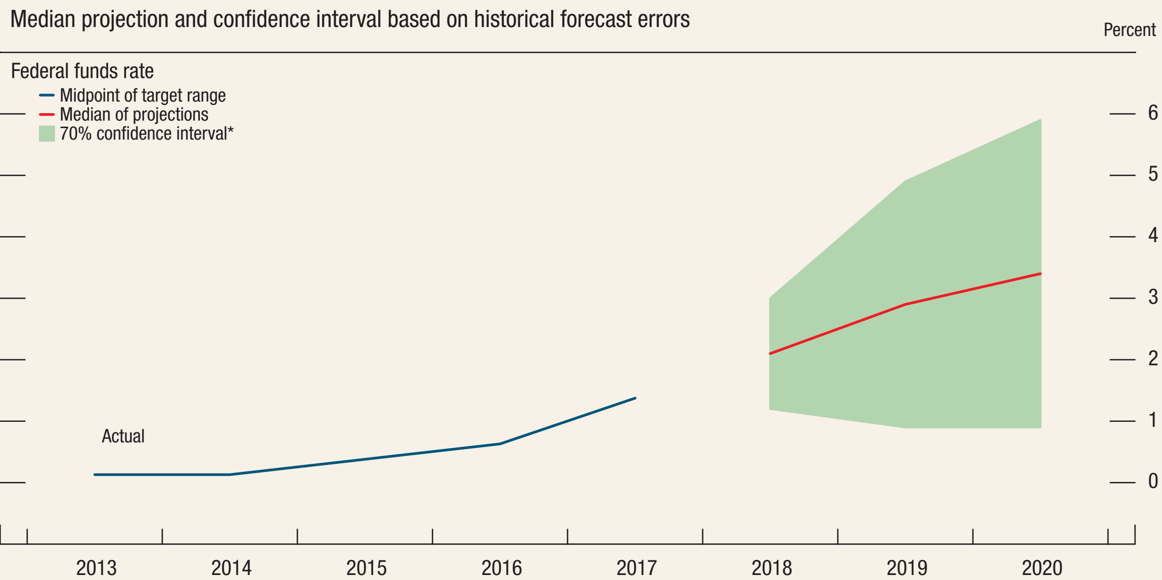
FOMC participants' assessments of uncertainty and risks around their economic projections



Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Participants' assessments of the appropriate future path of the federal funds rate are also subject to considerable uncertainty. Because the Committee adjusts the federal funds rate in response to actual and prospective developments over time in real GDP growth, the unemployment rate, and inflation, uncertainty surrounding the projected path for the federal funds rate importantly reflects the uncertainties about the paths for those key economic variables. Figure 5 provides a graphical representation of this uncertainty, plotting the median SEP projection for the federal funds rate surrounded by confidence intervals derived from the results presented in table 2. As with the macroeconomic variables, forecast uncertainty surrounding the appropriate path of the federal funds rate is substantial and increases for longer horizons.

Figure 5. Uncertainty in projections of the federal funds rate



Note: The blue and red lines are based on actual values and median projected values, respectively, of the Committee's target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants' individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero—the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee (FOMC). The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 1.5 to 4.5 percent in the current year and 1.0 to 5.0 percent in the second and third years. The corresponding 70 percent confidence intervals for overall inflation would be 1.1 to 2.9 percent in the current year, 1.0 to 3.0 percent in the second year, and 0.9 to 3.1 percent in the third year. Figures 4.A through 4.C illustrate these confidence bounds in "fan charts" that are symmetric and centered on the medians of FOMC participants' projections for GDP growth, the unemployment rate, and inflation. However, in some instances, the risks around the projections may not be symmetric. In particular, the unemployment rate cannot be negative; furthermore, the risks around a particular projection might be tilted to either the upside or the downside, in which case the corresponding fan chart would be asymmetrically positioned around the median projection.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each economic variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty seen in the past 20 years, as presented in table 2 and reflected in the widths of the confidence intervals shown in the top panels of figures 4.A through 4.C. Participants' current assessments of the uncertainty surrounding their projections are summarized in the bottom-left panels of those figures. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, while the symmetric historical fan charts shown in the top panels of figures 4.A through 4.C imply that the risks to participants' projections are balanced, participants may judge that there is a greater risk that a given variable will be above rather than below their projections. These judgments are summarized in the lower-right panels of figures 4.A through 4.C.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward. The final line in table 2 shows the error ranges for forecasts of short-term interest rates. They suggest that the historical confidence intervals associated with projections of the federal funds rate are quite wide. It should be noted, however, that these confidence intervals are not strictly consistent with the projections for the federal funds rate, as these projections are not forecasts of the most likely quarterly outcomes but rather are projections of participants' individual assessments of appropriate monetary policy and are on an end-of-year basis. However, the forecast errors should provide a sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that would be appropriate to offset the effects of shocks to the economy.

If at some point in the future the confidence interval around the federal funds rate were to extend below zero, it would be truncated at zero for purposes of the fan chart shown in figure 5; zero is the bottom of the lowest target range for the federal funds rate that has been adopted by the Committee in the past. This approach to the construction of the federal funds rate fan chart would be merely a convention; it would not have any implications for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate. In such situations, the Committee could also employ other tools, including forward guidance and asset purchases, to provide additional accommodation.

While figures 4.A through 4.C provide information on the uncertainty around the economic projections, figure 1 provides information on the range of views across FOMC participants. A comparison of figure 1 with figures 4.A through 4.C shows that the dispersion of the projections across participants is much smaller than the average forecast errors over the past 20 years.

Meeting Held on May 1–2, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, May 1, 2018, at 1:00 p.m. and continued on Wednesday, May 2, 2018, at 9:00 a.m.[1]

Present

Jerome H. Powell
Chairman

William C. Dudley
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Lael Brainard

Loretta J. Mester

Randal K. Quarles

John C. Williams

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held[2]
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Kartik B. Athreya, Thomas A. Connors, Mary Daly, Trevor A. Reeve, Ellis W. Tallman, William Wascher, and Beth Anne Wilson
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Matthew J. Eichner[3]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Supervision and Regulation, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Margie Shanks
Deputy Secretary, Office of the Secretary, Board of Governors

Daniel M. Covitz
Deputy Director, Division of Research and Statistics, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Michael T. Kiley
Deputy Director, Division of Financial Stability, Board of Governors

Antulio N. Bomfim
Special Adviser to the Chairman, Office of Board Members, Board of Governors

Joseph W. Gruber and John M. Roberts
Special Advisers to the Board, Office of Board Members, Board of Governors

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[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended Tuesday session only.

[3] Attended through the discussion of developments in financial markets and open market operations.

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Eric M. Engen and Joshua Gallin
Senior Associate Directors, Division of Research and Statistics, Board of Governors

Stephen A. Meyer and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jeremy B. Rudd
Senior Adviser, Division of Research and Statistics, Board of Governors

Jane E. Ihrig and David López-Salido
Associate Directors, Division of Monetary Affairs, Board of Governors

Stephanie R. Aaronson and Norman J. Morin
Assistant Directors, Division of Research and Statistics, Board of Governors

Robert Vigfusson
Assistant Director, Division of International Finance, Board of Governors

Eric C. Engstrom
Adviser, Division of Monetary Affairs,
and
Adviser, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[4]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Dana L. Burnett and Rebecca Zarutskie
Section Chiefs, Division of Monetary Affairs, Board of Governors

Marcelo Rezende
Principal Economist, Division of Monetary Affairs, Board of Governors

Ron Feldman
First Vice President, Federal Reserve Bank of Minneapolis

Michael Dotsey, Geoffrey Tootell, and Christopher J. Waller
Executive Vice Presidents, Federal Reserve Banks of Philadelphia, Boston, and St. Louis, respectively

Spencer Krane, Paula Tkac, and Mark L. J. Wright
Senior Vice Presidents, Federal Reserve Banks of Chicago, Atlanta, and Minneapolis, respectively

[4] Attended through the discussion on financial stability issues.

George A. Kahn
Vice President, Federal Reserve Bank of Kansas City

Richard K. Crump
Assistant Vice President, Federal Reserve Bank of New York

Anthony Murphy
Senior Economic Policy Advisor, Federal Reserve Bank of Dallas

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) provided a summary of domestic and global financial developments over the intermeeting period. Broad measures of financial conditions had tightened somewhat in recent weeks, with U.S. equity prices lower, the foreign exchange value of the dollar moderately higher, and longer-term Treasury yields up a little. Market participants pointed to a range of factors contributing to the decline in stock prices, including concerns about the outlook for trade policy both in the United States and abroad, the potential for increased regulatory oversight of U.S. technology companies, and incoming data suggesting some moderation in global economic growth. The rise in nominal U.S. Treasury yields was associated with an increase in inflation compensation that, in turn, seemed to reflect a firming in inflation data as well as a notable rise in crude oil prices. Judging from federal funds futures quotes, the expected path of the federal funds rate changed relatively little over the intermeeting period. While term LIBOR (London interbank offered rates) had widened relative to comparable-maturity OIS (overnight index swap) rates in recent months, the cost of dollar funding through the foreign exchange swap market had not risen to the same degree. Recent usage of standing U.S. dollar liquidity swap lines had been low, consistent with a view that the recent widening in LIBOR–OIS spreads did not reflect increased funding pressures or rising concerns about the condition of financial institutions.

The manager discussed the role of standing liquidity swap lines in supporting financial stability and recommended that these swap lines be renewed at this meeting following the usual annual schedule. The manager also discussed current projections for principal payments received from mortgage-backed securities (MBS) held in the SOMA. These projections suggested that, under the Committee's plan for balance sheet normalization, reinvestments of MBS principal

would likely cease later this year, although the timing is uncertain.

The deputy manager followed with a briefing focused on recent developments in the federal funds market, noting that the effective federal funds rate had increased in recent weeks and had moved toward the top of the target range for the federal funds rate. In large part, this development seemed to reflect a firming in rates on repurchase agreements (repos) that, in turn, had resulted from an increase in Treasury bill issuance and the associated higher demands for repo financing by dealers and others. Higher rates had reportedly made repos a more attractive alternative investment for major lenders in the federal funds market, thus reducing the availability of funding in that market and putting some upward pressure on the federal funds rate. While some of the recent pressure on the federal funds rate could be expected to fade over coming weeks as the market adjusts to higher levels of Treasury bills, the gradual normalization of the Federal Reserve's balance sheet and the accompanying decline in reserves was anticipated to continue putting some upward pressure on the federal funds rate relative to the interest on excess reserves (IOER) rate.

The deputy manager then discussed the possibility of a small technical realignment of the IOER rate relative to the top of the target range for the federal funds rate. Since the target range was established in December 2008, the IOER rate has been set at the top of the target range to help keep the effective federal funds rate within the range. Lately the spread of the IOER rate over the effective federal funds rate had narrowed to only 5 basis points. A technical adjustment of the IOER rate to a level 5 basis points below the top of the target range could keep the effective federal funds rate well within the target range. This could be accomplished by implementing a 20 basis point increase in the IOER rate at a time when the Committee raised the target range for the federal funds rate by 25 basis points. Alternatively, the IOER rate could be lowered 5 basis points at a meeting in which the Committee left the target range for the federal funds rate unchanged.

In their discussion of this issue, participants generally agreed that it could become appropriate to make a small technical adjustment in the Federal Reserve's approach to implementing monetary policy by setting the IOER rate modestly below the top of the target range for the federal funds rate. Such an adjustment would be consistent with the Committee's statement in the Policy Normalization Principles and Plans that it would be prepared to adjust the details of the approach to policy implementation during the period of normalization in light of economic and financial developments. Many participants judged that it would be useful to make such a technical adjustment sooner rather than later. Participants generally agreed that it would be desirable to make that adjustment at a time when the FOMC decided to increase the target range for the federal funds rate; that timing would simplify FOMC communications and emphasize that the IOER rate is a helpful tool for implementing the FOMC's policy decisions but does not, in itself, convey the stance of policy. While additional technical adjustments in the IOER rate could become necessary over time, these were not expected to be frequent. A number of participants also suggested that, before too long, the Committee might want to further discuss how it can implement monetary policy most effectively and efficiently when the quantity of reserve balances reaches a level appreciably below that seen in recent years.

The Committee voted unanimously to renew the reciprocal currency arrangements with the Bank of Canada and the Bank of Mexico; these arrangements are associated with the Federal Reserve's participation in the North American Framework Agreement of 1994. In addition, the Committee voted unanimously to renew the dollar and foreign currency liquidity swap arrangements with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, and the Swiss National Bank. The votes to renew the Federal Reserve's participation in these standing arrangements are taken annually at the April or May FOMC meeting.

By unanimous vote, the Committee ratified the Open Market Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the May 1–2 meeting indicated that labor market conditions continued to strengthen in the first quarter, while real gross domestic product (GDP) rose at a moderate pace. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), was 2 percent in March. Survey-based measures of

longer-run inflation expectations were, on balance, little changed.

Total nonfarm payroll employment rose less in March than in the previous two months, but the increase for the first quarter as a whole was solid. The labor force participation rate edged down in March but moved up a little, on net, in the first quarter. The national unemployment rate remained at 4.1 percent for a sixth consecutive month. Similarly, the unemployment rates for African Americans, Asians, and Hispanics were roughly flat, on balance, in recent months. The share of workers employed part time for economic reasons was little changed at a rate close to that prevailing before the previous recession. The rate of private-sector job openings stayed at an elevated level in February, the rate of quits remained high, and initial claims for unemployment insurance benefits continued to be low through mid-April. Recent readings showed that increases in labor compensation stepped up modestly over the past year. The employment cost index for private workers rose 2.8 percent over the 12 months ending in March, and average hourly earnings for all employees increased 2.7 percent over that period. Both increases were larger than those reported for the 12 months ending in March 2017.

Total industrial production increased in March and rose at a solid pace for the first quarter as a whole, with gains in the output of manufacturers, mines, and utilities. Automakers' schedules suggested that assemblies of light motor vehicles would edge down in the second quarter from the average pace in the first quarter, but broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, continued to point to further gains in factory output in the near term.

Consumer expenditures rose at a modest pace in the first quarter following a strong gain in the preceding quarter. Monthly data pointed to some improvement toward the end of the quarter, as real PCE moved up in March after declining in January and February. However, the recent movements might have partly reflected the effects of a delay in many federal tax refunds, which could have shifted some consumer spending from February to March. Light motor vehicle sales stepped down in the first quarter after a strong fourth-quarter pace that was partly boosted by replacement sales following the fall hurricanes; sales declined in April, but indicators of vehicle demand remained upbeat. More broadly, key factors that influence consumer spending—including gains in employment and real disposable personal income, along with households' elevated net worth—should continue to support solid real PCE growth in the near term. In addition, the lower tax withholding resulting from the tax cuts enacted late last year was likely to provide some impetus to spending in coming months. Consumer sentiment, as measured by the University of Michigan Surveys of Consumers, remained elevated in April.

Real residential investment was unchanged in the first quarter after a strong increase in the fourth quarter. Starts for new single-family homes decreased in March, but the average pace in the first quarter was little changed from the fourth quarter. In contrast, starts of multifamily units moved up in March after contracting in February, and they were higher in the first quarter than in the fourth. Sales of both new and existing homes increased in February and March.

Real private expenditures for business equipment and intellectual property increased at a moderate pace in the first quarter after rising briskly in the second half of last year. Nominal shipments of nondefense capital goods excluding aircraft edged down in March. However, forward-looking indicators of business equipment spending—such as the backlog of unfilled capital goods orders, along with upbeat readings on business sentiment from national and regional surveys—continued to point to robust gains in equipment spending in the near term. Real business expenditures for nonresidential structures rose at a robust pace in the first quarter, and the number of crude oil and natural gas rigs in operation—an indicator of business spending for structures in the drilling and mining sector—continued to move up through mid-April.

Total real government purchases rose at a slower rate in the first quarter than in the fourth quarter. Real federal purchases increased in the first quarter, with gains in both defense and nondefense spending. Real purchases by state and local governments also moved higher; state and local government payrolls were unchanged in the first quarter, but nominal construction spending by these governments rose somewhat.

The nominal U.S. international trade deficit widened in February as imports rose briskly, outpacing the increase in exports. Preliminary data on trade in goods suggested that the trade deficit narrowed sharply in March, with exports continuing to grow

robustly but imports retracing earlier gains. The Bureau of Economic Analysis estimated that the change in real net exports added slightly to growth of real GDP in the first quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased 2 percent over the 12 months ending in March. Core PCE price inflation, which excludes changes in consumer food and energy prices, was 1.9 percent over that same period. The consumer price index (CPI) rose 2.4 percent over the 12 months ending in March, while core CPI inflation was 2.1 percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey, the Survey of Professional Forecasters, and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Incoming data suggested that foreign economic activity continued to expand at a solid pace. Real GDP growth picked up in the first quarter in several emerging market economies (EMEs), including Mexico, China, and some other parts of emerging Asia. However, incoming data in a number of advanced foreign economies (AFEs)—in particular, real GDP in the United Kingdom—showed somewhat slower growth than market participants were expecting, partly because of transitory factors such as severe weather. Overall, inflation in most AFEs and EMEs continued to be subdued, increasing in the AFEs in the first quarter on higher energy prices but stepping down some in the EMEs, partly reflecting lower food prices in some Asian economies.

Staff Review of the Financial Situation

Early in the intermeeting period, uncertainty over trade policy and negative news about the technology sector reportedly contributed to lower prices for risky assets, but these concerns subsequently seemed to recede amid stronger-than-expected corporate earnings reports. Equity prices declined, nominal Treasury yields increased modestly, and market-based measures of inflation compensation ticked up on net. Meanwhile, financing conditions for nonfinancial businesses and households largely remained supportive of spending.

FOMC communications over the intermeeting period were generally viewed by market participants as reflecting an upbeat outlook for economic growth and as consistent with a continued gradual removal of monetary policy accommodation. The FOMC's decision to raise the target range for the federal funds rate 25 basis points at the March meeting was widely anticipated. Market reaction to the release of the March FOMC minutes later in the intermeeting period was minimal. The probability of an increase in the target range for the federal funds rate occurring at the May FOMC meeting, as implied by quotes on federal funds futures contracts, remained close to zero; the probability of an increase at the June FOMC meeting rose to about 90 percent by the end of the intermeeting period. Expected levels of the federal funds rate at the end of 2019 and 2020 implied by OIS rates rose modestly.

The nominal Treasury yield curve continued to flatten over the intermeeting period, with yields on 2-year and 10-year Treasury securities up 17 basis points and 7 basis points, respectively. Measures of inflation compensation derived from Treasury Inflation-Protected Securities increased 4 basis points and 7 basis points at the 5- and 5-to-10-year horizons, respectively, against a backdrop of rising oil prices. Option-implied measures of volatility of longer-term interest rates continued to decline over the intermeeting period after their marked increase earlier this year.

The S&P 500 index decreased over the period on net. Equity prices declined early in the intermeeting period, reportedly in response to trade tensions between the United States and China as well as negative news about the technology sector. However, equity prices subsequently retraced some of the earlier declines as concerns about trade policy seemed to ease and corporate earnings reports for the first quarter of 2018 generally came in stronger than expected. Option-implied volatility on the S&P 500 index at the one-month horizon—the VIX—declined but remained at elevated levels relative to 2017, ending the period at approximately 15 percent. On net, spreads of yields of investment-grade corporate bonds over comparable-maturity Treasury securities widened a bit, while spreads for speculative-grade corporate bonds were unchanged.

Conditions in short-term funding markets remained generally stable over the intermeeting period. Spreads on term money market instruments relative to comparable-maturity OIS rates were still larger than usual in some segments of the money market. Reflecting the FOMC's policy action in March, yields on a broad set of money market instruments moved about 25 basis points higher. Bill yields also stayed high relative to OIS rates as cumulative Treas-

ury bill supply remained elevated. Money market dynamics over quarter-end were muted relative to previous quarter-ends.

Foreign equity markets were mixed over the intermeeting period, with investors attuned to developments related to U.S. and Chinese trade policies and to news about the U.S. technology sector. Broad Japanese and European equity indexes outperformed their U.S. counterparts, ending the period somewhat higher. Market-based measures of policy expectations and longer-term yields were little changed in the euro area and Japan but declined modestly in the United Kingdom on weaker-than-expected economic data. Longer-term yields in Canada moved up moderately amid notably higher oil prices. In EMEs, sovereign bond spreads edged up; capital continued to flow into EME mutual funds, although at a slower pace lately.

On net, the broad nominal dollar index appreciated moderately over the intermeeting period. In the early part of the period, the index depreciated slightly, as relatively positive news about the current round of NAFTA (North American Free Trade Agreement) negotiations led to appreciation of the Mexican peso and Canadian dollar, two currencies with large weights in the index. Later in the period, there was a broad-based appreciation of the dollar against most currencies as U.S. yields increased relative to those in AFEs and as the Mexican peso declined amid uncertainty associated with the upcoming presidential elections.

Growth in banks' commercial and industrial (C&I) loans strengthened in March and the first half of April following relatively weak growth in January and February. Respondents to the April Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS) reported that their institutions had eased standards and terms on C&I loans in the first quarter, most often citing increased competition from other lenders as the reason for doing so. Gross issuance of corporate bonds and leveraged loans was strong in March, and equity issuance was robust. The credit quality of nonfinancial corporations was stable over the intermeeting period, and the ratio of aggregate debt to assets remained near multidecade highs.

Commercial real estate (CRE) financing conditions remained accommodative over the intermeeting period. CRE loan growth at banks strengthened in March but edged down in the first half of April. Spreads on commercial mortgage-backed securities (CMBS) were little changed over the intermeeting period and remained near their post-crisis lows. CMBS issuance continued to be strong in March but slowed somewhat in April. Respondents to the April SLOOS reported easing standards on nonfarm nonresidential loans and tightening standards on multifamily loans, whereas standards on construction and land development loans were little changed in the first quarter. Meanwhile, respondents indicated weaker demand for loans across these three CRE loan categories.

Financing conditions in the residential mortgage market remained accommodative for most borrowers in March and April. For borrowers with low credit scores, conditions continued to ease, but credit remained relatively tight and the volume of mortgage loans extended to this group remained low. Banks responding to the April SLOOS reported weaker loan demand across most residential real estate (RRE) loan categories, while standards were reportedly about unchanged for most RRE loan types in the first quarter.

Consumer credit growth moderated in March and the first half of April. Respondents to the April SLOOS reported that standards and terms on auto and credit card loans tightened, and that demand for these loans weakened in the first quarter. On balance, credit remained readily available to prime-rated borrowers, but tight for subprime borrowers, over the intermeeting period.

The staff provided its latest report on potential risks to financial stability; the report again characterized the financial vulnerabilities of the U.S. financial system as moderate on balance. This overall assessment incorporated the staff's judgment that vulnerabilities associated with asset valuation pressures, while having come down a little in recent months, nonetheless continued to be elevated. The staff judged vulnerabilities from financial-sector leverage and maturity and liquidity transformation to be low, vulnerabilities from household leverage as being in the low-to-moderate range, and vulnerabilities from leverage in the nonfinancial business sector as elevated. The staff also characterized overall vulnerabilities to foreign financial stability as moderate while highlighting specific issues in some foreign economies, including—depending on the country—elevated asset valuation pressures, high private or sovereign debt burdens, and political uncertainties.

Staff Economic Outlook

The staff projection for U.S. economic activity prepared for the May FOMC meeting continued to suggest that the economy was expanding at an above-trend pace. Real GDP growth, which slowed in the first quarter, was expected to pick up in the second quarter and to outpace potential output growth through 2020. The unemployment rate was projected to decline further over the next few years and to continue to run below the staff's estimate of its longer-run natural rate over this period. Relative to the forecast prepared for the March meeting, the projection for real GDP growth in 2018 was revised down a little, primarily in response to incoming consumer spending data that were somewhat softer than the staff had expected. Beyond 2018, the projection for GDP growth was essentially unrevised. With real GDP rising a little less, on balance, over the forecast period, the projected decline in the unemployment rate over the next few years was also a touch smaller than in the previous forecast.

The near-term projection for consumer price inflation was revised up slightly in response to incoming data on prices. Beyond the near term, the forecast for inflation was a bit lower than in the previous projection, reflecting the slightly higher unemployment rate in the new forecast. The rates of both total and core PCE price inflation were projected to be faster in 2018 than in 2017. The staff projected that total PCE inflation would be near the Committee's 2 percent objective over the next several years. Total PCE inflation was expected to run slightly below core inflation in 2019 and 2020 because of a projected decline in energy prices.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The staff saw the risks to the forecasts for real GDP growth and the unemployment rate as balanced. On the upside, recent fiscal policy changes could lead to a greater expansion in economic activity over the next few years than the staff projected. On the downside, those fiscal policy changes could yield less impetus to the economy than the staff expected if the economy was already operating above its potential level and resource utilization continued to tighten, as the staff projected. Risks to the inflation projection also were seen as balanced. An upside risk was that inflation could increase more than expected in an economy that was projected to move further above its potential. Downside risks included the possibilities that longer-term inflation expectations may be lower than was assumed or that the run of low core inflation readings last year could prove to be more persistent than the staff expected.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants agreed that information received since the FOMC met in March indicated that the labor market had continued to strengthen and that economic activity had been rising at a moderate rate. Job gains had been strong, on average, in recent months, and the unemployment rate had stayed low. Recent data suggested that growth of household spending had moderated from its strong fourth-quarter pace, while business fixed investment had continued to grow strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy had moved close to 2 percent. Market-based measures of inflation compensation remained low; survey-based measures of longer-term inflation expectations were little changed, on balance.

Participants viewed recent readings on spending, employment, and inflation as suggesting little change, on balance, in their assessments of the economic outlook. Real GDP growth slowed somewhat less in the first quarter than anticipated at the time of the March meeting, and participants expected that the moderation in the growth of consumer spending early in the year would prove temporary. They noted a number of economic fundamentals were currently supporting continued above-trend economic growth; these included a strong labor market, federal tax and spending policies, high levels of household and business confidence, favorable financial conditions, and strong economic growth abroad. Participants generally expected that further gradual increases in the target range for the federal funds rate would be consistent with solid expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Participants generally viewed the risks to the economic outlook to be roughly balanced.

Participants generally reported that their business contacts were optimistic about the economic outlook. However, in a number of Districts, contacts expressed concern about the possible adverse effects

of tariffs and trade restrictions, including the potential for postponing or pulling back on capital spending. Labor markets were generally strong, and contacts in a number of Districts reported shortages of workers in specific industries or occupations. In some cases, labor shortages were contributing to upward pressure on wages. In many Districts, business contacts experienced rising costs of nonlabor inputs, particularly trucking, rail, and shipping rates and prices of steel, aluminum, lumber, and petroleum-based commodities. Reports on the ability of firms to pass through higher costs to customers varied across Districts. Activity in the energy sector remained strong, and crude oil production was expected to continue to expand in response to rising global demand. In contrast, in agricultural areas, low crop prices continued to weigh on farm income. It was noted that the potential for higher Chinese tariffs on key agricultural products could, in the longer run, hurt U.S. competitiveness.

Participants generally agreed that labor market conditions strengthened further during the first quarter of the year. Nonfarm payroll employment posted strong gains, averaging 200,000 per month. The unemployment rate was unchanged, but at a level below most estimates of its longer-run normal rate. Both the overall labor force participation rate and the employment-to-population ratio moved up. The first-quarter data from the employment cost index indicated that the strength in the labor market was showing through to a gradual pickup in wage increases, although the signal from other wage measures was less clear. Many participants commented that overall wage pressures were still moderate or were strong only in industries and occupations experiencing very tight labor supply; several of them noted that recent wage developments provided little evidence of general overheating in the labor market. With economic growth anticipated to remain above trend, participants generally expected the unemployment rate to remain below, or to decline further below, their estimates of its longer-run normal rate. Several participants also saw scope for a strong labor market to continue to draw individuals into the workforce. However, a few others questioned whether tight labor markets would have a lasting positive effect on labor force participation.

The 12-month changes in overall and core PCE prices moved up in March, to 2 percent and 1.9 percent, respectively. Most participants viewed the recent firming in inflation as providing some reassurance that inflation was on a trajectory to achieve the Committee's symmetric 2 percent objective on a sustained basis. In particular, the recent readings appeared to support the view that the downside surprises last year were largely transitory. Some participants noted that inflation was likely to modestly overshoot 2 percent for a time. However, several participants suggested that the underlying trend in inflation had changed little, noting that some of the recent increase in inflation may have represented transitory price changes in some categories of health care and financial services, or that various measures of underlying inflation, such as the 12-month trimmed mean PCE inflation rate from the Federal Reserve Bank of Dallas, remained relatively stable at levels below 2 percent. In discussing the outlook for inflation, many participants emphasized that, after an extended period of low inflation, the Committee's longer-run policy objective was to return inflation to its symmetric 2 percent goal on a sustained basis. Many saw tight resource utilization, the pickup in wage increases and nonlabor input costs, and stable inflation expectations as supporting their projections that inflation would remain near 2 percent over the medium term. But a few cautioned that, although market-based measures of inflation compensation had moved up over recent months, in their view these measures, as well as some survey-based measures, remained at levels somewhat below those that would be consistent with an expectation of sustained 2 percent inflation as measured by the PCE price index.

Participants commented on a number of risks and uncertainties associated with their expectations for economic activity, the labor market, and inflation over the medium term. Some participants saw a risk that, as resource utilization continued to tighten, supply constraints could develop that would intensify upward wage and price pressures, or that financial imbalances could emerge, which could eventually erode the sustainability of the economic expansion. Alternatively, some participants thought that a strengthening labor market could bring a further increase in labor supply, allowing the unemployment rate to decline further with less upward pressure on wages and prices. Another area of uncertainty was the outlook for fiscal and trade policies. Several participants continued to note the challenge of assessing the timing and magnitude of the effects of recent fiscal policy changes on household and business spending and on labor supply over the next several years. In addition, they saw the trajectory of fiscal policy thereafter as difficult to forecast. With regard to trade policies, a number of participants viewed the range of possible outcomes for economic activity and

inflation to be particularly wide, depending on what actions were taken by the United States and how U.S. trading partners responded. And some participants observed that while these policies were being debated and negotiations continued, the uncertainty surrounding trade issues could damp business sentiment and spending. In their discussion of the outlook for inflation, a few participants also noted the risk that, if global oil prices remained high or moved higher, U.S. inflation would be boosted by the direct effects and pass-through of higher energy costs.

Financial conditions tightened somewhat over the intermeeting period but remained accommodative overall. The foreign exchange value of the dollar rose modestly, but this move retraced only a bit of the depreciation of the dollar since its 2016 peak. With their decline over the intermeeting period, equity prices were about unchanged, on net, since the beginning of the year but were still near their historical highs. Longer-term Treasury yields rose, but somewhat less than shorter-term yields, and the yield curve flattened somewhat further.

In commenting on the staff's assessment of financial stability, a couple of participants noted that after the bout of financial market volatility in early February, the use of investment strategies predicated on a low-volatility environment may have become less prevalent, and that some investors may have become more cautious. However, asset valuations across a range of markets and leverage in the nonfinancial corporate sector remained elevated relative to historical norms, leaving some borrowers vulnerable to unexpected negative shocks. With regard to the ability of the financial system to absorb such shocks, several participants commented that regulatory reforms since the crisis had contributed to appreciably stronger capital and liquidity positions in the financial sector. In this context, a few participants emphasized the need to build additional resilience in the financial sector at this point in the economic expansion.

In their consideration of monetary policy over the near term, participants discussed the implications of recent economic and financial developments for the outlook for economic growth, labor market conditions, and inflation and, in turn, for the appropriate path of the federal funds rate. All participants expressed the view that it would be appropriate for the Committee to leave the target range for the federal funds rate unchanged at the May meeting. Participants concurred that information received during the intermeeting period had not materially altered their assessment of the outlook for the economy. Participants commented that above-trend growth in real GDP in recent quarters, together with somewhat higher recent inflation readings, had increased their confidence that inflation on a 12-month basis would continue to run near the Committee's longer-run 2 percent symmetric objective. That said, it was noted that it was premature to conclude that inflation would remain at levels around 2 percent, especially after several years in which inflation had persistently run below the Committee's 2 percent objective. In light of subdued inflation over recent years, a few participants observed that adjustments in the stance of policy should take account of the possibility that longer-term inflation expectations have drifted a bit below levels consistent with the Committee's 2 percent inflation objective. Most participants judged that if incoming information broadly confirmed their current economic outlook, it would likely soon be appropriate for the Committee to take another step in removing policy accommodation. Overall, participants agreed that the current stance of monetary policy remained accommodative, supporting strong labor market conditions and a return to 2 percent inflation on a sustained basis.

With regard to the medium-term outlook for monetary policy, all participants reaffirmed that adjustments to the path for the policy rate would depend on their assessments of the evolution of the economic outlook and risks to the outlook relative to the Committee's statutory objectives. Participants generally agreed with the assessment that continuing to raise the target range for the federal funds rate gradually would likely be appropriate if the economy evolves about as expected. These participants commented that this gradual approach was most likely to be conducive to maintaining strong labor market conditions and achieving the symmetric 2 percent inflation objective on a sustained basis without resulting in conditions that would eventually require an abrupt policy tightening. A few participants commented that recent news on inflation, against a background of continued prospects for a solid pace of economic growth, supported the view that inflation on a 12-month basis would likely move slightly above the Committee's 2 percent objective for a time. It was also noted that a temporary period of inflation modestly above 2 percent would be consistent with the Committee's symmetric inflation objective and could be helpful in anchoring longer-run inflation expectations at a level consistent with that objective.

Meeting participants also discussed the recent flatter profile of the term structure of interest rates. Participants pointed to a number of factors contributing to the flattening of the yield curve, including the expected gradual rise of the federal funds rate, the downward pressure on term premiums from the Federal Reserve's still-large balance sheet as well as asset purchase programs by other central banks, and a reduction in investors' estimates of the longer-run neutral real interest rate. A few participants noted that such factors could make the slope of the yield curve a less reliable signal of future economic activity. However, several participants thought that it would be important to continue to monitor the slope of the yield curve, emphasizing the historical regularity that an inverted yield curve has indicated an increased risk of recession.

Participants commented on how the Committee's communications in its postmeeting statement might need to be revised in coming meetings if the economy evolved broadly as expected. A few participants noted that if increases in the target range for the federal funds rate continued, the federal funds rate could be at or above their estimates of its longer-run normal level before too long. In addition, a few observed that the neutral level of the federal funds rate might currently be lower than their estimates of its longer-run level. In light of this, some participants noted it might soon be appropriate to revise the forward-guidance language in the statement indicating that the "federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run" or to modify the language stating that "the stance of monetary policy remains accommodative." Participants expressed a range of views on the amount of further policy firming that would likely be required over the medium term to achieve the Committee's goals. Participants indicated that the Committee, in making policy decisions over the next few years, should conduct policy with the aim of keeping inflation near its longer-run symmetric objective while sustaining the economic expansion and a strong labor market. Participants agreed that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming information.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in March indicated that the labor market had continued to strengthen and that economic activity had been rising at a moderate rate. Job gains had been strong, on average, in recent months, and the unemployment rate had stayed low. Recent data suggested that growth of household spending had moderated from its strong fourth-quarter pace, while business fixed investment continued to grow strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy had moved close to 2 percent. In particular, in March the 12-month percent increase in PCE prices was equal to the Committee's longer-run objective of 2 percent, while the measure excluding food and energy prices was only slightly below 2 percent. Market-based measures of inflation compensation remained low, and survey-based measures of longer-term inflation expectations were little changed, on balance.

All members viewed the recent data as indicating that the outlook for the economy had changed little since the previous meeting. In addition, financial conditions, although somewhat tighter than at the time of the March FOMC meeting, had stayed accommodative overall, while fiscal policy was likely to provide sizable impetus to the economy over the next few years. Consequently, members expected that, with further gradual adjustments to the stance of monetary policy, economic activity would expand at a moderate pace in the medium term and labor market conditions would remain strong. Members agreed that inflation on a 12-month basis is expected to run near the Committee's symmetric 2 percent objective over the medium term. Members judged that the risks to the economic outlook appeared to be roughly balanced.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, members agreed to maintain the target range for the federal funds rate at 1½ to 1¾ percent. They noted that the stance of monetary policy remained accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend on their assessments of realized and expected economic conditions relative to the Committee's objectives of maximum employment and 2 percent inflation. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and

inflation expectations, and readings on financial and international developments. Members also agreed that they would carefully monitor actual and expected developments in inflation in relation to the Committee's symmetric inflation goal. Members expected that economic conditions would evolve in a manner that would warrant further gradual increases in the federal funds rate. Members agreed that the federal funds rate was likely to remain, for some time, below levels that they expected to prevail in the longer run. However, they noted that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective May 3, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of 1½ to 1¾ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 1.50 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $18 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $12 billion. Small deviations from these amounts for operational reasons are acceptable.
>
> The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in March indicates that the labor market has continued to strengthen and that economic activity has been rising at a moderate rate. Job gains have been strong, on average, in recent months, and the unemployment rate has stayed low. Recent data suggest that growth of household spending moderated from its strong fourth-quarter pace, while business fixed investment continued to grow strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy have moved close to 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.
>
> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with further gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace in the medium term and labor market conditions will remain strong. Inflation on a 12-month basis is expected to run near the Committee's symmetric 2 percent objective over the medium term. Risks to the economic outlook appear roughly balanced.
>
> In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1½ to 1¾ percent. The stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.
>
> In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal.

> The Committee expects that economic conditions will evolve in a manner that will warrant further gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data."

Voting for this action: Jerome H. Powell, William C. Dudley, Thomas I. Barkin, Raphael W. Bostic, Lael Brainard, Loretta J. Mester, Randal K. Quarles, and John C. Williams.

Voting against this action: None.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors voted unanimously to leave the interest rates on required and excess reserve balances unchanged at 1¾ percent and voted unanimously to approve establishment of the primary credit rate (discount rate) at the existing level of 2¼ percent.[5]

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, June 12–13, 2018. The meeting adjourned at 10:00 a.m. on May 2, 2018.

Notation Vote

By notation vote completed on April 10, 2018, the Committee unanimously approved the minutes of the Committee meeting held on March 20–21, 2018.

James A. Clouse
Secretary

[5] The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Meeting Held on June 12–13, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, June 12, 2018, at 1:00 p.m. and continued on Wednesday, June 13, 2018, at 9:00 a.m.[1]

Present

Jerome H. Powell
Chairman

William C. Dudley
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Lael Brainard

Loretta J. Mester

Randal K. Quarles

John C. Williams

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine[2]
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Steven B. Kamin
Economist

[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended Tuesday session only.

Thomas Laubach
Economist

David W. Wilcox
Economist

David Altig, Kartik B. Athreya, Thomas A. Connors, David E. Lebow, Trevor A. Reeve, Ellis W. Tallman, William Wascher,[2] and Beth Anne Wilson
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Ann E. Misback
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[3]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Supervision and Regulation, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Michael T. Kiley
Deputy Director, Division of Financial Stability, Board of Governors

Antulio N. Bomfim
Special Adviser to the Chairman, Office of Board Members, Board of Governors

Joseph W. Gruber and John M. Roberts
Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Shaghil Ahmed
Senior Associate Director, Division of International Finance, Board of Governors

[3] Attended through the discussion of developments in financial markets and open market operations.

Ellen E. Meade, Stephen A. Meyer, and Robert J. Tetlow
Senior Advisers, Division of Monetary Affairs, Board of Governors

John J. Stevens and Stacey Tevlin
Associate Directors, Division of Research and Statistics, Board of Governors

Jeffrey D. Walker[3]
Deputy Associate Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Min Wei
Deputy Associate Director, Division of Monetary Affairs, Board of Governors

Burcu Duygan-Bump, Norman J. Morin, John Sabelhaus, and Paul A. Smith
Assistant Directors, Division of Research and Statistics, Board of Governors

Christopher J. Gust
Assistant Director, Division of Monetary Affairs, Board of Governors

Penelope A. Beattie[2]
Assistant to the Secretary, Office of the Secretary, Board of Governors

John Ammer[2]
Senior Economic Project Manager, Division of International Finance, Board of Governors

Dan Li
Section Chief, Division of Monetary Affairs, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Martin Bodenstein and Marcel A. Priebsch
Principal Economists, Division of Monetary Affairs, Board of Governors

Logan T. Lewis
Principal Economist, Division of International Finance, Board of Governors

Maria Otoo
Principal Economist, Division of Research and Statistics, Board of Governors

Marcelo Ochoa
Senior Economist, Division of Monetary Affairs, Board of Governors

Achilles Sangster II
Information Management Analyst, Division of Monetary Affairs, Board of Governors

Kenneth C. Montgomery
First Vice President, Federal Reserve Bank of Boston

Jeff Fuhrer, Daniel G. Sullivan, and Christopher J. Waller
Executive Vice Presidents, Federal Reserve Banks of Boston, Chicago, and St. Louis, respectively

Marc Giannoni, Paolo A. Pesenti, and Mark L. J. Wright
Senior Vice Presidents, Federal Reserve Banks of Dallas, New York, and Minneapolis, respectively

Roc Armenter
Vice President, Federal Reserve Bank of Philadelphia

Willem Van Zandweghe
Assistant Vice President, Federal Reserve Bank of Kansas City

Nicolas Petrosky-Nadeau
Senior Research Advisor, Federal Reserve Bank of San Francisco

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) provided a summary of developments in domestic and global financial markets over the intermeeting period. Developments in emerging market economies (EMEs) and in Europe were the focus of considerable attention by financial market participants over recent weeks. Investor perceptions of increased economic and political vulnerabilities in several EMEs led to a notable depreciation in EME currencies relative to the dollar. Market participants reported that an unwinding of investor positions had been a factor amplifying these currency moves. In Europe, concerns about the political situation in Italy and its potential economic implications prompted a significant widening in risk spreads on Italian sovereign securities. The share prices of Italian banks and other banks that could be exposed to Italy declined sharply. In domestic financial markets, expectations for the path of the federal funds rate were little changed over the intermeeting period. The manager noted that the release of the minutes of the May FOMC meeting, and particularly the reference to a possible technical adjustment in the interest on excess reserves (IOER) rate relative to the top of the

FOMC's target range for the federal funds rate, prompted a small reduction in federal funds futures rates.

The deputy manager followed with a discussion of money markets and open market operations. Rates on Treasury repurchase agreements (repo) had remained elevated in recent weeks, apparently responding, in part, to increased Treasury issuance over recent months. In light of the firmness in repo rates, the volume of operations conducted through the Federal Reserve's overnight reverse repurchase agreement facility remained low. Elevated repo rates may also have contributed to some upward pressure on the effective federal funds rate in recent weeks as lenders in that market shifted some of their investments to earn higher rates available in repo markets. The deputy manager also discussed the current outlook for reinvestment purchases of agency mortgage-backed securities (MBS). Based on current projections, principal payments on the Federal Reserve's holdings of agency MBS would likely be lower than the monthly cap on redemptions that will be in effect beginning in the fall of this year. Consistent with the June 2017 addendum to the Policy Normalization Principles and Plans, reinvestment purchases of agency MBS then are projected to fall to zero from that point onward. However, principal payments on agency MBS are sensitive to changes in various factors, particularly long-term interest rates. As a result, agency MBS principal payments could rise above the monthly redemption cap in some future scenarios and thus require MBS reinvestment purchases. In light of this possibility, the deputy manager described plans for the Desk to conduct small value purchases of agency MBS on a regular basis in order to maintain operational readiness.

By unanimous vote, the Committee ratified the Open Market Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the June 12–13 meeting indicated that labor market conditions continued to strengthen in recent months, and that real gross domestic product (GDP) appeared to be rising at a solid rate in the first half of the year. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), was 2 percent in April. Survey-based measures of longer-run inflation expectations were little changed on balance.

Total nonfarm payroll employment expanded at a strong pace, on average, in April and May. The national unemployment rate edged down in both months and was 3.8 percent in May. The unemployment rates for African Americans, Asians, and Hispanics all declined, on net, from March to May; the rate for African Americans was the lowest on record but still noticeably above the rates for other groups. The overall labor force participation rate edged down in April and May but was still at about the same level as a year earlier. The share of workers employed part time for economic reasons was little changed at a level close to that from just before the previous recession. The rate of private-sector job openings rose in March and stayed at that elevated level in April; the rate of quits edged up, on net, over those two months; and initial claims for unemployment insurance benefits continued to be low through early June. Recent readings showed that increases in labor compensation stepped up over the past year. Compensation per hour in the nonfarm business sector increased 2.7 percent over the four quarters ending in the first quarter of this year (compared with 1.9 percent over the same four quarters a year earlier), and average hourly earnings for all employees increased 2.7 percent over the 12 months ending in May (compared with 2.5 percent over the same 12 months a year earlier).

Total industrial production increased at a solid pace in April, but the available indicators for May, particularly production worker hours in manufacturing, indicated that output declined in that month. Automakers' schedules suggested that assemblies of light motor vehicles would increase in the coming months, and broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, continued to point to solid gains in factory output in the near term.

Consumer spending appeared to be increasing briskly in the second quarter after rising at only a modest pace in the first quarter. Real PCE increased at a robust pace in April after a strong gain in March. Although light motor vehicle sales declined in May, indicators of vehicle demand generally remained upbeat. More broadly, recent readings on key factors that influence consumer spending—including gains in employment, real disposable personal income, and households' net worth—continued to be supportive of solid real PCE growth in the near term. In addi-

tion, the lower tax withholding resulting from the tax cuts enacted late last year still appeared likely to provide some additional impetus to spending in coming months. Consumer sentiment, as measured by the University of Michigan Surveys of Consumers, remained elevated in May.

Residential investment appeared to be declining further in the second quarter after decreasing in the first quarter. Starts for new single-family homes were unchanged in April from their first-quarter average, but starts of multifamily units declined noticeably. Sales of both new and existing homes decreased in April.

Real private expenditures for business equipment and intellectual property appeared to be rising at a moderate pace in the second quarter after a somewhat faster increase in the first quarter. Nominal shipments of non-defense capital goods excluding aircraft rose in April, and forward-looking indicators of business equipment spending—such as the backlog of unfilled capital goods orders, along with upbeat readings on business sentiment from national and regional surveys—continued to point to robust gains in equipment spending in the near term. Real business expenditures for nonresidential structures appeared to be expanding at a solid pace again in the second quarter, and the number of crude oil and natural gas rigs in operation—an indicator of business spending for structures in the drilling and mining sector—increased, on net, from mid-April through early June.

Nominal federal government spending data for April and May pointed to an increase in real federal purchases in the second quarter. Real state and local government purchases also appeared to be moving up; although nominal construction expenditures by these governments edged down in April, their payrolls rose at a moderate pace, on net, in April and May.

Net exports made a negligible contribution to real GDP growth in the first quarter, with growth of both real exports and real imports slowing from the brisk pace of the fourth quarter of last year. After narrowing in March, the nominal trade deficit narrowed further in April, as exports continued to increase while imports declined slightly, which suggested that net exports might add modestly to real GDP growth in the second quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased 2.0 percent over the 12 months ending in April. Core PCE price inflation, which excludes changes in consumer food and energy prices, was 1.8 percent over that same period. The consumer price index (CPI) rose 2.8 percent over the 12 months ending in May, while core CPI inflation was 2.2 percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey, the Survey of Professional Forecasters, and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Incoming data suggested that foreign economic activity continued to expand at a solid pace. Real GDP growth picked up in the first quarter in several EMEs—including Mexico, China, and much of emerging Asia—although recent indicators pointed to some moderation in the pace of activity in most EMEs. By contrast, in the advanced foreign economies (AFEs), real GDP growth slowed in the first quarter, owing partly to temporary factors such as labor strikes in some European countries and bad weather in Japan. More recent indicators pointed to a partial rebound in AFE economic growth in the second quarter. Inflation pressures in the foreign economies generally remained subdued, even though higher oil prices put some upward pressure on headline inflation.

Staff Review of the Financial Situation

During the intermeeting period, global financial markets were buffeted by increased concerns about the outlook for foreign growth and political developments in Italy, but these concerns subsequently eased. On net, Treasury yields were little changed despite significant intraperiod moves, and the dollar appreciated notably as a range of AFE and EME currencies and sovereign bonds came under pressure. However, broad domestic stock price indexes increased, on net, as generally strong corporate earnings reports helped support prices. Meanwhile, financing conditions for nonfinancial businesses and households remained supportive of economic activity on balance.

Over the intermeeting period, macroeconomic data releases signaling moderating growth in some foreign economies, along with downside risks stemming from political developments in Italy and several EMEs, weighed on prices of foreign risk assets. These developments, together with a still-solid economic outlook for the United States, supported an increase in the broad trade-weighted index of the foreign exchange value of the dollar.

The dollar appreciated notably against several EME currencies (primarily those of Argentina, Turkey, Mexico, and Brazil), as the increase in U.S. interest rates since late 2017, along with political developments and other issues, intensified concerns about financial vulnerabilities. EME mutual funds saw slight net outflows, and, on balance, EME sovereign spreads widened and equity prices edged lower. In the AFEs, sovereign spreads in some peripheral European countries widened and European bank shares came under pressure, as investors focused on political developments in Italy. Broad equity indexes in the euro area, with the exception of Italy, ended the period little changed, while those in Canada, the United Kingdom, and Japan edged higher. Market-based measures of expected policy rates were little changed, on balance, and flight-to-safety flows reportedly contributed to declines in German longer-term sovereign yields.

FOMC communications over the intermeeting period—including the May FOMC statement and the May FOMC meeting minutes—elicited only minor reactions in asset markets. Quotes on federal funds futures contracts suggested that the probability of an increase in the target range for the federal funds rate occurring at the June FOMC meeting inched up further to near certainty. Levels of the federal funds rate at the end of 2019 and 2020 implied by overnight index swap (OIS) rates were little changed on net.

Longer-term nominal Treasury yields ended the period largely unchanged despite notable movements during the intermeeting period. Measures of inflation compensation derived from Treasury Inflation-Protected Securities were also little changed on net.

Broad U.S. equity price indexes increased about 5 percent, on net, since the May FOMC meeting, boosted in part by the stronger-than-expected May Employment Situation report. Stock prices also appeared to have been buoyed by first-quarter earnings reports that generally beat expectations—particularly for the technology sector, which outperformed the broader market. However, the turbulence abroad and, to a lesser degree, mounting concerns about trade policy weighed on equity prices at times. Option-implied volatility on the S&P 500 at the one-month horizon—the VIX—was down somewhat, on net, remaining just a couple of percentage points above the very low levels that prevailed before early February. Over the intermeeting period, spreads of yields on nonfinancial corporate bonds over those of comparable-maturity Treasury securities widened moderately for both investment- and speculative-grade firms. However, these spreads remained low by historical standards.

Over the intermeeting period, short-term funding markets stayed generally stable despite still-elevated spreads between rates on some private money market instruments and OIS rates of similar maturity. While some of the factors contributing to pressures in short-term funding markets had eased recently, the three-month spread between the London interbank offered rate and the OIS rate remained significantly wider than at the start of the year.

Growth of outstanding commercial and industrial loans held by banks appeared to have moderated in May after a strong reading in April. The issuance of institutional leveraged loans was strong in April and May; meanwhile, corporate bond issuance was weak, likely reflecting seasonal patterns. Gross issuance of municipal bonds in April and May was solid, as issuance continued to recover from the slow pace recorded at the start of the year.

Financing conditions for commercial real estate (CRE) remained accommodative. Even so, the growth of CRE loans held by banks ticked down in April and May. Commercial mortgage-backed securities (CMBS) issuance, in general, continued at a robust pace; although issuance softened somewhat in April, partly reflecting seasonal factors, it recovered in May. Spreads on CMBS were little changed over the intermeeting period, remaining near their post-crisis lows.

Residential mortgage financing conditions remained accommodative for most borrowers. For borrowers with low credit scores, conditions stayed tight but continued to ease. Growth in home-purchase mortgages slowed a bit and refinancing activity continued to be muted in recent months, with both developments partly reflecting the rise in mortgage rates earlier this year.

Financing conditions in consumer credit markets were little changed in the first few months of 2018, on balance, and remained largely supportive of growth in household spending. Growth in consumer credit slowed a bit in the first quarter, as seasonally adjusted credit card balances were about flat after having surged in the fourth quarter of last year. Financing conditions for consumers with subprime credit scores continued to tighten, likely contributing

to a decline in auto loan extensions to such borrowers.

Staff Economic Outlook

In the U.S. economic forecast prepared for the June FOMC meeting, the staff continued to project that the economy would expand at an above-trend pace. Real GDP appeared to be rising at a much faster pace in the second quarter than in the first, and it was forecast to increase at a solid rate in the second half of this year. Over the 2018–20 period, output was projected to rise further above the staff's estimate of its potential, and the unemployment rate was projected to decline further below the staff's estimate of its longer-run natural rate. Relative to the forecast prepared for the May meeting, the projection for real GDP growth beyond the first half of 2018 was revised down a little in response to a higher assumed path for the exchange value of the dollar. In addition, the staff continued to anticipate that supply constraints might restrain output growth somewhat. With real GDP rising a little less, on balance, over the forecast period, the projected decline in the unemployment rate over the next few years was a touch smaller than in the previous forecast.

The staff forecast for total PCE price inflation from 2018 to 2020 was not revised materially. Total consumer price inflation over the first half of 2018 appeared to be a little lower than in the previous projection, mainly because of slightly softer incoming data on nonmarket prices, but the forecast for the second half of the year was a little higher, reflecting an upward revision to projected consumer energy prices over the next couple of quarters. The staff continued to project that total PCE inflation would remain near the Committee's 2 percent objective over the medium term and that core PCE price inflation would run slightly higher than total inflation over that period because of a projected decline in consumer energy prices in 2019 and 2020.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The staff saw the risks to the forecasts for real GDP growth and the unemployment rate as balanced. On the upside, recent fiscal policy changes could lead to a greater expansion in economic activity over the next few years than the staff projected. On the downside, those fiscal policy changes could yield less impetus to the economy than the staff expected if, for example, the marginal propensities to consume for groups most affected by the tax cuts are lower than the staff had assumed. Risks to the inflation projection also were seen as balanced. The upside risk that inflation could increase more than expected in an economy that was projected to move further above its potential was counterbalanced by the downside risk that longer-term inflation expectations may be lower than was assumed in the staff forecast.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real GDP growth, the unemployment rate, and inflation for each year from 2018 through 2020 and over the longer run, based on their individual assessments of the appropriate path for the federal funds rate. The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections and policy assessments are described in the Summary of Economic Projections, which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, meeting participants agreed that information received since the FOMC met in May indicated that the labor market had continued to strengthen and that economic activity had been rising at a solid rate. Job gains had been strong, on average, in recent months, and the unemployment rate had declined. Recent data suggested that growth of household spending had picked up, while business fixed investment had continued to grow strongly. On a 12-month basis, overall inflation and core inflation, which excludes changes in food and energy prices, had both moved close to 2 percent. Indicators of longer-term inflation expectations were little changed, on balance.

Participants viewed recent readings on spending, employment, and inflation as suggesting little change, on balance, in their assessments of the economic outlook. Incoming data suggested that GDP growth strengthened in the second quarter of this year, as growth of consumer spending picked up after slowing earlier in the year. Participants noted a number of favorable economic factors that were supporting above-trend GDP growth; these included a strong labor market, stimulative federal tax and spending

policies, accommodative financial conditions, and continued high levels of household and business confidence. They also generally expected that further gradual increases in the target range for the federal funds rate would be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Participants generally viewed the risks to the economic outlook as roughly balanced.

Participants reported that business fixed investment had continued to expand at a strong pace in recent months, supported in part by substantial investment growth in the energy sector. Higher oil prices were expected to continue to support investment in that sector, and District contacts in the industry were generally upbeat, though supply constraints for labor and infrastructure were reportedly limiting expansion plans. By contrast, District reports regarding the construction sector were mixed, although here, too, some contacts reported that supply constraints were acting as a drag on activity. Conditions in both the manufacturing and service sectors in several Districts were reportedly strong and were seen as contributing to solid investment gains. However, many District contacts expressed concern about the possible adverse effects of tariffs and other proposed trade restrictions, both domestically and abroad, on future investment activity; contacts in some Districts indicated that plans for capital spending had been scaled back or postponed as a result of uncertainty over trade policy. Contacts in the steel and aluminum industries expected higher prices as a result of the tariffs on these products but had not planned any new investments to increase capacity. Conditions in the agricultural sector reportedly improved somewhat, but contacts were concerned about the effect of potentially higher tariffs on their exports.

Participants agreed that labor market conditions strengthened further over the intermeeting period. Nonfarm payroll employment posted strong gains in recent months, averaging more than 200,000 per month this year. The unemployment rate fell to 3.8 percent in May, below the estimate of each participant who submitted a longer-run projection. Participants pointed to other indicators such as a very high rate of job openings and an elevated quits rate as additional signs that labor market conditions were strong. With economic growth anticipated to remain above trend, participants generally expected the unemployment rate to remain below, or decline further below, their estimates of its longer-run normal rate. Several participants, however, suggested that there may be less tightness in the labor market than implied by the unemployment rate alone, because there was further scope for a strong labor market to continue to draw individuals into the workforce.

Contacts in several Districts reported difficulties finding qualified workers, and, in some cases, firms were coping with labor shortages by increasing salaries and benefits in order to attract or retain workers. Other business contacts facing labor shortages were responding by increasing training for less-qualified workers or by investing in automation. On balance, for the economy overall, recent data on average hourly earnings indicated that wage increases remained moderate. A number of participants noted that, with the unemployment rate expected to remain below estimates of its longer-run normal rate, they anticipated wage inflation to pick up further.

Participants noted that the 12-month changes in both overall and core PCE prices had recently moved close to 2 percent. The recent large increases in consumer energy prices had pushed up total PCE price inflation relative to the core measure, and this divergence was expected to continue in the near term, resulting in a temporary increase in overall inflation above the Committee's 2 percent longer-run objective. In general, participants viewed recent price developments as consistent with their expectation that inflation was on a trajectory to achieve the Committee's symmetric 2 percent objective on a sustained basis, although a number of participants noted that it was premature to conclude that the Committee had achieved that objective. The generally favorable outlook for inflation was buttressed by reports from business contacts in several Districts suggesting some firming of inflationary pressures; for example, many business contacts indicated that they were experiencing rising input costs, and, in some cases, firms appeared to be passing these cost increases through to consumer prices. Although core inflation and the 12-month trimmed mean PCE inflation rate calculated by the Federal Reserve Bank of Dallas remained a little below 2 percent, many participants anticipated that high levels of resource utilization and stable inflation expectations would keep overall inflation near 2 percent over the medium term. In light of inflation having run below the Committee's 2 percent objective for the past several years, a few participants cautioned that measures of longer-run inflation expectations derived from financial market data remained somewhat below levels consistent with the Committee's 2 percent objective. Accordingly, in their view, inves-

tors appeared to judge the expected path of inflation as running a bit below 2 percent over the medium run. Some participants raised the concern that a prolonged period in which the economy operated beyond potential could give rise to heightened inflationary pressures or to financial imbalances that could lead eventually to a significant economic downturn.

Participants commented on a number of risks and uncertainties associated with their outlook for economic activity, the labor market, and inflation over the medium term. Most participants noted that uncertainty and risks associated with trade policy had intensified and were concerned that such uncertainty and risks eventually could have negative effects on business sentiment and investment spending. Participants generally continued to see recent fiscal policy changes as supportive of economic growth over the next few years, and a few indicated that fiscal policy posed an upside risk. A few participants raised the concern that fiscal policy is not currently on a sustainable path. Many participants saw potential downside risks to economic growth and inflation associated with political and economic developments in Europe and some EMEs.

Meeting participants also discussed the term structure of interest rates and what a flattening of the yield curve might signal about economic activity going forward. Participants pointed to a number of factors, other than the gradual rise of the federal funds rate, that could contribute to a reduction in the spread between long-term and short-term Treasury yields, including a reduction in investors' estimates of the longer-run neutral real interest rate; lower longer-term inflation expectations; or a lower level of term premiums in recent years relative to historical experience reflecting, in part, central bank asset purchases. Some participants noted that such factors might temper the reliability of the slope of the yield curve as an indicator of future economic activity; however, several others expressed doubt about whether such factors were distorting the information content of the yield curve. A number of participants thought it would be important to continue to monitor the slope of the yield curve, given the historical regularity that an inverted yield curve has indicated an increased risk of recession in the United States. Participants also discussed a staff presentation of an indicator of the likelihood of recession based on the spread between the current level of the federal funds rate and the expected federal funds rate several quarters ahead derived from futures market prices. The staff noted that this measure may be less affected by many of the factors that have contributed to the flattening of the yield curve, such as depressed term premiums at longer horizons. Several participants cautioned that yield curve movements should be interpreted within the broader context of financial conditions and the outlook, and would be only one among many considerations in forming an assessment of appropriate policy.

In their consideration of monetary policy at this meeting, participants generally agreed that the economic expansion was progressing roughly as anticipated, with real economic activity expanding at a solid rate, labor market conditions continuing to strengthen, and inflation near the Committee's objective. Based on their current assessments, almost all participants expressed the view that it would be appropriate for the Committee to continue its gradual approach to policy firming by raising the target range for the federal funds rate 25 basis points at this meeting. These participants agreed that, even after such an increase in the target range, the stance of monetary policy would remain accommodative, supporting strong labor market conditions and a sustained return to 2 percent inflation. One participant remarked that, with inflation having run consistently below 2 percent in recent years and market-based measures of inflation compensation still low, postponing an increase in the target range for the federal funds rate would help push inflation expectations up to levels consistent with the Committee's objective.

With regard to the medium-term outlook for monetary policy, participants generally judged that, with the economy already very strong and inflation expected to run at 2 percent on a sustained basis over the medium term, it would likely be appropriate to continue gradually raising the target range for the federal funds rate to a setting that was at or somewhat above their estimates of its longer-run level by 2019 or 2020. Participants reaffirmed that adjustments to the path for the policy rate would depend on their assessments of the evolution of the economic outlook and risks to the outlook relative to the Committee's statutory objectives.

Participants pointed to various reasons for raising short-term interest rates gradually, including the uncertainty surrounding the level of the federal funds rate in the longer run, the lags with which changes in monetary policy affect the economy, and the potential constraints on adjustments in the target range for the federal funds rate in response to adverse shocks

when short-term interest rates are low. In addition, a few participants saw survey- or market-based indicators as suggesting that inflation expectations were not yet firmly anchored at a level consistent with the Committee's objective. A few also noted that a temporary period of inflation modestly above 2 percent could be helpful in anchoring longer-run inflation expectations at a level consistent with the Committee's symmetric objective.

Participants offered their views about how much additional policy firming would likely be required to sustainably achieve the Committee's objectives of maximum employment and 2 percent inflation. Many noted that, if gradual increases in the target range for the federal funds rate continued, the federal funds rate could be at or above their estimates of its neutral level sometime next year. In that regard, participants discussed how the Committee's communications might evolve over coming meetings if the economy progressed about as anticipated; in particular, a number of them noted that it might soon be appropriate to modify the language in the postmeeting statement indicating that "the stance of monetary policy remains accommodative."

Participants supported a plan to implement a technical adjustment to the IOER rate that would place it at a level 5 basis points below the top of the FOMC's target range for the federal funds rate. A few participants suggested that, before too long, the Committee might want to further discuss how it can implement monetary policy most effectively and efficiently when the quantity of reserve balances reaches a level appreciably below that seen recently.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the FOMC met in May indicated that the labor market had continued to strengthen and that economic activity had been rising at a solid rate. Job gains had been strong, on average, in recent months, and the unemployment rate had declined. Recent data suggested that growth of household spending had picked up, while business fixed investment had continued to grow strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy had moved close to 2 percent. Indicators of longer-term inflation expectations were little changed, on balance.

Members viewed the recent data as consistent with a strong economy that was evolving about as they had expected. They judged that continuing along a path of gradual policy firming would balance the risk of moving too quickly, which could leave inflation short of a sustained return to the Committee's symmetric goal, against the risk of moving too slowly, which could lead to a buildup of inflation pressures or material financial imbalances. Consequently, members expected that further gradual increases in the target range for the federal funds rate would be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Members continued to judge that the risks to the economic outlook remained roughly balanced.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, members voted to raise the target range for the federal funds rate to 1¾ to 2 percent. They indicated that the stance of monetary policy remained accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend upon their assessment of realized and expected economic conditions relative to the Committee's maximum employment objective and symmetric 2 percent inflation objective. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

With regard to the postmeeting statement, members favored the removal of the forward-guidance language stating that "the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run." Members noted that, although this forward-guidance language had been useful for communicating the expected path of the federal funds rate during the early stages of policy normalization, this language was no longer appropriate in light of the strong state of the economy and the current expected path for policy. Moreover, the removal of the forward-guidance language and other changes to the statement should streamline and

facilitate the Committee's communications. Importantly, the changes were a reflection of the progress toward achieving the Committee's statutory goals and did not reflect a shift in the approach to policy going forward.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

"Effective June 14, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of 1¾ to 2 percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 1.75 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.

The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during June that exceeds $18 billion, and to continue reinvesting in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during June that exceeds $12 billion. Effective in July, the Committee directs the Desk to roll over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $24 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $16 billion. Small deviations from these amounts for operational reasons are acceptable.

The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

"Information received since the Federal Open Market Committee met in May indicates that the labor market has continued to strengthen and that economic activity has been rising at a solid rate. Job gains have been strong, on average, in recent months, and the unemployment rate has declined. Recent data suggest that growth of household spending has picked up, while business fixed investment has continued to grow strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy have moved close to 2 percent. Indicators of longer-term inflation expectations are little changed, on balance.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that further gradual increases in the target range for the federal funds rate will be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Risks to the economic outlook appear roughly balanced.

In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate to 1¾ to 2 percent. The stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its maximum employment objective and its symmetric 2 percent inflation objective. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments."

Voting for this action: Jerome H. Powell, William C. Dudley, Thomas I. Barkin, Raphael W. Bostic, Lael

Brainard, Loretta J. Mester, Randal K. Quarles, and John C. Williams.

Voting against this action: None.

To support the Committee's decision to raise the target range for the federal funds rate, the Board of Governors voted unanimously to raise the interest rates on required and excess reserve balances to 1.95 percent, effective June 14, 2018. The Board of Governors also voted unanimously to approve a ¼ percentage point increase in the primary credit rate (discount rate) to 2½ percent, effective June 14, 2018.[4]

Election of Committee Vice Chairman

By unanimous vote, the Committee selected John C. Williams to serve as Vice Chairman, effective on June 18, 2018, until the selection of a successor at the Committee's first regularly scheduled meeting in 2019.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, July 31–August 1, 2018. The meeting adjourned at 10:00 a.m. on June 13, 2018.

Notation Vote

By notation vote completed on May 22, 2018, the Committee unanimously approved the minutes of the Committee meeting held on May 1–2, 2018.

James A. Clouse
Secretary

[4] In taking this action, the Board approved requests submitted by the boards of directors of the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, Kansas City, Dallas, and San Francisco. This vote also encompassed approval by the Board of Governors of the establishment of a 2½ percent primary credit rate by the remaining Federal Reserve Bank, effective on the later of June 14, 2018, and the date such Reserve Bank informed the Secretary of the Board of such a request. (Secretary's note: Subsequently, the Federal Reserve Bank of New York was informed by the Secretary of the Board of the Board's approval of their establishment of a primary credit rate of 2½ percent, effective June 14, 2018.) The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on June 12–13, 2018, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2018 to 2020 and over the longer run.[1] Each participant's projections were based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy—including a path for the federal funds rate and its longer-run value—and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.[2] "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the statutory mandate to promote maximum employment and price stability.

All participants who submitted longer-run projections expected that, in 2018, real GDP would expand at a pace exceeding their individual estimates of the longer-run growth rate of real GDP. Participants generally saw real GDP growth moderating somewhat in each of the following two years but remaining above their estimates of the longer-run rate. All participants who submitted longer-run projections expected that, throughout the projection period, the unemployment rate would run below their estimates of its longer-run level. All participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would run at or slightly above the Committee's 2 percent objective by the end of 2018 and remain roughly flat through 2020. Compared with the Summary of Economic Projections (SEP) from March, most participants slightly marked up their projections of real GDP growth in 2018 and somewhat lowered their projections for the unemployment rate from 2018 through 2020; participants indicated that these revisions reflected, in large part, strength in incoming data. A large majority of participants made slight upward adjustments to their projections of inflation in 2018. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, participants generally continued to expect that the evolution of the economy relative to their objectives of maximum employment and 2 percent inflation would likely warrant further gradual increases in the federal funds rate. The central tendencies of participants' projections of the federal funds rate for both 2018 and 2019 were roughly unchanged, but the medians for both years were 25 basis points higher relative to March. Nearly all participants who submitted longer-run projections expected that, during part of the projection period, evolving economic conditions would make it appropriate for the federal funds rate to move somewhat above their estimates of its longer-run level.

In general, participants continued to view the uncertainty attached to their economic projections as broadly similar to the average of the past 20 years. As in March, most participants judged the risks around their projections for real GDP growth, the unemployment rate, and inflation to be broadly balanced.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP, conditional on their individual assessments of appropriate monetary policy, was 2.8 percent for this year and 2.4 percent for next year. The median was 2.0 percent for 2020, a touch above the median projection of longer-run growth. Most participants continued to cite fiscal policy as a driver of strong economic activity over the next couple of years. Many participants also mentioned accommodative monetary policy and financial conditions, strength in the global outlook, continued momentum in the labor market, or positive readings on business and consumer sentiment as important factors shaping the economic outlook. Compared with the March SEP, the median of participants' projections for the rate of real GDP growth was 0.1 percentage point higher for this year and unchanged for the next two years.

Almost all participants expected the unemployment rate to decline somewhat further over the projection period. The median of participants' projections for the unemployment rate was 3.6 percent for the final quarter of this year and 3.5 percent for the final quarters of 2019 and 2020. The median of partici-

[1] Three members of the Board of Governors were in office at the time of the June 2018 meeting.

[2] One participant did not submit longer-run projections for real GDP growth, the unemployment rate, or the federal funds rate.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, June 2018
Percent

Variable	Median[1]				Central tendency[2]				Range[3]			
	2018	2019	2020	Longer run	2018	2019	2020	Longer run	2018	2019	2020	Longer run
Change in real GDP	2.8	2.4	2.0	1.8	2.7–3.0	2.2–2.6	1.8–2.0	1.8–2.0	2.5–3.0	2.1–2.7	1.5–2.2	1.7–2.1
March projection	2.7	2.4	2.0	1.8	2.6–3.0	2.2–2.6	1.8–2.1	1.8–2.0	2.5–3.0	2.0–2.8	1.5–2.3	1.7–2.2
Unemployment rate	3.6	3.5	3.5	4.5	3.6–3.7	3.4–3.5	3.4–3.7	4.3–4.6	3.5–3.8	3.3–3.8	3.3–4.0	4.1–4.7
March projection	3.8	3.6	3.6	4.5	3.6–3.8	3.4–3.7	3.5–3.8	4.3–4.7	3.6–4.0	3.3–4.2	3.3–4.4	4.2–4.8
PCE inflation	2.1	2.1	2.1	2.0	2.0–2.1	2.0–2.2	2.1–2.2	2.0	2.0–2.2	1.9–2.3	2.0–2.3	2.0
March projection	1.9	2.0	2.1	2.0	1.8–2.0	2.0–2.2	2.1–2.2	2.0	1.8–2.1	1.9–2.3	2.0–2.3	2.0
Core PCE inflation[4]	2.0	2.1	2.1		1.9–2.0	2.0–2.2	2.1–2.2		1.9–2.1	2.0–2.3	2.0–2.3	
March projection	1.9	2.1	2.1		1.8–2.0	2.0–2.2	2.1–2.2		1.8–2.1	1.9–2.3	2.0–2.3	
Memo: Projected appropriate policy path												
Federal funds rate	2.4	3.1	3.4	2.9	2.1–2.4	2.9–3.4	3.1–3.6	2.8–3.0	1.9–2.6	1.9–3.6	1.9–4.1	2.3–3.5
March projection	2.1	2.9	3.4	2.9	2.1–2.4	2.8–3.4	3.1–3.6	2.8–3.0	1.6–2.6	1.6–3.9	1.6–4.9	2.3–3.5

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The March projections were made in conjunction with the meeting of the Federal Open Market Committee on March 20–21, 2018. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the March 20–21, 2018, meeting, and one participant did not submit such projections in conjunction with the June 12–13, 2018, meeting.

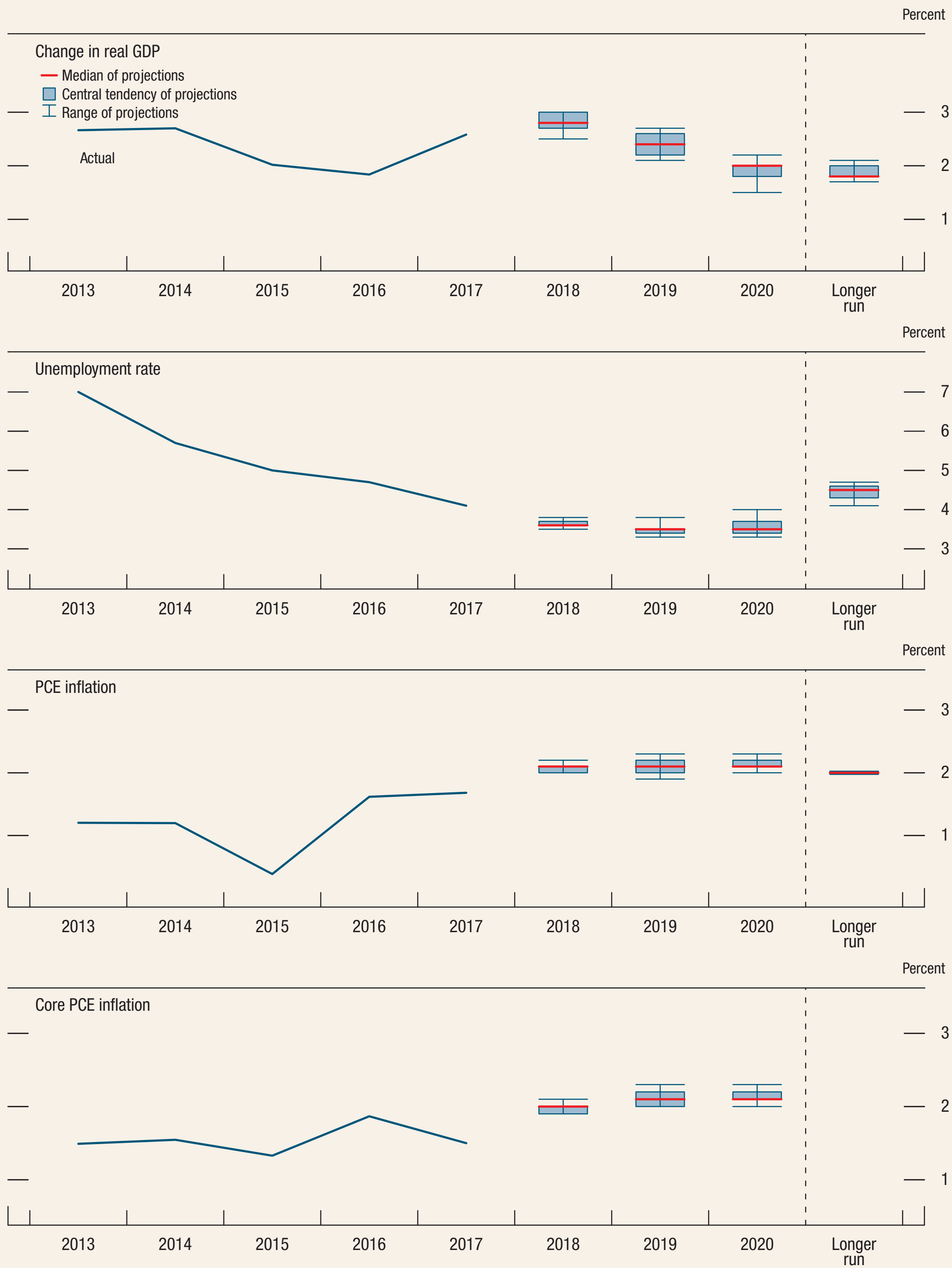
1 For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2 The central tendency excludes the three highest and three lowest projections for each variable in each year.

3 The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

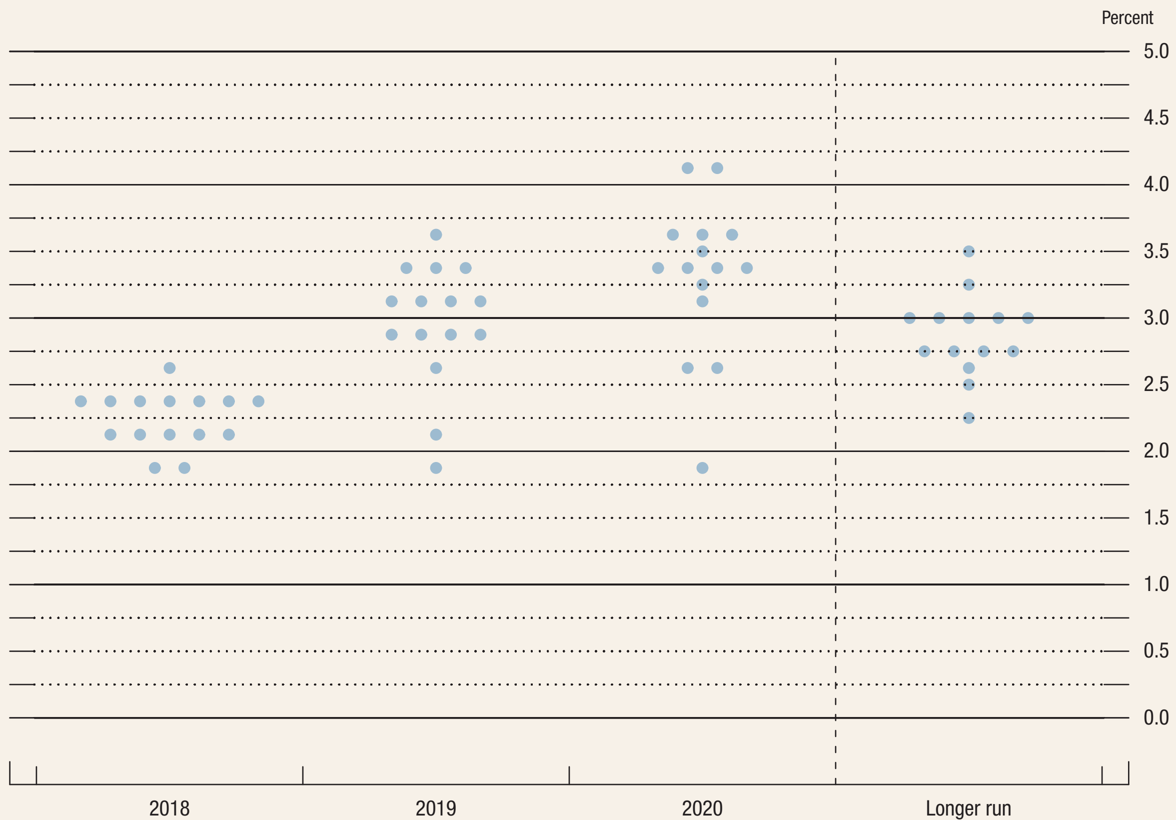
4 Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2018–20 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

pants' estimates of the longer-run unemployment rate was unchanged at 4.5 percent.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2018 to 2020 and over the longer run. The distribution of individual projections for real GDP growth this year shifted up noticeably from that in the March SEP. By contrast, the distributions of projected real GDP growth in 2019 and 2020 and over the longer run were little changed. The distributions of individual projections for the unemployment rate in 2018 to 2020 shifted down relative to the distributions in March, while the downward shift in the distribution of longer-run projections was very modest.

The Outlook for Inflation

The medians of participants' projections for total and core PCE price inflation in 2018 were 2.1 percent and 2.0 percent, respectively, and the median for each measure was 2.1 percent in 2019 and 2020. Compared with the March SEP, the medians of participants' projections for total PCE price inflation for this year and next were revised up slightly. Some participants pointed to incoming data on energy prices as a reason for their upward revisions. The median of participants' forecasts for core PCE price inflation was up a touch for this year and unchanged for subsequent years.

Figures 3.C and 3.D provide information on the distributions of participants' views about the outlook for inflation. The distributions of both total and core PCE price inflation for 2018 shifted to the right relative to the distributions in March. The distributions of projected inflation in 2019, 2020, and over the longer run were roughly unchanged. Participants generally expected each measure to be at or slightly above 2 percent in 2019 and 2020.

Appropriate Monetary Policy

Figure 3.E provides the distribution of participants' judgments regarding the appropriate target—or midpoint of the target range—for the federal funds rate at the end of each year from 2018 to 2020 and over the longer run. The distributions of projected policy rates through 2020 shifted modestly higher, consistent with the revisions to participants' projections of real GDP growth, the unemployment rate, and inflation. As in their March projections, a large majority of participants anticipated that evolving economic conditions would likely warrant the equivalent of a total of either three or four increases of 25 basis points in the target range for the federal funds rate over 2018. There was a slight reduction in the dispersion of participants' views, with no participant regarding the appropriate target at the end of the year to be below 1.88 percent. For each subsequent year, the dispersion of participants' year-end projections was somewhat smaller than that in the March SEP.

The medians of participants' projections of the federal funds rate rose gradually to 2.4 percent at the end of this year, 3.1 percent at the end of 2019, and 3.4 percent at the end of 2020. The median of participants' longer-run estimates, at 2.9 percent, was unchanged relative to the March SEP.

In discussing their projections, many participants continued to express the view that the appropriate trajectory of the federal funds rate over the next few years would likely involve gradual increases. This view was predicated on several factors, including a judgment that a gradual path of policy firming likely would appropriately balance the risks associated with, among other considerations, the possibilities that U.S. fiscal policy could have larger or more persistent positive effects on real activity and that shifts in trade policy or developments abroad could weigh on the expansion. As always, the appropriate path of the federal funds rate would depend on evolving economic conditions and their implications for participants' economic outlooks and assessments of risks.

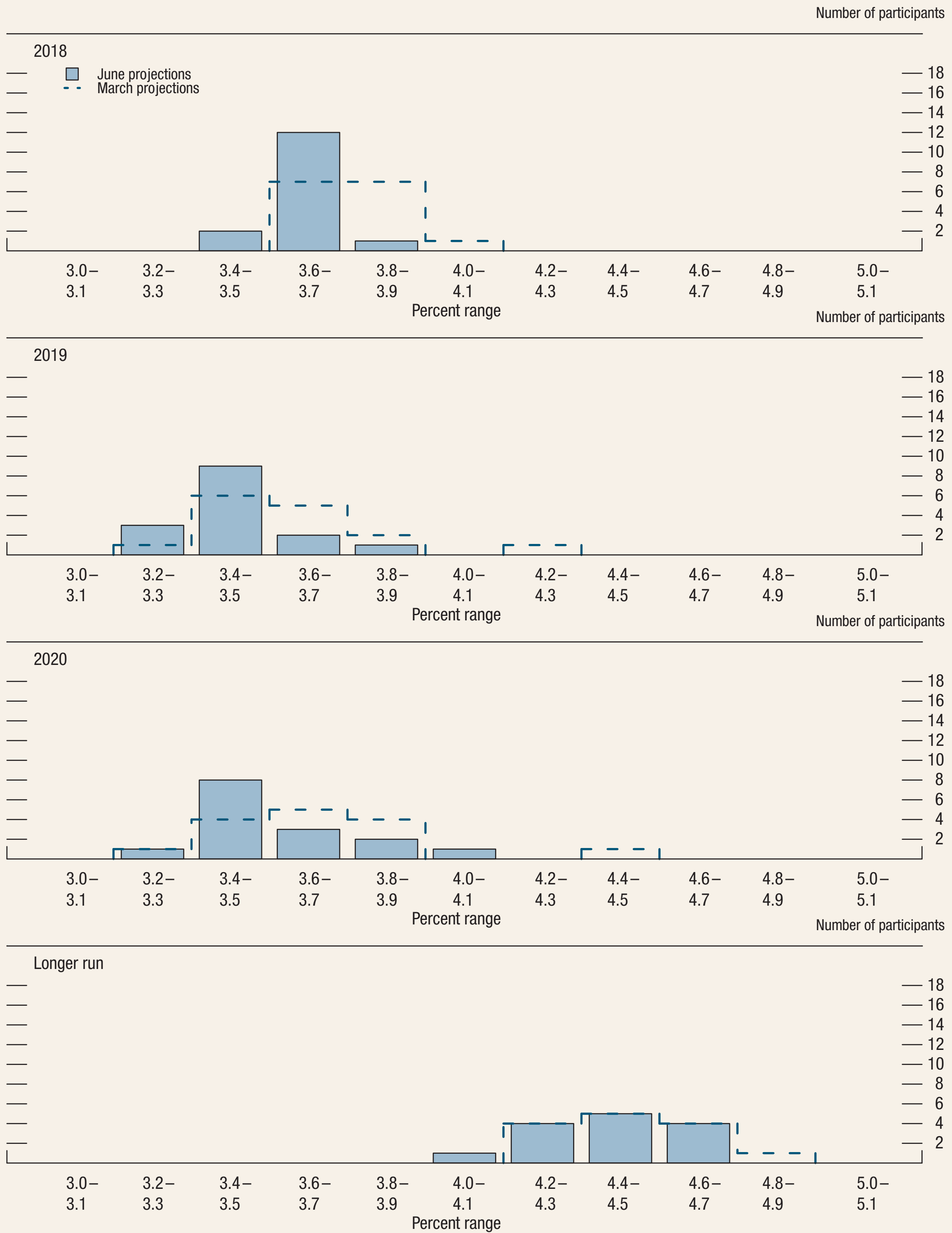
Uncertainty and Risks

In assessing the path for the federal funds rate that, in their view, is likely to be appropriate, FOMC participants take account of the range of possible economic outcomes, the likelihood of those outcomes, and the potential benefits and costs should they occur. As a reference, table 2 provides measures of forecast uncertainty, based on the forecast errors of various private and government forecasts over the past 20 years, for real GDP growth, the unemployment rate, and total PCE price inflation. Those measures are represented graphically in the "fan charts" shown in the top panels of figures 4.A, 4.B, and 4.C. The fan charts display the median SEP projections for the three variables surrounded by symmetric confidence intervals derived from the forecast errors reported in table 2. If the degree of uncertainty attending these projections is similar to the typical magnitude of past forecast errors and the risks

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2018–20 and over the longer run

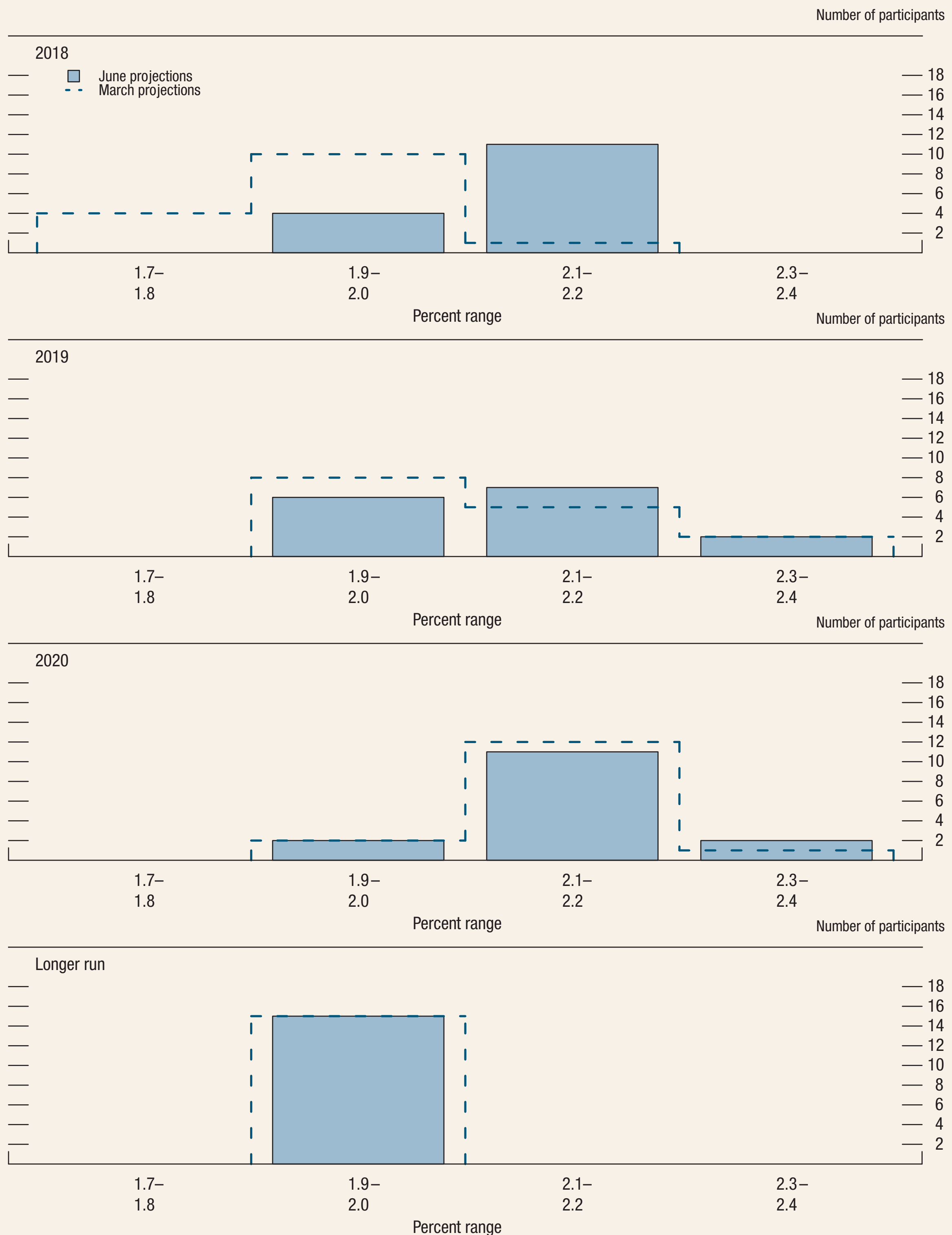
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2018–20 and over the longer run



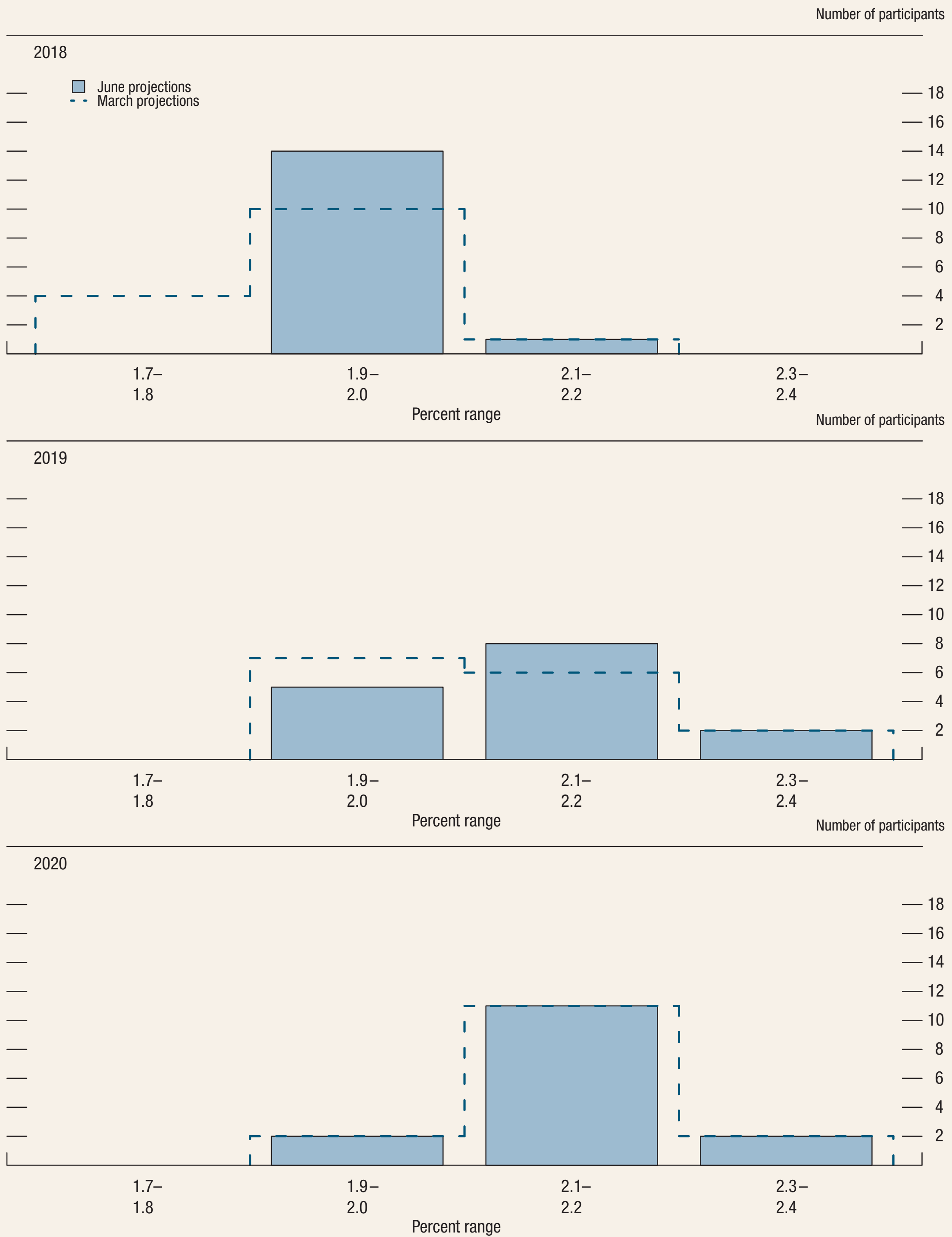
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2018–20 and over the longer run



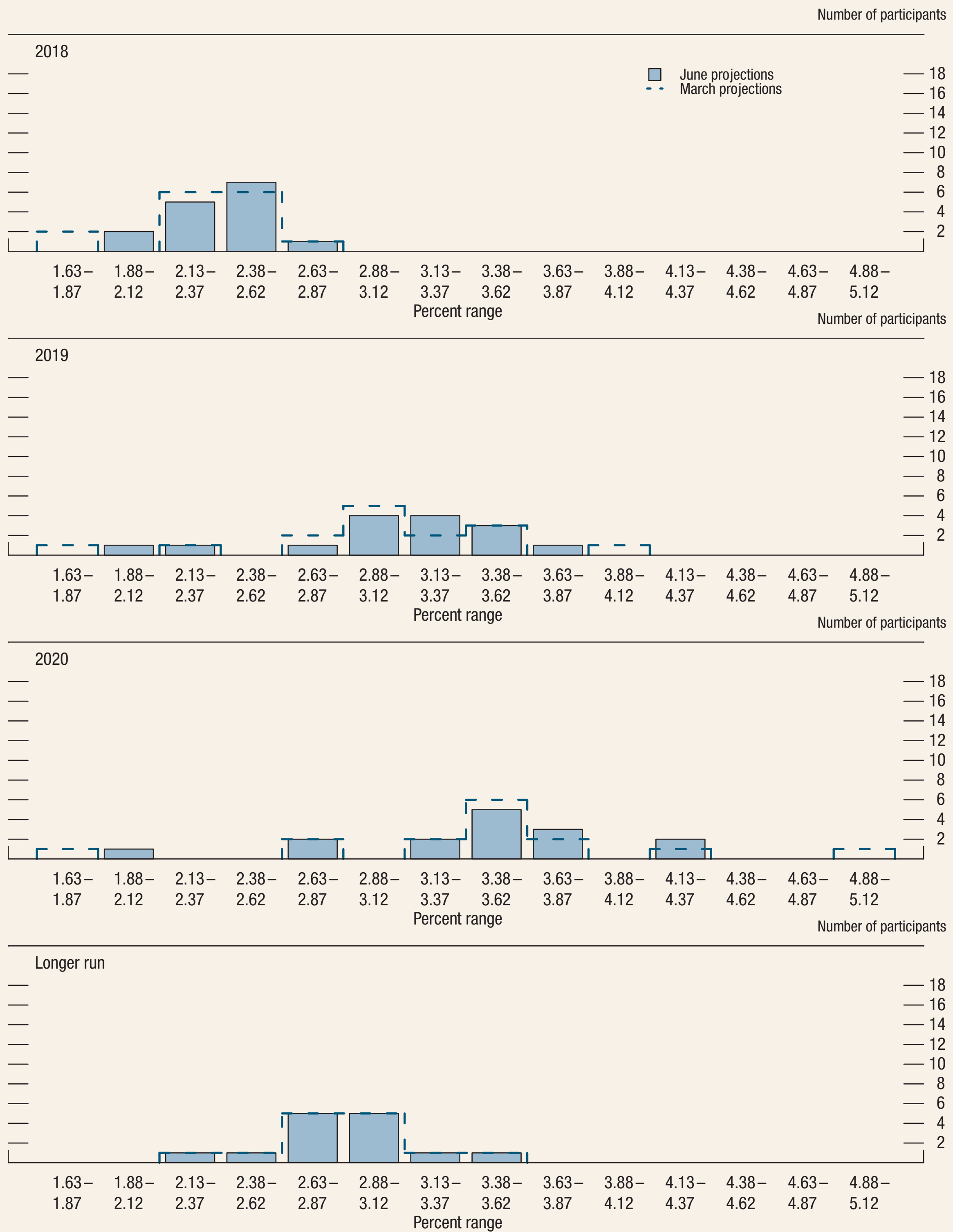
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2018–20



Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2018–20 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1.

Table 2. Average historical projection error ranges
Percentage points

Variable	2018	2019	2020
Change in real GDP[1]	±1.3	±2.0	±2.1
Unemployment rate[1]	±0.4	±1.2	±1.8
Total consumer prices[2]	±0.7	±1.0	±1.0
Short-term interest rates[3]	±0.7	±2.0	±2.2

Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1998 through 2017 that were released in the summer by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2017), "Gauging the Uncertainty of the Economic Outlook Using Historical Forecasting Errors: The Federal Reserve's Approach," Finance and Economics Discussion Series 2017-020 (Washington: Board of Governors of the Federal Reserve System, February), www.federalreserve.gov/econresdata/feds/2017/files/2017020pap.pdf.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projections are percent changes on a fourth quarter to fourth quarter basis.

3 For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Projection errors are calculated using average levels, in percent, in the fourth quarter.

around the projections are broadly balanced, then future outcomes of these variables would have about a 70 percent probability of being within these confidence intervals. For all three variables, this measure of uncertainty is substantial and generally increases as the forecast horizon lengthens.

Participants' assessments of the level of uncertainty surrounding their individual economic projections are shown in the bottom-left panels of figures 4.A, 4.B, and 4.C. Nearly all participants viewed the degree of uncertainty attached to their economic projections for real GDP growth, the unemployment rate, and inflation as broadly similar to the average of the past 20 years, a view that was essentially unchanged from March.[3]

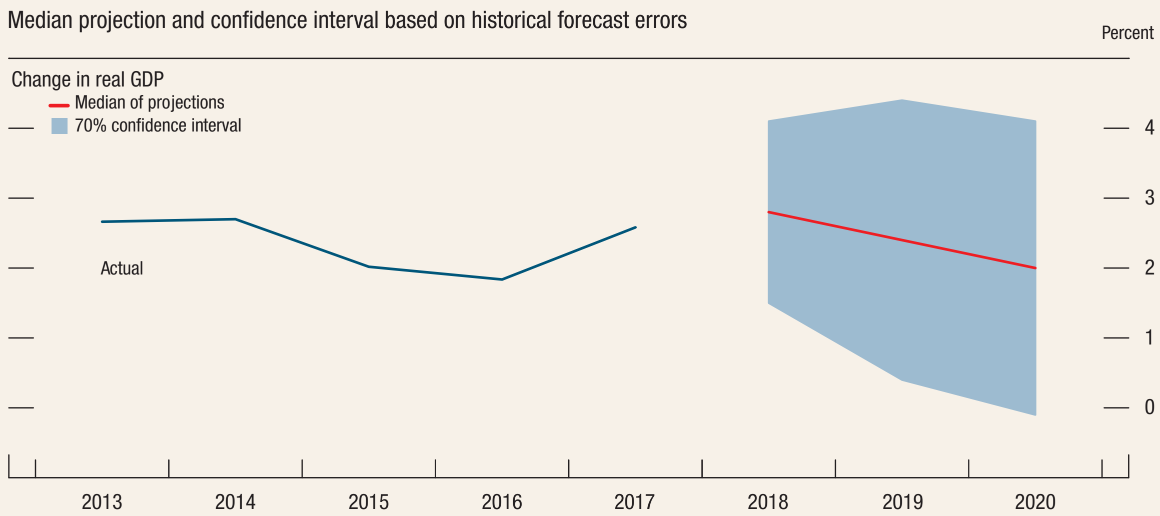
Because the fan charts are constructed to be symmetric around the median projections, they do not reflect any asymmetries in the balance of risks that participants may see in their economic projections. Participants' assessments of the balance of risks to their economic projections are shown in the bottom-right panels of figures 4.A, 4.B, and 4.C. Most participants judged the risks to their projections of real GDP growth, the unemployment rate, total inflation, and core inflation as broadly balanced—in other words, as broadly consistent with a symmetric fan chart. Compared with March, even more participants saw the risks to their projections as broadly balanced. Specifically, for GDP growth, only one participant viewed the risks as tilted to the downside, and the number of participants who viewed the risks as tilted to the upside dropped from four to two. For the unemployment rate, the number of participants who saw the risks as tilted toward low readings dropped from four to two. For inflation, all but one participant judged the risks to either total or core PCE price inflation as broadly balanced.

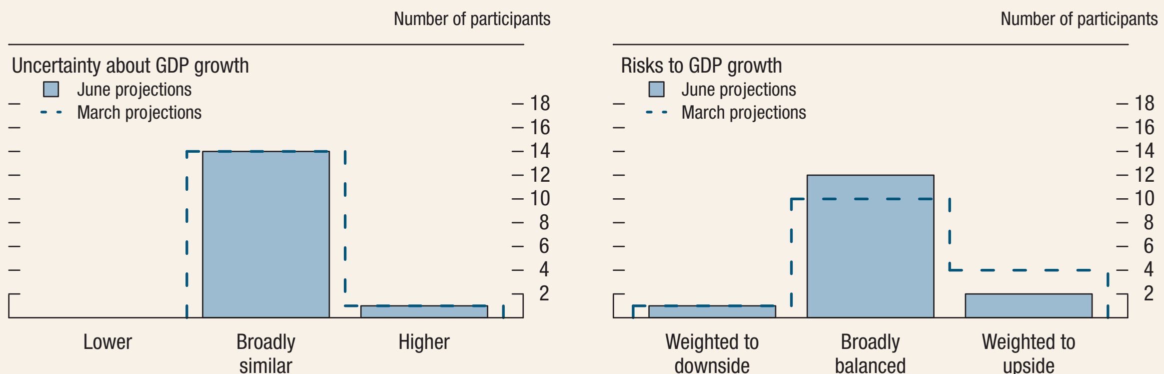
In discussing the uncertainty and risks surrounding their projections, several participants continued to point to fiscal developments as a source of upside risk, many participants cited developments related to trade policy as posing downside risks to their growth forecasts, and a few participants also pointed to political developments in Europe or the global outlook more generally as downside-risk factors. A few participants noted that the appreciation of the dollar posed downside risks to the inflation outlook. A few participants also noted the risk of inflation moving higher than anticipated as the unemployment rate falls.

Participants' assessments of the appropriate future path of the federal funds rate were also subject to considerable uncertainty. Because the Committee adjusts the federal funds rate in response to actual and prospective developments over time in real GDP growth, the unemployment rate, and inflation, uncertainty surrounding the projected path for the federal funds rate importantly reflects the uncertainties about the paths for those key economic variables. Figure 5 provides a graphical representation of this uncertainty, plotting the median SEP projection for the federal funds rate surrounded by confidence intervals derived from the results presented in table 2. As with the macroeconomic variables, forecast uncertainty surrounding the appropriate path of the federal funds rate is substantial and increases for longer horizons.

3 At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty surrounding the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

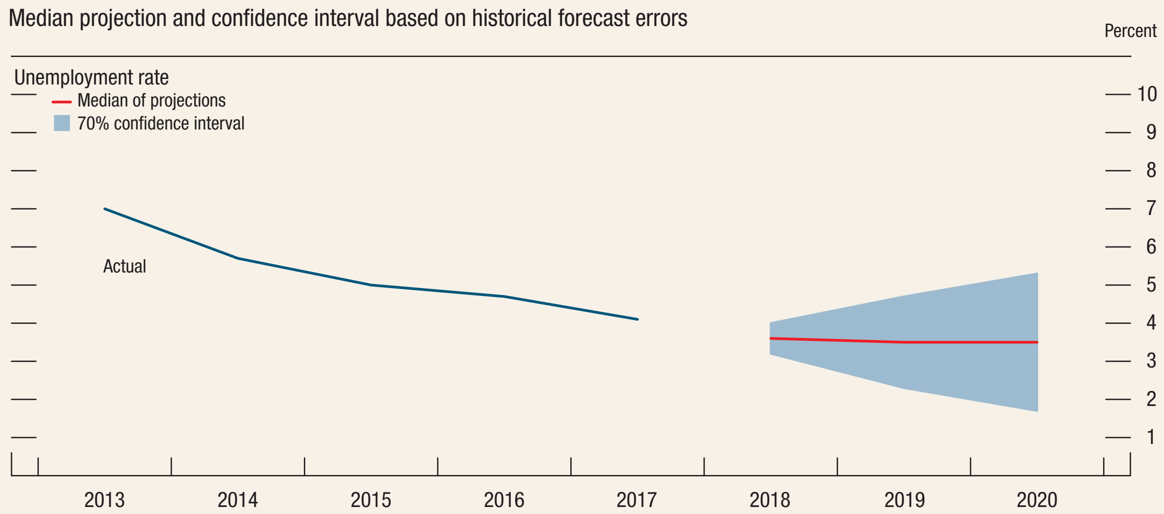
Figure 4.A. Uncertainty and risks in projections of GDP growth

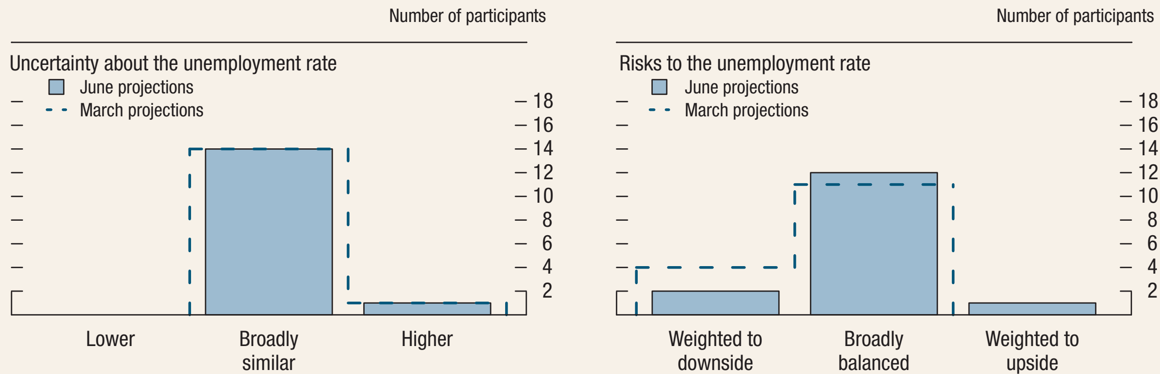




Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

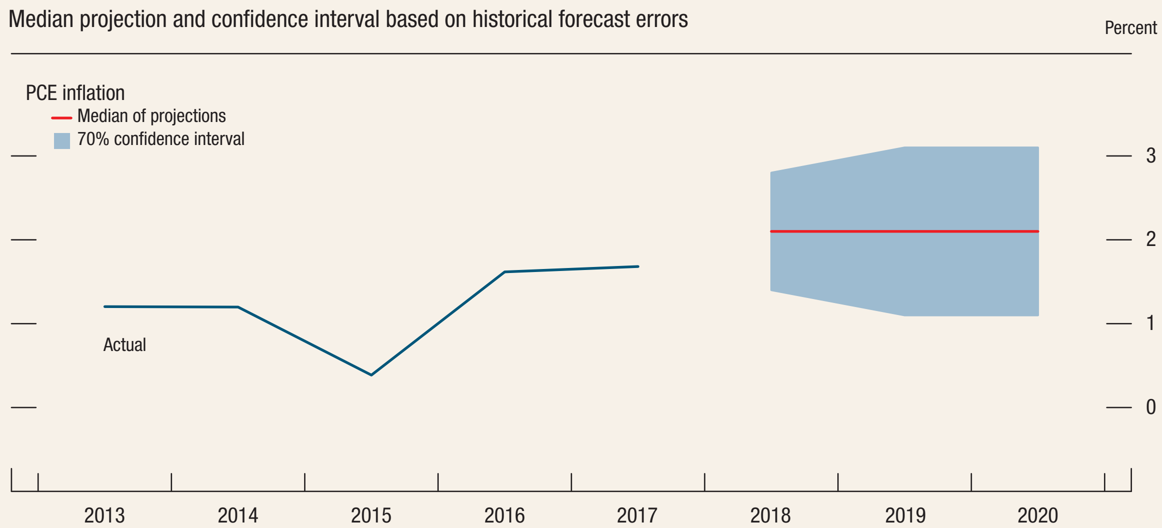
Figure 4.B. Uncertainty and risks in projections of the unemployment rate

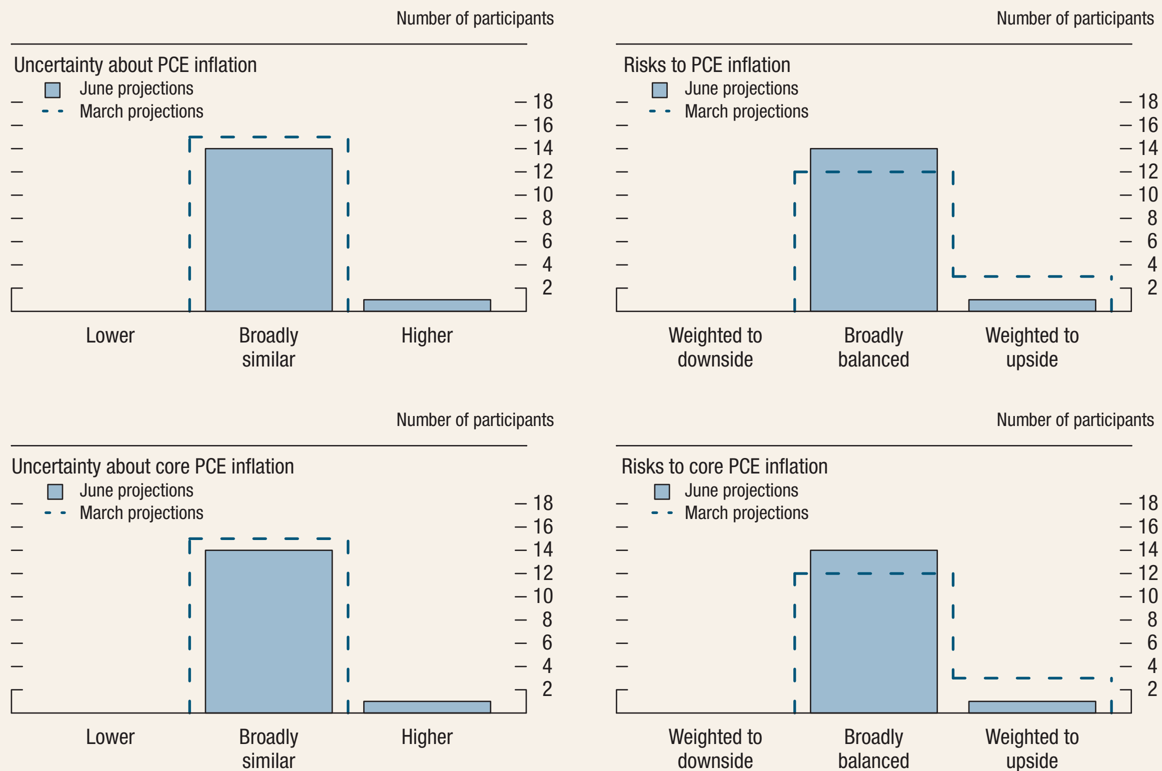




Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

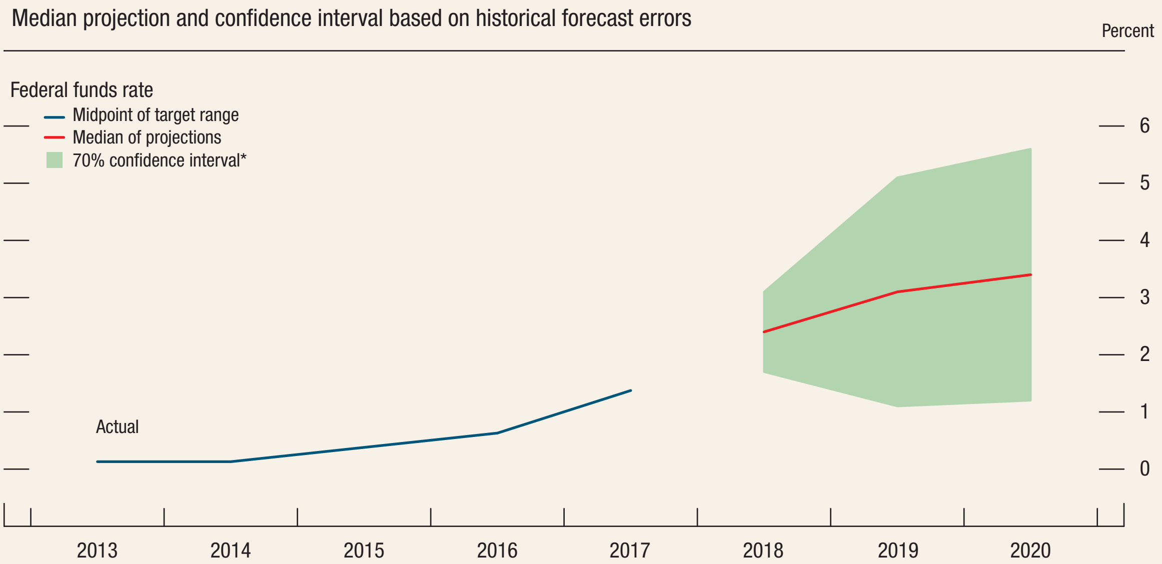
Figure 4.C. Uncertainty and risks in projections of PCE inflation





Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 5. Uncertainty in projections of the federal funds rate



Note: The blue and red lines are based on actual values and median projected values, respectively, of the Committee's target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants' individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero—the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Report*s and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee (FOMC). The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 1.7 to 4.3 percent in the current year, 1.0 to 5.0 percent in the second year, and 0.9 to 5.1 percent in the third year. The corresponding 70 percent confidence intervals for overall inflation would be 1.3 to 2.7 percent in the current year and 1.0 to 3.0 percent in the second and third years. Figures 4.A through 4.C illustrate these confidence bounds in "fan charts" that are symmetric and centered on the medians of FOMC participants' projections for GDP growth, the unemployment rate, and inflation. However, in some instances, the risks around the projections may not be symmetric. In particular, the unemployment rate cannot be negative; furthermore, the risks around a particular projection might be tilted to either the upside or the downside, in which case the corresponding fan chart would be asymmetrically positioned around the median projection.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each economic variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty seen in the past 20 years, as presented in table 2 and reflected in the widths of the confidence intervals shown in the top panels of figures 4.A through 4.C. Participants' current assessments of the uncertainty surrounding their projections are summarized in the bottom-left panels of those figures. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, while the symmetric historical fan charts shown in the top panels of figures 4.A through 4.C imply that the risks to participants' projections are balanced, participants may judge that there is a greater risk that a given variable will be above rather than below their projections. These judgments are summarized in the lower-right panels of figures 4.A through 4.C.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward. The final line in table 2 shows the error ranges for forecasts of short-term interest rates. They suggest that the historical confidence intervals associated with projections of the federal funds rate are quite wide. It should be noted, however, that these confidence intervals are not strictly consistent with the projections for the federal funds rate, as these projections are not forecasts of the most likely quarterly outcomes but rather are projections of participants' individual assessments of appropriate monetary policy and are on an end-of-year basis. However, the forecast errors should provide a sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that would be appropriate to offset the effects of shocks to the economy.

If at some point in the future the confidence interval around the federal funds rate were to extend below zero, it would be truncated at zero for purposes of the fan chart shown in figure 5; zero is the bottom of the lowest target range for the federal funds rate that has been adopted by the Committee in the past. This approach to the construction of the federal funds rate fan chart would be merely a convention; it would not have any implications for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate. In such situations, the Committee could also employ other tools, including forward guidance and asset purchases, to provide additional accommodation.

While figures 4.A through 4.C provide information on the uncertainty around the economic projections, figure 1 provides information on the range of views across FOMC participants. A comparison of figure 1 with figures 4.A through 4.C shows that the dispersion of the projections across participants is much smaller than the average forecast errors over the past 20 years.

Meeting Held on July 31–August 1, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, July 31, 2018, at 10:00 a.m. and continued on Wednesday, August 1, 2018, at 9:00 a.m.[1]

Present

Jerome H. Powell
Chairman

John C. Williams
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Lael Brainard

Loretta J. Mester

Randal K. Quarles

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

Mark A. Gould
First Vice President, Federal Reserve Bank of San Francisco

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Kartik B. Athreya, Thomas A. Connors, Mary Daly, David E. Lebow, Trevor A. Reeve, Ellis W. Tallman, William Wascher, and Beth Anne Wilson
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Ann E. Misback
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Supervision and Regulation, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Jon Faust
Senior Special Adviser to the Chairman, Office of Board Members, Board of Governors

Antulio N. Bomfim
Special Adviser to the Chairman, Office of Board Members, Board of Governors

Joseph W. Gruber and John M. Roberts
Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Christopher J. Erceg
Senior Associate Director, Division of International Finance, Board of Governors

[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended through the discussion of developments in financial markets and open market operations.

Gretchen C. Weinbach
Senior Associate Director, Division of Monetary Affairs, Board of Governors

Ellen E. Meade, Edward Nelson, and Robert J. Tetlow
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jeremy B. Rudd
Senior Adviser, Division of Research and Statistics, Board of Governors

John J. Stevens
Associate Director, Division of Research and Statistics, Board of Governors

Luca Guerrieri
Deputy Associate Director, Division of Financial Stability, Board of Governors

Glenn Follette and Shane M. Sherlund
Assistant Directors, Division of Research and Statistics, Board of Governors

Christopher J. Gust
Assistant Director, Division of Monetary Affairs, Board of Governors

Penelope A. Beattie[3]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Etienne Gagnon[4]
Section Chief, Division of Monetary Affairs, Board of Governors

Matthias Paustian[4]
Section Chief, Division of Research and Statistics, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Hess T. Chung[4]
Group Manager, Division of Research and Statistics, Board of Governors

Andrea Ajello, Edward Herbst, and Bernd Schlusche[4]
Principal Economists, Division of Monetary Affairs, Board of Governors

Randall A. Williams
Senior Information Manager, Division of Monetary Affairs, Board of Governors

James M. Trevino[4]
Technology Analyst, Division of Monetary Affairs, Board of Governors

Michael Dotsey, Beverly Hirtle, and Christopher J. Waller
Executive Vice Presidents, Federal Reserve Banks of Philadelphia, New York, and St. Louis, respectively

Anna Paulson
Senior Vice President, Federal Reserve Bank of Chicago

Joe Peek
Vice President, Federal Reserve Bank of Boston

Karel Mertens
Senior Economic Policy Advisor, Federal Reserve Bank of Dallas

A. Lee Smith
Senior Economist, Federal Reserve Bank of Kansas City

Brent Meyer
Policy Advisor and Economist, Federal Reserve Bank of Atlanta

Cristina Arellano
Monetary Advisor, Federal Reserve Bank of Minneapolis

Monetary Policy Options at the Effective Lower Bound

The staff provided a briefing that summarized its analysis of the extent to which some of the Committee's monetary policy tools could provide adequate policy accommodation if, in future economic downturns, the policy rate were again to become constrained by the effective lower bound (ELB).[5] The staff examined simulations from the staff's FRB/US model and various other economic models to assess the likelihood of the policy rate returning to the ELB and to evaluate how much additional policy accommodation could be delivered by the current toolkit. This toolkit included threshold-based forward-guidance policies, in which the Committee communicates that the federal funds rate will remain at the ELB until either inflation or the unemployment rate reaches a certain threshold, and balance sheet policies, involving increases in the size or duration of the Federal Reserve's asset holdings.

[3] Attended Tuesday session only.

[4] Attended through the discussion of monetary policy options at the effective lower bound.

[5] In the analysis, the staff assumed that the ELB was 12.5 basis points, equal to the midpoint of the target range for the federal funds rate from December 2008 to December 2015.

The staff's analysis indicated that under various policy rules, including those prescribing aggressive reductions in the federal funds rate in response to adverse economic shocks, there was a meaningful risk that the ELB could bind sometime during the next decade. That analysis also implied that threshold-based forward guidance and balance sheet actions could provide additional accommodation that could help support economic activity and mitigate disinflationary pressures in these episodes. In the model simulations, because of unanticipated shocks and lags in the transmission of the effects of monetary policy actions on economic activity and inflation, the effectiveness of monetary policy in general, including forward-guidance and balance sheet policies, was limited in mitigating the initial downturn in the economy. The staff noted that there was considerable uncertainty surrounding the estimated effects of those policies on the economy; in addition, estimates of how frequently the ELB could bind in the future differed across the models that the staff examined.

In the discussion that followed the staff's briefing, participants generally agreed that their current toolkit could provide significant accommodation but expressed concern about the potential limits on policy effectiveness stemming from the ELB. They viewed it as a matter of prudent planning to evaluate potential policy options in advance of such ELB events. Many participants commented on the monetary policy implications of the apparent secular decline in neutral real interest rates. That decline was viewed as likely driven by various factors, including slower trend growth of the labor force and productivity as well as increased demand for safe assets. In such circumstances, those participants saw monetary policy as having less scope than in the past to reduce the federal funds rate in response to negative shocks. Accordingly, in their view, spells at the ELB could become more frequent and protracted than in the past, consistent with the staff's analysis. Moreover, the secular decline in interest rates was a global phenomenon, and a couple of participants emphasized that this decline increased the likelihood that the ELB could bind simultaneously in a number of countries. A few other participants raised the concern that frequent or extended ELB episodes could result in expectations for inflation that were below the Committee's symmetric 2 percent objective, further limiting the scope for reductions in the federal funds rate to serve as a buffer for the economy and increasing the likelihood of ELB episodes. Fiscal policy was viewed as a potentially important tool in addressing a future economic downturn in which monetary policy was constrained by the ELB; however, countercyclical fiscal policy actions in the United States may be constrained by the high and rising level of federal government debt. A couple of participants saw macroprudential and regulatory policies as tools that could be used to mitigate the risk of financial imbalances inducing an economic downturn in which the ELB constrained the federal funds rate.

Participants generally agreed that both forward guidance and balance sheet actions would be effective tools to use if the federal funds rate were to become constrained by the ELB. In the Addendum to the Policy Normalization Principles and Plans statement issued in June 2017, the Committee indicated that it would be prepared to use its full range of tools, including altering the size and composition of its balance sheet, if future economic conditions were to warrant a more accommodative monetary policy than can be achieved solely by reducing the federal funds rate. However, participants acknowledged that there may be limits to the effectiveness of these tools in addressing an ELB episode. They also emphasized that there was considerable uncertainty about the economic effects of these tools. Consistent with that view, a few participants noted that economic researchers had not yet reached a consensus about the effectiveness of unconventional policies. A number of participants indicated that there might be significant costs associated with the use of unconventional policies, and that these costs might limit, in particular, the extent to which the Committee should engage in large-scale asset purchases.

Participants discussed the prominent role that previous communications about forward guidance and balance sheet actions, in conjunction with those policy measures, had in shaping public expectations about the potential future use of these tools and in determining their effectiveness. In general, advance communications about these policies were seen as important in reinforcing public understanding of the Committee's commitment to achieving its dual-mandate objectives. However, several participants cautioned against being too specific about how the Committee would deploy such tools. In particular, it was difficult to anticipate the forces that might push the economy into a recession, and thus preserving some flexibility in responding to an economic downturn could be appropriate. Moreover, although making multiyear commitments regarding asset purchases or the future path of the federal funds rate

could enhance the effectiveness of these policies, such commitments could unduly constrain the choices of the Committee in the future.

While the Committee's current toolkit was judged to be effective, participants agreed, as a matter of prudent planning, to discuss their policy options further and to broaden the discussion to include the evaluation of potential alternative policy strategies for addressing the ELB. Building on their discussions at previous meetings, participants suggested that a number of possible alternatives might be worth consideration and agreed to return to this topic at future meetings. Several participants indicated that it would be desirable to hold periodic and systematic reviews in which the Committee assessed the strengths and weaknesses of its current monetary policy framework.

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) provided a summary of developments in domestic and global financial markets over the intermeeting period. Asset prices were influenced by a number of factors, including reports concerning trade tensions among the United States and its major trading partners, foreign monetary policy developments, and data pointing to strong growth momentum in the United States. Escalating trade tensions between China and the United States prompted notable market moves, particularly in foreign exchange markets. News on an agreement between the United States and the European Union to continue talks to resolve their trade disputes provided some support for global equity prices. The manager summarized recent policy announcements by the European Central Bank (ECB) and the Bank of Japan (BOJ). European yields moved lower following a revision of the ECB's forward guidance at its June meeting concerning asset purchases and the path of short-term rates. The Japanese yield curve steepened following reports that the BOJ may facilitate an increase in longer-term interest rates. At its July meeting, the BOJ announced a number of changes with respect to forward guidance on its policy outlook, including its intention to keep interest rates low for an extended period. Meanwhile, expectations concerning the path of monetary policy in the United States were little changed over the intermeeting period. Futures quotes indicated that market participants placed high odds on a further quarter-point firming in the federal funds rate at the September FOMC meeting. Responses to the Open Market Desk's Survey of Primary Dealers and Survey of Market Participants indicated that concerns about trade tensions had not affected the outlook for U.S. monetary policy.

The deputy manager followed with a discussion of money markets and open market operations. Money market rates had moved up in line with the 20 basis point increase in the interest on excess reserves (IOER) rate at the June meeting. Over the days following the June FOMC meeting, the effective federal funds rate (EFFR) moved up relative to the IOER rate, reportedly reflecting some special factors in the federal funds market, including increased demand for overnight funding by banks in connection with liquidity regulations and a pullback by Federal Home Loan Banks in their lending in the federal funds market. These developments proved temporary, and the EFFR subsequently returned to a level about 4 basis points below the IOER rate. The deputy manager also discussed the Desk's plans for small-value purchases of agency mortgage-backed securities (MBS). The staff projected that principal payments from the Federal Reserve's holdings of agency MBS would fall below the FOMC's monthly redemption cap beginning in October. If principal payments followed this anticipated trajectory, the Desk planned to begin conducting monthly small-value purchases of agency MBS at that time to maintain operational readiness. The deputy manager also discussed the Federal Housing Finance Agency's Single Security Initiative, under which Uniform Mortgage-Backed Securities (UMBS) would be issued by both Fannie Mae and Freddie Mac beginning in June 2019. The Desk planned to develop the capability to conduct UMBS transactions and, to more efficiently manage the portfolio, convert some portion of the SOMA's existing agency MBS holdings to UMBS where appropriate.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the July 31–August 1 meeting indicated that labor market conditions continued to strengthen in recent months and that real gross domestic product (GDP) rose at a strong rate in the first half of the year. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures

(PCE), remained near 2 percent in June. Survey-based measures of longer-run inflation expectations were little changed on balance.

Total nonfarm payroll employment expanded at a strong pace again in June. The national unemployment rate moved up to 4.0 percent, but the labor force participation rate rose by a similar amount, leaving the employment-to-population ratio unchanged from May. The three-month moving averages of the unemployment rates for African Americans, Asians, and Hispanics were each at or below the lows achieved during the previous expansion. The share of workers employed part time for economic reasons edged down to its lowest level since late 2007. The rate of private-sector job openings ticked down in May but remained elevated, while the rate of quits moved higher; initial claims for unemployment insurance benefits continued to be low through mid-July.

Recent readings showed that increases in hourly labor compensation stepped up modestly over the past year. The employment cost index for private workers increased 2.9 percent over the 12 months ending in June (compared with 2.4 percent over the same 12 months a year earlier), and average hourly earnings for all employees rose 2.7 percent over that period (compared with 2.5 percent over the same 12 months a year earlier). (Data on compensation per hour that reflected the comprehensive revision of the national income and product accounts by the Bureau of Economic Analysis (BEA) were not available at the time of the meeting.)

Total industrial production was little changed, on net, from April to June despite solid increases in the output of the mining sector. Over the first half of the year, manufacturing production rose at a modest pace. Automakers' assembly schedules suggested a sizable increase in light motor vehicle production in the third quarter, and broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, pointed to solid gains in factory output in the near term.

Real PCE rose briskly in the second quarter after a modest gain in the first quarter. Light motor vehicle sales maintained a robust pace in June, and indicators of vehicle demand were mixed but generally favorable. More broadly, recent readings on key factors that influence consumer spending—including gains in employment, real disposable personal income, and households' net worth—continued to be supportive of solid real PCE growth in the near term. Consumer sentiment, as measured by the University of Michigan Surveys of Consumers, remained upbeat in June and July.

Residential investment declined again in the second quarter. Starts for new single-family homes were little changed, on average, in May and June, but starts of multifamily units declined on net. The issuance of building permits for both types of housing was lower in the second quarter than in the first quarter, which suggested that starts might move lower in coming months. Sales of existing homes edged down in May and June, while sales of new homes moved up on balance.

Real private expenditures for business equipment and intellectual property rose at a moderate pace in the second quarter after a strong gain in the first quarter. Nominal shipments of nondefense capital goods excluding aircraft rose in May and June, and forward-looking indicators of business equipment spending—such as the backlog of unfilled capital goods orders, along with upbeat readings on business sentiment from national and regional surveys—continued to point to robust gains in equipment spending in the near term. Real business expenditures for nonresidential structures expanded at a solid pace again in the second quarter. However, the number of crude oil and natural gas rigs in operation—an indicator of business spending for structures in the drilling and mining sector—decreased slightly in recent weeks.

Total real government purchases rose at a faster rate in the second quarter than in the first. Real federal defense and nondefense purchases both increased in the second quarter. Real purchases by state and local governments also moved higher; state and local government payrolls and construction spending by those governments increased in the second quarter.

The nominal U.S. international trade deficit narrowed in May, as exports, led by agricultural products (particularly soybeans) and capital goods, increased strongly and imports increased only modestly. In June, however, advance data suggested that nominal goods exports fell and imports rose. All told, the BEA estimates that net exports made a positive contribution of about 1 percentage point to real GDP growth in the second quarter after a near-zero contribution in the first.

Total U.S. consumer prices, as measured by the PCE price index, increased 2.2 percent over the 12 months

ending in June. Core PCE price inflation, which excludes changes in consumer food and energy prices, was 1.9 percent over that same period. The consumer price index (CPI) rose 2.9 percent over the 12 months ending in June, while core CPI inflation was 2.3 percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Incoming data suggested that foreign economic activity expanded at a moderate pace in the second quarter. Monthly indicators pointed to a pickup in the pace of economic activity in most advanced foreign economies (AFEs) following a temporary dip in the first quarter. However, real GDP growth remained moderate in the euro area and appeared to have slowed notably in many emerging market economies (EMEs), especially Mexico, from an unusually strong start to the year. Foreign inflation fell in the second quarter, largely reflecting lower retail energy and food price inflation. Underlying inflation pressures in most foreign economies, especially in some AFEs, remained subdued.

Staff Review of the Financial Situation

Concerns regarding international trade policy weighed on market sentiment at times over the intermeeting period, prompting notable declines in some foreign equity markets but leaving only a modest imprint on domestic asset prices on net. Meanwhile, FOMC communications were viewed by market participants as slightly less accommodative than expected, and domestic economic data releases were seen as mixed. On balance, market-based measures of the expected path of the federal funds rate through the end of 2019 edged up slightly. Yields on medium- and longer-term nominal Treasury securities were little changed. The broad dollar index moved up. Financing conditions for nonfinancial businesses and households remained supportive of economic activity on balance.

Although the reactions of asset prices to FOMC communications during the period were generally modest, market participants reportedly interpreted the June FOMC statement and Summary of Economic Projections (SEP) as somewhat less accommodative than expected. The probability of an increase in the target range for the federal funds rate occurring at the August FOMC meeting, as implied by quotes on federal funds futures contracts, remained close to zero; the probability of an increase at the September FOMC meeting rose to about 90 percent by the end of the intermeeting period. Levels of the federal funds rate at the end of 2019 and 2020 implied by overnight index swap (OIS) rates edged up slightly on net.

The nominal Treasury yield curve flattened somewhat during the intermeeting period. Measures of inflation compensation derived from Treasury Inflation-Protected Securities were little changed on net.

Concerns about international trade disputes led to a slight decline in sentiment toward some domestic risky assets early in the period, but sentiment was buoyed later by positive corporate earnings releases for the second quarter. Broad U.S. equity price indexes displayed mixed results since the June FOMC meeting. Option-implied volatility on the S&P 500 index at the one-month horizon—the VIX—was little changed, on net, and remained only a bit above the very low levels that prevailed before early February. Over the intermeeting period, spreads of yields on nonfinancial corporate bonds over those of comparable-maturity Treasury securities were little changed, on net, for both investment- and speculative-grade firms. These spreads remained low by historical standards.

Short-term funding markets functioned smoothly, and spreads of unsecured rates over comparable-maturity OIS rates continued to narrow during the intermeeting period. After the June FOMC meeting, the EFFR rose around 20 basis points, in line with the increase in the IOER rate, and traded well within the target range throughout the period.

The dollar appreciated against most currencies, with the notable exception of the Mexican peso, which appreciated on some easing of investor concerns around prospective economic policies of the newly elected government. Escalating trade tensions contributed to an unusually sharp depreciation of the Chinese renminbi. Trade tensions also drove foreign equity prices lower, but there was a modest reversal late in the intermeeting period following an agreement between the United States and the European Union to hold off on tariff increases pending further negotiations. On net, equity prices were little changed in the AFEs, while they declined in the EMEs, led largely by a steep drop in China. Outflows from dedicated emerging market funds slowed, and EME sovereign bond spreads narrowed slightly.

On balance, longer-term bond yields in the AFEs declined slightly over the intermeeting period. ECB communications following its June meeting were perceived as more accommodative than expected and led to a noticeable decline in market-based measures of policy rate expectations. The BOJ issued revised forward guidance at its July meeting indicating that it intends to maintain current low short- and long-term interest rates for an extended period. Finally, the Bank of England held its policy rate steady at its June meeting, but U.K. yields declined slightly amid ongoing Brexit-related concerns as well as lower-than-expected inflation data.

Financing conditions for nonfinancial corporations continued to be favorable over the intermeeting period. Gross issuance of corporate bonds and institutional leveraged loans picked up in May and stayed strong in June, with the rise in corporate bond issuance concentrated in the investment-grade segment of the market. Meanwhile, the volume of equity issuance remained robust.

Growth of outstanding commercial and industrial (C&I) loans held by banks was strong, on average, in June. Respondents to the June Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS) reported that their institutions had eased standards and terms on C&I loans in the second quarter, most often citing increased competition from other lenders and increased ease of transacting in the secondary market as the reasons for doing so. Although some signs of deterioration emerged over the intermeeting period, the credit quality of nonfinancial corporations continued to be solid overall. The ratio of aggregate debt to assets in this sector stayed near multidecade highs. Gross issuance of municipal bonds in June was robust, continuing to increase from its slow start to the year.

Financing conditions for commercial real estate (CRE) remained accommodative. CRE loans at banks maintained solid growth over the past several quarters, with growth shared across all three major CRE loan categories. On a weighted basis across all major CRE loan categories, respondents to the June SLOOS reported that standards and demand for CRE loans continued to be unchanged, on the whole, over the second quarter. Interest rate spreads on commercial mortgage-backed securities (CMBS) were little changed over the intermeeting period and remained near their post-crisis lows, while issuance of non-agency and agency CMBS maintained a solid pace in the second quarter.

Most borrowers in the residential mortgage market continued to face accommodative financing conditions. For borrowers with low credit scores, credit conditions continued to ease but stayed tight overall. Growth in home-purchase mortgages slowed a bit, and refinancing activity continued to be muted over the past year, with both developments partly reflecting the rise in mortgage rates earlier this year. Relative to the June FOMC meeting, interest rates on 30-year conforming mortgages and yields on agency MBS were little changed.

Financing conditions in consumer credit markets were little changed so far this year, on balance, and remained largely supportive of growth in household spending. Growth in consumer credit picked up in May from the more moderate pace seen earlier this year. Despite rising interest rates, financing rates remained low compared with historical levels, and recent household surveys indicated that consumers' assessments of buying conditions for autos and other expensive durable goods were generally positive. Credit supply conditions also continued to be largely supportive of spending. A moderate net fraction of July SLOOS respondents reported easing standards on auto loans over the previous three months after several quarters in which banks had reported tightening standards. However, a significant net fraction of banks reportedly continued to tighten standards for credit card accounts.

The staff provided its latest report on potential risks to financial stability; the report again characterized the financial vulnerabilities of the U.S. financial system as moderate on balance. This overall assessment incorporated the staff's judgment that vulnerabilities associated with asset valuation pressures continued to be elevated, with no major asset class exhibiting valuations below their historical midpoints. Additionally, the staff judged vulnerabilities from financial-sector leverage and maturity and liquidity transformation to be low, vulnerabilities from household leverage as being in the low-to-moderate range, and vulnerabilities from leverage in the nonfinancial business sector as elevated.

Staff Economic Outlook

In the U.S. economic forecast prepared for this FOMC meeting, the staff continued to project that the economy would expand at an above-trend pace. Real GDP was forecast to increase in the second half of this year at a pace that was just a little slower than in the first half of the year. Over the 2018–20 period,

output was projected to rise further above the staff's estimate of potential output, and the unemployment rate was projected to decline further below the staff's estimate of the longer-run natural rate. However, with labor market conditions already tight, the staff continued to assume that the projected decline in the unemployment rate will be attenuated by a greater-than-usual cyclical improvement in the labor force participation rate. Relative to the forecast prepared for the June meeting, the projection for real GDP growth was revised up a little, primarily in response to stronger incoming data on household spending. In addition, the staff continued to anticipate that supply constraints might restrain output growth somewhat in the medium term. The unemployment rate was projected to be a little higher over the next few quarters than in the previous forecast, but it was essentially unrevised thereafter.

The staff forecast for total PCE price inflation in 2018 was revised down a little, mainly because of a slower-than-expected increase in consumer energy prices in the second quarter and a downward revision to the forecast for energy price inflation in the second half of this year. The staff continued to project that total PCE inflation would remain near the Committee's 2 percent objective over the medium term and that core PCE price inflation would run slightly higher than total inflation over that period because of a projected decline in consumer energy prices in 2019 and 2020.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The staff saw the risks to the forecasts for real GDP growth and the unemployment rate as balanced. On the upside, household spending and business investment could expand faster over the next few years than the staff projected, supported in part by the tax cuts enacted last year. On the downside, trade policies could move in a direction that would have significant negative effects on economic growth. Another possibility was that recent fiscal policy actions could produce less of a boost to aggregate demand than assumed in the baseline projection, as the current tightness of resource utilization may result in smaller multiplier effects than would be typical at other points in the business cycle. Risks to the inflation projection also were seen as balanced. The upside risk that inflation could increase more than expected in an economy that was projected to move further above its potential was counterbalanced by the downside risk that longer-term inflation expectations may be lower than was assumed in the staff forecast.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants agreed that information received since the FOMC met in June indicated that the labor market had continued to strengthen and that economic activity had been rising at a strong rate. Job gains had been strong, on average, in recent months, and the unemployment rate had stayed low. Household spending and business fixed investment had grown strongly. On a 12-month basis, both overall inflation and core inflation, which excludes changes in food and energy prices, had remained near 2 percent. Indicators of longer-term inflation expectations were little changed, on balance.

Participants generally noted that economic growth in the second quarter had been strong; incoming data indicated considerable momentum in spending by households and businesses. Several participants stressed the possibility that real GDP growth in the second quarter may have been boosted by transitory factors, including an outsized increase in U.S. exports. For the second half of the year, participants generally expected that GDP growth would likely slow from its second-quarter rate but would still exceed that of potential output. Participants noted a number of favorable economic factors that were supporting above-trend GDP growth; these included a strong labor market, stimulative federal tax and spending policies, accommodative financial conditions, and continued high levels of household and business confidence. Participants generally viewed the risks to the economic outlook as roughly balanced.

Reports from business contacts confirmed a robust pace of expansion in several sectors of the economy, including energy, manufacturing, and services. Crude oil production was reported as having grown rapidly. In contrast to other sectors, residential construction activity appeared to have softened somewhat, possibly reflecting declining home affordability, higher mortgage rates, scarcity of available lots in certain cities, and delays in building approvals. However, a couple of participants reported vibrancy in industrial and multifamily construction activity. Business contacts in various sectors had cited labor shortages and other supply constraints as impediments to production. Furthermore, recent tariff increases had put upward pressure on input prices. Business contacts in

a few Districts reported that uncertainty regarding trade policy had led to some reductions or delays in their investment spending. Nonetheless, a number of participants indicated that most businesses concerned about trade disputes had not yet cut back their capital expenditures or hiring but might do so if trade tensions were not resolved soon. Several participants observed that the agricultural sector had been adversely affected by significant declines in crop and livestock prices over the intermeeting period. A couple of participants noted that this development likely partly flowed from trade tensions.

Participants agreed that labor market conditions had strengthened further over the intermeeting period. Payrolls had grown strongly in June, and labor market tightness was reflected in recent readings on rates of private-sector job openings and quits and on job-to-job switching by workers. Although the unemployment rate increased slightly in June, this increase was accompanied by an uptick in the labor force participation rate.

Many participants commented on the fact that measures of aggregate nominal wage growth had so far picked up only modestly. Among the factors cited as containing the pickup in wage growth were low trend productivity growth, lags in the response of nominal wage growth to resource pressures, and improvements in the terms of employment that were not recorded in the wage data. Alternatively, the recent pace of nominal wage growth might indicate continued slack in the labor market. However, some participants expected a pickup in aggregate nominal wage growth to occur before long, with a number of participants reporting that wage pressures in their Districts were rising or that firms now exhibited greater willingness to grant wage increases.

Participants noted that both overall inflation and inflation for items other than food and energy remained near 2 percent on a 12-month basis. A few participants expressed increased confidence that the recent return of inflation to near the Committee's longer-term 2 percent objective would be sustained. Several participants commented that increases in the prices of particular goods, such as those induced by the tariff increases, would likely be one source of short-term upward pressure on the inflation rate, although offsetting influences—including the negative effects that trade developments were having on agricultural prices—were also noted. Reports from several Districts suggested that firms had greater scope than in the recent past to raise prices in response to strong demand or increases in input costs, including those associated with tariff increases and recent rises in fuel and freight expenses. Many participants anticipated that, over the medium term, high levels of resource utilization and stable inflation expectations would keep inflation near 2 percent. However, some participants observed that inflation in recent years had shown only a weak connection to measures of resource pressures or indicated that they would like to see further evidence that measures of underlying inflation or readings on inflation expectations were on course to attain levels consistent with sustained achievement of the Committee's symmetric 2 percent inflation objective. Although a few participants observed that the trimmed mean measure of inflation calculated by the Federal Reserve Bank of Dallas was still below 2 percent, a couple noted forecasts that this measure would reach 2 percent by the end of the year. Some participants raised the concern that a prolonged period in which the economy operated beyond potential could give rise to inflationary pressures or to financial imbalances that could eventually trigger an economic downturn.

Participants commented on a number of risks and uncertainties associated with their outlook for economic activity, the labor market, and inflation over the medium term. They generally continued to see fiscal policy and the strengthening of the labor market as supportive of economic growth in the near term. Some noted larger or more persistent positive effects of these factors as an upside risk to the outlook. A few participants indicated, however, that a faster-than-expected fading of the fiscal impetus or a greater-than-anticipated subsequent fiscal tightening constituted a downside risk. In addition, all participants pointed to ongoing trade disagreements and proposed trade measures as an important source of uncertainty and risks. Participants observed that if a large-scale and prolonged dispute over trade policies developed, there would likely be adverse effects on business sentiment, investment spending, and employment. Moreover, wide-ranging tariff increases would also reduce the purchasing power of U.S. households. Further negative effects in such a scenario could include reductions in productivity and disruptions of supply chains. Other downside risks cited included the possibility of a significant weakening in the housing sector, a sharp increase in oil prices, or a severe slowdown in EMEs.

Participants remarked on the extent to which financial conditions remained supportive of economic expansion. Over the intermeeting period, only a small

change in overall financial conditions occurred, with modest movements on net in equity prices and in the foreign exchange value of the dollar. The yield curve had flattened further over the intermeeting period.

Participants who commented on financial stability noted that asset valuations remained elevated and corporate borrowing terms remained easy. They also noted that regulatory changes introduced in the past decade had helped to reduce the susceptibility of the financial sector to runs and to strengthen the capital positions of banks and other financial institutions. In discussing the capital positions of large banks, a few participants emphasized that financial stability risks could be reduced if these institutions further boosted their capital cushions while their profits are strong and the economic outlook is favorable; arguments for and against the activation of the countercyclical capital buffer as a means of further strengthening the capital positions of large banks were discussed in this context.

In their consideration of monetary policy, participants discussed the implications of recent economic and financial developments for the economic outlook and the associated risks to that outlook. Participants remarked on recent above-trend growth in real GDP and on indicators of resource utilization. Some commented that consumer spending had been quite strong in the second quarter, confirming their impressions that the first-quarter weakness had been temporary. Several participants also pointed to the continued strength in business fixed investment, although the persistent weakness and the risk of a further slowdown in residential investment were also noted. A few participants suggested there could still be some labor market slack, citing recent increases in labor force participation rates relative to prevailing demographically driven downward trends; the participation rate of prime-age men, in particular, was still below its previous business cycle peak. Other participants judged that labor market conditions were tight, pointing to other data, including job quits and openings rates, and anecdotes from contacts.

Participants generally characterized inflation as running close to the Committee's objective of 2 percent, and most of those who expressed a view indicated that recent readings on inflation had come in close to their expectations. Consistent with their SEP submissions in June, several participants remarked that inflation, measured on a 12-month basis, was likely to move modestly above the Committee's objective for a time. Others pointed to some indicators suggesting that long-term inflation expectations could be below levels consistent with the Committee's 2 percent inflation objective.

Participants generally judged that the current stance of monetary policy remained accommodative, supporting strong labor market conditions and inflation of around 2 percent. Participants agreed that it would be appropriate for the Committee to leave the target range for the federal funds rate unchanged at this meeting.

With regard to the medium term, various participants indicated that information gathered since the Committee met in June had not significantly altered their outlook for the U.S. economy. Many participants suggested that if incoming data continued to support their current economic outlook, it would likely soon be appropriate to take another step in removing policy accommodation. Participants generally expected that further gradual increases in the target range for the federal funds rate would be consistent with a sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Many participants reiterated that the actual path for the federal funds rate would ultimately depend on the incoming data and on how those data affect the economic outlook.

Participants discussed the economic forces and risks they saw as providing the rationale for gradual increases in the federal funds rate as well as scenarios that might cause them to depart from this expected path. Among other factors, they pointed to uncertainty about the appropriate level of the federal funds rate over the longer run and to constraints on the provision of monetary accommodation during ELB episodes as reasons for proceeding gradually in the removal of accommodation. Some participants noted that stronger underlying momentum in the economy was an upside risk; most expressed the view that an escalation in international trade disputes was a potentially consequential downside risk for real activity. Some participants suggested that, in the event of a major escalation in trade disputes, the complex nature of trade issues, including the entire range of their effects on output and inflation, presented a challenge in determining the appropriate monetary policy response.

Participants also discussed the possible implications of a flattening in the term structure of market interest rates. Several participants cited statistical evidence

for the United States that inversions of the yield curve have often preceded recessions. They suggested that policymakers should pay close attention to the slope of the yield curve in assessing the economic and policy outlook. Other participants emphasized that inferring economic causality from statistical correlations was not appropriate. A number of global factors were seen as contributing to downward pressure on term premiums, including central bank asset purchase programs and the strong worldwide demand for safe assets. In such an environment, an inversion of the yield curve might not have the significance that the historical record would suggest; the signal to be taken from the yield curve needed to be considered in the context of other economic and financial indicators.

A couple of participants commented on issues related to the operating framework for the implementation of monetary policy, including, among other things, the implications of changes in financial market regulations for the demand for reserves and for the size and composition of the Federal Reserve's balance sheet. These participants judged that it would be important for the Committee to resume its discussion of operating frameworks before too long. The Chairman suggested that the Committee would likely resume a discussion of operating frameworks in the fall.

Many participants noted that it would likely be appropriate in the not-too-distant future to revise the Committee's characterization of the stance of monetary policy in its postmeeting statement. They agreed that the statement's language that "the stance of monetary policy remains accommodative" would, at some point fairly soon, no longer be appropriate. Participants noted that the federal funds rate was moving closer to the range of estimates of its neutral level. A number of participants emphasized the considerable uncertainty in estimates of the neutral rate of interest, stemming from sources such as fiscal policy and large-scale asset purchase programs. Against this background, continuing to provide an explicit assessment of the federal funds rate relative to its neutral level could convey a false sense of precision.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the FOMC met in June indicated that the labor market had continued to strengthen and that economic activity had been rising at a strong rate. Job gains had been strong, on average, in recent months, and the unemployment rate had stayed low. Household spending and business fixed investment had grown strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy remained near 2 percent. Indicators of longer-term inflation expectations were little changed, on balance.

Policymakers viewed the recent data as indicating that the outlook for the economy was evolving about as they had expected. Consequently, members expected that further gradual increases in the target range for the federal funds rate would be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Members continued to judge that the risks to the economic outlook appeared roughly balanced.

After assessing the incoming data, current conditions, and the outlook for economic activity, the labor market, and inflation, members agreed to maintain the target range for the federal funds rate at 1¾ to 2 percent. They noted that the stance of monetary policy remained accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend on their assessments of realized and expected economic conditions relative to the objectives of maximum employment and 2 percent inflation. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective August 2, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range

of 1¾ to 2 percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 1.75 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.

The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $24 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $16 billion. Small deviations from these amounts for operational reasons are acceptable.

The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

"Information received since the Federal Open Market Committee met in June indicates that the labor market has continued to strengthen and that economic activity has been rising at a strong rate. Job gains have been strong, on average, in recent months, and the unemployment rate has stayed low. Household spending and business fixed investment have grown strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy remain near 2 percent. Indicators of longer-term inflation expectations are little changed, on balance.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that further gradual increases in the target range for the federal funds rate will be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Risks to the economic outlook appear roughly balanced.

In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 1¾ to 2 percent. The stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a sustained return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its maximum employment objective and its symmetric 2 percent inflation objective. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments."

Voting for this action: Jerome H. Powell, John C. Williams, Thomas I. Barkin, Raphael W. Bostic, Lael Brainard, Esther L. George, Loretta J. Mester, and Randal K. Quarles.

Voting against this action: None.

Ms. George voted as alternate member at this meeting.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors voted unanimously to leave the interest rates on required and excess reserve balances unchanged at 1.95 percent and voted unanimously to approve establishment of the primary credit rate (discount rate) at the existing level of 2½ percent, effective August 2, 2018.[6]

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, September 25–26, 2018. The meeting adjourned at 9:45 a.m. on August 1, 2018.

[6] The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Notation Vote

By notation vote completed on July 3, 2018, the Committee unanimously approved the minutes of the Committee meeting held on June 12–13, 2018.

James A. Clouse
Secretary

Meeting Held on September 25–26, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, September 25, 2018, at 2:00 p.m. and continued on Wednesday, September 26, 2018, at 9:00 a.m.[1]

Present

Jerome H. Powell
Chairman

John C. Williams
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Lael Brainard

Richard H. Clarida

Loretta J. Mester

Randal K. Quarles

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

Mark A. Gould
First Vice President, Federal Reserve Bank of San Francisco

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

David Altig, Kartik B. Athreya, Thomas A. Connors, Mary C. Daly, David E. Lebow, Trevor A. Reeve, William Wascher, and Beth Anne Wilson
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Ann E. Misback
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Jennifer L. Burns
Deputy Director, Division of Supervision and Regulation, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Michael T. Kiley
Deputy Director, Division of Financial Stability, Board of Governors

Jon Faust
Senior Special Adviser to the Chairman, Office of Board Members, Board of Governors

Antulio N. Bomfim
Special Adviser to the Chairman, Office of Board Members, Board of Governors

Joseph W. Gruber and John M. Roberts
Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

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[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended through the discussion of developments in financial markets and open market operations.

Eric M. Engen, Joshua Gallin, and Michael G. Palumbo
Senior Associate Directors, Division of Research and Statistics, Board of Governors

Christopher J. Erceg
Senior Associate Director, Division of International Finance, Board of Governors

Ellen E. Meade, Edward Nelson, and Joyce K. Zickler[3]
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jeremy B. Rudd
Senior Adviser, Division of Research and Statistics, Board of Governors

David López-Salido
Associate Director, Division of Monetary Affairs, Board of Governors

Stacey Tevlin
Associate Director, Division of Research and Statistics, Board of Governors

Eric C. Engstrom
Deputy Associate Director, Division of Monetary Affairs,
and
Adviser, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[4]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Jeffrey Huther
Section Chief, Division of Monetary Affairs, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Benjamin K. Johannsen
Senior Economist, Division of Monetary Affairs, Board of Governors

Achilles Sangster II
Information Management Analyst, Division of Monetary Affairs, Board of Governors

Gregory L. Stefani
First Vice President, Federal Reserve Bank of Cleveland

Michael Dotsey and Geoffrey Tootell
Executive Vice Presidents, Federal Reserve Banks of Philadelphia and Boston, respectively

Edward S. Knotek II, Spencer Krane, and Mark L. J. Wright
Senior Vice Presidents, Federal Reserve Banks of Cleveland, Chicago, and Minneapolis, respectively

Jonathan P. McCarthy and Jonathan L. Willis
Vice Presidents, Federal Reserve Banks of New York and Kansas City, respectively

William Dupor
Assistant Vice President, Federal Reserve Bank of St. Louis

Jim Dolmas
Senior Research Economist, Federal Reserve Bank of Dallas

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) discussed U.S. and global financial developments. In global markets, strains in emerging market economies (EMEs) contributed to volatility in currency and equity markets over the period. In addition, concerns about trade tensions between the United States and China were the focus of a great deal of attention among market participants. Such concerns led the Shanghai Composite index to drop as much as 8 percent at one point over the intermeeting period before recovering somewhat. The renminbi, however, was relatively stable, reportedly in part because investors believed that Chinese authorities were prepared to take measures to counter significant renminbi depreciation.

Regarding domestic financial markets, the manager noted that U.S. equity markets had posted strong gains, spurred by optimism regarding the U.S. economic outlook and rising corporate earnings. Longer-term Treasury yields moved higher, and market-based measures of the expected path of the funds rate edged up. According to the Open Market Desk's Survey of Primary Dealers and Survey of Market Participants, a 25 basis point increase in the target range for the federal funds rate at the September meeting was widely expected; moreover, investors appeared to be placing high odds on a further quarter-point policy firming at the December meeting. In U.S. money markets, the spread between the three-month London interbank offered rate and three-month overnight index swap (OIS) rates contin-

3 Attended opening remarks for Tuesday session only.

4 Attended Tuesday session only.

ued to narrow. The widening in that spread earlier in the year appeared to reflect an especially rapid run-up in Treasury bill supply. Treasury bill supply remained elevated and reportedly continued to contribute to upward pressure on overnight repurchase agreement (repo) rates. The relatively high level of repo rates was associated with continued very modest take-up in the Federal Reserve's overnight reverse repurchase agreement (ON RRP) operations. Elevated repo rates may also have contributed to the relatively tight spread between the interest on excess reserves (IOER) rate and the effective federal funds rate. That spread stood at 3 basis points over much of the period and seemed likely to narrow to 2 basis points in the near future. As yet, there were no signs that the upward pressure on the federal funds rate relative to the IOER rate was due to scarcity of aggregate reserves in the banking system. The level of reserves in the banking system temporarily dipped sharply in mid-September in connection with a sizable inflow of tax receipts to the Treasury's account at the Federal Reserve; however, that reduction in reserves in the banking system did not seem to have any effect on the federal funds market or the effective federal funds rate.

In reviewing Federal Reserve operations, the manager noted that market reaction to the ongoing reduction in the System's holdings of Treasury and agency securities had been muted to date. With the increase in the caps on redemptions to be implemented beginning in October, reinvestment of Treasury securities would occur almost exclusively in the middle month of each quarter in connection with the Treasury's mid-quarter refunding auctions. Under the baseline path for interest rates, the Federal Reserve's reinvestments of principal payments on agency mortgage-backed securities would likely fall to zero beginning in October; however, prepayments could rise somewhat above the redemption cap in some months in the future given the uncertainties surrounding prepayment projections.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the September 25–26 meeting indicated that labor market conditions continued to strengthen in recent months and that real gross domestic product (GDP) appeared to be rising at a strong rate in the third quarter, similar to its pace in the first half of the year. The flooding and damage from Hurricane Florence, which made landfall on September 14, seemed likely to have a modest, transitory effect on national economic growth in the second half of the year. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), remained near 2 percent in July. Survey-based measures of longer-run inflation expectations were little changed on balance.

Total nonfarm payroll employment increased at a strong pace, on average, in July and August. The national unemployment rate decreased to 3.9 percent in July and remained at that level in August, while the labor force participation rate and the employment-to-population ratio moved down somewhat, on balance, over those two months. The unemployment rates for African Americans, Asians, and Hispanics in August were below their levels at the end of the previous expansion. The share of workers employed part time for economic reasons declined further to below its level in late 2007. The rate of private-sector job openings continued to be elevated in June and July, while the rate of quits moved higher on balance; initial claims for unemployment insurance benefits were at a historically low level in mid-September. Total labor compensation per hour in the nonfarm business sector increased 3.3 percent over the four quarters ending in the second quarter, and average hourly earnings for all employees rose 2.9 percent over the 12 months ending in August.

Industrial production expanded at a solid pace in July and August. Automakers' assembly schedules suggested that light motor vehicle production would be roughly flat in the fourth quarter, although broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, pointed to further solid gains in factory output in the near term.

Real PCE appeared to be rising strongly in the third quarter. Retail sales increased somewhat in August, and the data for July were revised up to show a sizable gain. However, the rate of light motor vehicle sales moved down in July and August from the robust pace in the second quarter. The staff's preliminary assessment was that the consequences of Hurricane Florence would have a slight negative effect on aggregate real PCE growth in the third quarter but that spending would bounce back in the fourth quarter.

More broadly, recent readings on key factors that influence consumer spending—including gains in employment, real disposable personal income, and households' net worth—continued to be supportive of solid real PCE growth in the near term. Moreover, consumer sentiment, as measured by the University of Michigan Surveys of Consumers, remained upbeat in August and early September.

Real residential investment looked to be declining further in the third quarter. Starts for new single-family homes and multifamily units were, on average, below their second-quarter rates in July and August. The issuance of building permits for both types of housing stepped down, on net, over those two months, which suggested that starts might move lower in coming months. Sales of both new and existing homes declined somewhat in July, and existing home sales were flat in August.

Growth in real private expenditures for business equipment and intellectual property appeared to be moderating a little in the third quarter following strong gains in expenditures in the first half of the year. Nominal shipments of nondefense capital goods excluding aircraft rose briskly in July, although spending for transportation equipment investment moved down in recent months. Forward-looking indicators of business equipment spending—such as increases in new and unfilled capital goods orders, along with upbeat readings on business sentiment from national and regional surveys—pointed to robust gains in equipment spending in the near term. Nominal business expenditures for nonresidential structures outside of the drilling and mining sector declined in July, and the number of crude oil and natural gas rigs in operation—an indicator of business spending for structures in the drilling and mining sector—held about steady in recent weeks.

Total real government purchases looked to be rising further in the third quarter. Nominal defense spending in July and August was consistent with continued increases in real federal purchases. Real expenditures by state and local governments appeared to be roughly flat, as state and local government payrolls decreased slightly in July and August, while nominal construction spending by these governments rose modestly in July.

The nominal U.S. international trade deficit widened in June and July, with declining exports and rising imports. The decline in exports largely reflected lower exports of capital goods, while greater imports of industrial supplies boosted overall imports. The available data suggested that the change in net exports would be a notable drag on real GDP growth in the third quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased 2.3 percent over the 12 months ending in July. Core PCE price inflation, which excludes changes in consumer food and energy prices, was 2.0 percent over that same period. The consumer price index (CPI) rose 2.7 percent over the 12 months ending in August, while core CPI inflation was 2.2 percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey, the Survey of Professional Forecasters, and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Foreign economic growth slowed in the second quarter, as a pickup in growth for the advanced foreign economies (AFEs) was more than offset by slower growth in the EMEs. Incoming indicators for the AFEs pointed to some moderation in the pace of growth in the third quarter, especially for Canada and Japan, while indicators for the EMEs suggested a pickup in many countries from the unusually slow pace of the second quarter. Foreign inflation had risen a bit recently, boosted by higher oil prices and, in the EMEs, higher food prices and recent currency depreciation.

Staff Review of the Financial Situation

Nominal Treasury yields increased over the intermeeting period, as market reactions to domestic economic data releases that were, on balance, slightly stronger than expected appeared to outweigh ongoing concerns about trade policy and negative developments in some EMEs. FOMC communications over the period were largely in line with expectations and elicited little market reaction. Domestic stock prices rose, buoyed in part by positive news about corporate earnings, while foreign equity indexes declined and the broad dollar index moved up. Financing conditions for nonfinancial businesses and households remained supportive of economic activity on balance.

Global financial markets were volatile during the intermeeting period amid significant stress in some EMEs, ongoing focus on Brexit and on fiscal policy in Italy, and continued trade tensions. On balance, the dollar was little changed against AFE currencies

and appreciated against EME currencies, as financial pressures on some EMEs weighed on broader risk sentiment. Turkey and Argentina experienced significant stress, and other countries with similar macroeconomic vulnerabilities also came under pressure. There were small outflows from dedicated emerging market funds, and EME sovereign bond spreads widened. Trade tensions weighed on foreign equity prices, as the United States continued its trade negotiations with Canada and placed additional tariffs on Chinese products.

FOMC communications elicited limited price reactions in financial markets over the intermeeting period, and market-implied measures of monetary policy expectations were little changed. The probability of an increase in the target range for the federal funds rate occurring at the September FOMC meeting, as implied by quotes on the federal funds futures contracts, increased to near certainty. The market-implied probability of an additional rate increase at the December FOMC meeting rose to about 75 percent. The market-implied path for the federal funds rate beyond 2018 increased a touch.

Evolving trade-related risks and other international developments reportedly weighed somewhat on market sentiment. However, domestic economic data releases came in a bit above market expectations, on net, with the stronger-than-expected average hourly earnings in the August employment report notably boosting Treasury yields. Nominal Treasury yields moved up over the intermeeting period, with the 10-year yield rising above 3 percent. Measures of inflation compensation derived from Treasury Inflation-Protected Securities over the next 5 years ticked up and were little changed 5 to 10 years ahead.

Broad U.S. equity price indexes increased about 4 percent since the August FOMC meeting, as positive news about corporate earnings and the domestic economy outweighed negative international developments. Stock prices increased for many sectors in the S&P 500 index, as the second-quarter earnings reports for firms that reported later in the earnings cycle came in strong. However, concerns about economic prospects abroad—particularly with respect to trade policy and China—appeared to weigh on stocks in the energy and basic materials sectors, which declined. Option-implied volatility on the S&P 500 index at the one-month horizon—the VIX—moved down but remained somewhat above the extremely low levels seen in late 2017. Spreads of investment- and speculative-grade corporate bond yields over comparable-maturity Treasury yields narrowed a bit on net.

Short-term funding markets functioned smoothly over the intermeeting period. An elevated level of Treasury bills outstanding, following heavy issuance this summer, continued to put upward pressure on money market rates and reduced the attractiveness of the Federal Reserve's ON RRP facility. Take-up at the facility averaged $2.9 billion per day over the intermeeting period. Spreads of unsecured funding rates over comparable-maturity OIS rates continued to retrace the rise in spreads recorded earlier this year.

On balance, financing conditions for large nonfinancial firms remained accommodative in recent months. Demand for corporate borrowing appeared to have declined, in part because of strong earnings, rising interest rates, and seasonal factors. In July and August, gross issuance of corporate bonds was relatively weak, while commercial and industrial loan growth moderated. Meanwhile, the pace of equity issuance was solid in July but fell in August, reflecting seasonal factors. Financing conditions for small businesses remained favorable, and survey-based measures of credit demand among small business owners showed signs of strengthening, although demand was still weak relative to pre-crisis levels. Gross issuance of municipal bonds continued to be solid.

In the commercial real estate (CRE) sector, financing conditions also remained accommodative. Although CRE loan growth at banks moderated in July and August, issuance of commercial mortgage-backed securities (CMBS) was robust. CMBS spreads were little changed over the intermeeting period and stayed near their post-crisis lows.

Residential mortgage financing conditions remained accommodative on balance. For borrowers with low credit scores, however, conditions were still somewhat tight despite continued easing in credit availability. Refinancing activity continued to be muted in recent months, and the growth in purchase mortgage originations slowed a bit relative to year-earlier levels, in part reflecting the notable increase in mortgage rates earlier this year.

On net, financing conditions in consumer credit markets were little changed in recent months and remained largely supportive of growth in household spending. However, the supply of credit to consum-

ers with subprime credit scores remained tight. More broadly, although interest rates for credit cards and auto loans continued to rise, consumer credit expanded at a solid pace.

Staff Economic Outlook

In the U.S. economic forecast prepared for the September FOMC meeting, real GDP was projected to increase in the second half of this year at a rate that was just a little slower than in the first half of the year. The staff's preliminary assessment was that the effects of Hurricane Florence would lead to a slight reduction in real GDP growth in the third quarter and a small addition to growth in the fourth quarter as economic activity returned to more normal levels and some disrupted activity was made up. Over the 2018–20 period, output was projected to rise at a rate above or at the staff's estimate of potential growth and then slow to a pace below it in 2021. The unemployment rate was projected to decline further below the staff's estimate of its longer-run natural rate but to bottom out in 2020 and begin to edge up in 2021. Relative to the forecast prepared for the previous meeting, the projection for real GDP growth this year was revised up a little, primarily in response to stronger-than-expected incoming data on household spending and business investment. The projection for the medium term was not materially changed, in part because the recently enacted tariffs on Chinese goods and the retaliatory actions of China were judged to have only a small net effect on U.S. real GDP growth over the next few years. In addition, the staff continued to anticipate that supply constraints might restrain output growth somewhat in the medium term. The unemployment rate was projected to be a little lower over the medium term than in the previous forecast, partly in response to the staff's assessment that the natural rate of unemployment was a bit lower than previously assumed. With labor market conditions already tight, the staff continued to assume that projected employment gains would manifest in smaller-than-usual downward pressure on the unemployment rate and in larger-than-usual upward pressure on the labor force participation rate.

The staff forecast for total PCE price inflation in 2018 was revised up slightly, mainly because of a faster-than-expected increase in consumer energy prices in the second half. The staff continued to project that total PCE inflation would remain near the Committee's 2 percent objective over the medium term and that core PCE price inflation would run slightly higher than total inflation over that period because of a projected decline in consumer energy prices in 2019 through 2021.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The staff also saw the risks to the forecasts for real GDP growth and the unemployment rate as balanced. On the upside, household spending and business investment could expand faster than the staff projected, supported in part by the tax cuts enacted last year. On the downside, trade policies and foreign economic developments could move in directions that have significant negative effects on U.S. economic growth. Risks to the inflation projection also were seen as balanced. The upside risk that inflation could increase more than expected in an economy that was projected to move further above its potential was counterbalanced by the downside risk that longer-term inflation expectations may be lower than was assumed in the staff forecast.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real GDP growth, the unemployment rate, and inflation for each year from 2018 through 2021 and over the longer run, based on their individual assessments of the appropriate path for the federal funds rate. The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections are described in the Summary of Economic Projections (SEP), which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, meeting participants agreed that information received since the FOMC met in August indicated that the labor market continued to strengthen and that economic activity rose at a strong rate. Job gains were strong, on average, in recent months, and the unemployment rate stayed low. Recent data suggested that household spending and business fixed investment grew strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy remained near 2 percent. Indicators of longer-term inflation expectations were little changed on balance.

Meeting participants noted that a number of communities suffered devastating losses associated with Hurricane Florence. Despite the magnitude of the storm-related destruction, participants expected the imprint on the level of overall economic activity at the national level to be relatively modest, consistent with the experience following several previous major storms.

Based on recent readings on spending, employment, and inflation, almost all participants saw little change in their assessment of the economic outlook, although a few of them judged that recent data pointed to a pace of economic activity that was stronger than they had expected earlier this year. Participants noted a number of favorable economic factors that were supporting above-trend GDP growth; these included strong labor market conditions, stimulative federal tax and spending policies, accommodative financial conditions, solid household balance sheets, and continued high levels of household and business confidence. A number of participants observed that the stimulative effects of the changes in fiscal policy would likely diminish over the next several years. A couple of participants commented that recent strong growth in GDP may also be due in part to increases in the growth rate of the economy's productive capacity.

In their discussion of the household sector, participants generally characterized consumption growth as strong, and they judged that robust increases in disposable income, high levels of consumer confidence, and solid household balance sheets had contributed to the strength in spending. Several participants noted that the household saving rate had been revised up significantly in the most recent estimates published by the Bureau of Economic Activity. A few of those participants remarked that the upward revision in the saving rate could be viewed as evidence of the strength of the financial position of the household sector and could be a factor that would further support solid expansion of consumption spending. However, a couple of participants noted that the higher saving rate may not be a precursor to higher future consumption growth. For example, the higher saving rate may indicate some greater caution on the part of consumers, greater inequality of income and wealth—which would imply a lower aggregate propensity to spend—or changing consumer behavior in a low interest rate environment. With regard to residential investment, a few participants noted weak residential construction activity at the national or District level, which was attributed in part to higher interest rates or supply constraints.

Participants noted that business fixed investment had grown strongly so far this year. A few commented that recent changes in federal tax policy had likely bolstered investment spending. Contacts in most sectors remained optimistic about their business prospects, and surveys of manufacturing activity were broadly favorable. Despite this optimism, a number of contacts cited factors that were causing them to forego production or investment opportunities in some cases, including labor shortages and uncertainty regarding trade policy. In particular, tariffs on aluminum and steel were cited as reducing new investment in the energy sector. Contacts also suggested that firms were attempting to diversify the set of countries with which they trade—both imports and exports—as a result of uncertainty over tariff policy. Contacts in the agricultural industry reported that tariffs imposed by China had resulted in lower crop prices, further depressing incomes in that sector, although a new federal program was expected to offset some income losses.

In their discussion of labor markets, participants generally agreed that conditions continued to strengthen. Contacts in many Districts reported tight labor markets, with difficulty finding qualified workers. In some cases, firms were coping with labor shortages by increasing salaries, benefits, or workplace amenities in order to attract and retain workers. Other business contacts facing labor shortages were responding by increasing training for less-qualified workers. For the economy overall, participants generally agreed that, on balance, recent data suggested some acceleration in labor costs, but that wage growth remained moderate by historical standards, which was due in part to tepid productivity growth.

Regarding inflation, participants noted that on a 12-month basis, both overall inflation and inflation for items other than food and energy remained near 2 percent. Indicators of longer-term inflation expectations were little changed on balance. In general, participants viewed recent consumer price developments as consistent with their expectation that inflation was on a trajectory to achieve the Committee's symmetric 2 percent objective on a sustained basis. Several participants commented that inflation may modestly exceed 2 percent for a period of time. Reports from business contacts and surveys in a number of Districts also indicated some firming in

inflationary pressures. In particular, some contacts indicated that input prices had been bolstered by strong demand or import tariffs. Moreover, several participants reported that firms in their Districts that were facing higher input prices because of tariffs perceived that they had an increased ability to raise the prices of their products. A couple of participants emphasized that because inflation had run below the Committee's 2 percent objective for the past several years, some measures of trend inflation or longer-term inflation expectations were below levels consistent with the 2 percent objective; these participants judged that a modest increase in inflation expectations would be important for achieving the inflation objective on a sustained basis.

In their discussion of developments in financial markets, a number of participants noted that financial conditions remained accommodative: The rise in interest rates and appreciation of the dollar over the intermeeting period had been offset by increases in equity prices, and broader measures continued to point to accommodative financial conditions. Some participants commented about the continued growth in leveraged loans, the loosening of terms and standards on these loans, or the growth of this activity in the nonbank sector as reasons to remain mindful of vulnerabilities and possible risks to financial stability.

Participants commented on a number of risks and uncertainties associated with their outlook for economic activity, the labor market, and inflation over the medium term. Participants generally agreed that risks to the outlook appeared roughly balanced. Some participants commented that trade policy developments remained a source of uncertainty for the outlook for domestic growth and inflation. The divergence between domestic and foreign economic growth prospects and monetary policies was cited as presenting a downside risk because of the potential for further strengthening of the U.S. dollar; some participants noted that financial stresses in a few EMEs could pose additional risks if they were to spread more broadly through the global economy and financial markets. With regard to upside risks, participants variously noted that high consumer confidence, accommodative financial conditions, or greater-than-expected effects of fiscal stimulus could lead to stronger-than-expected economic outcomes. Tightening resource utilization and an increasing ability of firms to raise output prices were cited as factors that could lead to higher-than-expected inflation, while lower-than-expected growth, a strengthening of the U.S. dollar, or inflation expectations persistently running below 2 percent were mentioned as risks that could lead to lower inflation.

A few participants offered perspectives on the term structure of interest rates and what a potential inversion of the yield curve might signal about economic prospects in light of the historical regularity that an inverted yield curve has often preceded the onset of recessions in the United States. On the one hand, an inverted yield curve could indicate an increased risk of recession; on the other hand, the low level of term premiums in recent years—reflecting, in part, central bank asset purchases—could temper the reliability of the slope of the yield curve as an indicator of future economic activity. In addition, the recent rise and possible further increases in longer-term interest rates might diminish the likelihood that the yield curve would invert in the near term.

In their consideration of monetary policy at this meeting, participants generally judged that the economy was evolving about as anticipated, with real economic activity rising at a strong rate, labor market conditions continuing to strengthen, and inflation near the Committee's objective. Based on their current assessments, all participants expressed the view that it would be appropriate for the Committee to continue its gradual approach to policy firming by raising the target range for the federal funds rate 25 basis points at this meeting. Almost all considered that it was also appropriate to revise the Committee's postmeeting statement in order to remove the language stating that "the stance of monetary policy remains accommodative." Participants discussed a number of reasons for removing the language at this time, noting that the Committee would not be signaling a change in the expected path for policy, particularly as the target range for the federal funds rate announced after the Committee's meeting would still be below all of the estimates of its longer-run level submitted in the September SEP. In addition, waiting until the target range for the federal funds rate had been increased further to remove the characterization of the policy stance as "accommodative" could convey a false sense of precision in light of the considerable uncertainty surrounding all estimates of the neutral federal funds rate.

With regard to the outlook for monetary policy beyond this meeting, participants generally anticipated that further gradual increases in the target range for the federal funds rate would most likely be consistent with a sustained economic expansion, strong labor market conditions, and inflation near

2 percent over the medium term. This gradual approach would balance the risk of tightening monetary policy too quickly, which could lead to an abrupt slowing in the economy and inflation moving below the Committee's objective, against the risk of moving too slowly, which could engender inflation persistently above the objective and possibly contribute to a buildup of financial imbalances.

Participants offered their views about how much additional policy firming would likely be required for the Committee to sustainably achieve its objectives of maximum employment and 2 percent inflation. A few participants expected that policy would need to become modestly restrictive for a time and a number judged that it would be necessary to temporarily raise the federal funds rate above their assessments of its longer-run level in order to reduce the risk of a sustained overshooting of the Committee's 2 percent inflation objective or the risk posed by significant financial imbalances. A couple of participants indicated that they would not favor adopting a restrictive policy stance in the absence of clear signs of an overheating economy and rising inflation.

Participants reaffirmed that adjustments to the path for the policy rate would depend on their assessments of the evolution of the economic outlook and risks to the outlook relative to the Committee's statutory objectives. Many of them noted that future adjustments to the target range for the federal funds rate will depend on the evaluation of incoming information and its implications for the economic outlook. In this context, estimates of the level of the neutral federal funds rate would be only one among many factors that the Committee would consider in making its policy decisions.

Building on comments expressed at previous meetings, a couple of participants indicated that it would be desirable to assess the Committee's strategic approach to the conduct of policy and to hold a periodic and systematic review of the strengths and weaknesses of the Committee's monetary policy framework.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in August indicated that the labor market had continued to strengthen and that economic activity had been rising at a strong rate. Job gains had been strong, on average, in recent months, and the unemployment rate had stayed low. Household spending and business fixed investment had grown strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy remained near 2 percent. Indicators of longer-term inflation expectations were little changed on balance.

Members viewed the recent data as consistent with an economy that was evolving about as they had expected. Consequently, members expected that further gradual increases in the target range for the federal funds rate would be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Members continued to judge that the risks to the economic outlook remained roughly balanced.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, members voted to raise the target range for the federal funds rate to 2 to 2¼ percent. Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend on their assessment of realized and expected economic conditions relative to the Committee's maximum-employment objective and symmetric 2 percent inflation objective. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

With regard to the postmeeting statement, members agreed to remove the sentence indicating that "the stance of monetary policy remains accommodative." Members made various points regarding the removal of the sentence from the statement. These points included that the characterization of the stance of policy as "accommodative" had provided useful forward guidance in the early stages of the policy normalization process, that this characterization was no longer providing meaningful information in light of uncertainty surrounding the level of the neutral policy rate, that it was appropriate to remove the characterization of the stance from the Committee's statement before the target range for the federal funds rate moved closer to the range of estimates of the neutral policy rate, and that the Committee's earlier communications had helped prepare the public for this change.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective September 27, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of 2 to 2¼ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 2.00 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during September that exceeds $24 billion, and to continue reinvesting in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during September that exceeds $16 billion. Effective in October, the Committee directs the Desk to roll over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $30 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $20 billion. Small deviations from these amounts for operational reasons are acceptable.
>
> The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in August indicates that the labor market has continued to strengthen and that economic activity has been rising at a strong rate. Job gains have been strong, on average, in recent months, and the unemployment rate has stayed low. Household spending and business fixed investment have grown strongly. On a 12-month basis, both overall inflation and inflation for items other than food and energy remain near 2 percent. Indicators of longer-term inflation expectations are little changed, on balance.
>
> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that further gradual increases in the target range for the federal funds rate will be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Risks to the economic outlook appear roughly balanced.
>
> In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate to 2 to 2¼ percent.
>
> In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its maximum employment objective and its symmetric 2 percent inflation objective. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments."

Voting for this action: Jerome H. Powell, John C. Williams, Thomas I. Barkin, Raphael W. Bostic, Lael Brainard, Richard H. Clarida, Esther L. George, Loretta J. Mester, and Randal K. Quarles.

Voting against this action: None.

Ms. George voted as alternate member at this meeting.

To support the Committee's decision to raise the target range for the federal funds rate, the Board of

Governors voted unanimously to raise the interest rates on required and excess reserve balances to 2.20 percent, effective September 27, 2018. The Board of Governors also voted unanimously to approve a ¼ percentage point increase in the primary credit rate (discount rate) to 2.75 percent, effective September 27, 2018.[5]

[5] In taking this action, the Board approved requests to establish that rate submitted by the Boards of Directors of the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City, Dallas, and San Francisco. This vote also encompassed approval by the Board of Governors of the establishment of a 2.75 percent primary credit rate by the remaining Federal Reserve Banks, effective on the later of September 27, 2018, and the date such Reserve Banks informed the Secretary of the Board of such a request. (Secretary's note: Subsequently, the Federal Reserve Banks of New York and Minneapolis were informed by the Secretary of the Board of the Board's approval of their establishment of a primary credit rate of 2.75 percent, effective September 27, 2018.) The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Following the vote, Chairman Powell noted that he had asked Governor Clarida to serve as chair of a subcommittee on communications issues. The other members of the subcommittee will include Governor Brainard, President Kaplan, and President Rosengren. The role of the subcommittee will be to help prioritize and frame communications issues for the Committee.

It was agreed that the next meeting of the Committee would be held on Wednesday–Thursday, November 7–8, 2018. The meeting adjourned at 10:00 a.m. on September 26, 2018.

Notation Vote

By notation vote completed on August 21, 2018, the Committee unanimously approved the minutes of the Committee meeting held on July 31–August 1, 2018.

James A. Clouse
Secretary

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on September 25–26, 2018, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2018 to 2021 and over the longer run.[1] Each participant's projections were based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy—including a path for the federal funds rate and its longer-run value—and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.[2] "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the statutory mandate to promote maximum employment and price stability.

All participants who submitted longer-run projections expected that, in 2018, real GDP would expand at a pace exceeding their individual estimates of the longer-run growth rate of real GDP. All participants anticipated that real GDP growth would moderate in the coming years, and a majority of participants projected growth in 2021 to be below their estimates of the longer-run rate. All participants who submitted longer-run projections expected that the unemployment rate would run below their estimates of its longer-run level throughout the projection period. Participants generally projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would be at or near the Committee's 2 percent objective at the end of 2018 and would continue at close to that rate through 2021. Compared with the Summary of Economic Projections (SEP) from June, a solid majority of participants marked up their projections of real GDP growth and most increased their forecast of the unemployment rate in 2018, with participants indicating that these revisions mostly reflected incoming data. Participants' projections of inflation were largely unchanged from June. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, almost all participants continued to expect that the evolution of the economy, relative to their objectives of maximum employment and 2 percent inflation, would likely warrant further gradual increases in the federal funds rate. The medians of participants' projections of the federal funds rate through 2020 were unchanged relative to their June projections, and the median of participants' projections for 2021 was the same as that for 2020. The median projection for the longer-run federal funds rate rose slightly, with several participants citing increases in model-based estimates of the longer-run real federal funds rate and strong economic data as reasons for the revision. A substantial majority of participants expected that the year-end 2020 and 2021 federal funds rate would be above their estimates of the longer-run rate.

In general, participants continued to view the uncertainty around their economic projections as broadly similar to the average of the past 20 years. Risks to their outlooks were viewed as balanced, although a couple more participants than in June saw risks to their inflation projections as weighted to the upside.

The Outlook for Economic Activity

The medians of participants' projections for the growth rate of real GDP, conditional on their individual assessments of appropriate monetary policy, were 3.1 percent for 2018, 2.5 percent for 2019, and 2.0 percent for 2020. For this SEP, participants also submitted projections for economic variables in 2021 for the first time. Participants' projections for real GDP growth in 2021 were almost all below participants' projections of growth in 2020 and, for a majority of participants, below their longer-run projections of real GDP growth. Some participants cited the waning of fiscal stimulus, less accommodative monetary policy, or anticipated appreciation of the dollar as factors contributing to their forecasts for a moderation of real GDP growth over the course of the projection period.

While most participants made slight upward revisions to their unemployment rate projections for this

[1] Four members of the Board of Governors, one more than in June 2018, were in office at the time of the September 2018 meeting and submitted economic projections. The office of the president of the Federal Reserve Bank of San Francisco was vacant at the time of this FOMC meeting; First Vice President Mark A. Gould submitted economic projections.

[2] One participant did not submit longer-run projections for real GDP growth, the unemployment rate, or the federal funds rate.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, September 2018

Percent

Variable	Median[1]					Central tendency[2]					Range[3]				
	2018	2019	2020	2021	Longer run	2018	2019	2020	2021	Longer run	2018	2019	2020	2021	Longer run
Change in real GDP	3.1	2.5	2.0	1.8	1.8	3.0–3.2	2.4–2.7	1.8–2.1	1.6–2.0	1.8–2.0	2.9–3.2	2.1–2.8	1.7–2.4	1.5–2.1	1.7–2.1
June projection	2.8	2.4	2.0	n.a.	1.8	2.7–3.0	2.2–2.6	1.8–2.0	n.a.	1.8–2.0	2.5–3.0	2.1–2.7	1.5–2.2	n.a.	1.7–2.1
Unemployment rate	3.7	3.5	3.5	3.7	4.5	3.7	3.4–3.6	3.4–3.8	3.5–4.0	4.3–4.6	3.7–3.8	3.4–3.8	3.3–4.0	3.4–4.2	4.0–4.6
June projection	3.6	3.5	3.5	n.a.	4.5	3.6–3.7	3.4–3.5	3.4–3.7	n.a.	4.3–4.6	3.5–3.8	3.3–3.8	3.3–4.0	n.a.	4.1–4.7
PCE inflation	2.1	2.0	2.1	2.1	2.0	2.0–2.1	2.0–2.1	2.1–2.2	2.0–2.2	2.0	1.9–2.2	2.0–2.3	2.0–2.2	2.0–2.3	2.0
June projection	2.1	2.1	2.1	n.a.	2.0	2.0–2.1	2.0–2.2	2.1–2.2	n.a.	2.0	2.0–2.2	1.9–2.3	2.0–2.3	n.a.	2.0
Core PCE inflation[4]	2.0	2.1	2.1	2.1		1.9–2.0	2.0–2.1	2.1–2.2	2.0–2.2		1.9–2.0	2.0–2.3	2.0–2.2	2.0–2.3	
June projection	2.0	2.1	2.1	n.a.		1.9–2.0	2.0–2.2	2.1–2.2	n.a.		1.9–2.1	2.0–2.3	2.0–2.3	n.a.	
Memo: Projected appropriate policy path															
Federal funds rate	2.4	3.1	3.4	3.4	3.0	2.1–2.4	2.9–3.4	3.1–3.6	2.9–3.6	2.8–3.0	2.1–2.4	2.1–3.6	2.1–3.9	2.1–4.1	2.5–3.5
June projection	2.4	3.1	3.4	n.a.	2.9	2.1–2.4	2.9–3.4	3.1–3.6	n.a.	2.8–3.0	1.9–2.6	1.9–3.6	1.9–4.1	n.a.	2.3–3.5

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The June projections were made in conjunction with the meeting of the Federal Open Market Committee on June 12–13, 2018. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the June 12–13, 2018, meeting, and one participant did not submit such projections in conjunction with the September 25–26, 2018, meeting.

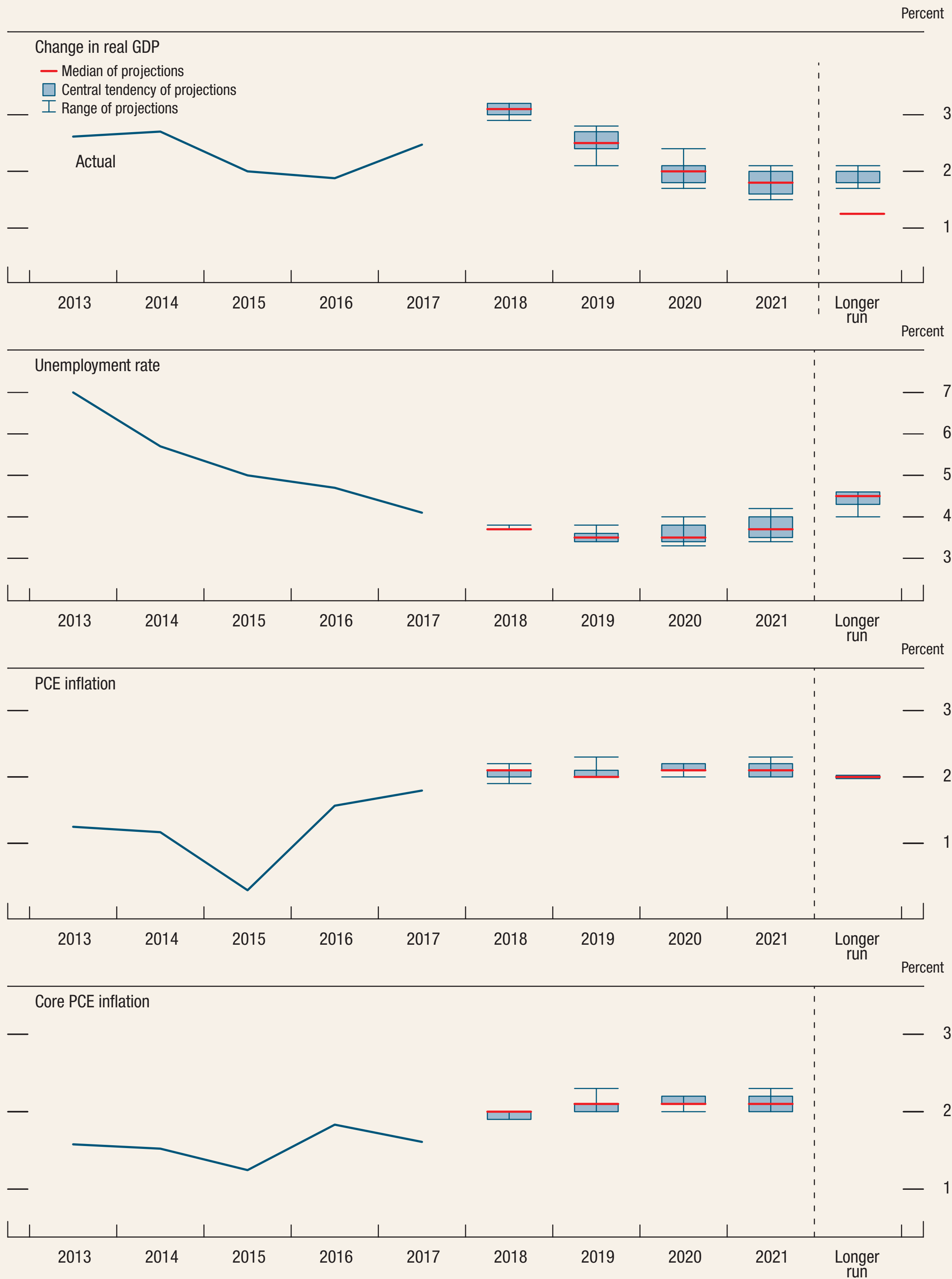
1 For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2 The central tendency excludes the three highest and three lowest projections for each variable in each year.

3 The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

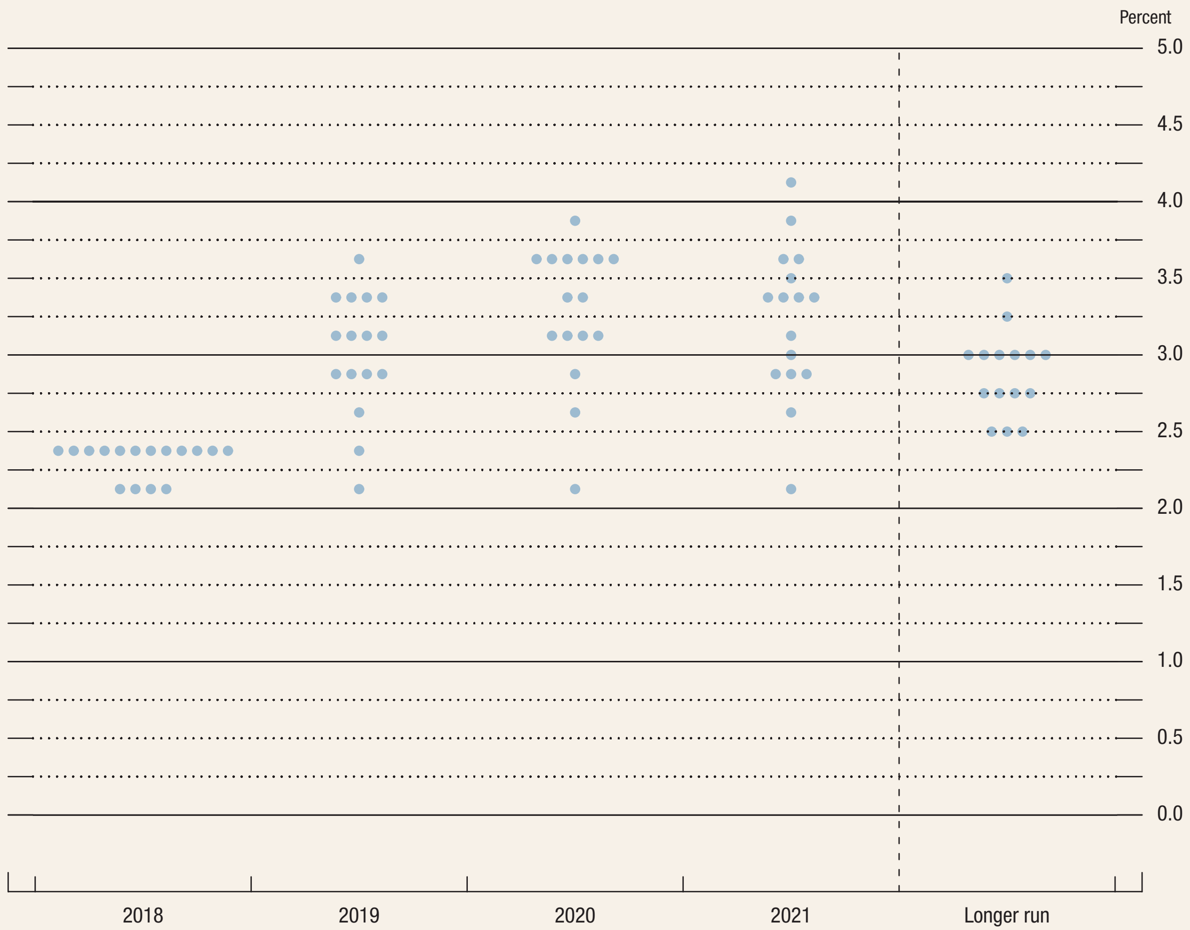
4 Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2018–21 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

year, their projections in subsequent years and in the longer run were largely unchanged. A substantial majority of participants expected the unemployment rate to bottom out in 2019 or 2020 at levels below their estimates of the unemployment rate in the longer run, and then to rise a little in 2021.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2018 to 2021 and over the longer run. The distribution of individual projections for real GDP growth for this year shifted noticeably to the right relative to that in the June SEP; the distribution for projected real GDP growth for 2019 also shifted to the right, albeit only a little. The distributions of individual projections for the unemployment rate in 2018 and 2019 shifted up a little relative to the distributions in June, while the distributions of the projections for the unemployment rate in the longer run were largely unchanged.

The Outlook for Inflation

The medians of projections for total PCE price inflation were 2.1 percent in 2018, 2.0 percent in 2019, and 2.1 percent in 2020 and 2021. The medians of projections for core PCE price inflation were 2.0 percent in 2018 and 2.1 percent in 2019, 2020, and 2021. For the entire period between 2018 and 2020, these medians were very similar to the June SEP. Figures 3.C and 3.D provide information on the distributions of participants' views about the outlook for inflation. Relative to the June SEP, a number of participants revised slightly down their projections for total PCE inflation this year and next. Most participants projected total PCE price inflation in the range of 1.9 to 2.0 percent for 2018 and 2019 and 2.1 to 2.2 percent in 2020 and 2021. Most participants projected that core PCE inflation would run at 1.9 to 2.0 percent in 2018 and at 2.1 to 2.2 percent in 2019, 2020, and 2021. Relative to the June SEP, a larger number of participants projected that core PCE inflation in 2019 and 2020 would fall in the 2.1 to 2.2 percent range.

Appropriate Monetary Policy

Figure 3.E shows distributions of participants' judgments regarding the appropriate target—or midpoint of the target range—for the federal funds rate for the end of each year from 2018 to 2021 and over the longer run. The distribution of projected policy rates for year-end 2018 was higher than in the June SEP, with projections clustered around 2.4 percent. The distributions of participants' views of the appropriate federal funds rate at the ends of 2019 and 2020 were relatively wide, as was the case in the June SEP.

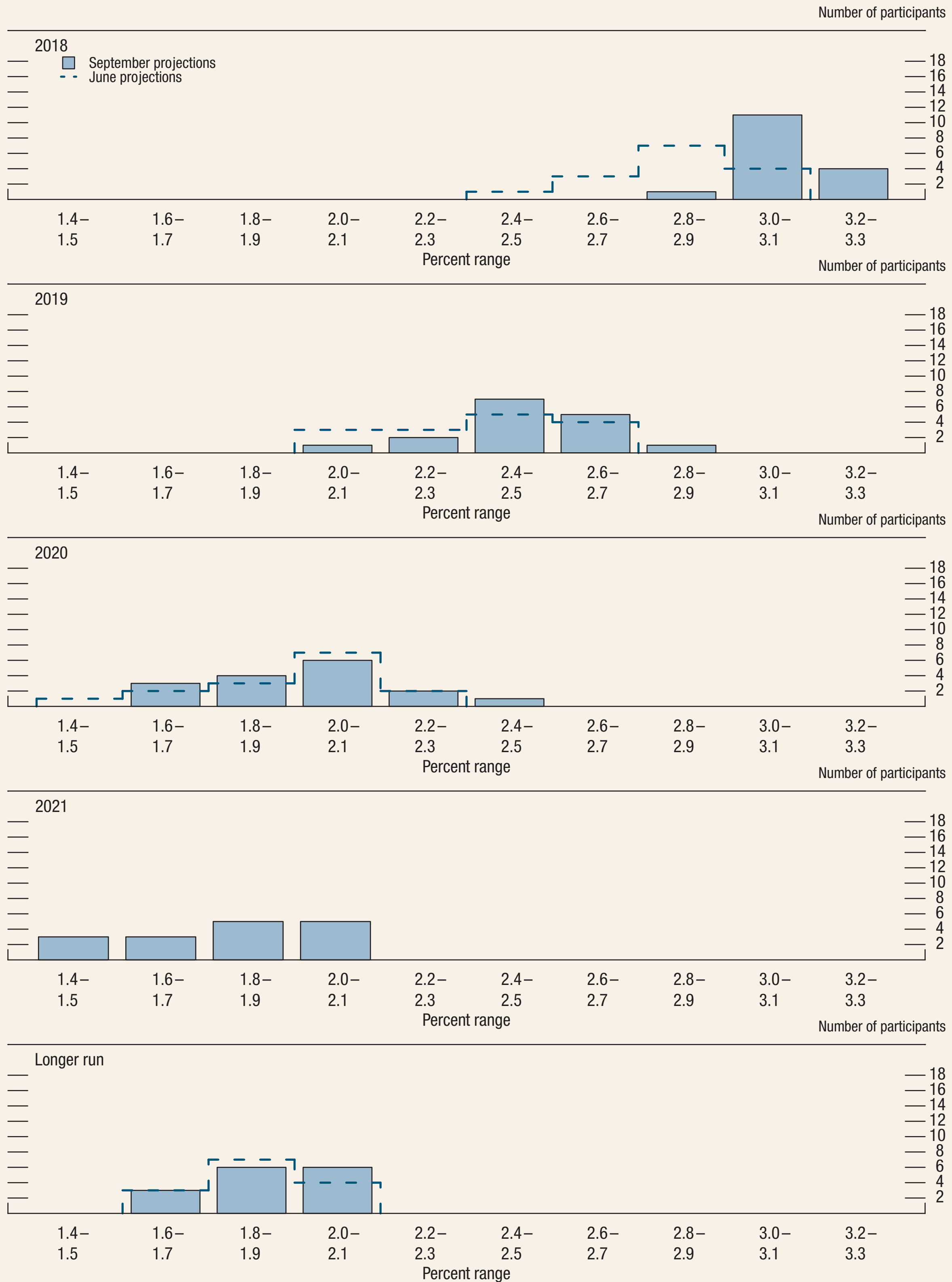
In discussing their projections, almost all participants continued to express the view that the appropriate trajectory of the federal funds rate would likely involve gradual increases. This view was predicated on several factors, including a judgment that a gradual path of policy firming would appropriately balance the risk of a buildup of inflationary pressures or other imbalances associated with high levels of resource utilization, against the risk that factors such as diminishing fiscal stimulus and adverse developments in foreign economies could become a significant drag on real GDP growth. As always, the appropriate path of the federal funds rate would depend on incoming economic data and their implications for participants' economic outlooks and assessments of risks.

Uncertainty and Risks

In assessing the appropriate path of the federal funds rate, FOMC participants take account of the range of possible economic outcomes, the likelihood of those outcomes, and the potential benefits and costs should they occur. As a reference, table 2 provides measures of forecast uncertainty, based on the forecast errors of various private and government forecasts over the past 20 years, for real GDP growth, the unemployment rate, and total PCE price inflation. Those measures are represented graphically in the "fan charts" shown in the top panels of figures 4.A, 4.B, and 4.C. The fan charts display the median SEP projections for the three variables surrounded by symmetric confidence intervals derived from the forecast errors reported in table 2. If the degree of uncertainty attending these projections is similar to the typical magnitude of past forecast errors and the risks around the projections are broadly balanced, then future outcomes of these variables would have about a 70 percent probability of being within these confidence intervals. For all three variables, this measure of uncertainty is substantial and generally increases as the forecast horizon lengthens.

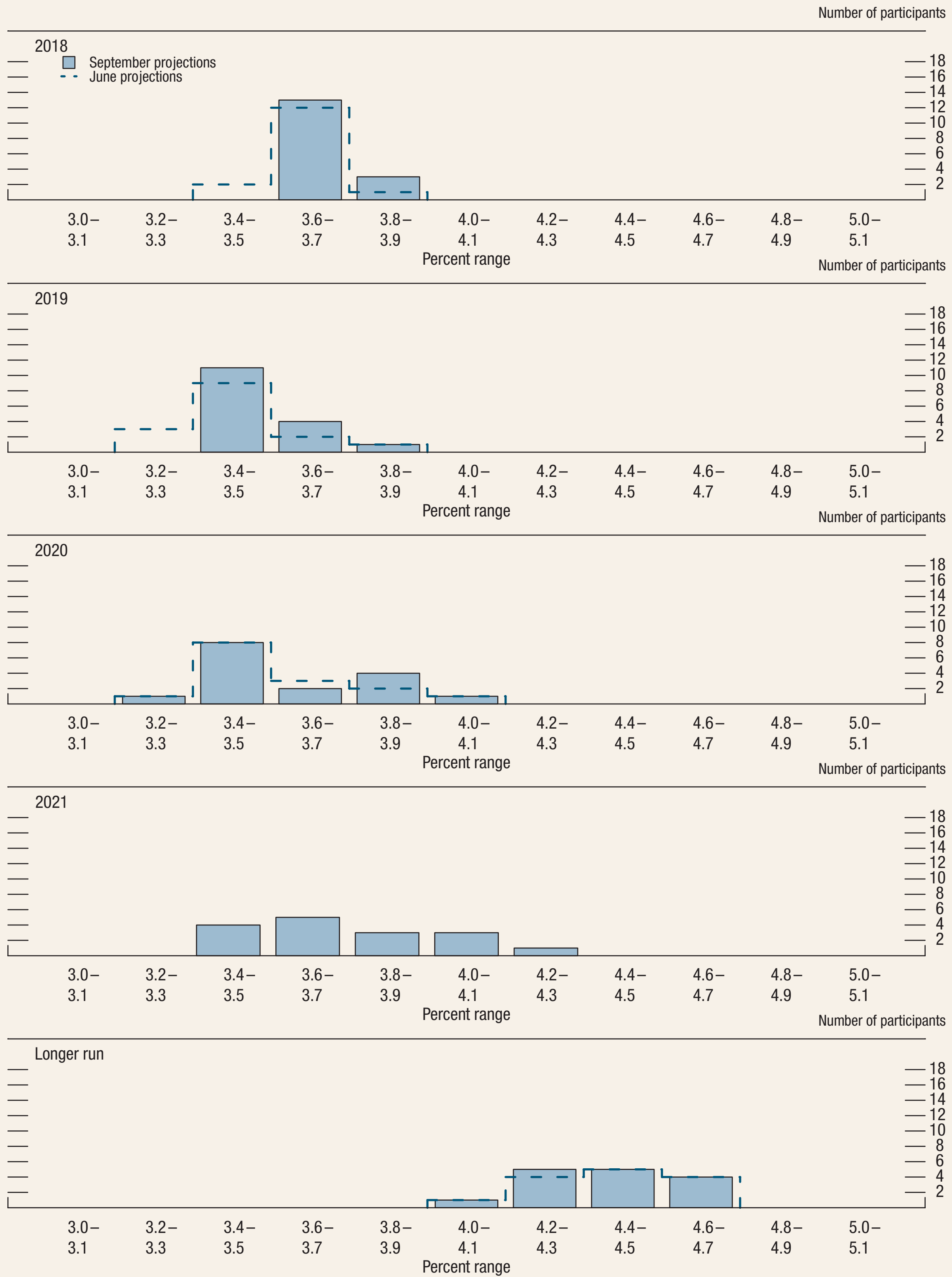
Participants' assessments of the level of uncertainty surrounding their individual economic projections are shown in the bottom-left panels of figures 4.A, 4.B, and 4.C. Nearly all participants viewed the degree of uncertainty attached to their economic projections for real GDP growth and inflation as

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2018–21 and over the longer run



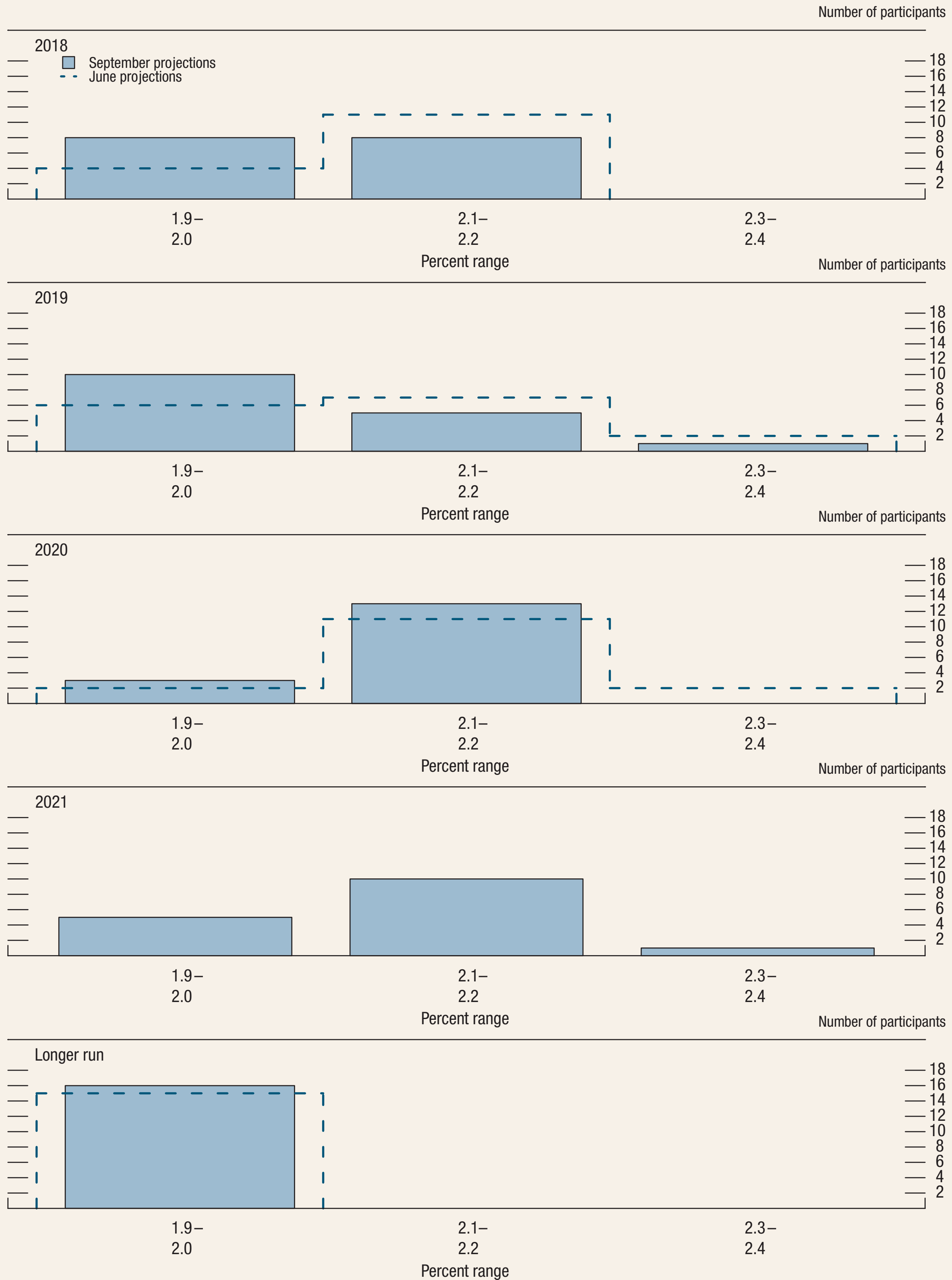
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2018–21 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2018–21 and over the longer run

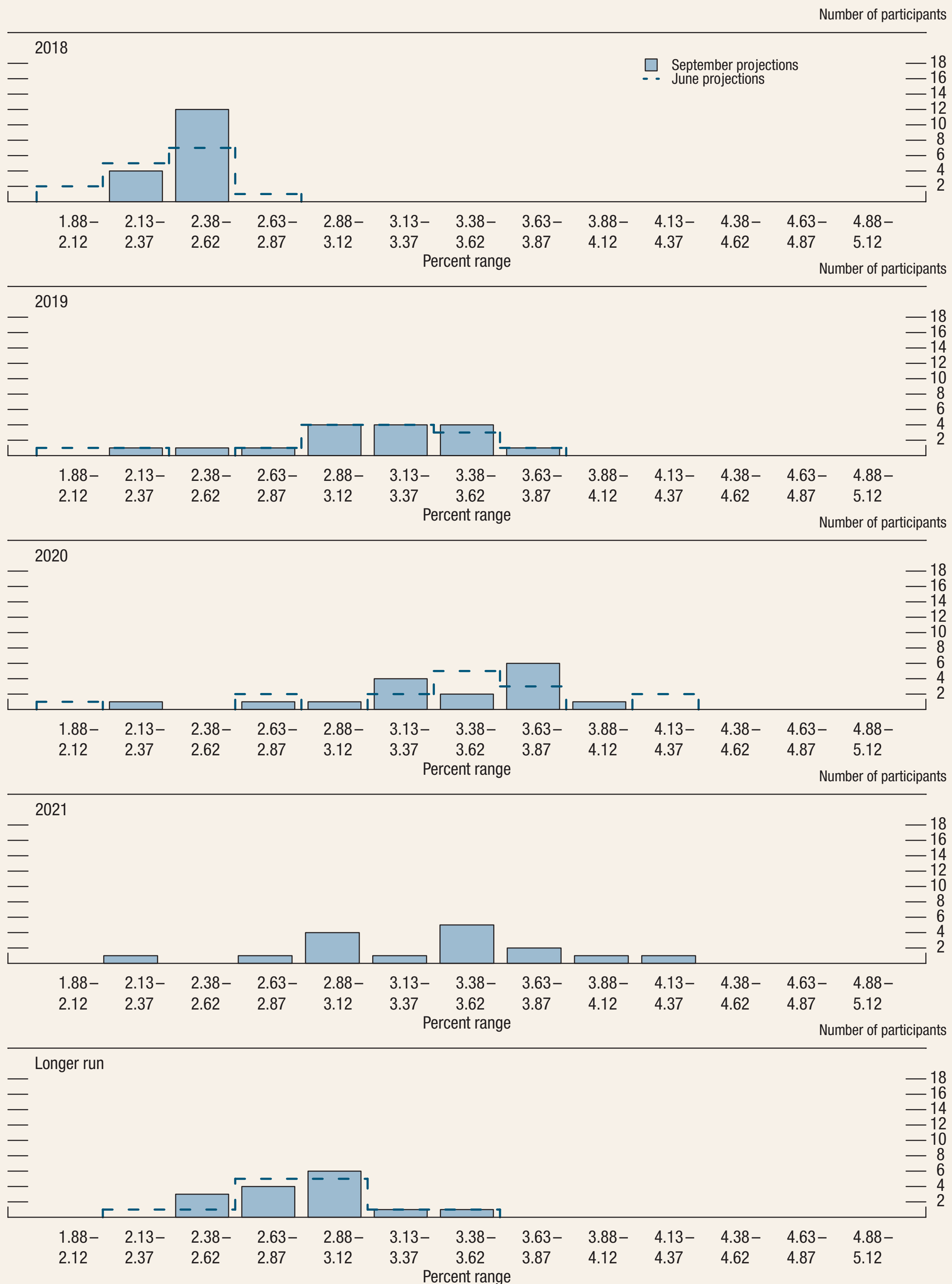


Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2018–21

Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2018–21 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1.

Table 2. Average historical projection error ranges
Percentage points

Variable	2018	2019	2020	2021
Change in real GDP[1]	±1.2	±1.8	±1.9	±2.0
Unemployment rate[1]	±0.3	±1.1	±1.6	±2.0
Total consumer prices[2]	±0.8	±1.0	±1.1	±1.1
Short-term interest rates[3]	±0.5	±1.7	±2.3	±2.7

Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1998 through 2017 that were released in the fall by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2017), "Gauging the Uncertainty of the Economic Outlook Using Historical Forecasting Errors: The Federal Reserve's Approach," Finance and Economics Discussion Series 2017-020 (Washington: Board of Governors of the Federal Reserve System, February), www.federalreserve.gov/econresdata/feds/2017/files/2017020pap.pdf.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projections are percent changes on a fourth quarter to fourth quarter basis.

3 For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Projection errors are calculated using average levels, in percent, in the fourth quarter.

broadly similar to the average of the past 20 years.[3] A couple more participants than in June viewed the uncertainty around the unemployment rate as higher than average.

Because the fan charts are constructed to be symmetric around the median projections, they do not reflect any asymmetries in the balance of risks that participants may see in their economic projections. Participants' assessments of the balance of risks to their economic projections are shown in the bottom-right panels of figures 4.A, 4.B, and 4.C. Most participants assessed the risks to their projections of real GDP growth and the unemployment rate as broadly balanced—in other words, as broadly consistent with a symmetric fan chart.

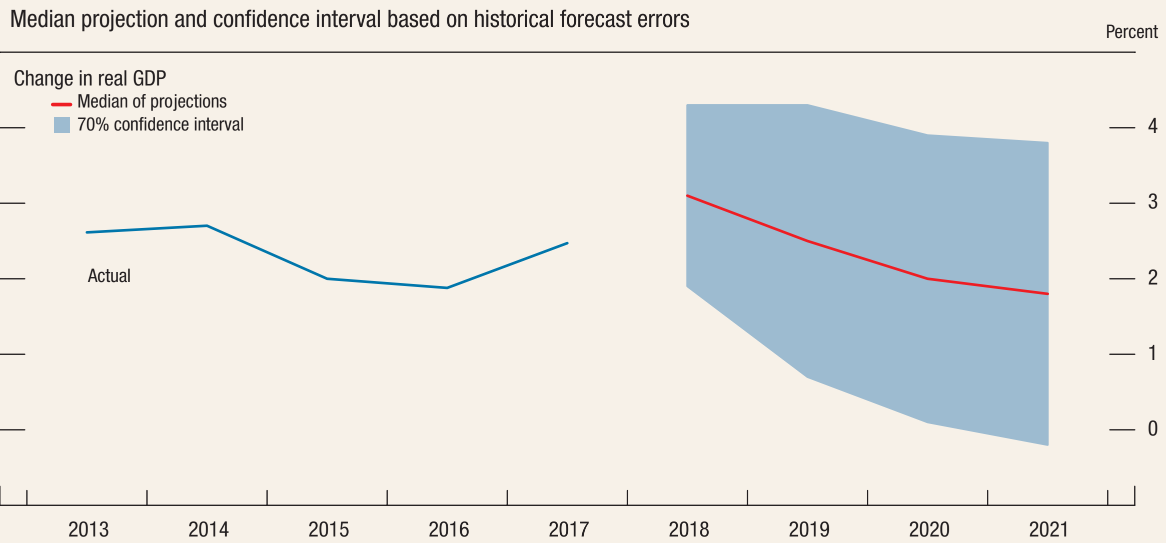
Those participants who did not judge the risks to their real GDP growth and unemployment rate projections as balanced were roughly evenly split between those who viewed the risks as being weighted to the upside and those who viewed the risks as being weighted to the downside. Risks around both total and core inflation projections were judged to be broadly balanced by a solid majority of participants; however, those participants who saw the risks as uneven saw them as weighted to the upside.

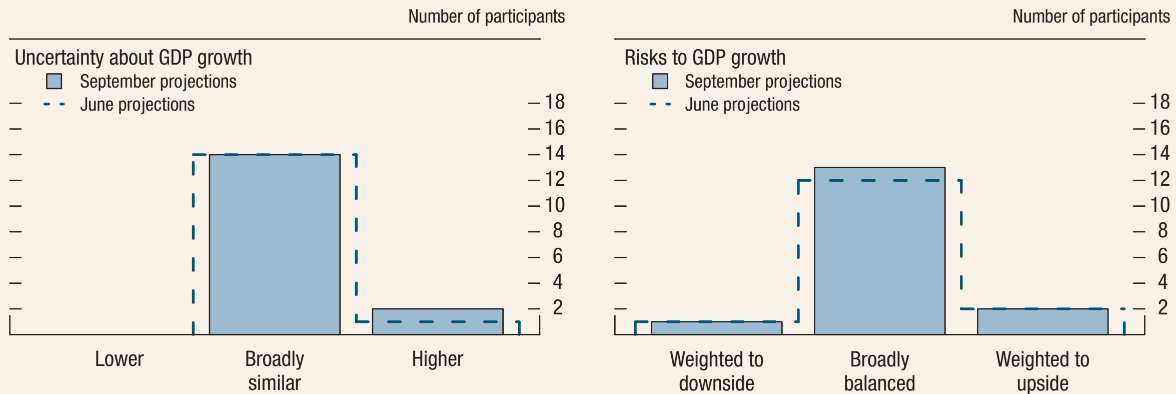
In discussing the uncertainty and risks surrounding their economic projections, many participants pointed to upside risks to real GDP growth from fiscal stimulus or stronger-than-expected effects of business optimism. Many participants also pointed to downside risks for the economy and inflation stemming from factors such as trade policy, stresses in emerging market economies, or stronger-than-anticipated appreciation of the dollar.

Participants' assessments of the appropriate future path of the federal funds rate were also subject to considerable uncertainty. Because the Committee adjusts the federal funds rate in response to actual and prospective developments over time in real GDP growth, the unemployment rate, and inflation, uncertainty surrounding the projected path for the federal funds rate importantly reflects the uncertainties about the paths for those key economic variables along with other factors. Figure 5 provides a graphical representation of this uncertainty, plotting the median SEP projection for the federal funds rate surrounded by confidence intervals derived from the results presented in table 2. As with the macroeconomic variables, the forecast uncertainty surrounding the appropriate path of the federal funds rate is substantial and increases for longer horizons.

3 At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty surrounding the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4.A. Uncertainty and risks in projections of GDP growth

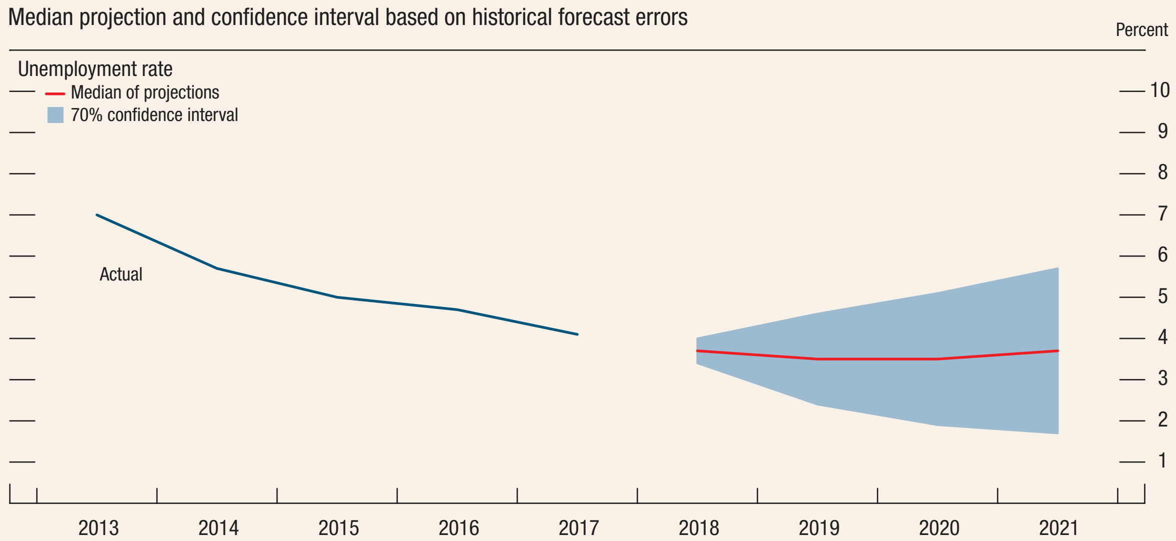




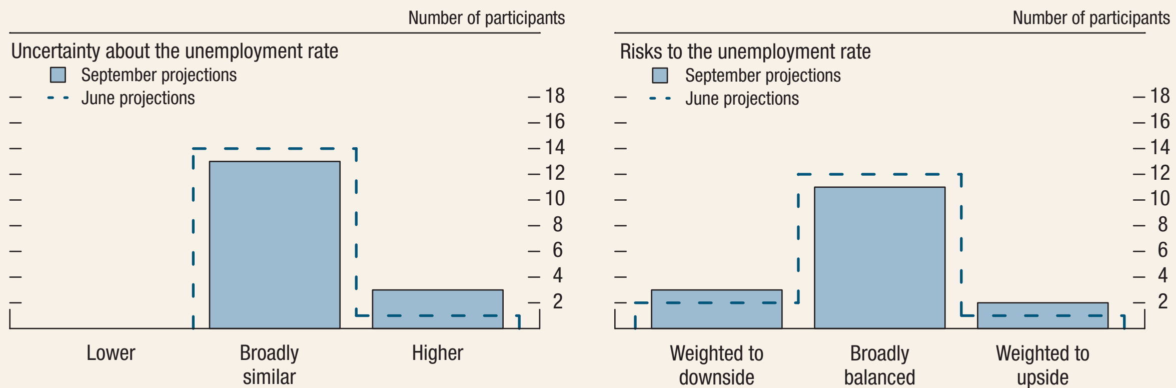
Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.B. Uncertainty and risks in projections of the unemployment rate

Median projection and confidence interval based on historical forecast errors

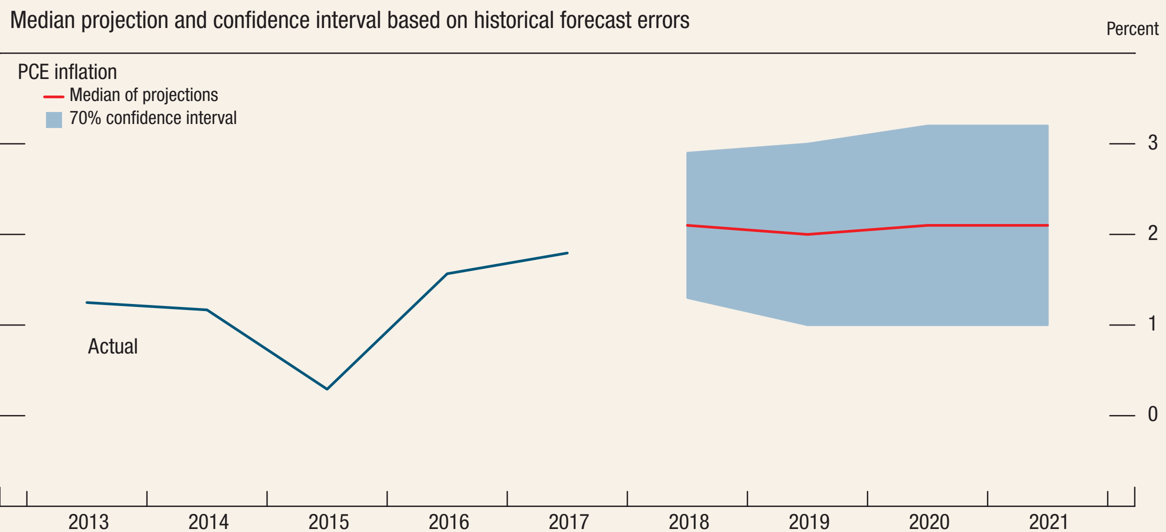


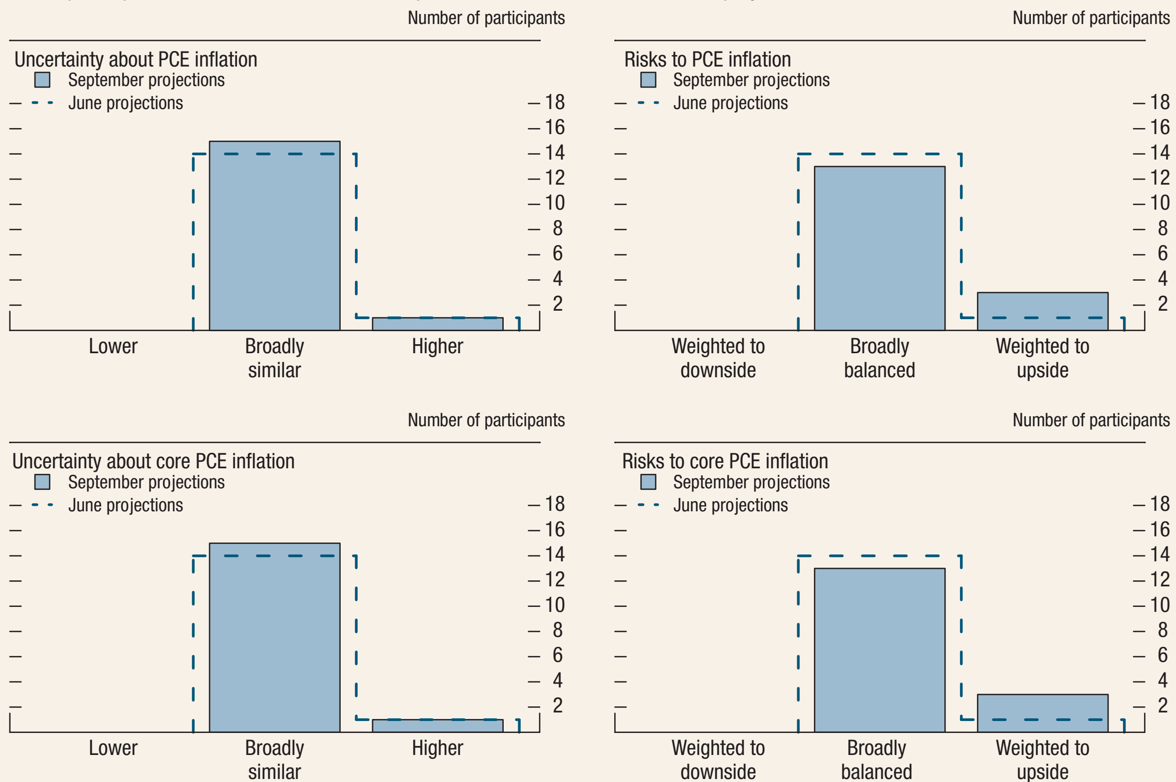
FOMC participants' assessments of uncertainty and risks around their economic projections



Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

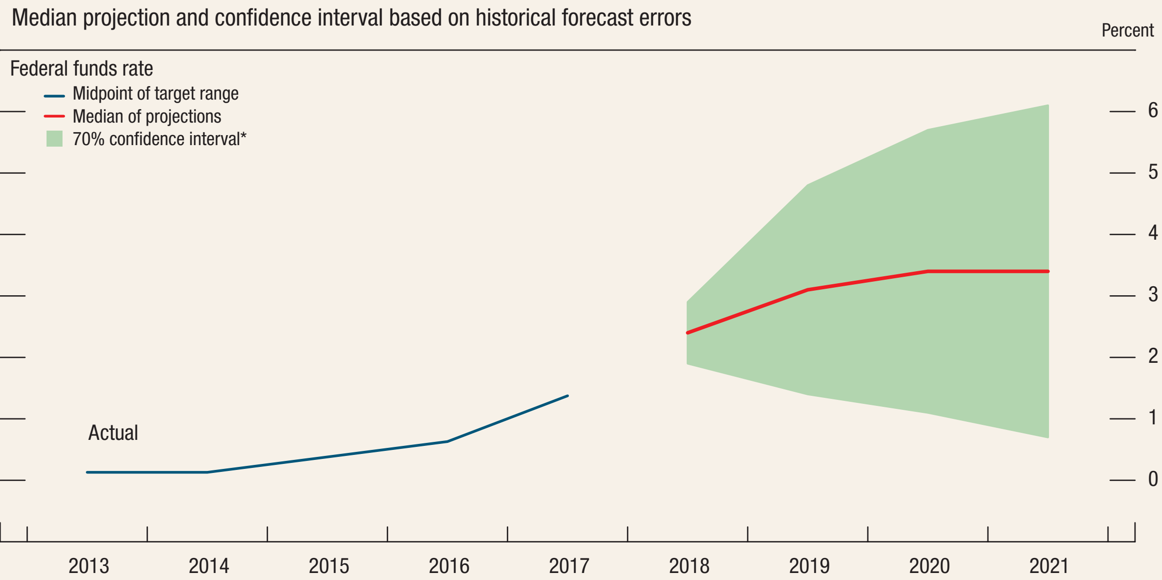
Figure 4.C. Uncertainty and risks in projections of PCE inflation





Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 5. Uncertainty in projections of the federal funds rate



Note: The blue and red lines are based on actual values and median projected values, respectively, of the Committee's target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants' individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero—the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee (FOMC). The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 1.8 to 4.2 percent in the current year, 1.2 to 4.8 percent in the second year, 1.1 to 4.9 percent in the third year, and 1.0 to 5.0 percent in the fourth year. The corresponding 70 percent confidence intervals for overall inflation would be 1.2 to 2.8 percent in the current year, 1.0 to 3.0 percent in the second year, and 0.9 to 3.1 percent in the third and fourth years. Figures 4.A through 4.C illustrate these confidence bounds in "fan charts" that are symmetric and centered on the medians of FOMC participants' projections for GDP growth, the unemployment rate, and inflation. However, in some instances, the risks around the projections may not be symmetric. In particular, the unemployment rate cannot be negative; furthermore, the risks around a particular projection might be tilted to either the upside or the downside, in which case the corresponding fan chart would be asymmetrically positioned around the median projection.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each economic variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty seen in the past 20 years, as presented in table 2 and reflected in the widths of the confidence intervals shown in the top panels of figures 4.A through 4.C. Participants' current assessments of the uncertainty surrounding their projections are summarized in the bottom-left panels of those figures. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, while the symmetric historical fan charts shown in the top panels of figures 4.A through 4.C imply that the risks to participants' projections are balanced, participants may judge that there is a greater risk that a given variable will be above rather than below their projections. These judgments are summarized in the lower-right panels of figures 4.A through 4.C.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward. The final line in table 2 shows the error ranges for forecasts of short-term interest rates. They suggest that the historical confidence intervals associated with projections of the federal funds rate are quite wide. It should be noted, however, that these confidence intervals are not strictly consistent with the projections for the federal funds rate, as these projections are not forecasts of the most likely quarterly outcomes but rather are projections of participants' individual assessments of appropriate monetary policy and are on an end-of-year basis. However, the forecast errors should provide a sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that would be appropriate to offset the effects of shocks to the economy.

If at some point in the future the confidence interval around the federal funds rate were to extend below zero, it would be truncated at zero for purposes of the fan chart shown in figure 5; zero is the bottom of the lowest target range for the federal funds rate that has been adopted by the Committee in the past. This approach to the construction of the federal funds rate fan chart would be merely a convention; it would not have any implications for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate. In such situations, the Committee could also employ other tools, including forward guidance and asset purchases, to provide additional accommodation.

While figures 4.A through 4.C provide information on the uncertainty around the economic projections, figure 1 provides information on the range of views across FOMC participants. A comparison of figure 1 with figures 4.A through 4.C shows that the dispersion of the projections across participants is much smaller than the average forecast errors over the past 20 years.

Meeting Held on November 7–8, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Wednesday, November 7, 2018, at 1:00 p.m. and continued on Thursday, November 8, 2018, at 9:00 a.m.[1]

Present

Jerome H. Powell
Chairman

John C. Williams
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Lael Brainard

Richard H. Clarida

Mary C. Daly

Loretta J. Mester

Randal K. Quarles

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

David Altig, Thomas A. Connors, Trevor A. Reeve, Ellis W. Tallman, William Wascher, and Beth Anne Wilson
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Ann E. Misback
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Supervision and Regulation, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Daniel M. Covitz
Deputy Director, Division of Research and Statistics, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Michael T. Kiley
Deputy Director, Division of Financial Stability, Board of Governors

Jon Faust
Senior Special Adviser to the Chairman, Office of Board Members, Board of Governors

Antulio N. Bomfim
Special Adviser to the Chairman, Office of Board Members, Board of Governors

[1] The Federal Open Market Committee is referenced as the “FOMC” and the “Committee” in these minutes.

[2] Attended through the discussion of developments in financial markets and open market operations.

Brian M. Doyle, Joseph W. Gruber, Ellen E. Meade, and John M. Roberts
Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Eric M. Engen
Senior Associate Director, Division of Research and Statistics, Board of Governors

Christopher J. Erceg
Senior Associate Director, Division of International Finance, Board of Governors

Edward Nelson
Senior Adviser, Division of Monetary Affairs, Board of Governors

S. Wayne Passmore
Senior Adviser, Division of Research and Statistics, Board of Governors

William F. Bassett
Associate Director, Division of Financial Stability, Board of Governors

Marnie Gillis DeBoer[3] and David López-Salido
Associate Directors, Division of Monetary Affairs, Board of Governors

Molly E. Mahar[3]
Associate Director, Division of Supervision and Regulation, Board of Governors

Stacey Tevlin
Associate Director, Division of Research and Statistics, Board of Governors

Jeffrey D. Walker[2]
Deputy Associate Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Min Wei
Deputy Associate Director, Division of Monetary Affairs, Board of Governors

Christopher J. Gust, Laura Lipscomb,[3] and Zeynep Senyuz[3]
Assistant Directors, Division of Monetary Affairs, Board of Governors

Patrick E. McCabe
Assistant Director, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[4]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Michiel De Pooter
Section Chief, Division of Monetary Affairs, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Alyssa G. Anderson[3] and Kurt F. Lewis
Principal Economists, Division of Monetary Affairs, Board of Governors

Joshua S. Louria[3]
Lead Financial Institution and Policy Analyst, Division of Monetary Affairs, Board of Governors

Sriya Anbil[3]
Senior Economist, Division of Monetary Affairs, Board of Governors

Randall A. Williams
Senior Information Manager, Division of Monetary Affairs, Board of Governors

Andre Anderson
First Vice President, Federal Reserve Bank of Atlanta

Jeff Fuhrer, Sylvain Leduc, Kevin Stiroh,[4] Daniel G. Sullivan, and Christopher J. Waller
Executive Vice Presidents, Federal Reserve Banks of Boston, San Francisco, New York, Chicago, and St. Louis, respectively

Paolo A. Pesenti, Paula Tkac,[3] Luke Woodward, Mark L. J. Wright, and Nathaniel Wuerffel[3]
Senior Vice Presidents, Federal Reserve Banks of New York, Atlanta, Kansas City, Minneapolis, and New York, respectively

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3 Attended through the discussion of the long-run monetary policy implementation frameworks.

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Long-Run Monetary Policy Implementation Frameworks

Committee participants resumed their discussion of potential long-run frameworks for monetary policy implementation, a topic last discussed at the November 2016 FOMC meeting. The staff provided briefings that described changes in recent years in banks' uses of reserves, outlined tradeoffs associated with potential choices of operating regimes to implement monetary policy and control short-term interest rates, reviewed potential choices of the policy target rate, and summarized developments in the policy implementation frameworks of other central banks.

The staff noted that banks' liquidity management practices had changed markedly since the financial crisis, with large banks now maintaining substantial buffers of reserves, among other high-quality liquid assets, to meet potential outflows and to comply with regulatory requirements. Information from bank contacts as well as a survey of banks indicated that, in an environment in which money market interest rates were very close to the interest rate paid on excess reserve balances, banks would likely be comfortable operating with much lower levels of reserve balances than at present but would wish to maintain substantially higher levels of balances than before the crisis. On average, survey responses suggested that banks might reduce their reserve holdings only modestly from those "lowest comfortable" levels if money market interest rates were somewhat above the interest on excess reserves (IOER) rate. Across banks, however, individual survey responses on this issue varied substantially.

The staff highlighted how changes in the determinants of reserve demand since the crisis could affect the tradeoffs between two types of operating regimes: (1) one in which aggregate excess reserves are sufficiently limited that money market interest rates are sensitive to small changes in the supply of reserves and (2) one in which aggregate excess reserves are sufficiently abundant that money market interest rates are not sensitive to small changes in reserve supply. In the former type of regime, the Federal Reserve actively adjusts reserve supply in order to keep its policy rate close to target. This technique worked well before the financial crisis, when reserve demand was fairly stable in the aggregate and largely influenced by payment needs and reserve requirements. However, with the increased use of reserves for precautionary liquidity purposes following the crisis, there was some uncertainty about whether banks' demand for reserves would now be sufficiently predictable for the Federal Reserve to be able to precisely target an interest rate in this way. In the latter type of regime, money market interest rates are not sensitive to small fluctuations in the demand for and supply of reserves, and the stance of monetary policy is instead transmitted from the Federal Reserve's administered rates to market rates—an approach that has been effective in controlling short-term interest rates in the United States since the financial crisis, as well as in other countries where central banks have used this approach.

The staff briefings also examined the tradeoffs between alternative policy rates that the Committee could choose in each of the regimes. In a regime of limited excess reserves, the Federal Reserve's policy tools most directly affect overnight unsecured rates paid by banks, such as the effective federal funds rate (EFFR) and the overnight bank funding rate (OBFR). These rates could also be targeted with abundant excess reserves, as could interest rates on secured funding or a mixture of secured and unsecured rates.

Participants commented on the advantages of a regime of policy implementation with abundant excess reserves. Based on experience over recent years, such a regime was seen as providing good control of short-term money market rates in a variety of market conditions and effective transmission of those rates to broader financial conditions. Participants commented that, by contrast, interest rate control might be difficult to achieve in an operating regime of limited excess reserves in view of the potentially greater unpredictability of reserve demand resulting from liquidity regulations or changes in risk appetite, or the increased variability of factors affecting reserve supply. Participants also observed that regimes with abundant excess reserves could provide effective control of short-term rates even if large amounts of liquidity needed to be added to address liquidity strains or if large-scale asset purchases needed to be undertaken to provide macroeconomic stimulus in situations where short-term rates are at their effective lower bound. Monetary policy operations in this regime would also not require active

management of reserve supply. In addition, the provision of sizable quantities of reserves could enhance financial stability and reduce operational risks in the payment system by maintaining a high level of liquidity in the banking system.

A number of participants commented that the attractive features of a regime of abundant excess reserves should be weighed against the potential drawbacks of such a regime as well as the potential benefits of returning to a regime similar to that employed before the financial crisis. Potential drawbacks of an abundant reserves regime included challenges in precisely determining the quantity of reserves necessary in such systems, the need to maintain relatively sizable quantities of reserves and holdings of securities, and relatively large ongoing interest expenses associated with the remuneration of reserves. Some noted that returning to a regime of limited excess reserves could demonstrate the Federal Reserve's ability to fully unwind the policies used to respond to the crisis and might thereby increase public acceptance or effectiveness of such policies in the future. Participants noted that the level of reserve balances required to remain in a regime where rate control does not entail active management of the supply of reserves was quite uncertain, but they thought that reserve supply could be reduced substantially below its current level while remaining in such a regime. They expected to learn more about the demand for reserves as the balance sheet continued to shrink in a gradual and predictable manner. They also observed that it might be possible to adopt strategies that provide incentives for banks to reduce their demand for reserves. Participants judged that if the level of reserves needed for a regime with abundant excess reserves turned out to be considerably higher than anticipated, the possibility of returning to a regime in which excess reserves were limited and adjustments in reserve supply were used to influence money market rates would warrant further consideration.

Participants noted that lending in the federal funds market was currently dominated by the Federal Home Loan Banks (FHLBs). Participants cited several potential benefits of targeting the OBFR rather than the EFFR: The larger volume of transactions and greater variety of lenders underlying the OBFR could make that rate a broader and more robust indicator of banks' overnight funding costs, the OBFR could become an even better indicator after the potential incorporation of data on onshore wholesale deposits, and the similarity of the OBFR and the EFFR suggested that transitioning to the OBFR would not require significant changes in the way the Committee conducted and communicated monetary policy. Some participants saw it as desirable to explore the possibility of targeting a secured interest rate. Some also expressed interest in studying, over the longer term, approaches in which the Committee would target a mixture of secured and unsecured rates.

Participants expected to continue their discussion of long-run implementation frameworks and related issues at upcoming meetings. They emphasized that it would be important to communicate clearly the rationale for any choice of operating regime and target interest rate.

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reviewed recent developments in domestic and global financial markets. The equity market was quite volatile over the intermeeting period, with U.S. stock prices down as much as 10 percent at one point before recovering somewhat. Investors pointed to a number of uncertainties in the global outlook that may have contributed to the decline in stock prices, including ongoing trade tensions between the United States and China, growing concerns about the fiscal position of the Italian government and its broader implications for financial markets and institutions, and some worries about the outcome of the Brexit negotiations. Market contacts also noted some nervousness about corporate earnings growth and an increase in longer-term Treasury yields over recent weeks as factors contributing to downward pressure on equity prices. The volatility in equity markets was accompanied by a rise in risk spreads on corporate debt, although the widening in risk spreads was not as notable as in some past stock market downturns.

On balance, the turbulence in equity markets did not leave much imprint on near-term U.S. monetary policy expectations. Respondents to the Open Market Desk's recent Survey of Primary Dealers and Survey of Market Participants indicated that respondents placed high odds on a further quarter-point increase in the target range for the federal funds rate at the December FOMC meeting; that expectation also seemed to be embedded in federal funds futures quotes. Further out, the median of survey respondents' modal expectations for the path of the federal funds rate pointed to about three additional policy firmings next year while futures quotes appeared to be pricing in a somewhat flatter trajectory.

The manager also reviewed recent developments in global markets. In China, investors were concerned about the apparent slowing of economic expansion and the implications of continued trade tensions with the United States. Chinese stock price indexes declined further over the intermeeting period and were off nearly 20 percent on the year to date. The renminbi continued to depreciate, moving closer to 7.0 renminbi per dollar—a level that some market participants viewed as a possible trigger for intensifying depreciation pressures. Anecdotal reports suggested that Chinese authorities had intervened to support the renminbi.

The deputy manager followed with a discussion of recent developments in money markets and Desk operations. The EFFR along with other overnight rates edged higher over the weeks following the increase in the target range at the previous meeting. Most recently, the EFFR had risen to the level of the IOER rate, placing it 5 basis points below the top of the target range. The upward pressure on the EFFR and other money market rates reportedly stemmed partly from a sizable increase in Treasury bill supply and a corresponding increase in Treasury bill yields. In part reflecting that development, FHLBs shifted the composition of their liquidity portfolios away from overnight lending in the federal funds market in favor of the higher returns on overnight repurchase agreements and on interest-bearing deposit accounts at banks; these reallocations in their liquidity portfolios in turn contributed to upward pressure on the EFFR. At the same time, anecdotal reports suggested that some depositories were seeking to increase their borrowing in federal funds from FHLBs, partly because of the favorable treatment of such borrowing under liquidity regulations. In addition, rates on term borrowing had moved higher over recent weeks, perhaps encouraging some depositories to bid up rates on overnight federal funds loans. To date, there were no clear signs that the ongoing decline in reserve balances in the banking system associated with the gradual normalization of the Federal Reserve's balance sheet had contributed meaningfully to the upward pressure on money market rates. Indeed, banks reportedly were willing to reduce reserve holdings in order to lend in overnight repurchase agreement (repo) markets at rates just a few basis points above the IOER rate.

However, respondents to the Desk's recent Survey of Primary Dealers and Survey of Market Participants indicated that they anticipated the reduction in the supply of reserves in the banking system could become a very important factor influencing the spread between the IOER rate and the EFFR over the last three quarters of next year. The deputy manager also provided an update on plans to incorporate additional data on overnight deposits in the OBFR. Banks had begun reporting new data on onshore overnight deposits in October. In aggregate, the volumes reported in onshore overnight deposits were substantial and the rates reported for these instruments were very close to rates reported on overnight Eurodollar transactions. The new data were expected to be incorporated in the calculation of the OBFR later next year.

Following the Desk briefings, the Chairman noted the upward trend in the EFFR relative to the IOER rate over the intermeeting period and suggested that it might be appropriate to implement another technical adjustment in the IOER rate relative to the top of the target range for the federal funds rate fairly soon. While the funds rate seemed to have stabilized recently, there remained some risk that it could continue to drift higher before the Committee's next meeting. As a contingency plan, participants agreed that it would be appropriate for the Board to implement such a technical adjustment in the IOER rate before the December meeting if necessary to keep the federal funds rate well within the target range established by the FOMC.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the November 7–8 meeting indicated that labor market conditions continued to strengthen in recent months and that real gross domestic product (GDP) rose at a strong rate in the third quarter, similar to its pace in the first half of the year. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), was 2.0 percent in September. Survey-based measures of longer-run inflation expectations were little changed on balance.

Total nonfarm payroll employment increased at a strong pace, on average, in September and October. The national unemployment rate decreased to 3.7 percent in September and remained at that level

in October, while the labor force participation rate and the employment-to-population ratio moved up somewhat over those two months. The unemployment rates for African Americans, Asians, and Hispanics in October were below their levels at the end of the previous expansion. The share of workers employed part time for economic reasons continued to be close to the lows reached in late 2007. The rates of private-sector job openings and quits both remained at high levels in September; initial claims for unemployment insurance benefits in late October were close to historically low levels. Total labor compensation per hour in the nonfarm business sector increased 2.8 percent over the four quarters ending in the third quarter, the employment cost index for private workers increased 2.9 percent over the 12 months ending in September, and average hourly earnings for all employees rose 3.1 percent over the 12 months ending in October.

Industrial production expanded at a solid pace again in September, and indicators for output in the fourth quarter were generally positive. Production worker hours in the manufacturing sector increased in October, automakers' assembly schedules suggested that light motor vehicle production would rise in the fourth quarter, and new orders indexes from national and regional manufacturing surveys pointed to solid gains in factory output in the near term.

Real PCE continued to grow strongly in the third quarter. Overall consumer spending rose steadily in recent months, and light motor vehicle sales stepped up to a robust pace in September and edged higher in October. Key factors that influence consumer spending—including solid gains in real disposable personal income and the effects of earlier increases in equity prices and home values on households' net worth—continued to be supportive of solid real PCE growth in the near term. Consumer sentiment, as measured by the University of Michigan Surveys of Consumers, remained upbeat in October.

Real residential investment declined further in the third quarter, likely reflecting a range of factors including the continued effects of rising mortgage interest rates on the affordability of housing. Starts of both new single-family homes and multifamily units decreased last quarter, but building permit issuance for new single-family homes—which tends to be a good indicator of the underlying trend in construction of such homes—was little changed on net. Sales of both new and existing homes declined again in the third quarter, while pending home sales edged up in September.

Growth in real private expenditures for business equipment and intellectual property moderated in the third quarter following strong gains in these expenditures in the first half of the year. Nominal orders and shipments of nondefense capital goods excluding aircraft edged down over the two months ending in September after brisk increases in July, while readings on business sentiment remained upbeat. Real business expenditures for nonresidential structures declined in the third quarter both for the drilling and mining sector and outside that sector. The number of crude oil and natural gas rigs in operation—an indicator of business spending for structures in the drilling and mining sector—held about steady from late May through late October.

Total real government purchases rose in the third quarter. Real federal purchases increased, mostly reflecting higher defense expenditures. Real purchases by state and local governments also increased, as real construction spending by these governments rose and payrolls expanded.

The nominal U.S. international trade deficit widened in August and September. Exports decreased in August but more than recovered in September, reflecting the pattern of industrial supplies exports. Imports of consumer goods led imports higher in both months. The change in net exports was estimated to have been a sizable drag on real GDP growth in the third quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased 2.0 percent over the 12 months ending in September. Core PCE price inflation, which excludes changes in consumer food and energy prices, also was 2.0 percent over that same period. The consumer price index (CPI) rose 2.3 percent over the 12 months ending in September, while core CPI inflation was 2.2 percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey, the Blue Chip Economic Indicators, and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Foreign economic growth appeared to pick up in the third quarter, as a strong rebound in economic activity in several emerging market economies (EMEs) more than offset a slowdown in China and most

advanced foreign economies (AFEs). Preliminary GDP data showed that Mexico's economy grew briskly, reversing its second-quarter contraction, while indicators suggested that Brazil's economy rebounded from a nationwide truckers' strike. In contrast, GDP growth slowed in China and the euro area, and indicators pointed to a step-down in Japanese growth. Foreign inflation picked up in the third quarter, boosted by higher oil prices and, in China, by higher food prices. However, underlying inflation pressures remained muted, especially in some AFEs.

Staff Review of the Financial Situation

Concerns about ongoing international trade tensions, the global growth outlook, and rising interest rates weighed on global equity market sentiment over the intermeeting period. Domestic stock prices declined considerably, on net, and equity market implied volatility rose. Nominal Treasury yields ended the period higher amid some moderate volatility, and the broad dollar index moved up. Financing conditions for nonfinancial businesses and households remained supportive of economic activity on balance.

During the intermeeting period, broad U.S. equity price indexes declined considerably, on net, amid somewhat elevated day-to-day volatility. Various factors appeared to weigh on investor sentiment including news related to ongoing international trade tensions and investors' concerns about the sustainability of strong corporate earnings growth. Stock prices in the basic materials and industrial sectors underperformed the broader market, reportedly reflecting an increase in trade tensions with China. More broadly, investors seemed to reassess equity valuations that appeared elevated. Investors also reacted to some large firms raising concerns about the effect of rising costs on their future profitability in their latest earnings reports. Option-implied volatility on the S&P 500 index at the one-month horizon—the VIX—increased, though it remained below the levels seen in early February. Despite the considerable declines in domestic stock prices, spreads of investment- and speculative-grade corporate bonds over comparable-maturity Treasury yields widened only modestly.

FOMC communications over the intermeeting period were viewed by market participants as consistent with a continued gradual removal of monetary policy accommodation. Market-implied measures of monetary policy expectations were generally little changed. Investors continued to see virtually no odds of a further quarter-point firming in the target range for the federal funds rate at the November FOMC meeting and high odds of a further firming at the December FOMC meeting. The market-implied path for the federal funds rate beyond 2018 increased a bit.

Medium- and longer-term nominal Treasury yields ended the period higher amid some moderate volatility over the intermeeting period. Meanwhile, measures of inflation compensation derived from Treasury Inflation-Protected Securities declined somewhat, with some of the decline occurring following the weaker-than-expected September CPI release.

Overnight interest rates in short-term funding markets rose in line with the increase in the target range for the federal funds rate announced at the September FOMC meeting. Over the intermeeting period, the spread between the EFFR and the IOER rate narrowed from 2 basis points to 0 basis points. Take-up at the Federal Reserve's overnight reverse repo facility remained low.

Over the intermeeting period, global investors focused on changes in U.S. equity prices and interest rates, ongoing trade tensions between the United States and China, and uncertainty regarding budget negotiations between the Italian government and the European Union. Foreign equity prices posted notable net declines; option-implied measures of foreign equity volatility spiked in October but remained well below levels seen in February and subsequently retraced some of those increases. Ten-year Italian sovereign bond spreads over German equivalents widened significantly, and there were moderate spillovers to other euro-area peripheral spreads. Bond yields in Germany and the United Kingdom fell, partly reflecting weaker-than-expected inflation data and European political developments. In contrast, Canadian yields increased slightly, bolstered by the announcement of the U.S.-Mexico-Canada trade agreement and a policy rate hike by the Bank of Canada. The dollar appreciated against most advanced and emerging market currencies, and EME-dedicated funds experienced small outflows.

Financing conditions for nonfinancial firms continued to be supportive of borrowing and spending over the intermeeting period. Net debt financing of nonfinancial firms was robust in the third quarter, as weak speculative-grade bond issuance was largely offset by rapid leveraged loan issuance. The pace of equity issuance was solid in September but slowed somewhat in October. The outlook for corporate earnings remained favorable on balance.

Respondents to the October Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS) reported, on net, that their institutions had eased standards and terms for commercial and industrial loans to large and middle-market firms over the past three months. All respondents that had done so cited increased competition from other lenders as an important reason. The credit quality of nonfinancial corporations remained solid, though there were some signs of modest deterioration. Gross issuance of municipal bonds in September and October was strong, much of which raised new capital.

Financing conditions in the commercial real estate (CRE) sector remained accommodative. Banks in the October SLOOS reported, on a portfolio-weighted basis, an easing of standards on CRE loans over the third quarter on net. Interest rate spreads on commercial mortgage-backed securities (CMBS) remained near their post-crisis lows, while issuance of non-agency and agency CMBS was stable in recent months and similar to year-earlier levels.

Most borrowers in the residential mortgage market continued to experience accommodative financing conditions, although the increase in mortgage rates since 2016 appeared to have reduced housing demand, and financing conditions remained somewhat tight for borrowers with low credit scores. Growth in home-purchase mortgage originations slowed over the past year as mortgage rates stayed near their highest level since 2011, and refinancing activity continued to be very muted.

Financing conditions in consumer credit markets, on balance, remained supportive of growth in household spending, although interest rates for consumer loans continued to rise. Credit card loan growth showed signs of moderating amid rising interest rates and reported tightening of lending standards at the largest credit card banks. Compared with the beginning of this year, respondents to the October 2018 SLOOS reported, on a portfolio-weighted basis, a reduced willingness to issue credit card loans to borrowers across the credit spectrum and, in particular, to borrowers with lower credit scores; meanwhile, banks reported having eased standards on auto loans.

The staff provided its latest report on potential risks to financial stability; the report again characterized the financial vulnerabilities of the U.S. financial system as moderate on balance. This overall assessment incorporated the staff's judgment that vulnerabilities associated with asset valuation pressures continued to be elevated, that vulnerabilities from financial-sector leverage and maturity and liquidity transformation remained low, and that vulnerabilities from household leverage were still in the low-to-moderate range. Additionally, the staff judged vulnerabilities from leverage in the nonfinancial business sector as elevated and noted a pickup in the issuance of risky debt and the continued deterioration in underwriting standards on leveraged loans. The staff also characterized overall vulnerabilities to foreign financial stability as moderate while highlighting specific issues in some foreign economies, including—depending on the country—high private or sovereign debt burdens, external vulnerabilities, and political uncertainties.

Staff Economic Outlook

In the U.S. economic forecast prepared for the November FOMC meeting, the staff continued to project that real GDP would increase a little less rapidly in the second half of the year than in the first half. Hurricanes Florence and Michael had devastating effects on many communities, but they appeared likely to leave essentially no imprint on the national economy in the second half of the year as a whole. Relative to the forecast prepared for the previous meeting, the projection for real GDP growth this year was little revised. Over the 2018–20 period, output was forecast to rise at a rate above or at the staff's estimate of potential growth and then slow to a pace below it in 2021. The unemployment rate was projected to decline further below the staff's estimate of its longer-run natural rate but to bottom out in 2020 and begin to edge up in 2021. The medium-term projection for real GDP growth was only a bit weaker than in the previous forecast, primarily reflecting a lower projected path for equity prices, leaving the unemployment rate forecast little revised. With labor market conditions already tight, the staff continued to assume that projected employment gains would manifest in smaller-than-usual downward pressure on the unemployment rate and in larger-than-usual upward pressure on the labor force participation rate.

The staff expected both total and core PCE price inflation to remain close to 2 percent through the medium term. The staff's forecasts for both total and core PCE price inflation were little revised on net.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The staff also saw the risks to the forecasts

for real GDP growth and the unemployment rate as balanced. On the upside, household spending and business investment could expand faster than the staff projected, supported in part by the tax cuts enacted last year. On the downside, trade policies and foreign economic developments could move in directions that have significant negative effects on U.S. economic growth. Risks to the inflation projection also were seen as balanced. The upside risk that inflation could increase more than expected in an economy that was projected to move further above its potential was counterbalanced by the downside risk that longer-term inflation expectations may be lower than was assumed in the staff forecast.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants agreed that information received since the FOMC met in September indicated that the labor market had continued to strengthen and that economic activity had been rising at a strong rate. Job gains had been strong, on average, in recent months, and the unemployment rate had declined. Household spending had continued to grow strongly, while growth of business fixed investment had moderated from its rapid pace earlier in the year. On a 12-month basis, both overall inflation and core inflation, which excludes changes in food and energy prices, had remained near 2 percent. Indicators of longer-term inflation expectations were little changed on balance.

Based on recent readings on spending, prices, and the labor market, participants generally indicated little change in their assessment of the economic outlook, with above-trend economic growth expected to continue before slowing to a pace closer to trend over the medium term. Participants pointed to several factors supporting above-trend growth, including strong employment gains, expansionary federal tax and spending policies, and continued high levels of consumer and business confidence. Several participants observed that the stimulative effects of fiscal policy would likely diminish over time, while the lagged effects of reductions in monetary policy accommodation would show through more fully, with both factors contributing to their expectation that economic growth would slow to a pace closer to trend.

In their discussion of the household sector, participants generally continued to characterize consumption growth as strong. This view was supported by reports from District contacts, which were mostly upbeat regarding consumer spending. Although household spending overall was seen as strong, most participants noted weakness in residential investment. This weakness was attributed to a variety of factors, including increased mortgage rates, building cost increases, and supply constraints.

Participants observed that growth in business fixed investment slowed in the third quarter following several quarters of rapid growth. Some participants pointed to anecdotal evidence regarding higher tariffs and uncertainty about trade policy, slowing global demand, rising input costs, or higher interest rates as possible factors contributing to the slowdown. A couple of others noted that business investment growth can be volatile on a quarterly basis and factors such as the recent cuts in corporate taxes and high levels of business sentiment were expected to support investment going forward.

Reports from District contacts in the manufacturing, energy, and service sectors were generally favorable, though growth in manufacturing activity was reportedly moderating in a couple of Districts. Business contacts generally remained optimistic about the outlook, but concerns about trade policy, slowing foreign demand, and labor shortages were reportedly weighing on business prospects. Contacts in the agricultural sector reported that conditions remain depressed, in part, due to the effects of trade policy actions on exports and farm incomes.

Participants agreed that labor market conditions had strengthened further over the intermeeting period. Payrolls had increased strongly in October, and measures of labor market tightness such as rates of job openings and quits continued to be elevated. The unemployment rate remained at a historically low level in October, and the labor force participation rate moved up. A couple of participants saw scope for further increases in the labor force participation rate as the strong economy pulled more workers into the labor market, while a couple of other participants judged that there was little scope for significant further increases.

Contacts in many Districts continued to report tight labor markets with difficulties finding qualified workers. In some cases, firms were responding to these difficulties by increasing training for less-qualified workers, outsourcing work, or automating production, while in other cases, firms were responding by raising wages. Contacts in a couple of Districts indi-

cated that labor shortages, particularly for skilled labor, might be constraining activity in certain industries. Participants observed that, at the national level, measures of nominal wage growth appeared to be picking up. Many participants noted that the recent pace of aggregate wage gains was broadly consistent with trends in productivity growth and inflation.

Participants observed that both overall and core PCE price inflation remained near 2 percent on a 12-month basis. In general, participants viewed recent price developments as consistent with their expectation that inflation would remain near the Committee's symmetric 2 percent objective on a sustained basis. Reports from business contacts and surveys in a number of Districts were consistent with some firming in inflationary pressure. Contacts in many Districts indicated that input costs had risen and that increased tariffs were raising costs, especially for industries relying heavily on steel and aluminum. In a few Districts, transportation costs had reportedly increased. Some contacts indicated that while input costs were higher, it appeared that the pass-through of these higher costs to consumer prices was limited.

Participants commented on a number of risks and uncertainties associated with their outlook for economic activity, the labor market, and inflation over the medium term. A few participants indicated that uncertainty had increased recently, pointing to the high levels of uncertainty regarding the effects of fiscal and trade policies on economic activity and inflation. Some participants viewed economic and financial developments abroad, including the possibility of further appreciation of the U.S. dollar, as posing downside risks for domestic economic growth and inflation. A couple of participants expressed the concern that measures of inflation expectations would remain low, particularly if economic growth slowed more than expected. Several participants were concerned that the high level of debt in the nonfinancial business sector, and especially the high level of leveraged loans, made the economy more vulnerable to a sharp pullback in credit availability, which could exacerbate the effects of a negative shock on economic activity. The potential for an escalation in tariffs or trade tensions was also cited as a factor that could slow economic growth more than expected. With regard to upside risks, participants noted that greater-than-expected effects of fiscal stimulus and high consumer confidence could lead to stronger-than-expected economic outcomes. Some participants raised the concern that tightening resource utilization in conjunction with an increase in the ability of firms to pass through increases in tariffs or in other input costs to consumer prices could generate undesirable upward pressure on inflation. In general, participants agreed that risks to the outlook appeared roughly balanced.

In their discussion of financial developments, participants observed that financial conditions tightened over the intermeeting period, as equity prices declined, longer-term yields and borrowing costs for most sectors increased, and the foreign exchange value of the dollar rose. Despite these developments, a number of participants judged that financial conditions remained accommodative relative to historical norms.

Among those who commented on financial stability, a number cited possible risks related to elevated CRE prices, narrow corporate bond spreads, or strong issuance of leveraged loans. A few participants suggested that some of these financial vulnerabilities might not currently represent risks to financial stability so much as they represent downside risks to the economic outlook; a couple of participants suggested that financial stability risks and risks to the outlook are interconnected. A couple of participants also commented on the upcoming release of the Board's first public *Financial Stability Report* and noted that the report would increase the transparency of the Federal Reserve's financial stability work as well as enhance communications on this topic.

In their discussion of monetary policy, participants agreed that it would be appropriate to maintain the current target range for the federal funds rate at this meeting. Participants generally judged that the economy had been evolving about as they had anticipated, with economic activity rising at a strong rate, labor market conditions continuing to strengthen, and inflation running at or near the Committee's longer-run objective. Almost all participants reaffirmed the view that further gradual increases in the target range for the federal funds rate would likely be consistent with sustaining the Committee's objectives of maximum employment and price stability.

Consistent with their judgment that a gradual approach to policy normalization remained appropriate, almost all participants expressed the view that another increase in the target range for the federal funds rate was likely to be warranted fairly soon if incoming information on the labor market and inflation was in line with or stronger than their current

expectations. However, a few participants, while viewing further gradual increases in the target range of the federal funds rate as likely to be appropriate, expressed uncertainty about the timing of such increases. A couple of participants noted that the federal funds rate might currently be near its neutral level and that further increases in the federal funds rate could unduly slow the expansion of economic activity and put downward pressure on inflation and inflation expectations.

Participants emphasized that the Committee's approach to setting the stance of policy should be importantly guided by incoming data and their implications for the economic outlook. They noted that their expectations for the path of the federal funds rate were based on their current assessment of the economic outlook. Monetary policy was not on a preset course; if incoming information prompted meaningful reassessments of the economic outlook and attendant risks, either to the upside or the downside, their policy outlook would change. Various factors such as the recent tightening in financial conditions, risks in the global outlook, and some signs of slowing in interest-sensitive sectors of the economy on the one hand, and further indicators of tightness in labor markets and possible inflationary pressures, on the other hand, were noted in this context. Participants also commented on how the Committee's communications in its postmeeting statement might need to be revised at coming meetings, particularly the language referring to the Committee's expectations for "further gradual increases" in the target range for the federal funds rate. Many participants indicated that it might be appropriate at some upcoming meetings to begin to transition to statement language that placed greater emphasis on the evaluation of incoming data in assessing the economic and policy outlook; such a change would help to convey the Committee's flexible approach in responding to changing economic circumstances.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in September indicated that the labor market had continued to strengthen and that economic activity had been rising at a strong rate. Job gains had been strong, on average, in recent months, and the unemployment rate had declined. Household spending had continued to grow strongly, while growth of business fixed investment had moderated recently from its rapid pace earlier in the year. On a 12-month basis, both overall inflation and inflation for items other than food and energy remained near 2 percent. Indicators of long-term inflation expectations were little changed on balance.

Members generally judged that the economy had been evolving about as they had anticipated at the previous meeting. Financial conditions, although somewhat tighter than at the time of the September FOMC meeting, had stayed accommodative overall, while the effects of expansionary fiscal policies enacted over the past year were expected to continue through the medium term. Consequently, members continued to expect that further gradual increases in the target range for the federal funds rate would be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Members continued to judge that the risks to the economic outlook were roughly balanced.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, members decided to maintain the target range for the federal funds rate at 2 to 2¼ percent. Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend on their assessment of realized and expected economic conditions relative to the Committee's maximum employment and symmetric 2 percent inflation objectives. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. More generally, members noted that decisions regarding near-term adjustments of the stance of monetary policy would appropriately remain dependent on the evolution of the outlook as informed by incoming data.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective November 9, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of 2 to 2¼ percent, including overnight reverse

repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 2.00 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.

The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $30 billion, and to continue reinvesting in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $20 billion. Small deviations from these amounts for operational reasons are acceptable.

The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

"Information received since the Federal Open Market Committee met in September indicates that the labor market has continued to strengthen and that economic activity has been rising at a strong rate. Job gains have been strong, on average, in recent months, and the unemployment rate has declined. Household spending has continued to grow strongly, while growth of business fixed investment has moderated from its rapid pace earlier in the year. On a 12-month basis, both overall inflation and inflation for items other than food and energy remain near 2 percent. Indicators of longer-term inflation expectations are little changed, on balance.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that further gradual increases in the target range for the federal funds rate will be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. Risks to the economic outlook appear roughly balanced.

In view of realized and expected labor market conditions and inflation, the Committee decided to maintain the target range for the federal funds rate at 2 to 2¼ percent.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its maximum employment objective and its symmetric 2 percent inflation objective. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments."

Voting for this action: Jerome H. Powell, John C. Williams, Thomas I. Barkin, Raphael W. Bostic, Lael Brainard, Richard H. Clarida, Mary C. Daly, Loretta J. Mester, and Randal K. Quarles.

Voting against this action: None.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors voted unanimously to leave the interest rates on required and excess reserve balances unchanged at 2.20 percent and voted unanimously to approve establishment of the primary credit rate at the existing level of 2.75 percent, effective November 9, 2018.

Update from Subcommittee on Communications

Governor Clarida presented a proposal from the subcommittee on communications to conduct a review during 2019 of the Federal Reserve's strategic framework for monetary policy. This assessment would consider the strategy, tools, and communications that would best enable the Federal Reserve to meet its statutory objectives of maximum employment and price stability. With labor market conditions close to maximum employment and inflation near the Committee's 2 percent objective, it was an opportune time for the Federal Reserve to undertake this review and assess the robustness of its strategic framework.

During the review, the Federal Reserve would engage with a broad range of interested stakeholders across the country and host a research conference in June 2019. FOMC participants would discuss the strategic framework at subsequent FOMC meetings, drawing on the lessons from the outreach efforts and on staff analysis. The goal of these discussions would be to identify possible ways to improve the Committee's current strategic policy framework in order to ensure that the Federal Reserve is best positioned going forward to achieve its statutory mandate.

Notation Vote

By notation vote completed on October 16, 2018, the Committee unanimously approved the minutes of the Committee meeting held on September 25–26, 2018.

James A. Clouse
Secretary

Meeting Held on December 18–19, 2018

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, December 18, 2018, at 1:00 p.m. and continued on Wednesday, December 19, 2018, at 9:00 a.m.[1]

Present

Jerome H. Powell
Chairman

John C. Williams
Vice Chairman

Thomas I. Barkin

Raphael W. Bostic

Michelle W. Bowman

Lael Brainard

Richard H. Clarida

Mary C. Daly

Loretta J. Mester

Randal K. Quarles

James Bullard, Charles L. Evans, Esther L. George, Eric Rosengren, and Michael Strine
Alternate Members of the Federal Open Market Committee

Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Presidents of the Federal Reserve Banks of Philadelphia, Dallas, and Minneapolis, respectively

James A. Clouse
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

David Altig, Kartik B. Athreya, Thomas A. Connors, David E. Lebow, Trevor A. Reeve, William Wascher, and Beth Anne Wilson
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Ann E. Misback
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Supervision and Regulation, Board of Governors

Andreas Lehnert
Director, Division of Financial Stability, Board of Governors

Daniel M. Covitz
Deputy Director, Division of Research and Statistics, Board of Governors

Rochelle M. Edge
Deputy Director, Division of Monetary Affairs, Board of Governors

Michael T. Kiley
Deputy Director, Division of Financial Stability, Board of Governors

Jon Faust
Senior Special Adviser to the Chairman, Office of Board Members, Board of Governors

Antulio N. Bomfim
Special Adviser to the Chairman, Office of Board Members, Board of Governors

Brian M. Doyle, Joseph W. Gruber, Ellen E. Meade, and John M. Roberts
Special Advisers to the Board, Office of Board Members, Board of Governors

[2] Attended through the discussion of developments in financial markets and open market operations.

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Shaghil Ahmed and Christopher J. Erceg
Senior Associate Directors, Division of International Finance, Board of Governors

Eric M. Engen
Senior Associate Director, Division of Research and Statistics, Board of Governors

Gretchen C. Weinbach[3]
Senior Associate Director, Division of Monetary Affairs, Board of Governors

Edward Nelson
Senior Adviser, Division of Monetary Affairs, Board of Governors

Marnie Gillis DeBoer,[3] David López-Salido, and Min Wei
Associate Directors, Division of Monetary Affairs, Board of Governors

John J. Stevens
Associate Director, Division of Research and Statistics, Board of Governors

Steven A. Sharpe
Deputy Associate Director, Division of Research and Statistics, Board of Governors

Jeffrey D. Walker[2]
Deputy Associate Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Andrew Figura and John Sabelhaus
Assistant Directors, Division of Research and Statistics, Board of Governors

Christopher J. Gust,[4] Laura Lipscomb,[3] and Zeynep Senyuz[3]
Assistant Directors, Division of Monetary Affairs, Board of Governors

Don Kim
Adviser, Division of Monetary Affairs, Board of Governors

Penelope A. Beattie[5]
Assistant to the Secretary, Office of the Secretary, Board of Governors

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3 Attended through the discussion of the long-run monetary policy implementation frameworks.

4 Attended the discussion of financial developments and open market operations through the close of the meeting.

5 Attended Tuesday session only.

Michele Cavallo[5]
Section Chief, Division of Monetary Affairs, Board of Governors

Mark A. Carlson[2]
Senior Economic Project Manager, Division of Monetary Affairs, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Andrea Ajello and Alyssa G. Anderson[3]
Principal Economists, Division of Monetary Affairs, Board of Governors

Arsenios Skaperdas[3]
Economist, Division of Monetary Affairs, Board of Governors

Donielle A. Winford
Information Management Analyst, Division of Monetary Affairs, Board of Governors

Michael Dotsey, Sylvain Leduc, Daniel G. Sullivan, Geoffrey Tootell, and Christopher J. Waller
Executive Vice Presidents, Federal Reserve Banks of Philadelphia, San Francisco, Chicago, Boston, and St. Louis, respectively

Todd E. Clark, Evan F. Koenig, Antoine Martin, and Julie Ann Remache[3]
Senior Vice Presidents, Federal Reserve Banks of Cleveland, Dallas, New York, and New York, respectively

Roc Armenter,[3] Kathryn B. Chen,[3] Jonathan L. Willis, and Patricia Zobel[3]
Vice Presidents, Federal Reserve Banks of Philadelphia, New York, Kansas City, and New York, respectively

Gara Afonso[3] and William E. Riordan[3]
Assistant Vice Presidents, Federal Reserve Bank of New York

Suraj Prasanna[3] and Lisa Stowe[3]
Markets Officers, Federal Reserve Bank of New York

Samuel Schulhofer-Wohl[2]
Senior Economist and Research Advisor, Federal Reserve Bank of Chicago

Fabrizio Perri
Monetary Advisor, Federal Reserve Bank of Minneapolis

Long-Run Monetary Policy Implementation Frameworks

Committee participants resumed their discussion from the November 2018 FOMC meeting of potential long-run frameworks for monetary policy implementation. At the December meeting, the staff provided a set of briefings that considered various issues related to the transition to a long-run operating regime with lower levels of excess reserves than at present and to a long-run composition of the balance sheet.

The staff noted that during the transition to a long-run operating regime with excess reserves below current levels, the effective federal funds rate (EFFR) could begin to rise a little above the interest on excess reserves (IOER) rate as reserves in the banking system declined gradually to a level that the Committee judges to be most appropriate for efficient and effective implementation of policy. This upward movement in the federal funds rate could be gradual. However, the staff noted that the federal funds rate and other money market rates could possibly become somewhat volatile at times as banks and financial markets adjusted to lower levels of reserve balances. Were upward pressures on the federal funds rate to emerge, it could be challenging to distinguish between pressures that were transitory and likely to abate as financial institutions adjust and those that were more persistent and associated with aggregate reserve scarcity. The staff reported on the monitoring of conditions in money markets as well as various survey and market outreach activities that could assist in detecting reserve scarcity. The staff reviewed a number of steps that the Federal Reserve could take to ensure effective monetary policy implementation were upward pressures on the federal funds rate and other money market rates to emerge. These steps included lowering the IOER rate further within the target range, using the discount window to support the efficient distribution of reserves, and slowing or smoothing the pace of reserve decline through open market operations or through slowing portfolio redemptions. The staff also discussed new ceiling tools that could help keep the EFFR within the Committee's target range, including options that would add new counterparties for the Open Market Desk's operations. The staff also provided a review of the liabilities on the Federal Reserve's balance sheet; the review described the factors that influence the size of reserve and nonreserve liabilities and discussed the increase in the size of these liabilities since the financial crisis. Additionally, the staff outlined various issues related to the long-run composition of the System Open Market Account (SOMA) portfolio, including the maturity composition of the portfolio's Treasury securities and the management of residual holdings of agency mortgage-backed securities (MBS) after the Committee has normalized the size of the balance sheet.

In discussing the transition to a long-run operating regime, participants commented on the advantages and disadvantages of allowing reserves to decline to a level that could put noticeable upward pressure on the federal funds rate, at least for a time. Reducing reserves close to the lowest level that still corresponded to the flat portion of the reserve demand curve would be one approach consistent with the Committee's previously stated intention, in the Policy Normalization Principles and Plans that it issued in 2014, to "hold no more securities than necessary to implement monetary policy efficiently and effectively." However, reducing reserves to a point very close to the level at which the reserve demand curve begins to slope upward could lead to a significant increase in the volatility in short-term interest rates and require frequent sizable open market operations or new ceiling facilities to maintain effective interest rate control. These considerations suggested that it might be appropriate to instead provide a buffer of reserves sufficient to ensure that the Federal Reserve operates consistently on the flat portion of the reserve demand curve so as to promote the efficient and effective implementation of monetary policy.

Participants discussed options for maintaining control of interest rates should upward pressures on money market rates emerge during the transition to a regime with lower excess reserves. Several participants commented on options that rely on existing or currently used tools, such as further technical adjustments to the IOER rate to keep the federal funds rate within the target range or using the discount window, although such options were recognized to have limitations in some situations. Some participants commented on the possibility of slowing the pace of the decline in reserves in approaching the longer-run level of reserves. Standard temporary open market operations could be used for this purpose. In addition, participants discussed options such as ending portfolio redemptions with a relatively high level of reserves still in the system and then either maintaining that level of reserves or allowing growth in nonreserve liabilities to very gradually reduce reserves further. These approaches could allow markets and banks more time to adjust to lower reserve levels

while maintaining effective control of interest rates. Several participants, however, expressed concern that a slowing of redemptions could be misinterpreted as a signal about the stance of monetary policy. Some participants expressed an interest in learning more about possible options for new ceiling tools to provide firmer control of the policy rate.

Participants commented on the role that the Federal Reserve's nonreserve liabilities have played in the expansion of the Federal Reserve's balance sheet since the financial crisis. Many participants noted that the magnitudes of these nonreserve liabilities—most significantly currency but also liabilities to the Treasury through the Treasury General Account and liabilities to foreign official institutions through their accounts at the Federal Reserve—are not closely related to Federal Reserve monetary policy decisions. They also remarked that the size of the Federal Reserve's balance sheet was expected to increase over time as the growth of these liabilities roughly tracks the growth of nominal gross domestic product (GDP). Additionally, participants cited the social benefits provided by these liabilities to the economy. Participants considered it important to present information on the Federal Reserve's balance sheet to the public in ways that communicated these facts. In discussing the long-run level of reserve liabilities, participants noted that it might be useful to explore ways to encourage banks to reduce their demand for reserves and to provide information to banks and the public about the likely long-run level of reserves.

Participants commented on a number of issues related to the long-run composition of the SOMA portfolio. With regard to the portfolio of Treasury securities, participants discussed the advantages of different portfolio maturity compositions. Several participants noted that a portfolio of holdings weighted toward shorter maturities would provide greater flexibility to lengthen maturity if warranted by an economic downturn, while a couple of others noted that a portfolio with maturities that matched the outstanding Treasury market would have a more neutral effect on the market. With regard to the MBS portfolio, participants noted that the passive runoff of MBS holdings through principal paydowns would continue for many years after the size of the balance sheet had been normalized. Several participants commented on the possibility of reducing agency MBS holdings somewhat more quickly than the passive approach by implementing a program of very gradual MBS sales sometime after the size of the balance sheet had been normalized.

Participants expected to continue their discussion of long-run implementation frameworks and related issues at upcoming meetings. They reiterated the importance of communicating clearly on the rationale for any decision made on the implementation framework.

Developments in Financial Markets and Open Market Operations

The SOMA manager reviewed developments in financial markets over the intermeeting period. Asset prices were volatile in recent weeks, reportedly reflecting a pullback from risk-taking by investors. In part, the deterioration in risk sentiment appeared to stem importantly from uncertainty about the state of trade negotiations between China and the United States. In addition, investors pointed to concerns about the global growth outlook, the unsettled state of Brexit negotiations, and uncertainties about the political situation in Europe.

Against this backdrop, U.S. stock prices were down nearly 8 percent on the period. Risk spreads on corporate bonds widened appreciably, with market participants reportedly focusing on the potential implications of downside risks to the U.S. economic outlook for the financial condition of companies, particularly for companies at the lower end of the investment-grade spectrum. Treasury yields declined significantly, especially at longer maturities, contributing to some flattening of the Treasury yield curve. Based on readings from Treasury Inflation-Protected Securities (TIPS), the decline in nominal Treasury yields was associated with a notable drop in inflation compensation. A sizable decline in oil prices was cited as an important factor contributing to the drop in measures of inflation compensation.

The deterioration in market sentiment was accompanied by a significant downward revision in the expected path of the federal funds rate based on federal funds futures quotes. In addition, futures-based measures of policy expectations moved lower in response to speeches by Federal Reserve officials. The revision in the expected policy path was less noticeable in the Desk's survey-based measures of the expected path of the federal funds rate. Desk surveys indicated that respondents placed high odds on a further quarter-point firming in the stance of monetary policy at the December meeting, but lower than the near certainty of a rate increase reported just before previous policy firmings in 2018; survey responses anticipated that the median projected path of the federal funds

rate in the Summary of Economic Projections (SEP) would show only two additional quarter-point policy firmings next year—down from the three policy firmings in the median path in the September SEP results.

The deputy manager followed with a discussion of money market developments and open market operations. After a fast narrowing of the spread between the IOER rate and the EFFR before the November meeting, the EFFR had remained stable at, or just 1 basis point below the level of the IOER rate since then. Some upward pressures on overnight rates were evident in the repurchase agreement (repo) market, apparently from higher issuance of Treasury bills and an associated expansion of primary dealer inventories over the intermeeting period. Banks expanded their lending in repo markets in light of higher repo rates relative to the IOER rate; the willingness of banks to lend in repo markets suggested that the reserve supply was still ample. The deputy manager noted the results of the recent Desk surveys of primary dealers and market participants indicating an increase in the median respondent's estimate of the long-run level of reserve balances to a level closer to that implied by banks' responses in the Senior Financial Officer Survey conducted in advance of the November FOMC meeting. The deputy manager also reported on paydowns on the SOMA securities holdings. Under the baseline outlook, prepayments of principal on agency MBS would remain below the $20 billion redemption cap for the foreseeable future. However, if longer-term interest rates moved substantively lower than assumed in the baseline, some modest reinvestments in MBS could occur for a few months next year concurrent with the pickup in seasonal turnover.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the December 18–19 meeting indicated that labor market conditions continued to strengthen in recent months and that real GDP growth was strong. Consumer price inflation, as measured by the 12-month percentage change in the price index for personal consumption expenditures (PCE), was 2 percent in October. Survey-based measures of longer-run inflation expectations were little changed on balance.

Total nonfarm payroll employment expanded further in November, and job gains were strong, on average, over recent months. The national unemployment rate remained at a very low level of 3.7 percent, and both the labor force participation rate and the employment-to-population ratio also stayed flat in November. The unemployment rates for African Americans, Asians, and Hispanics in November were below their levels at the end of the previous economic expansion. The share of workers employed part time for economic reasons was still close to the lows reached in late 2007. The rates of private-sector job openings and quits were both still at high levels in October; initial claims for unemployment insurance benefits in early December were still close to historically low levels. Total labor compensation per hour in the nonfarm business sector—a volatile measure even on a four-quarter change basis—increased 2.2 percent over the four quarters ending in the third quarter. Average hourly earnings for all employees rose 3.1 percent over the 12 months ending in November.

Industrial production expanded, on net, over October and November. Output increased in the mining and utilities sectors, while manufacturing production edged down on balance. Automakers' assembly schedules suggested that production of light motor vehicles would rise in December, and new orders indexes from national and regional manufacturing surveys pointed to moderate gains in total factory output in the coming months.

Household spending continued to increase at a strong pace in recent months. Real PCE growth was brisk in October, and the components of the nominal retail sales used by the Bureau of Economic Analysis to construct its estimate of PCE rose considerably in November. The pace of light motor vehicle sales edged down in November but stayed near its recent elevated level. Key factors that influence consumer spending—including ongoing gains in real disposable personal income and the effects of earlier increases in equity prices and home values on households' net worth—continued to be supportive of solid real PCE growth in the near term. Consumer sentiment, as measured by the University of Michigan Surveys of Consumers, remained relatively upbeat through early December.

Real residential investment appeared to be declining further in the fourth quarter, likely reflecting in part the effects of the rise in mortgage interest rates over the past year on the affordability of housing. Starts of new single-family homes decreased in October and November, although starts of multifamily units rose

sharply in November. Building permit issuance for new single-family homes, which tends to be a good indicator of the underlying trend in construction of such homes, moved down modestly over recent months. Sales of new homes declined markedly in October, although existing home sales increased modestly.

Growth in real private expenditures for business equipment and intellectual property looked to be picking up solidly in the fourth quarter after moderating in the previous quarter. Nominal shipments of nondefense capital goods excluding aircraft moved up in October. Forward-looking indicators of business equipment spending—such as a rising backlog of unfilled orders for nondefense capital goods excluding aircraft and upbeat readings on business sentiment—pointed to further spending gains in the near term. Nominal business expenditures for nonresidential structures outside of the drilling and mining sector declined modestly in October, while the number of crude oil and natural gas rigs in operation—an indicator of business spending for structures in the drilling and mining sector—held about steady in November through early December.

Total real government purchases appeared to be rising moderately in the fourth quarter. Nominal defense spending in October and November pointed to solid growth in real federal purchases. Real purchases by state and local governments looked to be only edging up, as nominal construction spending by these governments rose solidly in October but their payrolls declined a little in October and November.

The nominal U.S. international trade deficit widened slightly in October. Exports declined a little, with decreases in exports of agricultural products and capital goods, although exports of industrial supplies increased. Imports rose a bit, with increases in imports of consumer goods and automotive products, but imports of capital goods declined sharply from September's elevated level. Available trade data suggested that the contribution of the change in net exports to the rate of real GDP growth in the fourth quarter would be much less negative than the drag of nearly 2 percentage points in the third quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased 2 percent over the 12 months ending in October. Core PCE price inflation, which excludes changes in consumer food and energy prices, was 1.8 percent over that same period. The consumer price index (CPI) rose 2.2 percent over the 12 months ending in November, and core CPI inflation was also 2.2 percent. Recent readings on survey-based measures of longer-run inflation expectations—including those from the Michigan survey, the Survey of Professional Forecasters, and the Desk's Survey of Primary Dealers and Survey of Market Participants—were little changed on balance.

Foreign economic growth continued at a moderate pace in the third quarter, as a pickup in emerging market economies (EMEs) roughly offset slowing growth in advanced foreign economies (AFEs). Among EMEs, growth in Mexico and Brazil bounced back from transitory second-quarter weakness, more than offsetting a slowdown in China and India. The softness in AFE growth partly reflected temporary factors, including disruptions from natural disasters in Japan and the adoption of new car emissions testing in Germany. Indicators for economic activity in the fourth quarter were consistent with continued moderate foreign economic growth. Foreign inflation fell in recent months, largely reflecting a significant drag from lower oil prices. Underlying inflation pressures, especially in some AFEs, remained muted.

Staff Review of the Financial Situation

Investors' perceptions of downside risks to the domestic and global outlook appeared to increase over the intermeeting period, reportedly driven in part by signs of slowing in foreign economies and growing concerns over escalating trade frictions. Both nominal U.S. Treasury yields and U.S. equity prices declined notably over the period. Financing conditions for businesses and households tightened a bit but generally remained supportive of economic growth.

Remarks by Federal Reserve officials over the intermeeting period were interpreted by market participants as signaling a shift in the stance of policy toward a more gradual path of federal funds rate increases. The market-implied path for the federal funds rate for 2019 and 2020 shifted down markedly, while the market-implied probability for a rate hike at the December FOMC meeting declined slightly though remained high.

Nominal Treasury yields fell considerably over the period, with the declines most pronounced in longer-dated maturities and contributing to a flattening of the yield curve. The spread between 10- and 2-year nominal Treasury yields narrowed to near the 20th percentile of its distribution since 1971. Investor perceptions of increased downside risks to the out-

looks for domestic and foreign economic growth, including growing concerns over trade frictions between the United States and China, reportedly weighed on yields. Measures of inflation compensation derived from TIPS also decreased notably over the period along with the declines in oil prices.

Concerns over escalating trade tensions, global growth prospects, and the sustainability of corporate earnings growth were among the factors that appeared to contribute to a significant drop in U.S. equity prices. The declines were largest in the technology and retail sectors. One-month option-implied volatility on the S&P 500 index—the VIX—increased over the period and corporate credit spreads widened, consistent with the selloff in equities.

Over the intermeeting period, foreign financial markets were affected by perceived increases in downside risks to the global growth outlook and ongoing uncertainty about trade relations between the United States and China. Investors also focused on the state of negotiations over Brexit and the Italian government budget deficit. Equity markets in AFEs posted notable declines, and Europe-dedicated bond and equity funds reported strong outflows. Equity declines in EMEs were more modest, and emerging market funds received modest inflows on net.

AFE sovereign yields declined significantly, reflecting decreases in U.S. bond yields and weaker-than-expected euro-area and U.K. economic data. Measures of inflation compensation generally fell, partly reflecting sharp decreases in oil prices. Spreads of Italian sovereign yields over German counterparts narrowed amid progress on budget negotiations between the Italian government and the European Commission. The U.S. dollar appreciated modestly; although declines in U.S. yields weighed on the dollar, deteriorating global risk sentiment provided support. Ongoing uncertainty about the passage of a Brexit withdrawal agreement put downward pressure on the exchange value of the British pound.

Short-term funding markets functioned smoothly over the intermeeting period. Elevated levels of Treasury bills outstanding have continued to put upward pressure on money market rates. The EFFR held steady at or very close to the level of the IOER rate, while take-up in the overnight reverse repo facility remained near historically low levels. In offshore funding markets, the one-month foreign exchange swap basis for most major currencies increased, consistent with typical year-end pressures.

Financing conditions for nonfinancial firms remained accommodative, on net, though funding conditions for capital markets tightened somewhat as spreads on nonfinancial corporate bonds widened to near the middle of their historical distribution. Gross issuance of corporate bonds also moderated in November, driven by a significant step-down in speculative-grade bond issuance, while institutional leveraged loan issuance also slowed in November. Small business credit market conditions were little changed, and credit conditions in municipal bond markets stayed accommodative on net.

Private-sector analysts revised down their projections for year-ahead corporate earnings a bit. In many cases, nonfinancial firms' earnings reports suggested that tariffs were a salient concern in the changed outlook for corporate earnings. The pace of gross equity issuance through both seasoned and initial offerings moderated, consistent with the weakness and volatility in the stock market.

In the commercial real estate (CRE) sector, financing conditions remained accommodative. Commercial mortgage-backed securities (CMBS) spreads widened slightly over the intermeeting period but remained near post-crisis lows. Issuance of non-agency CMBS was stable while CRE loan growth remained strong at banks. Financing conditions in the residential mortgage market also remained accommodative for most borrowers, but the demand for mortgage credit softened. Purchase mortgage origination activity declined modestly, while refinance activity remained muted.

Financing conditions in consumer credit markets also remained accommodative. Broad consumer credit grew at a solid pace through September, though October and November saw credit card growth at banks edge a bit lower on average. Conditions in the consumer asset-backed securities market remained stable over the intermeeting period with slightly higher spreads and robust issuance.

Staff Economic Outlook

With some stronger-than-expected incoming data on economic activity and the recent tightening in financial conditions, particularly the decline in equity prices, the U.S. economic forecast prepared by the staff for the December FOMC meeting was little revised on balance. The staff continued to expect that real GDP growth would be strong in the fourth quarter of 2018, although somewhat slower than the rapid pace of growth in the previous two quarters. Over the

2018–20 period, real GDP was forecast to rise at a rate above the staff's estimate of potential output growth and then slow to a pace below it in 2021. The unemployment rate was projected to decline further below the staff's estimate of its longer-run natural rate but to bottom out by 2020 and begin to edge up in 2021. With labor market conditions already tight, the staff continued to assume that projected employment gains would manifest in smaller-than-usual downward pressure on the unemployment rate and in larger-than-usual upward pressure on the labor force participation rate.

The staff expected both total and core PCE price inflation to be just a touch below 2 percent in 2018, with total inflation revised down a bit because of recent declines in consumer energy prices. Core PCE price inflation was forecast to move up to 2 percent in 2019 and remain at that level through the medium term; total inflation was forecast to be a little below core inflation in 2019, reflecting projected declines in energy prices, and then to run at the same level as core inflation over the following two years. The staff's medium-term projections for both total and core PCE price inflation were little revised on net.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The staff also saw the risks to the forecasts for real GDP growth and the unemployment rate as balanced. On the upside, household spending and business investment could expand faster than the staff projected, supported in part by the tax cuts enacted last year. On the downside, trade policies and foreign economic developments could move in directions that have significant negative effects on U.S. economic growth. Risks to the inflation projection also were seen as balanced. The upside risk that inflation could increase more than expected in an economy that was projected to move further above its potential was counterbalanced by the downside risk that longer-term inflation expectations may be lower than was assumed in the staff forecast.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real GDP growth, the unemployment rate, and inflation for each year from 2018 through 2021 and over the longer run, based on their individual assessments of the appropriate path for the federal funds rate. The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections and policy assessments are described in the SEP, which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, meeting participants agreed that information received since the FOMC met in November indicated that the labor market had continued to strengthen and that economic activity had been rising at a strong rate. Job gains had been strong, on average, in recent months, and the unemployment rate had remained low. Household spending had continued to grow strongly, while growth of business fixed investment had moderated from its rapid pace earlier in the year. On a 12-month basis, both overall inflation and inflation for items other than food and energy remained near 2 percent. Indicators of longer-term inflation expectations were little changed on balance.

In assessing the economic outlook, participants noted the contrast between the strength of incoming data on economic activity and the concerns about downside risks evident in financial markets and in reports from business contacts. Recent readings on household and business spending, inflation, and labor market conditions were largely in line with participants' expectations and indicated continued strength of the economy. By contrast, financial markets were volatile and conditions had tightened over the intermeeting period, with sizable declines in equity prices and notably wider corporate credit spreads coinciding with a continued flattening of the Treasury yield curve; in part, these changes in financial conditions appeared to reflect greater concerns about the global economic outlook. Participants also reported hearing more frequent concerns about the global economic outlook from business contacts.

After taking into account incoming economic data, information from business contacts, and the tightening of financial conditions, participants generally revised down their individual assessments of the appropriate path for monetary policy and indicated either no material change or only a modest downward revision in their assessment of the economic outlook. Economic growth was expected to remain above trend in 2019 and then slow to a pace closer to

trend over the medium term. Participants who downgraded their assessment of the economic outlook pointed to a variety of factors underlying their assessment, including recent financial market developments, some softening in the foreign economic growth outlook, or a more pessimistic outlook for housing-sector activity.

In their discussion of the household sector, participants generally characterized real PCE growth as remaining strong. Participants pointed to a number of factors that were supporting consumer spending, including further gains in wages and household income reflecting a strong labor market, expansionary federal tax policies, still-upbeat readings on consumer sentiment, recent declines in oil prices, and household balance sheets that generally remained healthy despite tighter financial conditions. Although household spending overall was seen as strong, several participants noted continued weakness in residential investment. This weakness was attributed to a variety of factors, including increased mortgage rates and rising home prices. Reports from District contacts in the auto sector were mixed.

Several participants noted that business fixed investment remained solid despite a slowdown in the third quarter, as more recent data pointed to a rebound in investment spending. Business contacts in several Districts reported robust activity through the end of 2018 and planned to follow through or expand on their current capital expenditure projects. However, contacts in a number of Districts appeared less upbeat than at the time of the November meeting, as concerns about a variety of factors—including trade policy, waning fiscal stimulus, slowing global economic growth, or financial market volatility—were reportedly beginning to weigh on business sentiment. A couple of participants commented that the recent decline in oil prices could be a sign of a weakening in global demand that could weigh on capital spending by oil production companies and affect companies providing services to the oil industry. However, a couple of participants noted that the recent oil price decline could also be associated with increasing oil supply rather than softening global demand.

Contacts in the agricultural sector reported that conditions remained depressed, in part because of the effects of trade policy actions on exports and farm incomes, uncertainty about future trade agreements, and continued low commodity prices. Banks continued to report a gradual increase in agricultural loan delinquencies in recent months. Nonetheless, participants cited a few recent favorable developments, including new trade mitigation payments as well as legislative action to maintain crop insurance that was seen as reducing uncertainty.

Participants agreed that labor market conditions had remained strong. Payrolls continued to grow at an above-trend rate in November, and measures of labor market tightness such as rates of job openings and quits continued to be elevated. The unemployment rate remained at a historically low level in November, and the labor force participation rate stayed steady, which represented an improvement relative to its gradual downward-sloping underlying trend. Several participants observed that labor force participation had been improving for low-skilled workers and for prime-age workers. A couple of participants saw scope for further improvements in the labor force participation rate relative to its historical downward trend, while a couple of others judged that there was little scope for significant further improvements.

Contacts in many Districts continued to report tight labor markets with difficulties finding qualified workers. In some cases, firms were responding to these difficulties by using various types of nonwage incentives to attract and retain workers, while in other cases, firms were responding by raising wages. Many participants observed that, at the national level, most measures of nominal wage growth had risen and were currently at levels that were broadly in line with trends in productivity growth and inflation.

Participants observed that both overall and core PCE price inflation remained near 2 percent on a 12-month basis, but that core inflation had edged lower in recent months. A few participants noted that the recent declines in energy prices would likely only temporarily weigh on headline inflation. Several participants remarked that longer-term TIPS-based inflation compensation had declined notably since November, concurrent with both falling oil prices and a deterioration in investor risk sentiment. A few participants pointed to the decline in longer-term inflation compensation as an indication that longer-run inflation expectations may have edged lower, while several others cited survey-based measures as suggesting that longer-run expectations likely remained anchored. Participants generally continued to view recent price developments as consistent with their expectation that inflation would remain near the Committee's symmetric 2 percent objective on a sustained basis. Although a few participants pointed to anecdotal and survey evidence indicating rising

input costs and pass-through of these higher costs to consumer prices, reports from business contacts and surveys in some other Districts suggested some moderation in inflationary pressure.

In their discussion of financial developments, participants agreed that financial markets had been volatile and financial conditions had tightened over the intermeeting period, as equity prices declined, corporate credit spreads widened, and the Treasury yield curve continued to flatten. Some participants commented that these developments may reflect an increased focus among market participants on tail risks such as a sharp escalation of trade tensions or could be a signal of a significant slowdown in the pace of economic growth in the future. A couple of participants noted that the tightening in financial conditions so far did not appear to be restraining real activity, although a more persistent tightening would undoubtedly weigh on business and household spending. Participants agreed to continue to monitor financial market developments and assess the implications of these developments for the economic outlook.

Participants commented on a number of risks associated with their outlook for economic activity, the labor market, and inflation over the medium term. Various factors that could pose downside risks for domestic economic growth and inflation were mentioned, including the possibilities of a sharper-than-expected slowdown in global economic growth, a more rapid waning of fiscal stimulus, an escalation in trade tensions, a further tightening of financial conditions, or greater-than-anticipated negative effects from the monetary policy tightening to date. A few participants expressed concern that longer-run inflation expectations would remain low, particularly if economic growth slowed more than expected. With regard to upside risks, participants noted that the effects of fiscal stimulus could turn out to be greater than expected and the uncertainties surrounding trade tensions or the global growth outlook could be resolved favorably, leading to stronger-than-expected economic outcomes, while a couple of participants suggested that tightening resource utilization in conjunction with an increase in the ability of firms to pass through increases in input costs to consumer prices could generate undesirable upward pressure on inflation. A couple of participants pointed to risks to financial stability stemming from high levels of corporate borrowing, especially by riskier firms, and elevated CRE prices. In general, participants agreed that risks to the outlook appeared roughly balanced, although some noted that downside risks may have increased of late.

In their consideration of monetary policy at this meeting, participants generally judged that the economy was evolving about as anticipated, with real economic activity rising at a strong rate, labor market conditions continuing to strengthen, and inflation near the Committee's objective. Based on their current assessments, most participants expressed the view that it would be appropriate for the Committee to raise the target range for the federal funds rate 25 basis points at this meeting. A few participants, however, favored no change in the target range at this meeting, judging that the absence of signs of upward inflation pressure afforded the Committee some latitude to wait and see how the data would develop amid the recent rise in financial market volatility and increased uncertainty about the global economic growth outlook.

With regard to the outlook for monetary policy beyond this meeting, participants generally judged that some further gradual increases in the target range for the federal funds rate would most likely be consistent with a sustained economic expansion, strong labor market conditions, and inflation near 2 percent over the medium term. With an increase in the target range at this meeting, the federal funds rate would be at or close to the lower end of the range of estimates of the longer-run neutral interest rate, and participants expressed that recent developments, including the volatility in financial markets and the increased concerns about global growth, made the appropriate extent and timing of future policy firming less clear than earlier. Against this backdrop, many participants expressed the view that, especially in an environment of muted inflation pressures, the Committee could afford to be patient about further policy firming. A number of participants noted that, before making further changes to the stance of policy, it was important for the Committee to assess factors such as how the risks that had become more pronounced in recent months might unfold and to what extent they would affect economic activity, and the effects of past actions to remove policy accommodation, which were likely still working their way through the economy.

Participants emphasized that the Committee's approach to setting the stance of policy should be importantly guided by the implications of incoming data for the economic outlook. They noted that their expectations for the path of the federal funds rate were based on their current assessment of the economic outlook. Monetary policy was not on a preset course; neither the pace nor the ultimate endpoint of future

rate increases was known. If incoming information prompted meaningful reassessments of the economic outlook and attendant risks, either to the upside or the downside, their policy outlook would change. Various factors, such as the recent tightening in financial conditions and risks to the global outlook, on the one hand, and further indicators of tightness in labor markets and possible risks to financial stability from a prolonged period of tight resource utilization, on the other hand, were noted in this context.

Participants discussed ideas for effectively communicating to the public the Committee's data-dependent approach, including options for transitioning away from forward guidance language in future postmeeting statements. Several participants expressed the view that it might be appropriate over upcoming meetings to remove forward guidance entirely and replace it with language emphasizing the data-dependent nature of policy decisions.

Participants supported a plan to implement another technical adjustment to the IOER rate that would place it 10 basis points below the top of the target range for the federal funds rate. This adjustment would foster trading in the federal funds market at rates well within the FOMC's target range.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in November indicated that the labor market had continued to strengthen and that economic activity had been rising at a strong rate. Job gains had been strong, on average, in recent months, and the unemployment rate had remained low. Household spending had continued to grow strongly, while growth of business fixed investment had moderated from its rapid pace earlier in the year. On a 12-month basis, both overall inflation and inflation for items other than food and energy remained near 2 percent. Indicators of longer-term inflation expectations were little changed, on balance.

Members generally judged that the economy had been evolving about as they had anticipated at the previous meeting. Though financial conditions had tightened and global growth had moderated, members generally anticipated that growth would remain above trend and the labor market would remain strong. Members judged that some further gradual increases in the target range for the federal funds rate would be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term.

After assessing current conditions and the outlook for economic activity, the labor market, and inflation, members decided to raise the target range for the federal funds rate to 2¼ to 2½ percent. Members agreed that the timing and size of future adjustments to the target range for the federal funds rate would depend on their assessment of realized and expected economic conditions relative to the Committee's maximum employment and symmetric 2 percent inflation objectives. They reiterated that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. More generally, members noted that decisions regarding near-term adjustments of the stance of monetary policy would appropriately remain dependent on the evolution of the outlook as informed by incoming data.

With regard to the postmeeting statement, members agreed to modify the phrase "the Committee expects that further gradual increases" to read "the Committee judges that some further gradual increases." The use of the word "judges" in the revised phrase was intended to better convey the data-dependency of the Committee's decisions regarding the future stance of policy; the reference to "some" further gradual increases was viewed as helping indicate that, based on current information, the Committee judged that a relatively limited amount of additional tightening likely would be appropriate. While members judged that the risks to the economic outlook were roughly balanced, they decided that recent developments warranted emphasizing that the Committee would "continue to monitor global economic and financial developments and assess their implications for the economic outlook."

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective December 20, 2018, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range

of 2¼ to 2½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 2.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.

The Committee directs the Desk to continue rolling over at auction the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $30 billion, and to continue reinvesting in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $20 billion. Small deviations from these amounts for operational reasons are acceptable.

The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

"Information received since the Federal Open Market Committee met in November indicates that the labor market has continued to strengthen and that economic activity has been rising at a strong rate. Job gains have been strong, on average, in recent months, and the unemployment rate has remained low. Household spending has continued to grow strongly, while growth of business fixed investment has moderated from its rapid pace earlier in the year. On a 12-month basis, both overall inflation and inflation for items other than food and energy remain near 2 percent. Indicators of longer-term inflation expectations are little changed, on balance.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee judges that some further gradual increases in the target range for the federal funds rate will be consistent with sustained expansion of economic activity, strong labor market conditions, and inflation near the Committee's symmetric 2 percent objective over the medium term. The Committee judges that risks to the economic outlook are roughly balanced, but will continue to monitor global economic and financial developments and assess their implications for the economic outlook.

In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate to 2¼ to 2½ percent.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its maximum employment objective and its symmetric 2 percent inflation objective. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments."

Voting for this action: Jerome H. Powell, John C. Williams, Thomas I. Barkin, Raphael W. Bostic, Michelle W. Bowman, Lael Brainard, Richard H. Clarida, Mary C. Daly, Loretta J. Mester, and Randal K. Quarles.

Voting against this action: None.

To support the Committee's decision to raise the target range for the federal funds rate, the Board of Governors voted unanimously to raise the interest rates on

required and excess reserve balances to 2.40 percent, effective December 20, 2018. The Board of Governors also voted unanimously to approve a ¼ percentage point increase in the primary credit rate (discount rate) to 3.00 percent, effective December 20, 2018.[6]

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, January 29–30, 2019. The meeting adjourned at 10:50 a.m. on December 19, 2018.

Notation Vote

By notation vote completed on November 28, 2018, the Committee unanimously approved the minutes of the Committee meeting held on November 7–8, 2018.

James A. Clouse
Secretary

[6] In taking this action, the Board approved requests to establish that rate submitted by the boards of directors of the Federal Reserve Banks of Boston, Cleveland, Richmond, Atlanta, Chicago, and San Francisco. This vote also encompassed approval by the Board of Governors of the establishment of a 3.00 percent primary credit rate by the remaining Federal Reserve Banks, effective on the later of December 20, 2018, and the date such Reserve Banks informed the Secretary of the Board of such a request. (Secretary's note: Subsequently, the Federal Reserve Banks of New York, Philadelphia, St. Louis, Minneapolis, Kansas City, and Dallas were informed by the Secretary of the Board's approval of their establishment of a primary credit rate of 3.00 percent, effective December 20, 2018.) The second vote of the Board also encompassed approval of the establishment of the interest rates for secondary and seasonal credit under the existing formulas for computing such rates.

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on December 18–19, 2018, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2018 to 2021 and over the longer run.[1] Each participant's projections were based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy—including a path for the federal funds rate and its longer-run value—and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy.[2] "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the statutory mandate to promote maximum employment and price stability.

All participants who submitted longer-run projections expected that, under appropriate monetary policy, growth in real GDP in 2019 would run somewhat above their individual estimate of its longer-run rate. Most participants continued to expect real GDP growth to slow throughout the projection horizon, with a majority of participants projecting growth in 2021 to be a little below their estimate of its longer-run rate. Almost all participants who submitted longer-run projections continued to expect that the unemployment rate would run below their estimate of its longer-run level through 2021. Most participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would increase slightly over the next two years, and nearly all participants expected that it would be at or slightly above the Committee's 2 percent objective in 2020 and 2021. Compared with the Summary of Economic Projections (SEP) from September, many participants marked down slightly their projections for real GDP growth and inflation in 2019. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, participants generally continued to expect that the evolution of the economy, relative to their objectives of maximum employment and 2 percent inflation, would likely warrant some further gradual increases in the federal funds rate. Compared with the September submissions, the median projections for the federal funds rate for the end of 2019 through 2021 and over the longer run were a little lower. Most participants expected that the federal funds rate at the end of 2020 and 2021 would be modestly higher than their estimate of its level over the longer run; however, many marked down the extent to which it would exceed their estimate of the longer-run level relative to their September projections.

On balance, participants continued to view the uncertainty around their projections as broadly similar to the average of the past 20 years. While most participants viewed the risks to the outlook as balanced, a couple more participants than in September saw risks to real GDP growth as weighted to the downside, and one less participant viewed the risks to inflation as weighted to the upside.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP for 2019, conditional on their individual assessment of appropriate monetary policy, was 2.3 percent, slower than the 3.0 percent pace expected for 2018. Most participants continued to expect GDP growth to slow throughout the projection horizon, with the median projection at 2.0 percent in 2020 and at 1.8 percent in 2021, a touch lower than the median estimate of its longer-run rate of 1.9 percent. Relative to the September SEP, the medians of the projections for real GDP growth for 2018 and 2019 were slightly lower, while the median for the longer-run rate of growth was a bit higher. Several participants mentioned tighter financial conditions or a softer global economic outlook as factors behind the downward revisions to their near-term growth estimates.

The median of projections for the unemployment rate in the fourth quarter of 2019 was 3.5 percent, unchanged from the September SEP and almost 1 percentage point below the median assessment of its longer-run normal level. With participants gener-

[1] Five members of the Board of Governors, one more than in September 2018, were in office at the time of the December 2018 meeting and submitted economic projections.

[2] One participant did not submit longer-run projections for real GDP growth, the unemployment rate, or the federal funds rate.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, December 2018
Percent

Variable	Median[1]					Central tendency[2]					Range[3]				
	2018	2019	2020	2021	Longer run	2018	2019	2020	2021	Longer run	2018	2019	2020	2021	Longer run
Change in real GDP	3.0	2.3	2.0	1.8	1.9	3.0–3.1	2.3–2.5	1.8–2.0	1.5–2.0	1.8–2.0	3.0–3.1	2.0–2.7	1.5–2.2	1.4–2.1	1.7–2.2
September projection	3.1	2.5	2.0	1.8	1.8	3.0–3.2	2.4–2.7	1.8–2.1	1.6–2.0	1.8–2.0	2.9–3.2	2.1–2.8	1.7–2.4	1.5–2.1	1.7–2.1
Unemployment rate	3.7	3.5	3.6	3.8	4.4	3.7	3.5–3.7	3.5–3.8	3.6–3.9	4.2–4.5	3.7	3.4–4.0	3.4–4.3	3.4–4.2	4.0–4.6
September projection	3.7	3.5	3.5	3.7	4.5	3.7	3.4–3.6	3.4–3.8	3.5–4.0	4.3–4.6	3.7–3.8	3.4–3.8	3.3–4.0	3.4–4.2	4.0–4.6
PCE inflation	1.9	1.9	2.1	2.1	2.0	1.8–1.9	1.8–2.1	2.0–2.1	2.0–2.1	2.0	1.8–1.9	1.8–2.2	2.0–2.2	2.0–2.3	2.0
September projection	2.1	2.0	2.1	2.1	2.0	2.0–2.1	2.0–2.1	2.1–2.2	2.0–2.2	2.0	1.9–2.2	2.0–2.3	2.0–2.2	2.0–2.3	2.0
Core PCE inflation[4]	1.9	2.0	2.0	2.0		1.8–1.9	2.0–2.1	2.0–2.1	2.0–2.1		1.8–1.9	1.9–2.2	2.0–2.2	2.0–2.3	
September projection	2.0	2.1	2.1	2.1		1.9–2.0	2.0–2.1	2.1–2.2	2.0–2.2		1.9–2.0	2.0–2.3	2.0–2.2	2.0–2.3	
Memo: Projected appropriate policy path															
Federal funds rate	2.4	2.9	3.1	3.1	2.8	2.4	2.6–3.1	2.9–3.4	2.6–3.1	2.5–3.0	2.1–2.4	2.4–3.1	2.4–3.6	2.4–3.6	2.5–3.5
September projection	2.4	3.1	3.4	3.4	3.0	2.1–2.4	2.9–3.4	3.1–3.6	2.9–3.6	2.8–3.0	2.1–2.4	2.1–3.6	2.1–3.9	2.1–4.1	2.5–3.5

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The September projections were made in conjunction with the meeting of the Federal Open Market Committee on September 25–26, 2018. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the September 25–26, 2018, meeting, and one participant did not submit such projections in conjunction with the December 18–19, 2018, meeting.

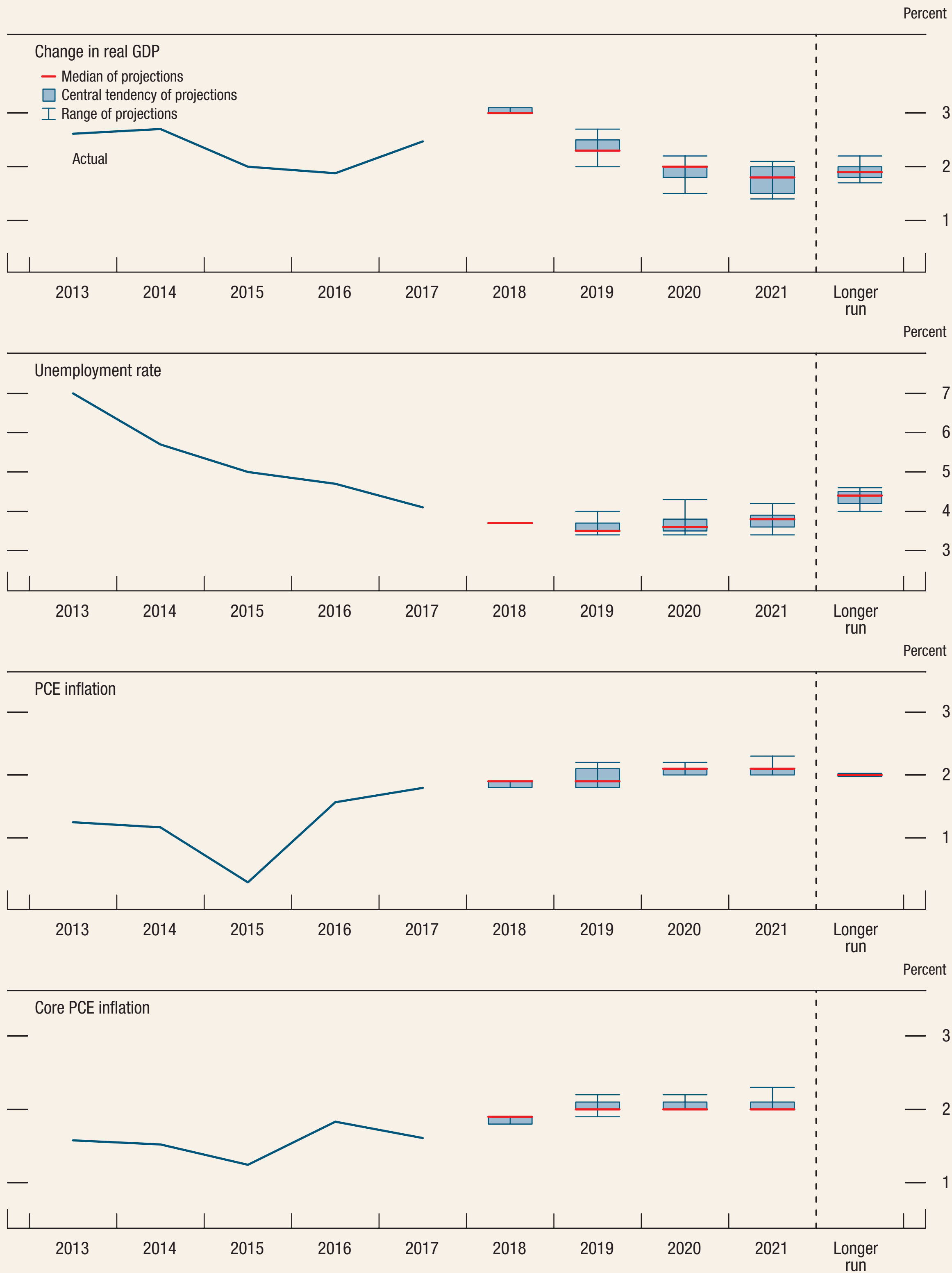
1 For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2 The central tendency excludes the three highest and three lowest projections for each variable in each year.

3 The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

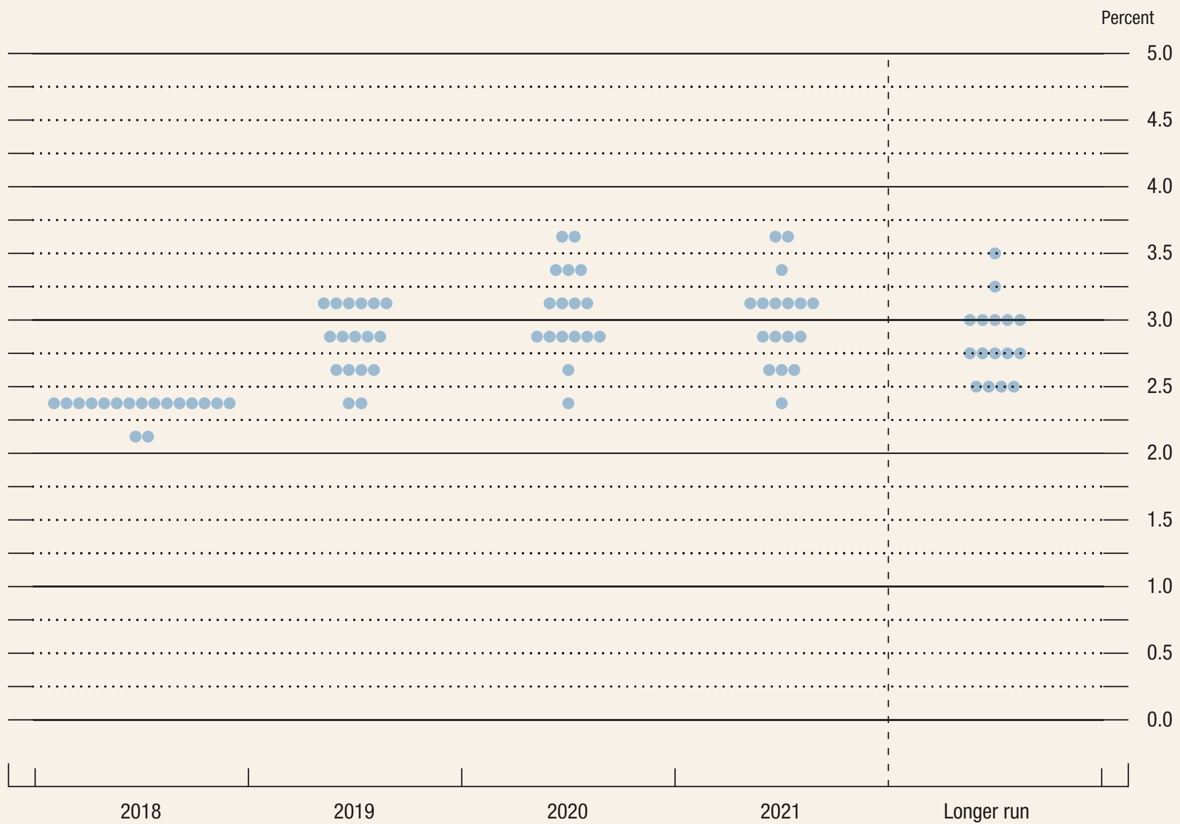
4 Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2018–21 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

ally continuing to expect the unemployment rate to bottom out in 2019 or 2020, the median projections for 2020 and 2021 edged back up to 3.6 percent and 3.8 percent, respectively. Nevertheless, most participants continued to project that the unemployment rate in 2021 would still be well below their estimates of its longer-run level. The median estimate of the longer-run normal rate of unemployment was slightly lower than in September.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2018 to 2021 and in the longer run. The distributions of individual projections for real GDP growth for 2019 and 2020 shifted down relative to those in the September SEP, while the distributions for 2021 and for the longer-run rate of GDP growth were little changed. The distribution of individual projections for the unemployment rate in 2019 was a touch more dispersed relative to the distribution of the September projections; the distribution moved slightly higher for 2020, while the distribution for the longer-run normal rate shifted toward the lower end of its range.

The Outlook for Inflation

The median of projections for total PCE price inflation was 1.9 percent in 2019, a bit lower than in the September SEP, while the medians for 2020 and 2021 were 2.1 percent, the same as in the previous projections. The medians of projections for core PCE price inflation over the 2019–21 period were 2.0 percent, a touch lower than in September. Some participants pointed to softer incoming data or recent declines in oil prices as reasons for shaving their projections for inflation.

Figures 3.C and 3.D provide information on the distributions of participants' views about the outlook for inflation. On the whole, the distributions of projections for total PCE price inflation and core PCE price inflation beyond this year either shifted slightly to the left or were unchanged relative to the September SEP. Most participants revised down slightly their projections of total PCE price inflation for 2019. All participants expected that total PCE price inflation would be in a range from 2.0 to 2.3 percent in 2020 and 2021. Most participants projected that core PCE inflation would run at 2.0 to 2.1 percent throughout the projection horizon.

Appropriate Monetary Policy

Figure 3.E shows distributions of participants' judgments regarding the appropriate target—or midpoint of the target range—for the federal funds rate at the end of each year from 2018 to 2021 and over the longer run. The distributions for 2019 through 2021 were less dispersed and shifted slightly toward lower values. Compared with the projections prepared for the September SEP, the median federal funds rate was 25 basis points lower over the 2019–21 period. For the end of 2019, the median of federal funds rate projections was 2.88 percent, consistent with two 25 basis point rate increases over the course of 2019. Thereafter, the medians of the projections were 3.13 percent at the end of 2020 and 2021. Most participants expected that the federal funds rate at the end of 2020 and 2021 would be modestly higher than their estimate of its level over the longer run; however, many marked down the extent to which it would exceed their estimate of the longer-run level relative to their September projections. The median of the longer-run projections of the federal funds rate was 2.75 percent, 25 basis points lower than in September.

In discussing their projections, many participants continued to express the view that any further increases in the federal funds rate over the next few years would likely be gradual. That anticipated pace reflected a few factors, such as a short-term neutral real interest rate that is currently low and an inflation rate that has been rising only gradually to the Committee's 2 percent objective. Some participants cited a weaker near-term trajectory for economic growth or a muted response of inflation to tight labor market conditions as factors contributing to the downward revisions in their assessments of the appropriate path for the policy rate.

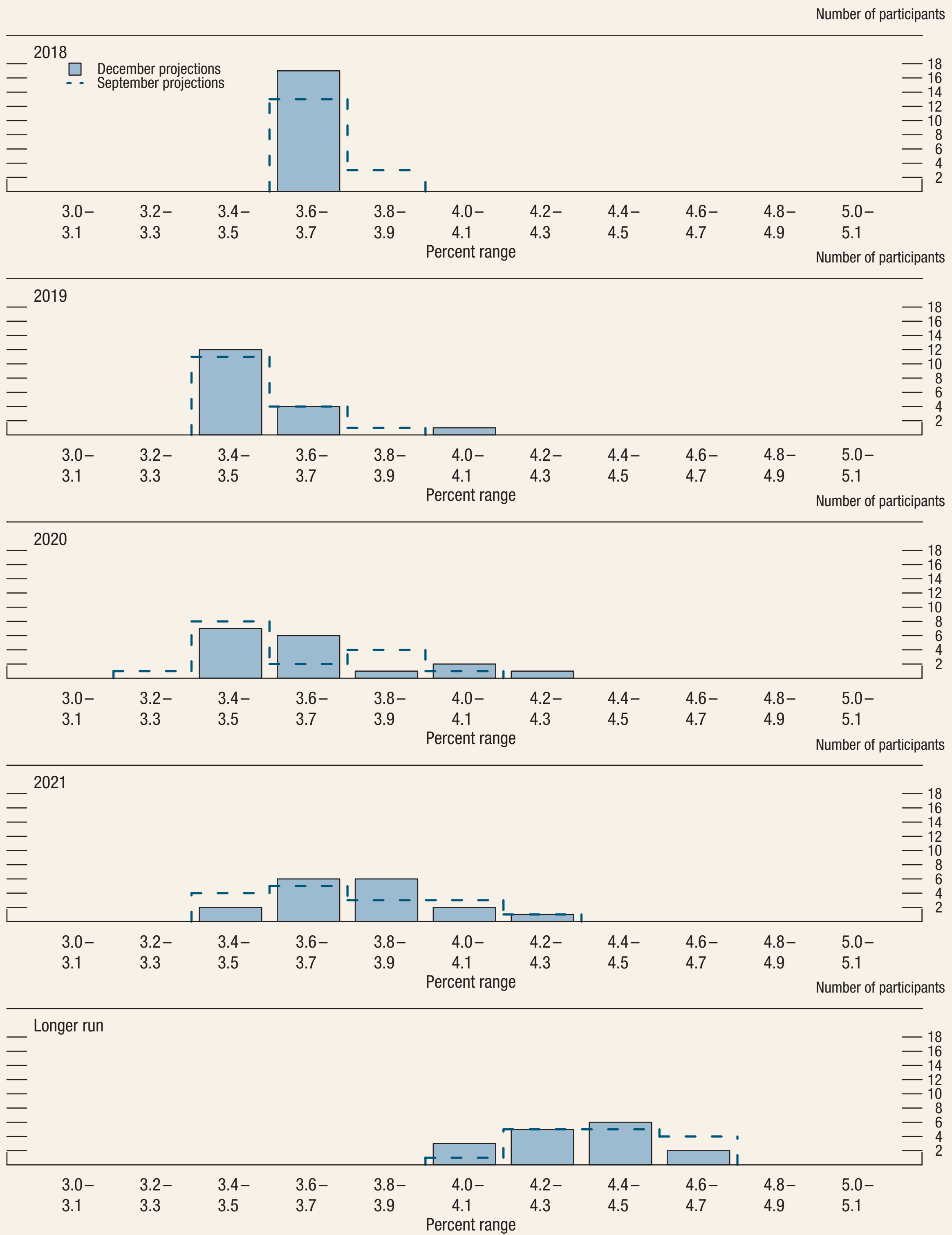
Uncertainty and Risks

In assessing the appropriate path of the federal funds rate, FOMC participants take account of the range of possible economic outcomes, the likelihood of those outcomes, and the potential benefits and costs should they occur. As a reference, table 2 provides measures of forecast uncertainty—based on the forecast errors of various private and government forecasts over the past 20 years—for real GDP growth, the unemployment rate, and total PCE price infla-

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2018–21 and over the longer run

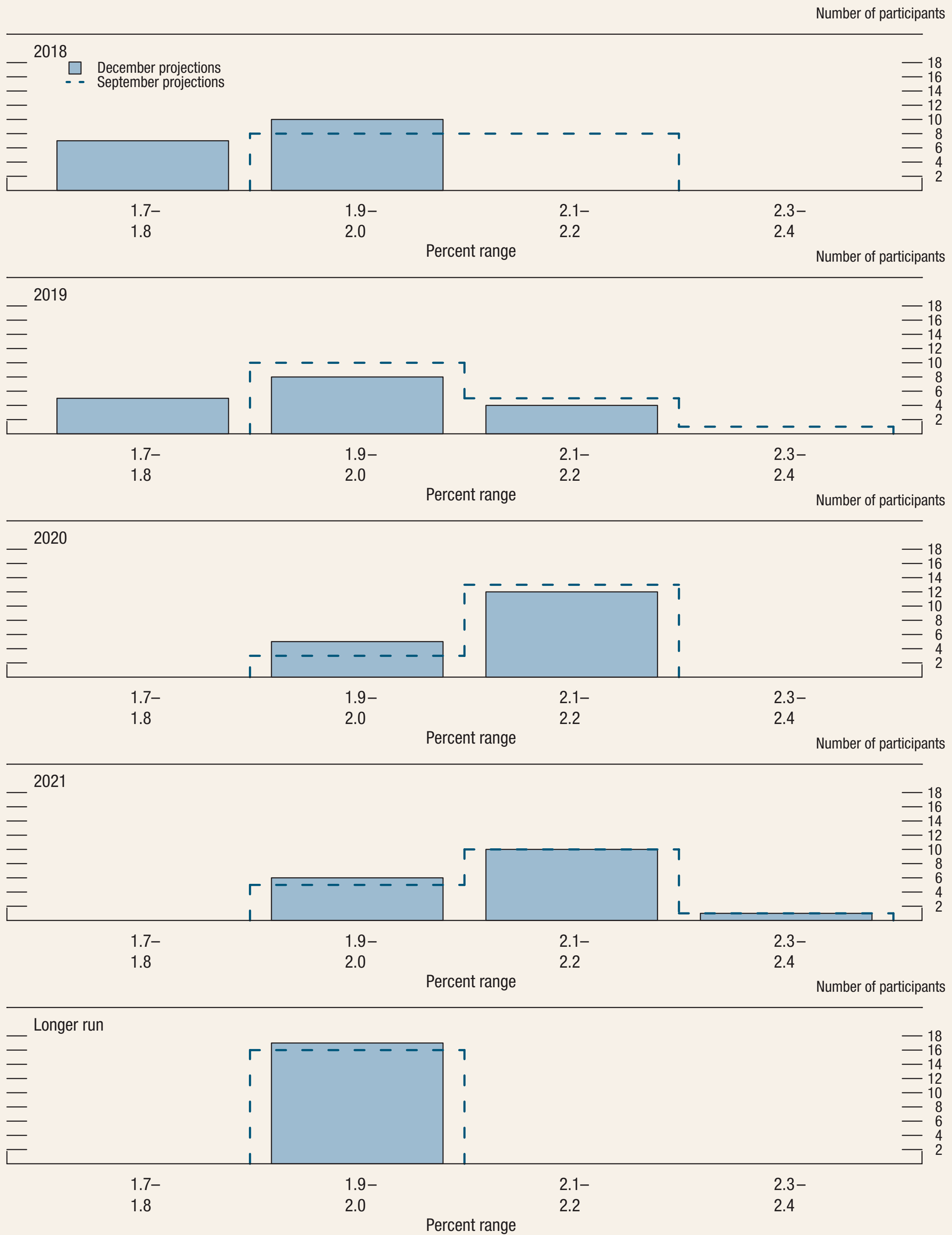
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2018–21 and over the longer run



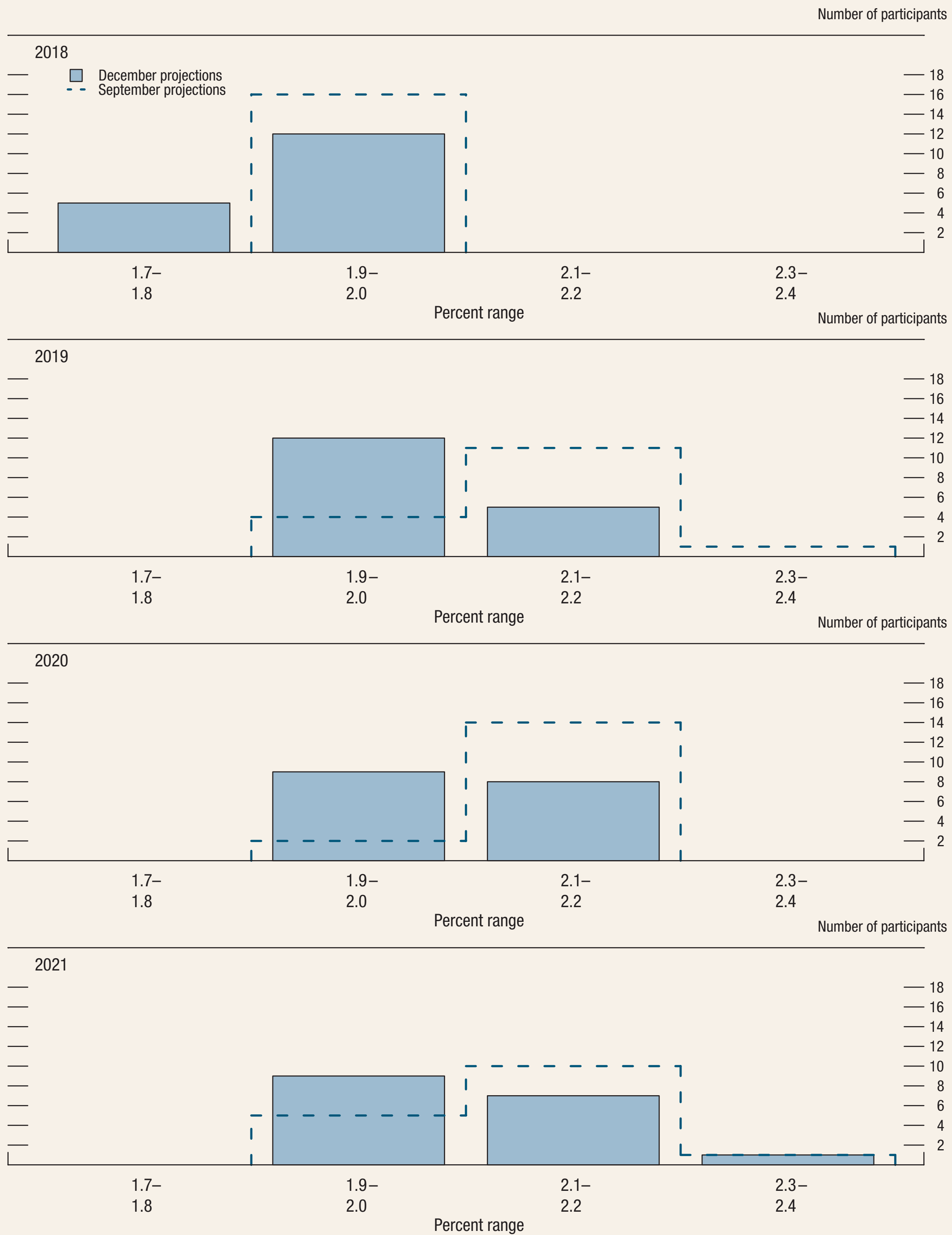
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2018–21 and over the longer run



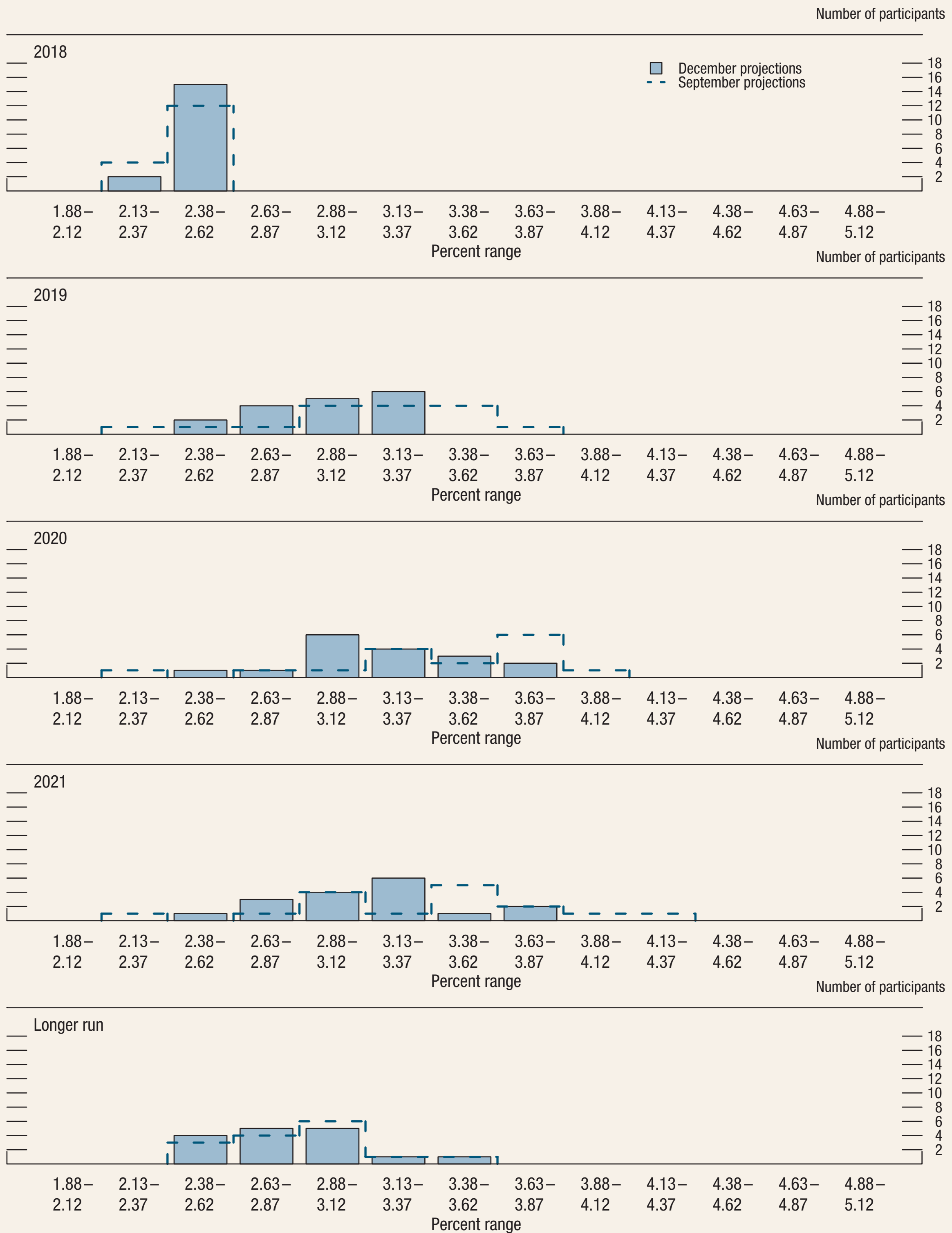
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2018–21



Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2018–21 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1.

Table 2. Average historical projection error ranges
Percentage points

Variable	2018	2019	2020	2021
Change in real GDP[1]	±0.8	±1.6	±2.1	±2.1
Unemployment rate[1]	±0.1	±0.8	±1.5	±1.9
Total consumer prices[2]	±0.2	±1.0	±1.0	±1.0
Short-term interest rates[3]	±0.1	±1.4	±2.0	±2.4

Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1998 through 2017 that were released in the winter by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2017), "Gauging the Uncertainty of the Economic Outlook Using Historical Forecasting Errors: The Federal Reserve's Approach," Finance and Economics Discussion Series 2017-020 (Washington: Board of Governors of the Federal Reserve System, February), https://dx.doi.org/10.17016/FEDS.2017.020.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projections are percent changes on a fourth quarter to fourth quarter basis.

3 For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Projection errors are calculated using average levels, in percent, in the fourth quarter.

tion. Those measures are represented graphically in the "fan charts" shown in the top panels of figures 4.A, 4.B, and 4.C. The fan charts display the median SEP projections for the three variables surrounded by symmetric confidence intervals derived from the forecast errors reported in table 2. If the degree of uncertainty attending these projections is similar to the typical magnitude of past forecast errors and the risks around the projections are broadly balanced, then future outcomes of these variables would have about a 70 percent probability of being within these confidence intervals. For all three variables, this measure of uncertainty is substantial and generally increases as the forecast horizon lengthens.

Participants' assessments of the level of uncertainty surrounding their individual economic projections are shown in the bottom-left panels of figures 4.A, 4.B, and 4.C. Participants generally continued to view the degree of uncertainty attached to their economic projections for real GDP growth and inflation as broadly similar to the average of the past 20 years.[3] A couple more participants than in September viewed the uncertainty around the unemployment rate as higher than average.

Because the fan charts are constructed to be symmetric around the median projections, they do not reflect any asymmetries in the balance of risks that participants may see in their economic projections. Participants' assessments of the balance of risks to their economic projections are shown in the bottom-right panels of figures 4.A, 4.B, and 4.C. Most participants generally judged the risks to the outlook for real GDP growth, the unemployment rate, headline inflation, and core inflation as broadly balanced—in other words, as broadly consistent with a symmetric fan chart. Two more participants than in September saw the risks to real GDP growth as weighted to the downside, and one less judged the risks as weighted to the upside. The balance of risks to the projection for the unemployment rate was unchanged, with three participants judging the risks to the unemployment rate as weighted to the downside and two participants viewing the risks as weighted to the upside. In addition, the balance of risks to the inflation projections shifted down slightly relative to September, as one less participant judged the risks to both total and core inflation as weighted to the upside and one more participant viewed the risks as weighted to the downside.

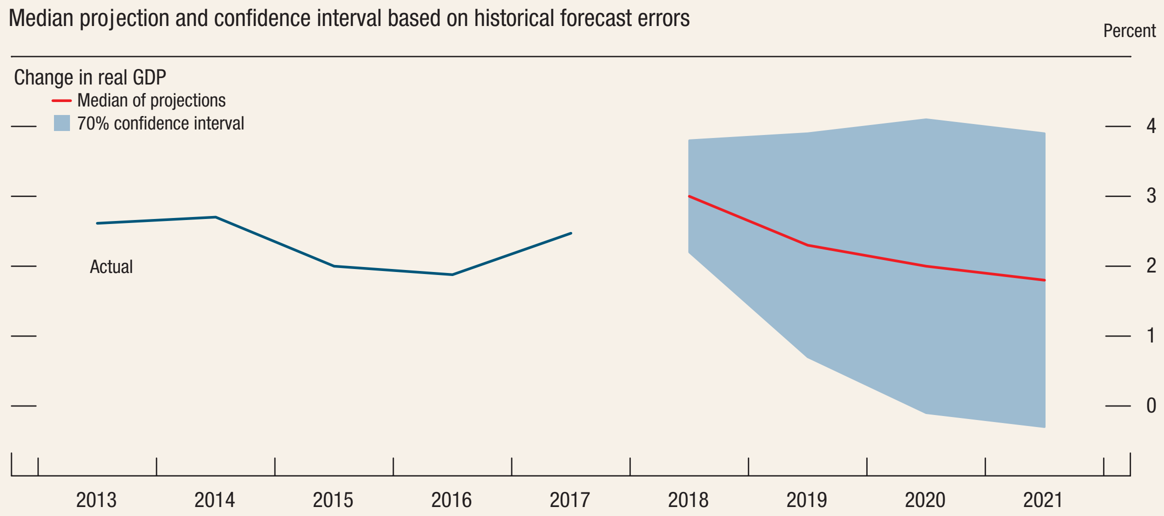
In discussing the uncertainty and risks surrounding their economic projections, participants mentioned trade tensions as well as financial and foreign economic developments as sources of uncertainty or downside risk to the growth outlook. For the inflation outlook, the effects of trade restrictions were cited as upside risks and lower energy prices and the stronger dollar as downside risks. Those who commented on U.S. fiscal policy viewed it as an additional source of uncertainty and noted that it might present two-sided risks to the outlook, as its effects could be waning faster than expected or turn out to be more stimulative than anticipated.

Participants' assessments of the appropriate future path of the federal funds rate were also subject to considerable uncertainty. Because the Committee adjusts the federal funds rate in response to actual and prospective developments over time in real GDP growth, the unemployment rate, and inflation, uncertainty surrounding the projected path for the federal funds rate importantly reflects the uncertainties about the paths for those key economic variables

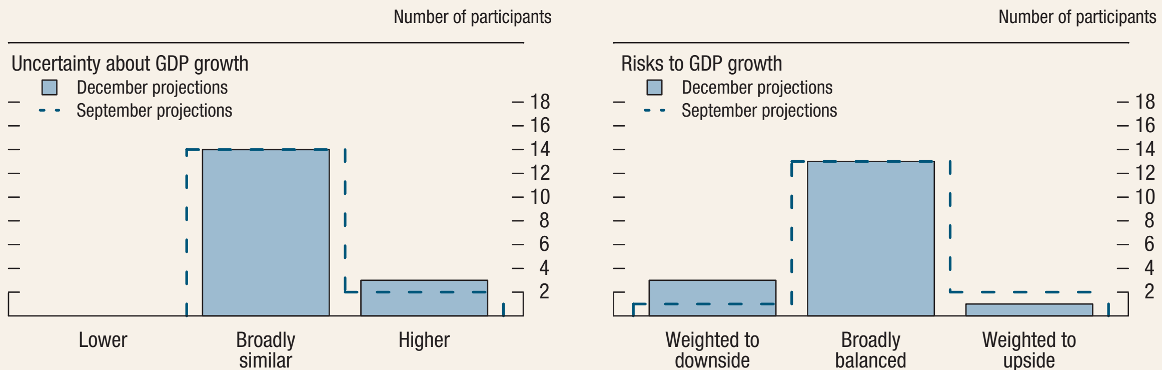
3 At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty surrounding the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4.A. Uncertainty and risks in projections of GDP growth

Median projection and confidence interval based on historical forecast errors

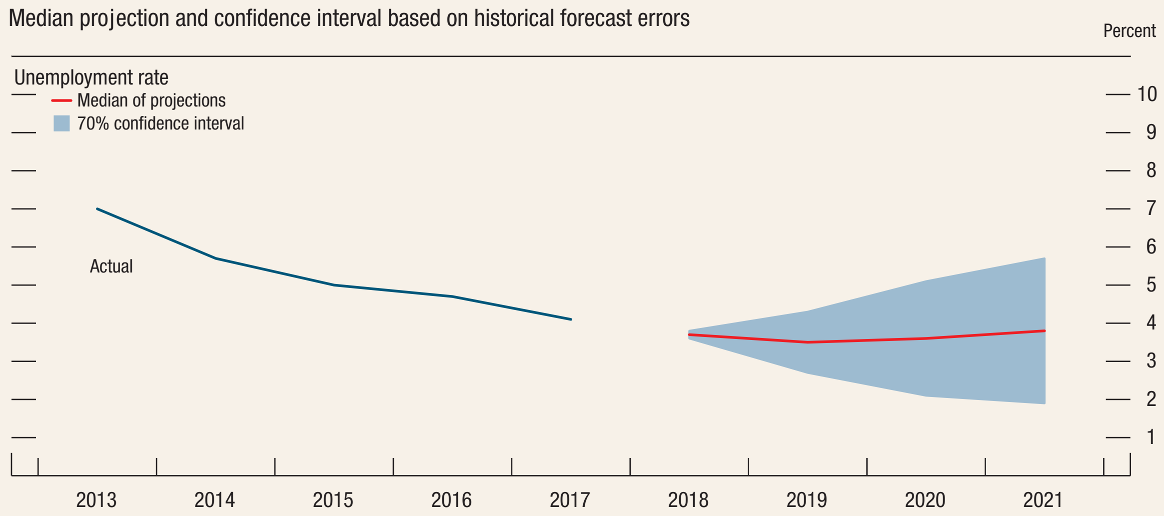


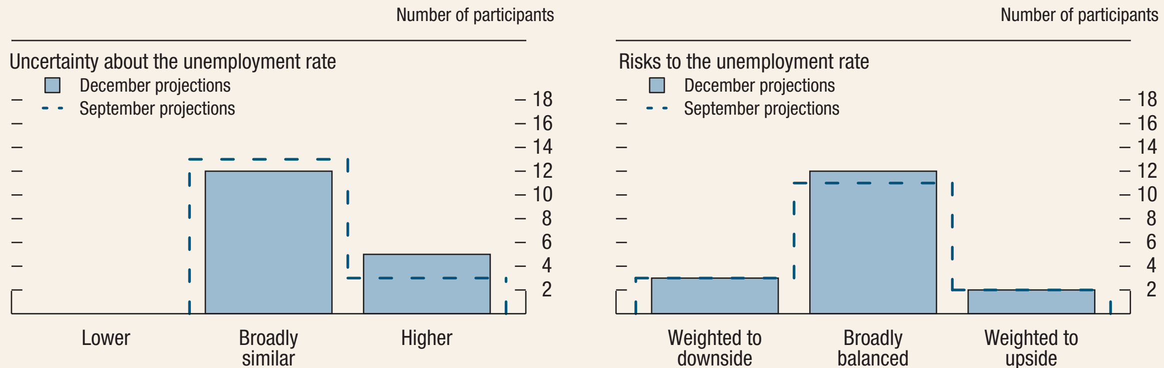
FOMC participants' assessments of uncertainty and risks around their economic projections



Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

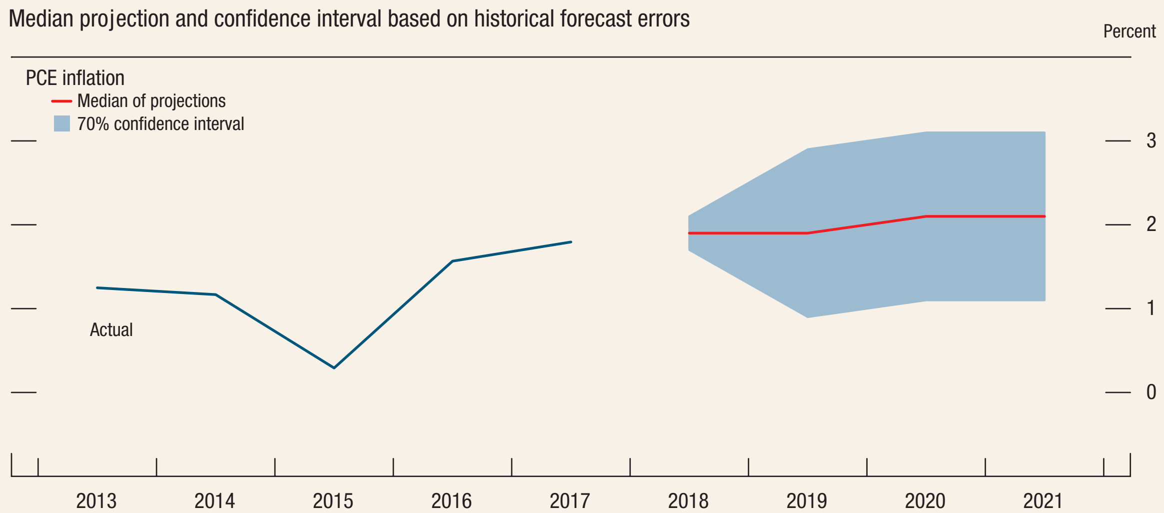
Figure 4.B. Uncertainty and risks in projections of the unemployment rate

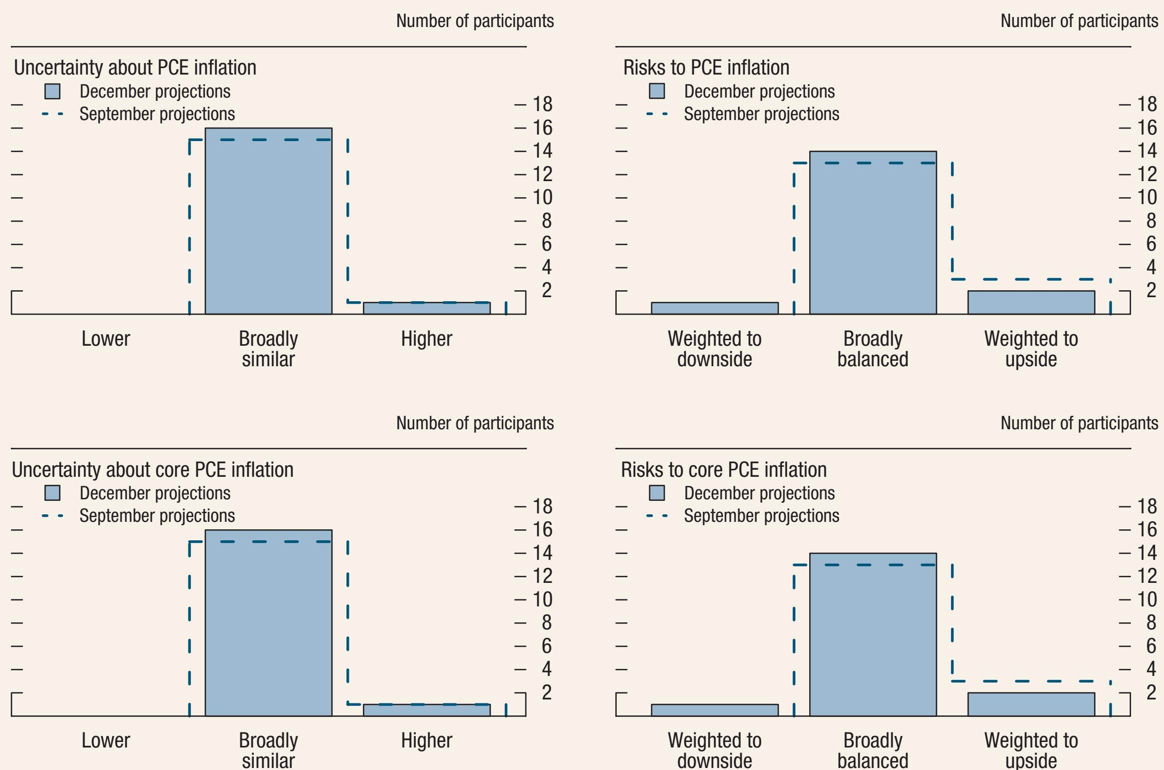




Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.C. Uncertainty and risks in projections of PCE inflation

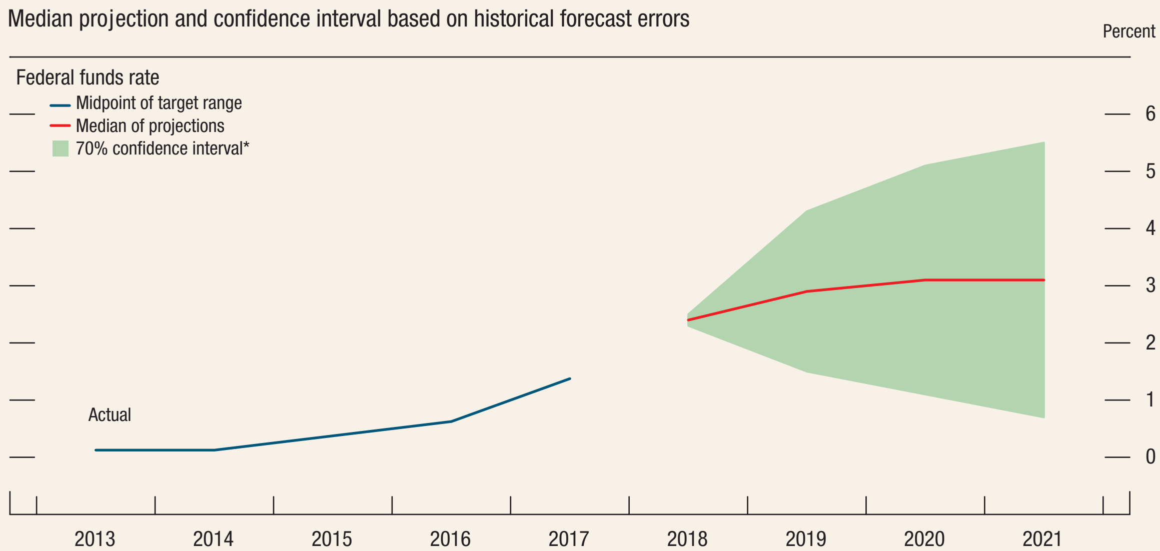




Note: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

along with other factors. Figure 5 provides a graphical representation of this uncertainty, plotting the median SEP projection for the federal funds rate surrounded by confidence intervals derived from the results presented in table 2. As with the macroeconomic variables, the forecast uncertainty surrounding the appropriate path of the federal funds rate is substantial and increases for longer horizons.

Figure 5. Uncertainty in projections of the federal funds rate



Note: The blue and red lines are based on actual values and median projected values, respectively, of the Committee's target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants' individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero—the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee (FOMC). The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 2.2 to 3.8 percent in the current year, 1.4 to 4.6 percent in the second year, and 0.9 to 5.1 percent in the third and fourth years. The corresponding 70 percent confidence intervals for overall inflation would be 1.8 to 2.2 percent in the current year and 1.0 to 3.0 percent in the second, third, and fourth years. Figures 4.A through 4.C illustrate these confidence bounds in "fan charts" that are symmetric and centered on the medians of FOMC participants' projections for GDP growth, the unemployment rate, and inflation. However, in some instances, the risks around the projections may not be symmetric. In particular, the unemployment rate cannot be negative; furthermore, the risks around a particular projection might be tilted to either the upside or the downside, in which case the corresponding fan chart would be asymmetrically positioned around the median projection.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each economic variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty seen in the past 20 years, as presented in table 2 and reflected in the widths of the confidence intervals shown in the top panels of figures 4.A through 4.C. Participants' current assessments of the uncertainty surrounding their projections are summarized in the bottom-left panels of those figures. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, while the symmetric historical fan charts shown in the top panels of figures 4.A through 4.C imply that the risks to participants' projections are balanced, participants may judge that there is a greater risk that a given variable will be above rather than below their projections. These judgments are summarized in the lower-right panels of figures 4.A through 4.C.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward. The final line in table 2 shows the error ranges for forecasts of short-term interest rates. They suggest that the historical confidence intervals associated with projections of the federal funds rate are quite wide. It should be noted, however, that these confidence intervals are not strictly consistent with the projections for the federal funds rate, as these projections are not forecasts of the most likely quarterly outcomes but rather are projections of participants' individual assessments of appropriate monetary policy and are on an end-of-year basis. However, the forecast errors should provide a sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that would be appropriate to offset the effects of shocks to the economy.

If at some point in the future the confidence interval around the federal funds rate were to extend below zero, it would be truncated at zero for purposes of the fan chart shown in figure 5; zero is the bottom of the lowest target range for the federal funds rate that has been adopted by the Committee in the past. This approach to the construction of the federal funds rate fan chart would be merely a convention; it would not have any implications for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate. In such situations, the Committee could also employ other tools, including forward guidance and asset purchases, to provide additional accommodation.

While figures 4.A through 4.C provide information on the uncertainty around the economic projections, figure 1 provides information on the range of views across FOMC participants. A comparison of figure 1 with figures 4.A through 4.C shows that the dispersion of the projections across participants is much smaller than the average forecast errors over the past 20 years.

10 Litigation

During 2018, the Board of Governors was a party in 7 lawsuits or appeals filed that year and was a party in 12 other cases pending from previous years, for a total of 19 cases. In 2017, the Board had been a party in a total of 17 cases. As of December 31, 2018, 7 cases were pending.

Pending

Baylor v. Powell, No. 17-cv-02647 (D. District of Columbia, filed December 11, 2017), is an employment discrimination case.

Burford v. Powell, No. 15-cv-02074 (D. District of Columbia, filed December 1, 2015), is an employment discrimination case.

Center for Popular Democracy v. Board of Governors, No. 16-cv-5829 (E.D. New York, filed October 19, 2016), is an action under the Freedom of Information Act.

Garrett v. PennyMac Loan Services et al., No. 18-00718 (M.D. Pennsylvania, filed April 11, 2018), is an action arising out of mortgage foreclosure.

Jiampietro v. Board of Governors, No. 18-2806 (2d Circuit, filed September 21, 2018), was a petition for review of a Board order remanding an enforcement action for further proceedings before an administrative law judge. On January 30, 2019, the court of appeals granted the Board's motion to dismiss the petition.

Mitchell v. Powell, No. 17-cv-00182 (D. District of Columbia, filed January 27, 2017), is an employment discrimination case.

Richardson v. Powell, No. 14-cv-01673 (D. District of Columbia, filed October 8, 2014), is an employment discrimination case.

Resolved

Ashton v. Board of Governors, No. 18-1033 (D.C. Circuit, filed January 29, 2018), was a petition for review of final enforcement order. On May 10, 2018, the petition was voluntarily dismissed.

BBX Capital Corporation v. FDIC, No. 17-cv-62317 (S.D. Florida, filed November 22, 2017), was an action relating to golden parachute payments. On November 14, 2018, the district court granted the agencies' motion for summary judgment.

Board of Governors v. Afnani, No. 17-cv-00503 (E.D. Virginia, filed May 1, 2017), was a claim for recovery of disability benefits. On February 1, 2018, judgment for the Board was entered by consent of the parties.

Community Financial Services Association of America, Ltd., v. Board of Governors, No. 14-cv-00953 (D. District of Columbia, filed June 11, 2014), was a challenge to actions of the Board, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency that allegedly disadvantage payday lenders. On September 24, 2018, the Board was dismissed as a defendant by stipulation of the parties.

Crisman v. Board of Governors et al., No. 12-cv-1871 (D. District of Columbia, filed November 19, 2012), was a Freedom of Information Act case. On September 18, 2018, the court dismissed all claims against the Board.

Dickson v. Board of Governors, No. 18-cv-00205 (W.D. Texas, notice of removal filed March 1, 2018), was an action involving an allegedly fraudulent check. On May 25, 2018, the district court granted the Board's motion to dismiss.

Handy v. Johnson & Johnson et al., No. 18-1008 (4th Circuit, notice of appeal filed December 29, 2017), was an appeal of the dismissal of an action

arising out of employment at a Federal Reserve Bank. The court of appeals affirmed the dismissal on May 29, 2018, and the Supreme Court denied review on October 27, 2018.

Hardy v. Yellen, No. 16-cv-1572 (D. District of Columbia, filed August 2, 2016), was an employment discrimination action. On July 10, 2018, the district court granted the Board's motion for summary judgment.

Jiampietro v. Board of Governors, No. 18-cv-04769 (S.D. New York, filed May 30, 2018), was a mandamus action filed by a respondent in an administrative enforcement case brought by the Board. On September 20, 2018, the action was dismissed by stipulation of the parties.

Jiampietro v. Board of Governors, No. 18-1989 (2d Circuit, filed July 5, 2018), was a petition for review of an interlocutory order temporarily staying an administrative enforcement action. On September 20, 2018, the petition was dismissed by stipulation of the parties.

The Loan Syndications and Trading Association v. Board of Governors, No. 17-5004 (D.C. Circuit, appeal docketed February 10, 2017), was an appeal of a district court decision (223 F. Supp. 3d 37) upholding the credit-risk retention rules issued under section 941 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. On February 9, 2018, the court of appeals reversed and vacated the credit-risk retention rule insofar as it applied to investment managers of open-market collateralized loan obligations.

Richardson v. Board of Governors, No. 18-5063 (D.C. Circuit, notice of appeal filed March 2, 2018), was an appeal of a district court order dismissing claims brought under the Federal Tort Claims Act, Privacy Act, and Freedom of Information Act, among others. On November 1, 2018, the court of appeals summarily affirmed the dismissal.

11 Statistical Tables

Table 1. Federal Reserve open market transactions, 2018
Millions of dollars

Type of security and transaction	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
U.S. Treasury securities[1]													
Outright transactions[2]													
Treasury bills													
Gross purchases	0	0	0	0	0	0	0	100	0	0	0	0	100
Gross sales	0	0	0	0	0	0	0	0	0	47	0	0	47
Exchanges	0	0	0	0	0	0	0	0	0	0	0	0	0
For new bills	0	0	0	0	0	0	0	0	0	0	0	0	0
Redemptions	0	0	0	0	0	0	0	0	0	0	53	0	53
Others up to 1 year													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	-18,945	-36,610	-19,201	-16,575	-36,706	-12,454	-7,436	-20,001	0	0	-29,220	0	-197,148
Redemptions	12,000	12,000	12,000	18,000	18,000	18,000	24,000	24,000	19,007	23,833	30,000	18,209	229,049
Over 1 to 5 years													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	11,836	20,273	14,039	12,815	19,459	8,717	4,961	11,901	0	0	16,063	0	120,118
Over 5 to 10 years													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	100	0	0	0	0	0	0	0	0	100
Exchanges	6,703	11,606	5,109	3,737	13,149	3,736	2,420	5,680	0	0	9,282	0	61,422
More than 10 years													
Gross purchases	0	100	0	0	0	0	0	0	0	0	0	0	100
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	406	4,731	0	22	4,098	0	54	2,420	0	0	3,875	0	15,606
All maturities													
Gross purchases	0	100	0	0	0	0	0	100	0	0	0	0	200
Gross sales	0	0	0	100	0	0	0	0	0	47	0	0	147
Redemptions	12,000	12,000	12,000	18,000	18,000	18,000	24,000	24,000	19,007	23,833	30,053	18,209	229,102
Net change in U.S. Treasury securities	-12,000	-11,900	-12,000	-18,100	-18,000	-18,000	-24,000	-23,900	-19,007	-23,880	-30,053	-18,209	-229,049
Federal agency obligations													
Outright transactions[2]													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Redemptions	0	0	0	0	0	1,982	0	0	0	0	0	0	1,982
Net change in federal agency obligations	0	0	0	0	0	-1,982	0	0	0	0	0	0	-1,982
Mortgage-backed securities[3]													
Net settlements[2]													
Net change in mortgage-backed securities	-4,185	-772	-5,604	-9,396	-10,382	-13,318	-11,729	-12,537	-15,231	-12,787	-15,519	-16,346	-127,805
Total net change in securities holdings[4]	**-16,185**	**-12,672**	**-17,604**	**-27,496**	**-28,382**	**-33,300**	**-35,729**	**-36,437**	**-34,238**	**-36,667**	**-45,572**	**-34,555**	**-358,836**

(continued on next page)

Table 1.—*continued*

Type of security and transaction	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Temporary transactions													
Repurchase agreements[5]	0	0	0	0	9	0	0	0	0	0	3	3	n/a
Reverse repurchase agreements[5]	290,080	266,993	238,668	248,708	252,150	255,107	253,470	241,292	235,391	225,612	232,978	246,245	n/a
Foreign official and international accounts	242,964	232,134	227,606	242,212	247,413	244,017	248,977	239,663	227,018	222,723	227,862	240,700	n/a
Others	47,116	34,859	11,062	6,496	4,737	11,091	4,494	1,629	8,373	2,889	5,115	5,546	n/a

Note: Purchases of Treasury securities and federal agency obligations increase securities holdings; sales and redemptions of these securities decrease securities holdings. Exchanges occur when the Federal Reserve rolls the proceeds of maturing securities into newly issued securities, and so exchanges do not affect total securities holdings. Positive net settlements of mortgage-backed securities increase securities holdings, while negative net settlements of these securities decrease securities holdings. Components may not sum to totals because of rounding. See table 2 of the H.4.1 release (https://www.federalreserve.gov/releases/h41/) for the maturity distribution of the securities.

1 Transactions exclude changes in compensation for the effects of inflation on the principal of inflation-indexed securities. Transactions include the rollover of inflation compensation into new securities. The maturity distributions of exchanged Treasury securities are based on the announced maturity of new securities rather than actual day counts.

2 Excludes the effect of temporary transactions—repurchase agreements and reverse repurchase agreements.

3 Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. Monthly net change in the remaining principal balance of the securities, reported at face value.

4 The net change in securities holdings reflects the settlements of purchases, reinvestments, sales, and maturities of portfolio securities.

5 Averages of daily business cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities. For additional details on temporary transactions, see the temporary open market operations historical search available at https://apps.newyorkfed.org/markets/autorates/tomo-search-page.

n/a Not applicable.

Table 2. Federal Reserve Bank holdings of U.S. Treasury and federal agency securities, December 31, 2016–18
Millions of dollars

Description	December 31			Change	
	2018	2017	2016	2017–18	2016–17
U.S. Treasury securities[1]					
Held outright[2]	**2,222,547**	**2,454,208**	**2,463,616**	**-231,661**	**-9,408**
By remaining maturity					
Bills					
1–90 days	0	0	0	0	0
91 days to 1 year	0	0	0	0	0
Notes and bonds					
1 year or less	384,936	443,679	206,822	-58,743	236,857
More than 1 year through 5 years	958,065	1,077,270	1,224,348	-119,205	-147,078
More than 5 years through 10 years	260,898	310,375	399,277	-49,477	-88,902
More than 10 years	618,648	622,884	633,169	-4,236	-10,285
By type					
Bills	0	0	0	0	0
Notes	1,382,654	1,624,620	1,638,172	-241,966	-13,552
Bonds	839,893	829,588	825,444	10,305	4,144
Federal agency securities[1]					
Held outright[2]	**2,409**	**4,391**	**16,180**	**-1,982**	**-11,789**
By remaining maturity					
Discount notes					
1–90 days	0	0	0	0	0
91 days to 1 year	0	0	0	0	0
Coupons					
1 year or less	62	1,982	11,789	-1,920	-9,807
More than 1 year through 5 years	0	62	2,044	-62	-1,982
More than 5 years through 10 years	0	0	0	0	0
More than 10 years	2,347	2,347	2,347	0	0
By type					
Discount notes	0	0	0	0	0
Coupons	2,409	4,391	16,180	-1,982	-11,789
By issuer					
Federal Home Loan Mortgage Corporation	591	2,573	8,356	-1,982	-5,783
Federal National Mortgage Association	1,818	1,818	5,401	0	-3,583
Federal Home Loan Banks	0	0	2,423	0	-2,423
Mortgage-backed securities[3,4]					
Held outright[2]	**1,637,123**	**1,764,929**	**1,741,391**	**-127,806**	**23,538**
By remaining maturity					
1 year or less	4	1	0	3	1
More than 1 year through 5 years	214	173	77	41	96
More than 5 years through 10 years	62,706	20,013	10,584	42,693	9,429
More than 10 years	1,574,199	1,744,742	1,730,730	-170,543	14,012
By issuer					
Federal Home Loan Mortgage Corporation	481,436	515,025	506,931	-33,589	8,094
Federal National Mortgage Association	761,166	826,306	836,558	-65,140	-10,252
Government National Mortgage Association	394,521	423,598	397,901	-29,077	25,697
Temporary transactions[5]					
Repurchase agreements[6]	**0**	**0**	**0**	**0**	**0**
Reverse repurchase agreements[6]	**304,012**	**563,958**	**725,210**	**-259,946**	**-161,252**
Foreign official and international accounts	262,164	244,363	256,855	17,801	-12,492
Primary dealers and expanded counterparties	41,848	319,595	468,355	-277,747	-148,760

Note: Components may not sum to totals because of rounding.
1 Par value.
2 Excludes the effect of temporary transactions—repurchase agreements and reverse repurchase agreements.
3 Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae.
4 The par amount shown is the remaining principal balance of the securities.
5 Contract amount of agreements.
6 Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities.

Table 3. Federal Reserve Bank interest rates on loans to depository institutions, December 31, 2018
Percent

Reserve Bank	Primary credit	Secondary credit	Seasonal credit
All banks	3.00	3.50	2.40

Note: For details on rate changes over the course of 2018, see "Discount Rates for Depository Institutions in 2018" in section 8 of this annual report ("Record of Policy Actions of the Board of Governors"). Primary credit is available for very short terms as a backup source of liquidity to depository institutions that are in generally sound financial condition in the judgment of the lending Federal Reserve Bank. Secondary credit is available in appropriate circumstances to depository institutions that do not qualify for primary credit. Seasonal credit is available to help relatively small depository institutions meet regular seasonal needs for funds that arise from a clear pattern of intra-yearly movements in their deposits and loans. The discount rate on seasonal credit takes into account rates charged by market sources of funds and is reestablished on the first business day of each two-week reserve maintenance period.

Table 4. Reserve requirements of depository institutions, December 31, 2018

Liability type	Requirements	
	Percentage of liabilities	Effective date
Net transaction accounts[1]		
$0 million–$16.0 million[2]	0	1/18/2018
More than $16.0 million–$122.3 million[3]	3	1/18/2018
More than $122.3 million	10	1/18/2018
Nonpersonal time deposits	0	12/27/1990
Eurocurrency liabilities	0	12/27/1990

Note: The table reflects the liability types and percentages of those liabilities subject to requirements for the maintenance period that contains the year end. Required reserves must be held in the form of vault cash and, if vault cash is insufficient, also in the form of a deposit with a Federal Reserve Bank. An institution must hold that deposit directly with a Reserve Bank or with another institution in a pass-through relationship. Reserve requirements are imposed on commercial banks, savings banks, savings and loan associations, credit unions, U.S. branches and agencies of foreign banks, Edge corporations, and agreement corporations.

[1] Total transaction accounts consist of demand deposits, automatic transfer service (ATS) accounts, NOW accounts, share draft accounts, telephone or preauthorized transfer accounts, ineligible acceptances, and affiliate-issued obligations maturing in seven days or less. Net transaction accounts are total transaction accounts less amounts due from other depository institutions and less cash items in the process of collection.

For a more detailed description of these deposit types, see Form FR 2900.

[2] The amount of net transaction accounts subject to a reserve requirement ratio of 0 percent (the "exemption amount") is adjusted each year by statute. The exemption amount is adjusted upward by 80 percent of the previous year's (June 30 to June 30) rate of increase in total reservable liabilities at all depository institutions. No adjustment is made in the event of a decrease in such liabilities.

[3] The amount of net transaction accounts subject to a reserve requirement ratio of 3 percent is the "low reserve tranche." By statute, the upper limit of the low reserve tranche is adjusted each year by 80 percent of the previous year's (June 30 to June 30) rate of increase or decrease in net transaction accounts held by all depository institutions.

Table 5. Banking offices and banks affiliated with bank holding companies in the United States, December 31, 2017 and 2018

Type of office	Total	Commercial banks[1]					Savings banks
		Total	Member			Nonmember	
			Total	National	State		
All banking offices							
Banks							
Number, Dec. 31, 2017	**5,181**	**4,918**	**1,654**	**864**	**790**	**3,264**	**263**
Changes during 2018							
New banks	28	25	5	4	1	20	3
Banks converted into branches	-213	-207	-66	-34	-32	-141	-6
Ceased banking operations[2]	-33	-31	-14	-8	-6	-17	-2
Other[3]	0	8	-1	-17	16	9	-8
Net change	-218	-205	-76	-55	-21	-129	-13
Number, Dec. 31, 2018	**4,963**	**4,713**	**1,578**	**809**	**769**	**3,135**	**250**
Branches and additional offices							
Number, Dec. 31, 2017	**80,457**	**77,535**	**54,302**	**39,791**	**14,511**	**23,233**	**2,922**
Changes during 2018							
New branches	1,073	1,034	643	435	208	391	39
Banks converted to branches	213	200	87	39	48	113	13
Discontinued[2]	-2,508	-2,453	-1,866	-1,459	-407	-587	-55
Other[3]	0	4	173	1	172	-169	-4
Net change	-1,222	-1,215	-963	-984	21	-252	-7
Number, Dec. 31, 2018	**79,235**	**76,320**	**53,339**	**38,807**	**14,532**	**22,981**	**2,915**
Banks affiliated with bank holding companies							
Number, Dec. 31, 2017	**4,374**	**4,244**	**1,493**	**763**	**730**	**2,751**	**130**
Changes during 2018							
BHC-affiliated new banks	36	32	10	8	2	22	4
Banks converted into branches	-183	-179	-59	-29	-30	-120	-4
Ceased banking operations[2]	-29	-29	-15	-9	-6	-14	0
Other[3]	0	3	-1	-16	15	4	-3
Net change	-176	-173	-65	-46	-19	-108	-3
Number, Dec. 31, 2018	**4,198**	**4,071**	**1,428**	**717**	**711**	**2,643**	**127**

Note: Includes banks, banking offices, and bank holding companies in U.S. territories and possessions (affiliated insular areas).

1 For purposes of this table, banks are entities that are defined as banks in the Bank Holding Company Act, as amended, which is implemented by Federal Reserve Regulation Y. Generally, a bank is any institution that accepts demand deposits and is engaged in the business of making commercial loans or any institution that is defined as an insured bank in section 3(h) of the Federal Deposit Insurance Corporation Act.

2 Institutions that no longer meet the Regulation Y definition of a bank.

3 Interclass changes and sales of branches.

Table 6A. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1984–2018 and month-end 2018

Millions of dollars

Period	Factors supplying reserve funds								
	Federal Reserve Bank credit outstanding						Gold stock	Special drawing rights certificate account	Treasury currency outstanding[5]
	Securities held outright[1]	Repurchase agreements[2]	Loans and other credit extensions[3]	Float	Other Federal Reserve assets[4]	Total[4]			
1984	167,612	2,015	3,577	833	12,347	186,384	11,096	4,618	16,418
1985	186,025	5,223	3,060	988	15,302	210,598	11,090	4,718	17,075
1986	205,454	16,005	1,565	1,261	17,475	241,760	11,084	5,018	17,567
1987	226,459	4,961	3,815	811	15,837	251,883	11,078	5,018	18,177
1988	240,628	6,861	2,170	1,286	18,803	269,748	11,060	5,018	18,799
1989	233,300	2,117	481	1,093	39,631	276,622	11,059	8,518	19,628
1990	241,431	18,354	190	2,222	39,897	302,091	11,058	10,018	20,402
1991	272,531	15,898	218	731	34,567	323,945	11,059	10,018	21,014
1992	300,423	8,094	675	3,253	30,020	342,464	11,056	8,018	21,447
1993	336,654	13,212	94	909	33,035	383,904	11,053	8,018	22,095
1994	368,156	10,590	223	-716	33,634	411,887	11,051	8,018	22,994
1995	380,831	13,862	135	107	33,303	428,239	11,050	10,168	24,003
1996	393,132	21,583	85	4,296	32,896	451,992	11,048	9,718	24,966
1997	431,420	23,840	2,035	719	31,452	489,466	11,047	9,200	25,543
1998	452,478	30,376	17	1,636	36,966	521,475	11,046	9,200	26,270
1999	478,144	140,640	233	-237	35,321	654,100	11,048	6,200	28,013
2000	511,833	43,375	110	901	36,467	592,686	11,046	2,200	31,643
2001	551,685	50,250	34	-23	37,658	639,604	11,045	2,200	33,017
2002	629,416	39,500	40	418	39,083	708,457	11,043	2,200	34,597
2003	666,665	43,750	62	-319	40,847	751,005	11,043	2,200	35,468
2004	717,819	33,000	43	925	42,219	794,007	11,045	2,200	36,434
2005	744,215	46,750	72	885	39,611	831,532	11,043	2,200	36,540
2006	778,915	40,750	67	-333	39,895	859,294	11,041	2,200	38,206
2007	740,611	46,500	72,636	-19	41,799	901,528	11,041	2,200	38,681
2008	495,629	80,000	1,605,848	-1,494	43,553	2,223,537	11,041	2,200	38,674
2009	1,844,838	0	281,095	-2,097	92,811	2,216,647	11,041	5,200	42,691
2010	2,161,094	0	138,311	-1,421	110,255	2,408,240	11,041	5,200	43,542
2011	2,605,124	0	144,098	-631	152,568	2,901,159	11,041	5,200	44,198
2012	2,669,589	0	11,867	-486	218,296	2,899,266	11,041	5,200	44,751
2013	3,756,158	0	2,177	-962	246,947	4,004,320	11,041	5,200	45,493
2014	4,236,873	0	3,351	-555	239,238	4,478,908	11,041	5,200	46,301
2015	4,241,958	0	2,830	-36	221,448	4,466,199	11,041	5,200	47,567
2016	4,221,187	0	7,325	-804	206,551	4,434,259	11,041	5,200	48,536
2017	4,223,528	0	13,914	-920	194,288	4,430,809	11,041	5,200	49,381
2018	3,862,079	0	4,269	-770	173,324	4,038,902	11,041	5,200	49,801

(continued on next page)

Table 6A.—*continued*

Period	Factors supplying reserve funds								
	Federal Reserve Bank credit outstanding						Gold stock	Special drawing rights certificate account	Treasury currency outstanding[5]
	Securities held outright[1]	Repurchase agreements[2]	Loans and other credit extensions[3]	Float	Other Federal Reserve assets[4]	Total[4]			
2018, month-end									
Jan	4,201,346	0	2,442	-1,038	197,165	4,399,914	11,041	5,200	49,440
Feb	4,188,604	0	1,808	-807	184,734	4,374,340	11,041	5,200	49,440
Mar	4,183,711	0	6,736	-700	189,448	4,379,195	11,041	5,200	49,517
Apr	4,144,804	0	1,993	-902	190,553	4,336,449	11,041	5,200	49,545
May	4,116,745	0	1,895	-976	180,478	4,298,143	11,041	5,200	49,586
Jun	4,101,985	0	3,040	-543	184,355	4,288,837	11,041	5,200	49,617
Jul	4,048,821	0	2,073	-827	186,311	4,236,378	11,041	5,200	49,646
Aug	4,012,615	0	2,028	-527	174,071	4,188,187	11,041	5,200	49,667
Sep	3,997,394	0	352	-969	177,941	4,174,718	11,041	5,200	49,691
Oct	3,941,797	0	317	-877	179,498	4,120,735	11,041	5,200	49,721
Nov	3,896,390	0	252	-557	169,752	4,065,837	11,041	5,200	49,745
Dec	3,862,079	0	4,269	-770	173,324	4,038,902	11,041	5,200	49,801

Note: Components may not sum to totals because of rounding.

1 Includes U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities. U.S. Treasury securities and federal agency debt securities include securities lent to dealers, which are fully collateralized by U.S. Treasury securities, federal agency securities, and other highly rated debt securities.

2 Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and agency mortgage-backed securities.

3 As of 2015, includes only central bank liquidity swaps; primary, seasonal, and secondary credit; and net portfolio holdings of Maiden Lane LLC. For disaggregated loans and other credit extensions from 1984 to 2014, refer to "Table 6B. Loans and other credit extensions, by type, year-end 1984–2014 and month-end 2014" of the *2014 Annual Report.*

4 As of 2013, unamortized discounts on securities held outright are included as a component of Other Federal Reserve assets. Previously, they were included in Other Federal Reserve liabilities and capital.

5 Includes currency and coin (other than gold) issued directly by the U.S. Treasury. The largest components are fractional and dollar coins. For details, refer to "U.S. Currency and Coin Outstanding and in Circulation," *Treasury Bulletin.*

Table 6A. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1984–2018 and month-end 2018—*continued*

Period	Factors absorbing reserve funds										Reserve balances with Federal Reserve Banks
	Currency in circulation	Reverse repurchase agreements[6]	Treasury cash holdings[7]	Deposits with Federal Reserve Banks, other than reserve balances					Required clearing balances[9]	Other Federal Reserve liabilities and capital[4,10]	
				Term deposits	Treasury general account	Treasury supplementary financing account	Foreign	Other[8]			
1984	183,796	0	513	n/a	5,316	n/a	253	867	1,126	5,952	20,693
1985	197,488	0	550	n/a	9,351	n/a	480	1,041	1,490	5,940	27,141
1986	211,995	0	447	n/a	7,588	n/a	287	917	1,812	6,088	46,295
1987	230,205	0	454	n/a	5,313	n/a	244	1,027	1,687	7,129	40,097
1988	247,649	0	395	n/a	8,656	n/a	347	548	1,605	7,683	37,742
1989	260,456	0	450	n/a	6,217	n/a	589	1,298	1,618	8,486	36,713
1990	286,963	0	561	n/a	8,960	n/a	369	528	1,960	8,147	36,081
1991	307,756	0	636	n/a	17,697	n/a	968	1,869	3,946	8,113	25,051
1992	334,701	0	508	n/a	7,492	n/a	206	653	5,897	7,984	25,544
1993	365,271	0	377	n/a	14,809	n/a	386	636	6,332	9,292	27,967
1994	403,843	0	335	n/a	7,161	n/a	250	1,143	4,196	11,959	25,061
1995	424,244	0	270	n/a	5,979	n/a	386	2,113	5,167	12,342	22,960
1996	450,648	0	249	n/a	7,742	n/a	167	1,178	6,601	13,829	17,310
1997	482,327	0	225	n/a	5,444	n/a	457	1,171	6,684	15,500	23,447
1998	517,484	0	85	n/a	6,086	n/a	167	1,869	6,780	16,354	19,164
1999	628,359	0	109	n/a	28,402	n/a	71	1,644	7,481	17,256	16,039
2000	593,694	0	450	n/a	5,149	n/a	216	2,478	6,332	17,962	11,295
2001	643,301	0	425	n/a	6,645	n/a	61	1,356	8,525	17,083	8,469
2002	687,518	21,091	367	n/a	4,420	n/a	136	1,266	10,534	18,977	11,988
2003	724,187	25,652	321	n/a	5,723	n/a	162	995	11,829	19,793	11,054
2004	754,877	30,783	270	n/a	5,912	n/a	80	1,285	9,963	26,378	14,137
2005	794,014	30,505	202	n/a	4,573	n/a	83	2,144	8,651	30,466	10,678
2006	820,176	29,615	252	n/a	4,708	n/a	98	972	6,842	36,231	11,847
2007	828,938	43,985	259	n/a	16,120	n/a	96	1,830	6,614	41,622	13,986
2008	889,898	88,352	259	n/a	106,123	259,325	1,365	21,221	4,387	48,921	855,599
2009	928,249	77,732	239	n/a	186,632	5,001	2,411	35,262	3,020	63,219	973,814
2010	982,750	59,703	177	0	140,773	199,964	3,337	13,631	2,374	99,602	965,712
2011	1,075,820	99,900	128	0	85,737	0	125	64,909	2,480	72,766	1,559,731
2012	1,169,159	107,188	150	0	92,720	0	6,427	27,476	n/a	66,093	1,491,044
2013	1,241,228	315,924	234	0	162,399	0	7,970	26,181	n/a	63,049	2,249,070
2014	1,342,957	509,837	201	0	223,452	0	5,242	20,320	n/a	61,447	2,377,995
2015	1,424,967	712,401	266	0	333,447	0	5,231	31,212	n/a	45,320	1,977,163
2016	1,509,440	725,210	166	0	399,190	0	5,165	53,248	n/a	46,943	1,759,675
2017	1,618,006	563,958	214	0	228,933	0	5,257	77,762	n/a	47,876	1,954,426
2018	1,719,302	304,012	214	0	402,138	0	5,245	73,073	n/a	45,007	1,555,954

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Table 6A.—*continued*

Period	Factors absorbing reserve funds										Reserve balances with Federal Reserve Banks
	Currency in circulation	Reverse repurchase agreements[6]	Treasury cash holdings[7]	Deposits with Federal Reserve Banks, other than reserve balances					Required clearing balances[9]	Other Federal Reserve liabilities and capital[4,10]	
				Term deposits	Treasury general account	Treasury supplementary financing account	Foreign	Other[8]			
2018, month-end											
Jan	1,607,534	310,476	267	0	275,794	0	5,255	76,740	n/a	47,153	2,142,376
Feb	1,627,206	277,458	304	0	199,390	0	5,255	77,043	n/a	45,057	2,208,308
Mar	1,636,694	273,381	319	0	289,648	0	5,253	88,012	n/a	44,582	2,107,065
Apr	1,643,149	263,241	290	0	419,376	0	5,254	77,087	n/a	44,633	1,949,204
May	1,661,173	269,493	245	0	354,393	0	5,255	69,944	n/a	44,921	1,958,546
Jun	1,666,880	341,633	198	0	332,805	0	5,301	76,224	n/a	44,735	1,886,919
Jul	1,668,836	248,166	206	0	358,159	0	5,257	70,924	n/a	45,498	1,905,220
Aug	1,685,329	239,097	211	0	317,971	0	5,256	64,625	n/a	43,648	1,897,958
Sep	1,685,463	278,949	214	0	384,713	0	5,256	72,428	n/a	44,136	1,769,493
Oct	1,695,923	236,530	232	0	366,596	0	5,257	66,688	n/a	43,929	1,771,541
Nov	1,703,441	234,532	203	0	344,874	0	5,256	69,124	n/a	44,355	1,730,038
Dec	1,719,302	304,012	214	0	402,138	0	5,245	73,073	n/a	45,007	1,555,954

6 Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and agency mortgage-backed securities.

7 Coin and paper currency held by the Treasury.

8 As of 2014, includes desposits of designated financial market utilites.

9 Required clearing balances were discontinued in July 2012.

10 In 2010, includes funds from American International Group, Inc. asset dispositions, held as agent.

n/a Not applicable.

Table 6B. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1918–1983
Millions of dollars

Period	Factors supplying reserve funds									
	Federal Reserve Bank credit outstanding							Gold stock[6]	Special drawing rights certificate account	Treasury currency outstanding[7]
	Securities held outright[1]	Repurchase agreements[2]	Loans	Float[3]	All other[4]	Other Federal Reserve assets[5]	Total			
1918	239	0	1,766	199	294	0	2,498	2,873	n/a	1,795
1919	300	0	2,215	201	575	0	3,292	2,707	n/a	1,707
1920	287	0	2,687	119	262	0	3,355	2,639	n/a	1,709
1921	234	0	1,144	40	146	0	1,563	3,373	n/a	1,842
1922	436	0	618	78	273	0	1,405	3,642	n/a	1,958
1923	80	54	723	27	355	0	1,238	3,957	n/a	2,009
1924	536	4	320	52	390	0	1,302	4,212	n/a	2,025
1925	367	8	643	63	378	0	1,459	4,112	n/a	1,977
1926	312	3	637	45	384	0	1,381	4,205	n/a	1,991
1927	560	57	582	63	393	0	1,655	4,092	n/a	2,006
1928	197	31	1,056	24	500	0	1,809	3,854	n/a	2,012
1929	488	23	632	34	405	0	1,583	3,997	n/a	2,022
1930	686	43	251	21	372	0	1,373	4,306	n/a	2,027
1931	775	42	638	20	378	0	1,853	4,173	n/a	2,035
1932	1,851	4	235	14	41	0	2,145	4,226	n/a	2,204
1933	2,435	2	98	15	137	0	2,688	4,036	n/a	2,303
1934	2,430	0	7	5	21	0	2,463	8,238	n/a	2,511
1935	2,430	1	5	12	38	0	2,486	10,125	n/a	2,476
1936	2,430	0	3	39	28	0	2,500	11,258	n/a	2,532
1937	2,564	0	10	19	19	0	2,612	12,760	n/a	2,637
1938	2,564	0	4	17	16	0	2,601	14,512	n/a	2,798
1939	2,484	0	7	91	11	0	2,593	17,644	n/a	2,963
1940	2,184	0	3	80	8	0	2,274	21,995	n/a	3,087
1941	2,254	0	3	94	10	0	2,361	22,737	n/a	3,247
1942	6,189	0	6	471	14	0	6,679	22,726	n/a	3,648
1943	11,543	0	5	681	10	0	12,239	21,938	n/a	4,094
1944	18,846	0	80	815	4	0	19,745	20,619	n/a	4,131
1945	24,262	0	249	578	2	0	25,091	20,065	n/a	4,339
1946	23,350	0	163	580	1	0	24,093	20,529	n/a	4,562
1947	22,559	0	85	535	1	0	23,181	22,754	n/a	4,562
1948	23,333	0	223	541	1	0	24,097	24,244	n/a	4,589
1949	18,885	0	78	534	2	0	19,499	24,427	n/a	4,598
1950	20,725	53	67	1,368	3	0	22,216	22,706	n/a	4,636
1951	23,605	196	19	1,184	5	0	25,009	22,695	n/a	4,709
1952	24,034	663	156	967	4	0	25,825	23,187	n/a	4,812
1953	25,318	598	28	935	2	0	26,880	22,030	n/a	4,894
1954	24,888	44	143	808	1	0	25,885	21,713	n/a	4,985
1955	24,391	394	108	1,585	29	0	26,507	21,690	n/a	5,008
1956	24,610	305	50	1,665	70	0	26,699	21,949	n/a	5,066
1957	23,719	519	55	1,424	66	0	25,784	22,781	n/a	5,146
1958	26,252	95	64	1,296	49	0	27,755	20,534	n/a	5,234
1959	26,607	41	458	1,590	75	0	28,771	19,456	n/a	5,311
1960	26,984	400	33	1,847	74	0	29,338	17,767	n/a	5,398
1961	28,722	159	130	2,300	51	0	31,362	16,889	n/a	5,585
1962	30,478	342	38	2,903	110	0	33,871	15,978	n/a	5,567
1963	33,582	11	63	2,600	162	0	36,418	15,513	n/a	5,578
1964	36,506	538	186	2,606	94	0	39,930	15,388	n/a	5,405
1965	40,478	290	137	2,248	187	0	43,340	13,733	n/a	5,575
1966	43,655	661	173	2,495	193	0	47,177	13,159	n/a	6,317
1967	48,980	170	141	2,576	164	0	52,031	11,982	n/a	6,784

(continued on next page)

Table 6B.—*continued*

Period	Factors supplying reserve funds									
	Federal Reserve Bank credit outstanding							Gold stock[6]	Special drawing rights certificate account	Treasury currency outstanding[7]
	Securities held outright[1]	Repurchase agreements[2]	Loans	Float[3]	All other[4]	Other Federal Reserve assets[5]	Total			
1968	52,937	0	186	3,443	58	0	56,624	10,367	n/a	6,795
1969	57,154	0	183	3,440	64	2,743	63,584	10,367	n/a	6,852
1970	62,142	0	335	4,261	57	1,123	67,918	10,732	400	7,147
1971	69,481	1,323	39	4,343	261	1,068	76,515	10,132	400	7,710
1972	71,119	111	1,981	3,974	106	1,260	78,551	10,410	400	8,313
1973	80,395	100	1,258	3,099	68	1,152	86,072	11,567	400	8,716
1974	84,760	954	299	2,001	999	3,195	92,208	11,652	400	9,253
1975	92,789	1,335	211	3,688	1,126	3,312	102,461	11,599	500	10,218
1976	100,062	4,031	25	2,601	991	3,182	110,892	11,598	1,200	10,810
1977	108,922	2,352	265	3,810	954	2,442	118,745	11,718	1,250	11,331
1978	117,374	1,217	1,174	6,432	587	4,543	131,327	11,671	1,300	11,831
1979	124,507	1,660	1,454	6,767	704	5,613	140,705	11,172	1,800	13,083
1980	128,038	2,554	1,809	4,467	776	8,739	146,383	11,160	2,518	13,427
1981	136,863	3,485	1,601	1,762	195	9,230	153,136	11,151	3,318	13,687
1982	144,544	4,293	717	2,735	1,480	9,890	163,659	11,148	4,618	13,786
1983	159,203	1,592	918	1,605	418	8,728	172,464	11,121	4,618	15,732

Note: For a description of figures and discussion of their significance, see *Banking and Monetary Statistics*, 1941–1970 (Board of Governors of the Federal Reserve System, 1976), pp. 507–23. Components may not sum to totals because of rounding.

1 In 1969 and thereafter, includes securities loaned—fully guaranteed by U.S. government securities pledged with Federal Reserve Banks—and excludes securities sold and scheduled to be bought back under matched sale–purchase transactions. On September 29, 1971, and thereafter, includes federal agency issues bought outright.

2 On December 1, 1966, and thereafter, includes federal agency obligations held under repurchase agreements.

3 In 1960 and thereafter, figures reflect a minor change in concept; refer to *Federal Reserve Bulletin*, vol. 47 (February 1961), p. 164.

4 Principally acceptances and, until August 21, 1959, industrial loans, the authority for which expired on that date.

5 For the period before April 16, 1969, includes the total of Federal Reserve capital paid in, surplus, other capital accounts, and other liabilities and accrued dividends, less the sum of bank premises and other assets, and is reported as "Other Federal Reserve accounts"; thereafter, "Other Federal Reserve assets" and "Other Federal Reserve liabilities and capital" are shown separately.

6 Before January 30, 1934, includes gold held in Federal Reserve Banks and in circulation.

7 Includes currency and coin (other than gold) issued directly by the Treasury. The largest components are fractional and dollar coins. For details refer to "U.S. Currency and Coin Outstanding and in Circulation,'' *Treasury Bulletin*.

n/a Not applicable.

Table 6B. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1918–1983—*continued*
Millions of dollars

Period	Factors absorbing reserve funds								Member bank reserves[9]			
	Currency in circulation	Treasury cash holdings[8]	Deposits with Federal Reserve Banks, other than reserve balances			Other Federal Reserve accounts[5]	Required clearing balances	Other Federal Reserve liabilities and capital[5]	With Federal Reserve Banks	Currency and coin[10]	Required[11]	Excess[11,12]
			Treasury	Foreign	Other							
1918	4,951	288	51	96	25	118	0	0	1,636	n/a	1,585	51
1919	5,091	385	31	73	28	208	0	0	1,890	n/a	1,822	68
1920	5,325	218	57	5	18	298	0	0	1,781	n/a	n/a	n/a
1921	4,403	214	96	12	15	285	0	0	1,753	n/a	1,654	99
1922	4,530	225	11	3	26	276	0	0	1,934	n/a	n/a	n/a
1923	4,757	213	38	4	19	275	0	0	1,898	n/a	1,884	14
1924	4,760	211	51	19	20	258	0	0	2,220	n/a	2,161	59
1925	4,817	203	16	8	21	272	0	0	2,212	n/a	2,256	-44
1926	4,808	201	17	46	19	293	0	0	2,194	n/a	2,250	-56
1927	4,716	208	18	5	21	301	0	0	2,487	n/a	2,424	63
1928	4,686	202	23	6	21	348	0	0	2,389	n/a	2,430	-41
1929	4,578	216	29	6	24	393	0	0	2,355	n/a	2,428	-73
1930	4,603	211	19	6	22	375	0	0	2,471	n/a	2,375	96
1931	5,360	222	54	79	31	354	0	0	1,961	n/a	1,994	-33
1932	5,388	272	8	19	24	355	0	0	2,509	n/a	1,933	576
1933	5,519	284	3	4	128	360	0	0	2,729	n/a	1,870	859
1934	5,536	3,029	121	20	169	241	0	0	4,096	n/a	2,282	1,814
1935	5,882	2,566	544	29	226	253	0	0	5,587	n/a	2,743	2,844
1936	6,543	2,376	244	99	160	261	0	0	6,606	n/a	4,622	1,984
1937	6,550	3,619	142	172	235	263	0	0	7,027	n/a	5,815	1,212
1938	6,856	2,706	923	199	242	260	0	0	8,724	n/a	5,519	3,205
1939	7,598	2,409	634	397	256	251	0	0	11,653	n/a	6,444	5,209
1940	8,732	2,213	368	1,133	599	284	0	0	14,026	n/a	7,411	6,615
1941	11,160	2,215	867	774	586	291	0	0	12,450	n/a	9,365	3,085
1942	15,410	2,193	799	793	485	256	0	0	13,117	n/a	11,129	1,988
1943	20,449	2,303	579	1,360	356	339	0	0	12,886	n/a	11,650	1,236
1944	25,307	2,375	440	1,204	394	402	0	0	14,373	n/a	12,748	1,625
1945	28,515	2,287	977	862	446	495	0	0	15,915	n/a	14,457	1,458
1946	28,952	2,272	393	508	314	607	0	0	16,139	n/a	15,577	562
1947	28,868	1,336	870	392	569	563	0	0	17,899	n/a	16,400	1,499
1948	28,224	1,325	1123	642	547	590	0	0	20,479	n/a	19,277	1,202
1949	27,600	1,312	821	767	750	706	0	0	16,568	n/a	15,550	1,018
1950	27,741	1,293	668	895	565	714	0	0	17,681	n/a	16,509	1,172
1951	29,206	1,270	247	526	363	746	0	0	20,056	n/a	19,667	389
1952	30,433	1,270	389	550	455	777	0	0	19,950	n/a	20,520	-570
1953	30,781	761	346	423	493	839	0	0	20,160	n/a	19,397	763
1954	30,509	796	563	490	441	907	0	0	18,876	n/a	18,618	258
1955	31,158	767	394	402	554	925	0	0	19,005	n/a	18,903	102
1956	31,790	775	441	322	426	901	0	0	19,059	n/a	19,089	-30
1957	31,834	761	481	356	246	998	0	0	19,034	n/a	19,091	-57
1958	32,193	683	358	272	391	1,122	0	0	18,504	n/a	18,574	-70
1959	32,591	391	504	345	694	841	0	0	18,174	310	18,619	-135
1960	32,869	377	485	217	533	941	0	0	17,081	2,544	18,988	637
1961	33,918	422	465	279	320	1,044	0	0	17,387	2,823	20,114	96
1962	35,338	380	597	247	393	1,007	0	0	17,454	3,262	20,071	645
1963	37,692	361	880	171	291	1,065	0	0	17,049	4,099	20,677	471
1964	39,619	612	820	229	321	1,036	0	0	18,086	4,151	21,663	574
1965	42,056	760	668	150	355	211	0	0	18,447	4,163	22,848	-238
1966	44,663	1,176	416	174	588	-147	0	0	19,779	4,310	24,321	-232
1967	47,226	1,344	1,123	135	653	-773	0	0	21,092	4,631	25,905	-182

(continued on next page)

Table 6B.—*continued*

Period	Factors absorbing reserve funds								Member bank reserves[9]			
	Currency in circulation	Treasury cash holdings[8]	Deposits with Federal Reserve Banks, other than reserve balances			Other Federal Reserve accounts[5]	Required clearing balances	Other Federal Reserve liabilities and capital[5]	With Federal Reserve Banks	Currency and coin[10]	Required[11]	Excess[11,12]
			Treasury	Foreign	Other							
1968	50,961	695	703	216	747	-1,353	0	0	21,818	4,921	27,439	-700
1969	53,950	596	1,312	134	807	0	0	1,919	22,085	5,187	28,173	-901
1970	57,093	431	1,156	148	1,233	0	0	1,986	24,150	5,423	30,033	-460
1971	61,068	460	2,020	294	999	0	0	2,131	27,788	5,743	32,496	1,035
1972	66,516	345	1,855	325	840	0	0	2,143	25,647	6,216	32,044	98
1973	72,497	317	2,542	251	1,149[13]	0	0	2,669	27,060	6,781	35,268	-1,360
1974	79,743	185	3,113	418	1,275[13]	0	0	2,935	25,843	7,370	37,011	-3,798
1975	86,547	483	7,285	353	1,090	0	0	2,968	26,052	8,036	35,197	-1,103[14]
1976	93,717	460	10,393	352	1,357	0	0	3,063	25,158	8,628	35,461	-1,535
1977	103,811	392	7,114	379	1,187	0	0	3,292	26,870	9,421	37,615	-1,265
1978	114,645	240	4,196	368	1,256	0	0	4,275	31,152	10,538	42,694	-893
1979	125,600	494	4,075	429	1,412	0	0	4,957	29,792	11,429	44,217	-2,835
1980	136,829	441	3,062	411	617	0	0	4,671	27,456	13,654	40,558	675
1981	144,774	443	4,301	505	781	0	117	5,261	25,111	15,576	42,145	-1,442
1982	154,908	429	5,033	328	1,033	0	436	4,990	26,053	16,666	41,391	1,328
1983	171,935	479	3,661	191	851	0	1,013	5,392	20,413	17,821	39,179	-945

[8] Coin and paper currency held by the Treasury, as well as any gold in excess of the gold certificates issued to the Reserve Bank.

[9] In November 1979 and thereafter, includes reserves of member banks, Edge Act corporations, and U.S. agencies and branches of foreign banks. On November 13, 1980, and thereafter, includes reserves of all depository institutions.

[10] Between December 1, 1959, and November 23, 1960, part was allowed as reserves; thereafter, all was allowed.

[11] Estimated through 1958. Before 1929, data were available only on call dates (in 1920 and 1922 the call date was December 29). Since September 12, 1968, the amount has been based on close-of-business figures for the reserve period two weeks before the report date.

[12] For the week ending November 15, 1972, and thereafter, includes $450 million of reserve deficiencies on which Federal Reserve Banks are allowed to waive penalties for a transition period in connection with bank adaptation to Regulation J as amended, effective November 9, 1972. Allowable deficiencies are as follows (beginning with first statement week of quarter, in millions): 1973—Q1, $279; Q2, $172; Q3, $112; Q4, $84; 1974—Q1, $67; Q2, $58. The transition period ended with the second quarter of 1974.

[13] For the period before July 1973, includes certain deposits of domestic nonmember banks and foreign-owned banking institutions held with member banks and redeposited in full with Federal Reserve Banks in connection with voluntary participation by nonmember institutions in the Federal Reserve System program of credit restraint. As of December 12, 1974, the amount of voluntary nonmember bank and foreign-agency and branch deposits at Federal Reserve Banks that are associated with marginal reserves is no longer reported. However, two amounts are reported: (1) deposits voluntarily held as reserves by agencies and branches of foreign banks operating in the United States and (2) Eurodollar liabilities.

[14] Adjusted to include waivers of penalties for reserve deficiencies, in accordance with change in Board policy, effective November 19, 1975.

n/a Not applicable.

Table 7. Principal assets and liabilities of insured commercial banks, by class of bank, June 30, 2018 and 2017
Millions of dollars, except as noted

Item	Total	Member banks			Nonmember banks
		Total	National	State	
2018					
Assets					
Loans and investments	3,232,554	2,811,901	2,223,698	588,203	420,654
Loans, gross					
Net	8,644,391	6,865,683	5,447,509	1,418,174	1,778,708
Investments	3,232,554	2,811,901	2,223,698	588,203	420,654
U.S. government securities	459,324	437,362	361,754	75,608	21,962
Other	2,773,230	2,374,539	1,861,944	512,595	398,692
Cash assets, total	1,316,958	1,175,055	949,841	225,214	141,904
Liabilities					
Deposits, total	11,254,955	9,273,322	7,396,328	1,876,994	1,981,633
Interbank	276,625	254,320	216,231	38,089	22,305
Other transactions	1,860,078	1,516,713	1,138,826	377,887	343,365
Other nontransactions	9,118,253	7,502,289	6,041,270	1,461,019	1,615,964
Equity capital	1,846,170	1,547,780	1,237,118	310,661	298,390
Number of banks	4,822	1,612	850	762	3,210
2017					
Assets					
Loans and investments	3,209,713	2,779,238	2,200,102	579,136	430,475
Loans, gross					
Net	8,220,620	6,509,962	5,189,028	1,320,934	1,710,658
Investments	3,209,713	2,779,238	2,200,102	579,136	430,475
U.S. government securities	579,392	499,918	391,752	108,166	79,474
Other	2,630,320	2,279,320	1,808,349	470,970	351,001
Cash assets, total	1,421,976	1,269,913	1,054,249	215,665	152,062
Liabilities					
Deposits, total	10,797,646	8,872,820	7,124,247	1,748,573	1,924,826
Interbank	267,840	244,799	208,143	36,656	23,042
Other transactions	1,880,660	1,541,240	1,192,240	349,000	339,420
Other nontransactions	8,649,146	7,086,781	5,723,864	1,362,917	1,562,365
Equity capital	1,795,758	1,500,282	1,202,780	297,502	295,476
Number of banks	5,000	1,678	897	781	3,322

Note: Includes U.S.-insured commercial banks located in the United States but not U.S.-insured commercial banks operating in U.S. territories or possessions. Data are domestic assets and liabilities (except for those components reported on a consolidated basis only). Components may not sum to totals because of rounding. Data for 2017 have been revised.

Table 8. Initial margin requirements under Regulations T, U, and X
Percent of market value

Effective date	Margin stocks	Convertible bonds	Short sales, T only[1]
1934, Oct. 1	25–45	n/a	n/a
1936, Feb. 1	25–55	n/a	n/a
1936, Apr. 1	55	n/a	n/a
1937, Nov. 1	40	n/a	50
1945, Feb. 5	50	n/a	50
1945, July 5	75	n/a	75
1946, Jan. 21	100	n/a	100
1947, Feb. 1	75	n/a	75
1949, Mar. 3	50	n/a	50
1951, Jan. 17	75	n/a	75
1953, Feb. 20	50	n/a	50
1955, Jan. 4	60	n/a	60
1955, Apr. 23	70	n/a	70
1958, Jan. 16	50	n/a	50
1958, Aug. 5	70	n/a	70
1958, Oct. 16	90	n/a	90
1960, July 28	70	n/a	70
1962, July 10	50	n/a	50
1963, Nov. 6	70	n/a	70
1968, Mar. 11	70	50	70
1968, June 8	80	60	80
1970, May 6	65	50	65
1971, Dec. 6	55	50	55
1972, Nov. 24	65	50	65
1974, Jan. 3	50	50	50

Note: These regulations, adopted by the Board of Governors pursuant to the Securities Exchange Act of 1934, limit the amount of credit that may be extended for the purpose of purchasing or carrying margin securities (as defined in the regulations) when the loan is collateralized by such securities. The margin requirement, expressed as a percentage, is the difference between the market value of the securities being purchased or carried (100 percent) and the maximum loan value of the collateral as prescribed by the Board. Regulation T was adopted effective October 1, 1934; Regulation U, effective May 1, 1936; and Regulation X, effective November 1, 1971. The former Regulation G, which was adopted effective March 11, 1968, was merged into Regulation U, effective April 1, 1998.

[1] From October 1, 1934, to October 31, 1937, the requirement was the margin "customarily required" by the brokers and dealers.

n/a Not applicable.

Table 9A. Statement of condition of the Federal Reserve Banks, by Bank, December 31, 2018 and 2017
Millions of dollars

Item	Total		Boston		New York		Philadelphia		Cleveland		Richmond	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Assets												
Gold certificates	11,037	11,037	364	349	3,626	3,592	350	348	544	553	773	776
Special drawing rights certificates	5,200	5,200	196	196	1,818	1,818	210	210	237	237	412	412
Coin	1,726	1,892	41	47	39	47	148	187	124	145	236	270
Loans and securities												
Primary, secondary, and seasonal loans	61	134	8	*	*	70	*	*	*	*	*	*
Treasury securities, bought outright[1]	2,222,547	2,454,208	42,448	47,817	1,227,018	1,381,944	56,115	63,367	63,010	71,170	131,522	143,793
Government-sponsored enterprise debt securities, bought outright[1]	2,409	4,391	46	86	1,330	2,473	61	113	68	127	142	257
Federal agency and government-sponsored enterprise mortgage-backed securities, bought outright[2]	1,637,123	1,764,929	31,267	34,387	903,819	993,817	41,334	45,570	46,413	51,181	96,879	103,408
Unamortized premiums on securities held outright[3]	140,083	158,760	2,676	3,093	77,336	89,396	3,536	4,099	3,972	4,604	8,290	9,302
Unamortized discounts on securities held outright[3]	-13,427	-14,103	-256	-275	-7,413	-7,941	-339	-364	-380	-409	-795	-826
Total loans and securities	3,988,796	4,368,319	76,189	85,108	2,202,090	2,459,759	100,707	112,785	113,083	126,673	236,038	255,934
Accrued interest receivable - System Open Market Account	22,236	24,744	426	484	12,258	13,912	564	641	634	722	1,328	1,464
Net portfolio holdings of consolidated variable interest entity[4]	*	1,713[r]	n/a	n/a	*	1,713[r]	n/a	n/a	n/a	n/a	n/a	n/a
Foreign currency denominated investments[5]	20,906	21,316	890	924	6,590	6,825	1,188	1,146	1,687	1,736	4,517	4,607
Central bank liquidity swaps[6]	4,207	12,067	179	523	1,326	3,864	239	649	340	983	909	2,608
Other SOMA assets	*	13	*	*	*	7	*	*	*	*	*	1
Other assets												
Items in process of collection	236	81	*	*	*	*	*	*	*	*	*	*
Bank premises	2,218	2,217	109	114	468	455	82	73	118	121	195	197
Deferred asset (accrued liability) - remittances to the Treasury	*	*	*	*	*	*	*	*	*	*	*	*
All other assets[7]	1,318	1,369	50	66	324	355	29	29	55	55	283	270
Interdistrict settlement account	*	*	27,157	12,789	-165,634	-166,593	-670	5,003	8,181	12,153	25,831	26,896
Total assets	**4,057,880**	**4,449,968[r]**	**105,601**	**100,600**	**2,062,905**	**2,325,754[r]**	**102,847**	**121,071**	**125,003**	**143,378**	**270,522**	**293,435**

(continued on next page)

Table 9A.—*continued*

Item	Total		Boston		New York		Philadelphia		Cleveland		Richmond	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Liabilities												
Federal Reserve notes outstanding	1,861,768	1,745,775	57,940	57,138	615,087	577,769	54,893	54,181	88,686	83,646	125,630	119,325
Less: Notes held by Federal Reserve Bank	190,331	175,048	5,686	6,032	55,968	49,106	6,600	6,451	7,740	8,699	12,341	13,343
Federal Reserve notes outstanding, net	1,671,437	1,570,727	52,254	51,106	559,119	528,663	48,293	47,730	80,946	74,947	113,289	105,982
Securities sold under agreements to repurchase[8]	304,012	563,958	5,806	10,988	167,838	317,560	7,676	14,561	8,619	16,354	17,990	33,043
Deposits												
Depository institutions	1,555,954	1,947,633[r]	45,654	36,282[r]	891,753	1,206,552[r]	44,391	56,228	32,030	45,193[r]	129,765	144,246[r]
Treasury, general account	402,138	228,933	n/a	n/a	402,138	228,993	n/a	n/a	n/a	n/a	n/a	n/a
Foreign, official accounts	5,245	5,257	2	2	5,217	5,230	2	2	3	3	9	9
Other[9]	73,072	84,559[r]	18	265[r]	22,013	22,672[r]	1	*	20	3,271[r]	478	601[r]
Total deposits	**2,036,409**	**2,266,382**	**45,665**	**36,549**	**1,321,121**	**1,463,387**	**44,394**	**56,230**	**32,053**	**48,467**	**130,252**	**144,856**
Other liabilities												
Accrued remittances to the Treasury[10]	1,597	2,337	33	42	612	1,448	47	21	86	79	174	143
Deferred credit items	1,006	1,001	*	*	*	*	*	*	*	*	*	*
All other liabilities[11]	4,259	4,174	157	154	1,789	1,650	174	178	173	190	467	470
Total liabilities	**4,018,720**	**4,408,579[r]**	**103,915**	**98,839**	**2,050,479**	**2,312,708[r]**	**100,584**	**118,720**	**121,877**	**140,037**	**262,172**	**284,494**
Capital accounts												
Capital paid-in	32,335	31,389	1,393	1,336	10,260	9,894	1,869	1,783	2,581	2,534	6,895	6,781
Surplus (including accumulated other comprehensive loss)	6,825	10,000	293	425	2,166	3,152	394	568	545	807	1,455	2,160
Total liabilities and capital accounts	**4,057,880**	**4,449,968[r]**	**105,601**	**100,600**	**2,062,905**	**2,325,754[r]**	**102,847**	**121,071**	**125,003**	**143,378**	**270,522**	**293,435**

Note: Components may not sum to totals because of rounding.

1 Par value. Includes securities loaned—fully collateralized by U.S. Treasury securities, other investment-grade securities, and collateral eligible for tri-party repurchase agreements pledged with Federal Reserve Banks.

2 The par amount shown is the remaining principal balance of the securities.

3 Reflects the premium or discount, which is the difference between the purchase price and the face value of the securities that has not been amortized.

4 The Federal Reserve Bank of New York is the primary beneficiary of Maiden Lane LLC, and, as a result, the accounts and results of operations of Maiden Lane LLC are included in the combined financial statements of the Federal Reserve Banks.

5 Valued daily at market exchange rates.

6 Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.

7 Includes furniture and equipment and depository institution overdrafts.

8 Contract amount of agreements.

9 Includes deposits of government-sponsored enterprises (GSEs), the Consumer Financial Protection Bureau, international organizations, and designated financial market utilities.

10 Represents the estimated weekly remittances to the U.S. Treasury.

11 Includes accrued benefit costs and cash collateral posted by counterparties under commitments to purchase and sell federal agency and GSE MBS.

* Less than $500,000.

r Revised.

n/a Not applicable.

Table 9A. Statement of condition of the Federal Reserve Banks, by Bank, December 31, 2018 and 2017—*continued*
Millions of dollars

Item	Atlanta		Chicago		St. Louis		Minneapolis		Kansas City		Dallas		San Francisco	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Assets														
Gold certificates[r]	1,491	1,520	739	737	334	341	199	191	307	292	905	916	1,405	1,422
Special drawing rights certificates	654	654	424	424	150	150	90	90	153	153	282	282	574	574
Coin	180	198	285	299	27	37	46	52	111	108	197	193	293	308
Loans and securities														
Primary, secondary, and seasonal loans	6	26	33	23	1	2	13	12	*	1	*	*	*	*
Treasury securities, bought outright[1]	133,413	144,464	119,035	103,221	29,589	32,726	18,547	19,134	34,988	34,806	91,902	98,249	274,961	313,516
Government-sponsored enterprise debt securities, bought outright[1]	145	259	129	185	32	58	20	34	38	62	100	176	298	561
Federal agency and government-sponsored enterprise mortgage-backed securities, bought outright[2]	98,271	103,890	87,681	74,231	21,796	23,535	13,662	13,760	25,772	25,031	67,695	70,655	202,535	225,463
Unamortized premiums on securities held outright[3]	8,409	9,345	7,503	6,677	1,865	2,118	1,169	1,238	2,205	2,252	5,792	6,355	17,331	20,281
Unamortized discounts on securities held outright[3]	-807	-831	-720	-593	-179	-188	-112	-110	-211	-200	-556	-564	-1,662	-1,802
Total loans and securities	239,437	257,153	213,661	183,744	53,104	58,251	33,299	34,068	62,792	61,952	164,933	174,871	493,463	558,019
Accrued interest receivable - System Open Market Account	1,335	1,456	1,190	1,041	296	330	185	193	350	351	917	988	2,753	3,163
Net portfolio holdings of consolidated variable interest entity[4]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Foreign currency denominated investments[5]	1,208	1,243	886	892	302	233	96	90	207	207	259	273	3,077	3,139
Central bank liquidity swaps[6]	243	704	178	505	61	132	19	51	42	117	52	154	619	1,777
Other SOMA assets	*	1	*	1	*	*	*	*	*	*	*	1	*	2
Other assets														
Items in process of collection	236	81	*	*	*	*	*	*	*	*	*	*	*	*
Bank premises	206	203	194	204	107	110	95	88	232	236	221	221	192	193
Deferred asset (accrued liability) - remittances to the Treasury	*	*	*	*	*	*	*	*	*	*	*	*	*	*
All other assets[7]	84	106	47	61	105	109	62	26	84	89	55	58	136	151
Interdistrict settlement account	46,747	32,445	15,866	56,756	10,352	3,353	3,559	5,162	1,277	5,258	18,270	13,909	9,064	-7,132
Total assets	**291,821**	**295,764**	**233,470**	**244,664**	**64,838**	**63,046**	**37,650**	**40,011**	**65,555**	**68,763**	**186,091**	**191,866**	**511,576**	**561,616**

(continued on next page)

Table 9A.—*continued*

Item	Atlanta		Chicago		St. Louis		Minneapolis		Kansas City		Dallas		San Francisco	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Liabilities														
Federal Reserve notes outstanding	262,457	244,418	121,764	115,902	56,057	52,041	31,497	31,010	49,969	47,902	150,909	140,794	246,879	221,648
Less: Notes held by Federal Reserve Bank	28,508	24,170	13,680	10,707	5,129	5,167	2,561	2,898	5,440	5,711	17,032	16,336	29,646	26,428
Federal Reserve notes outstanding, net	233,949	220,248	108,084	105,195	50,928	46,874	28,936	28,112	44,529	42,191	133,877	124,458	217,233	195,220
Securities sold under agreements to repurchase[8]	18,249	33,197	16,282	23,719	4,047	7,520	2,537	4,397	4,786	7,998	12,571	22,577	37,611	72,044
Deposits														
Depository institutions	35,885	37,214[r]	57,527	58,480[r]	9,099	7,920	5,767	7,087[r]	15,020	16,964[r]	38,673	43,836[r]	250,400	287,631[r]
Treasury, general account	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Foreign, official accounts	3	2	2	2	1	*	*	*	*	*	*	1	6	6
Other[9]	30	1,255[r]	49,569	55,176[r]	6	3	72	83[r]	675	1,048[r]	187	182[r]	1	2[r]
Total deposits	**35,918**	**38,471**	**107,098**	**113,659**	**9,106**	**7,923**	**5,839**	**7,170**	**15,695**	**18,012**	**38,860**	**44,019**	**250,407**	**287,639**
Other liabilities														
Acrued remittances to the Treasury[10]	170	173	75	51	35	5	20	11	43	25	96	88	207	252
Deferred credit items	1,006	1,001	*	*	*	*	*	*	*	*	*	*	*	*
All other liabilities[11]	252	282	296	285	125	127	132	131	123	127	202	212	369	368
Total liabilities	**289,544**	**293,372**	**231,835**	**242,909**	**64,241**	**62,449**	**37,464**	**39,821**	**65,176**	**68,353**	**185,606**	**191,354**	**505,827**	**555,524**
Capital accounts														
Capital paid-in	1,880	1,814	1,350	1,331	493	453	154	144	313	311	400	388	4,747	4,620
Surplus (including accumulated other comprehensive loss)	397	578	285	424	104	144	32	46	66	99	85	124	1,002	1,472
Total liabilities and capital accounts	**291,821**	**295,764**	**233,470**	**244,664**	**64,838**	**63,046**	**37,650**	**40,011**	**65,555**	**68,763**	**186,091**	**191,866**	**511,576**	**561,616**

Note: Components may not sum to totals because of rounding.

1 Par value. Includes securities loaned—fully collateralized by U.S. Treasury securities, other investment-grade securities, and collateral eligible for tri-party repurchase agreements pledged with Federal Reserve Banks.

2 The par amount shown is the remaining principal balance of the securities.

3 Reflects the premium or discount, which is the difference between the purchase price and the face value of the securities that has not been amortized.

4 The Federal Reserve Bank of New York is the primary beneficiary of Maiden Lane LLC, and, as a result, the accounts and results of operations of Maiden Lane LLC are included in the combined financial statements of the Federal Reserve Banks.

5 Valued daily at market exchange rates.

6 Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.

7 Includes furniture and equipment and depository institution overdrafts.

8 Contract amount of agreements.

9 Includes deposits of government-sponsored enterprises (GSEs), the Consumer Financial Protection Bureau, international organizations, and designated financial market utilities.

10 Represents the estimated weekly remittances to the U.S. Treasury.

11 Includes accrued benefit costs and cash collateral posted by counterparties under commitments to purchase and sell federal agency and GSE MBS.

r Revised.

* Less than $500,000.

n/a Not applicable.

Table 9B. Statement of condition of the Federal Reserve Banks, December 31, 2018 and 2017
Supplemental information—collateral held against Federal Reserve notes: Federal Reserve agents' accounts
Millions of dollars

Item	2018	2017
Federal Reserve notes outstanding	1,861,768	1,745,775
Less: Notes held by Federal Reserve Banks not subject to collateralization	190,331	175,048
Collateralized Federal Reserve notes	**1,671,437**	**1,570,727**
Collateral for Federal Reserve notes		
Gold certificates	11,037	11,037
Special drawing rights certificates	5,200	5,200
U.S. Treasury securities[1]	1,655,200	1,554,490
Total collateral	**1,671,437**	**1,570,727**

[1] Face value. Includes compensation to adjust for the effect of inflation on the original face value of inflation-indexed securities.

Table 10. Income and expenses of the Federal Reserve Banks, by Bank, 2018

Thousands of dollars

Item	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
Current income													
Interest income													
Primary, secondary, and seasonal loans	2,765	9	57	3	8	5	192	485	950	781	93	14	166
Treasury securities	62,806,620	1,206,413	34,870,861	1,595,946	1,792,177	3,706,193	3,749,303	3,158,389	836,547	514,323	960,860	2,573,520	7,842,088
Government-sponsored enterprise debt securities, net	174,937	3,365	97,258	4,452	5,000	10,316	10,429	8,660	2,330	1,426	2,658	7,152	21,891
Federal agency and government-sponsored enterprise mortgage-backed securities, net	49,288,798	946,940	27,370,850	1,252,723	1,406,755	2,908,235	2,941,792	2,473,163	656,508	403,366	753,315	2,018,999	6,156,152
Foreign currency denominated investments, net	-28,959	-1,237	-9,159	-1,626	-2,342	-6,257	-1,677	-1,224	-396	-131	-286	-361	-4,263
Central bank liquidity swaps[1]	15,102	649	4,799	834	1,225	3,263	877	636	191	66	148	190	2,223
Total interest income	112,259,263	2,156,139	62,334,666	2,852,332	3,202,823	6,621,755	6,700,916	5,640,109	1,496,130	919,831	1,716,788	4,599,514	14,018,257
Income from priced services	442,520	n/a	116,708	n/a	n/a	n/a	236,249	89,562	n/a	n/a	n/a	n/a	n/a
Compensation received for services provided[2]	135,034	15,907	576	407	1,380	24,486	707	27,284	859	13,286	39,987	5,424	4,729
Securities lending fees	20,577	397	11,474	525	590	1,212	1,223	983	274	166	308	837	2,587
Other income	4,263	60	3,463	58	30	102	69	102	46	34	63	78	159
Total other income	602,394	16,364	132,221	990	2,000	25,800	238,248	117,931	1,179	13,486	40,358	6,339	7,475
Total current income	**112,861,657**	**2,172,503**	**62,466,887**	**2,853,322**	**3,204,823**	**6,647,555**	**6,939,164**	**5,758,040**	**1,497,309**	**933,317**	**1,757,146**	**4,605,853**	**14,025,732**
Net expenses													
Personnel													
Salaries and other personnel expenses	2,510,957	143,801	555,998	107,683	111,903	352,983	206,201	208,056	159,927	105,971	195,241	134,079	229,114
Retirement and other benefits	755,370	38,179	159,229	32,524	37,142	108,033	64,819	56,297	47,354	35,032	58,085	47,846	70,831
Administrative													
Fees	423,306	11,404	43,169	13,439	4,983	300,571	12,388	8,090	6,100	4,020	5,789	2,111	11,242
Travel	101,657	5,007	14,291	3,306	5,512	13,992	10,309	11,235	6,166	3,911	8,546	5,943	13,440
Postage and other shipping costs	13,946	264	1,298	163	1,443	379	2,655	174	779	263	898	2,186	3,443
Communications	39,210	856	4,719	594	512	24,763	1,381	2,067	1,051	414	811	923	1,120
Materials and supplies	74,730	4,837	22,650	10,296	2,900	5,631	4,970	6,108	2,925	2,104	3,842	3,529	4,937
Building													
Taxes on real estate	53,045	8,185	14,293	1,632	1,822	2,561	2,052	5,375	801	3,771	4,123	3,337	5,092
Property depreciation	142,404	12,421	28,964	7,976	8,215	14,542	11,162	16,094	8,258	3,823	8,754	9,375	12,820
Utilities	36,122	3,890	8,783	1,603	1,406	3,976	2,603	2,010	1,904	1,966	2,720	2,547	2,713
Rent	33,427	390	1,638	14	983	23,085	301	1,225	3,629	192	756	836	378
Other building	73,130	6,921	15,067	5,036	3,873	6,425	5,202	10,088	2,562	2,419	2,634	5,515	7,388
Equipment/software													
Purchases	42,185	3,893	7,308	2,213	1,640	7,959	2,420	3,266	2,320	2,419	3,562	2,392	2,793
Rentals	3,254	303	952	215	314	463	279	572	17	64	9	27	38
Depreciation	81,072	2,144	6,390	1,869	1,948	47,750	3,681	3,657	1,743	1,193	2,644	3,359	4,694
Repairs and maintenance	66,665	3,351	5,344	1,939	2,471	28,863	5,843	3,503	1,695	1,244	2,197	3,683	6,531
Software	278,336	5,430	47,502	3,587	8,842	113,063	11,674	7,962	11,985	4,322	33,022	8,301	22,647
Other expenses													
Compensation paid for service costs incurred[2]	135,034	n/a	43,608	n/a	n/a	n/a	80,898	10,528	n/a	n/a	n/a	n/a	n/a
Other expenses	97,329	20,736	131,461	18,962	18,309	-531,773	74,227	74,335	164,348	15,674	34,375	29,874	46,801
Recoveries	-370,214	-47,728	-45,301	-19,054	-8,109	-53,239	-9,962	-28,968	-13,508	-17,281	-45,331	-28,824	-52,908

(continued on next page)

Table 10.—*continued*

Item	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
Expenses capitalized[3]	-63,479	-2,840	-22,402	-2,623	-6,814	-1,450	-1,844	-3,075	-112	-23	-11,899	-2,367	-8,031
Total operating expenses before pension expense and reimbursements	**4,527,486**	**221,444**	**1,044,961**	**191,374**	**199,295**	**468,577**	**491,259**	**398,599**	**409,944**	**171,498**	**310,778**	**234,672**	**385,083**
Net periodic pension expense[4]	483,507	4,225	436,987	2,576	3,201	4,178	4,222	7,550	2,586	3,815	4,059	4,116	5,992
Reimbursements	-706,097	-37,995	-144,023	-10,756	-46,323	-33,803	-24,319	-4,204	-251,060	-37,616	-92,560	-20,015	-3,425
Operating expenses	4,304,896	187,674	1,337,925	183,194	156,173	438,952	471,162	401,945	161,470	137,697	222,277	218,773	387,650
Interest expense on securities sold under agreements to repurchase	4,558,384	87,468	2,528,255	115,696	129,919	269,127	272,392	231,950	60,710	37,458	70,106	187,093	568,210
Interest on reserves	38,483,872	538,452	24,987,772	916,063	676,368	2,455,071	672,499	1,962,791	127,563	107,208	325,573	762,597	4,951,916
Interest on term deposits	2,209	18	746	723	6	34	*	202	*	*	118	*	362
Other expenses	4,275	82	2,377	109	122	252	255	212	57	35	65	175	535
Net expenses	47,353,636	813,694	28,857,075	1,215,785	962,588	3,163,436	1,416,308	2,597,100	349,800	282,398	618,139	1,168,638	5,908,673
Current net income	65,508,021	1,358,809	33,609,812	1,637,537	2,242,235	3,484,119	5,522,856	3,160,940	1,147,509	650,919	1,139,007	3,437,215	8,117,059
Additions to (+) and deductions from (-) current net income													
Profit on sales of Treasury securities	5,511	107	3,103	142	160	323	324	232	73	43	78	221	704
Profit on sales of federal agency and government-sponsored enterprise mortgage-backed securities	-3,203	-61	-1,758	-80	-90	-190	-193	-182	-43	-27	-52	-134	-393
Foreign currency translation gains (losses)	-390,164	-15,939	-118,828	-24,685	-30,874	-84,228	-22,092	-16,986	-8,537	-2,094	-4,031	-4,492	-57,377
Net income from consolidated variable interest entity[5]	7,226	n/a	7,226	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other additions	65	15	10	2	2	4	3	22	1	1	1	1	4
Other deductions	-2,394	n/a	-1,407	9	-6	-462	-146	-37	-133	5	8	147	-374
Net additions to current net income	-382,959	-15,878	-111,654	-24,612	-30,808	-84,553	-22,104	-16,951	-8,639	-2,072	-3,996	-4,257	-57,436
Cost of unreimbursed Treasury services	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	n/a	n/a	n/a	n/a
Assessments by Board													
Board expenditures[6]	838,000	35,384	265,390	48,177	67,191	180,479	48,231	35,240	12,413	3,824	8,175	10,353	123,143
Cost of currency	848,807	35,597	170,075	36,678	52,969	73,322	129,306	75,381	26,650	17,406	25,931	67,299	138,193
Consumer Financial Protection Bureau[7]	337,100	14,239	106,644	19,458	27,016	72,664	19,374	14,176	5,009	1,539	3,307	4,172	49,504
Assessments by the Board of Governors	2,023,907	85,220	542,109	104,313	147,176	326,465	196,911	124,797	44,072	22,769	37,413	81,824	310,840
Net income before providing for remittances to the Treasury	63,101,154	1,257,711	32,956,049	1,508,612	2,064,251	3,073,101	5,303,841	3,019,192	1,094,797	626,078	1,097,598	3,351,134	7,748,783
Earnings remittances to the Treasury, as required by the Federal Reserve Act	65,319,280	1,350,292	33,608,434	1,627,722	2,255,908	3,581,483	5,441,778	3,119,937	1,120,479	638,374	1,121,262	3,374,514	8,079,097
Net income after providing for remittances to the Treasury	-2,218,126	-92,581	-652,385	-119,110	-191,657	-508,382	-137,937	-100,745	-25,682	-12,296	-23,664	-23,380	-330,314
Other comprehensive income (loss)	41,831	3,064	-29,979	3,673	6,638	9,745	16,742	7,688	3,586	5,063	5,428	3,106	7,076
Comprehensive income	-2,176,295	-89,517	-682,364	-115,437	-185,019	-498,637	-121,195	-93,057	-22,096	-7,233	-18,236	-20,274	-323,238

(continued on next page)

Table 10.—*continued*

Item	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
Distribution of comprehensive income													
Dividends on capital stock	998,703	42,080	304,096	58,231	77,295	206,395	59,774	45,947	18,156	6,210	14,776	19,065	146,678
Transferred to/from surplus and change in accumulated other comprehensive income	-3,175,000	-131,602	-986,459	-173,667	-262,315	-705,034	-180,968	-139,001	-40,247	-13,443	-33,011	-39,338	-469,915
Earnings remittances to the Treasury	65,319,280	1,350,292	33,608,434	1,627,722	2,255,908	3,581,483	5,441,778	3,119,937	1,120,479	638,374	1,121,262	3,374,514	8,079,097
Total distribution of net income	**63,142,983**	**1,260,770**	**32,926,071**	**1,512,286**	**2,070,888**	**3,082,844**	**5,320,584**	**3,026,883**	**1,098,388**	**631,141**	**1,103,027**	**3,354,241**	**7,755,860**

Note: Components may not sum to totals because of rounding.

[1] Represents interest income recognized on swap agreements with foreign central banks.

[2] The Federal Reserve Bank of Atlanta (FRBA) has overall responsibility for managing the Reserve Banks' provision of check and automated clearinghouse (ACH) services and recognizes total System revenue for these services. The Federal Reserve Bank of New York (FRBNY) has overall responsibility for managing the Reserve Banks' provision of Fedwire funds transfer and securities transfer services, and recognizes the total System revenue for these services. The Federal Reserve Bank of Chicago (FRBC) has overall responsibility for managing the Reserve Banks' provision of electronic access services to depository institutions, and recognizes the total System revenue for these services. The FRBA, the FRBNY, and the FRBC compensate the other Reserve Banks for the costs incurred in providing these services.

[3] Includes expenses for labor and materials capitalized and depreciated or amortized as charges to activities in the periods benefited.

[4] Reflects the effect of the Financial Accounting Standards Board's Codification Topic (ASC 715) Compensation-Retirement Benefits. Net pension expense for the System Retirement Plan of $413,948 thousand is recorded on behalf of the System in the books of the FRBNY. The Benefit Equalization Retirement Plan and the Supplemental Retirement Plan for Select Officers of the Federal Reserve Banks are recorded by each Federal Reserve Bank.

[5] Represents the portion of the consolidated variable interest entity's net income recorded by the FRBNY. The amount includes interest income, interest expenses, realized and unrealized gains and losses, and professional fees.

[6] For additional details, see the "Board of Governors Financial Statements" in section 12.

[7] The Board of Governors assesses the Reserve Banks to fund the operations of the Consumer Financial Protection Bureau. These assessments are allocated to each Reserve Bank based on each Reserve Bank's capital and surplus balances as of the most recent quarter.

n/a Not applicable.

* Less than $500.

Table 11. Income and expenses of the Federal Reserve Banks, 1914–2018
Thousands of dollars

Federal Reserve Bank and period	Current income	Net expenses	Net additions or deductions (-)[1]	Assessments by the Board of Governors			Other compre-hensive income (loss)	Dividends paid	Distributions to the U.S. Treasury		Trans-ferred to/from surplus[4]	Transferred to/from surplus and change in accu-mulated other compre-hensive income[5]
				Board expend-itures	Costs of currency	Consumer Financial Protection Bureau and Office of Financial Research[2]			Statutory transfers[3]	Interest on Federal Reserve notes		
All banks												
1914–15	2,173	2,018	6	302	n/a	n/a	n/a	217	n/a	n/a	n/a	n/a
1916	5,218	2,082	-193	192	n/a	n/a	n/a	1,743	n/a	n/a	n/a	n/a
1917	16,128	4,922	-1,387	238	n/a	n/a	n/a	6,804	1,134	n/a	n/a	1,134
1918	67,584	10,577	-3,909	383	n/a	n/a	n/a	5,541	n/a	n/a	n/a	48,334
1919	102,381	18,745	-4,673	595	n/a	n/a	n/a	5,012	2,704	n/a	n/a	70,652
1920	181,297	27,549	-3,744	710	n/a	n/a	n/a	5,654	60,725	n/a	n/a	82,916
1921	122,866	33,722	-6,315	741	n/a	n/a	n/a	6,120	59,974	n/a	n/a	15,993
1922	50,499	28,837	-4,442	723	n/a	n/a	n/a	6,307	10,851	n/a	n/a	-660
1923	50,709	29,062	-8,233	703	n/a	n/a	n/a	6,553	3,613	n/a	n/a	2,546
1924	38,340	27,768	-6,191	663	n/a	n/a	n/a	6,682	114	n/a	n/a	-3,078
1925	41,801	26,819	-4,823	709	n/a	n/a	n/a	6,916	59	n/a	n/a	2,474
1926	47,600	24,914	-3,638	722	1,714	n/a	n/a	7,329	818	n/a	n/a	8,464
1927	43,024	24,894	-2,457	779	1,845	n/a	n/a	7,755	250	n/a	n/a	5,044
1928	64,053	25,401	-5,026	698	806	n/a	n/a	8,458	2,585	n/a	n/a	21,079
1929	70,955	25,810	-4,862	782	3,099	n/a	n/a	9,584	4,283	n/a	n/a	22,536
1930	36,424	25,358	-93	810	2,176	n/a	n/a	10,269	17	n/a	n/a	-2,298
1931	29,701	24,843	311	719	1,479	n/a	n/a	10,030	n/a	n/a	n/a	-7,058
1932	50,019	24,457	-1,413	729	1,106	n/a	n/a	9,282	2,011	n/a	n/a	11,021
1933	49,487	25,918	-12,307	800	2,505	n/a	n/a	8,874	n/a	n/a	n/a	-917
1934	48,903	26,844	-4,430	1,372	1,026	n/a	n/a	8,782	n/a	n/a	-60	6,510
1935	42,752	28,695	-1,737	1,406	1,477	n/a	n/a	8,505	298	n/a	28	607
1936	37,901	26,016	486	1,680	2,178	n/a	n/a	7,830	227	n/a	103	353
1937	41,233	25,295	-1,631	1,748	1,757	n/a	n/a	7,941	177	n/a	67	2,616
1938	36,261	25,557	2,232	1,725	1,630	n/a	n/a	8,019	120	n/a	-419	1,862
1939	38,501	25,669	2,390	1,621	1,356	n/a	n/a	8,110	25	n/a	-426	4,534
1940	43,538	25,951	11,488	1,704	1,511	n/a	n/a	8,215	82	n/a	-54	17,617
1941	41,380	28,536	721	1,840	2,588	n/a	n/a	8,430	141	n/a	-4	571
1942	52,663	32,051	-1,568	1,746	4,826	n/a	n/a	8,669	198	n/a	50	3,554
1943	69,306	35,794	23,768	2,416	5,336	n/a	n/a	8,911	245	n/a	135	40,327
1944	104,392	39,659	3,222	2,296	7,220	n/a	n/a	9,500	327	n/a	201	48,410
1945	142,210	41,666	-830	2,341	4,710	n/a	n/a	10,183	248	n/a	262	81,970
1946	150,385	50,493	-626	2,260	4,482	n/a	n/a	10,962	67	n/a	28	81,467
1947	158,656	58,191	1,973	2,640	4,562	n/a	n/a	11,523	36	75,284	87	8,366
1948	304,161	64,280	-34,318	3,244	5,186	n/a	n/a	11,920	n/a	166,690	n/a	18,523
1949	316,537	67,931	-12,122	3,243	6,304	n/a	n/a	12,329	n/a	193,146	n/a	21,462
1950	275,839	69,822	36,294	3,434	7,316	n/a	n/a	13,083	n/a	196,629	n/a	21,849
1951	394,656	83,793	-2,128	4,095	7,581	n/a	n/a	13,865	n/a	254,874	n/a	28,321
1952	456,060	92,051	1,584	4,122	8,521	n/a	n/a	14,682	n/a	291,935	n/a	46,334
1953	513,037	98,493	-1,059	4,100	10,922	n/a	n/a	15,558	n/a	342,568	n/a	40,337
1954	438,486	99,068	-134	4,175	6,490	n/a	n/a	16,442	n/a	276,289	n/a	35,888
1955	412,488	101,159	-265	4,194	4,707	n/a	n/a	17,712	n/a	251,741	n/a	32,710
1956	595,649	110,240	-23	5,340	5,603	n/a	n/a	18,905	n/a	401,556	n/a	53,983
1957	763,348	117,932	-7,141	7,508	6,374	n/a	n/a	20,081	n/a	542,708	n/a	61,604
1958	742,068	125,831	124	5,917	5,973	n/a	n/a	21,197	n/a	524,059	n/a	59,215
1959	886,226	131,848	98,247	6,471	6,384	n/a	n/a	22,722	n/a	910,650	n/a	-93,601
1960	1,103,385	139,894	13,875	6,534	7,455	n/a	n/a	23,948	n/a	896,816	n/a	42,613
1961	941,648	148,254	3,482	6,265	6,756	n/a	n/a	25,570	n/a	687,393	n/a	70,892

(continued on next page)

Table 11.—*continued*

Federal Reserve Bank and period	Current income	Net expenses	Net additions or deductions (-)[1]	Assessments by the Board of Governors			Other compre-hensive income (loss)	Dividends paid	Distributions to the U.S. Treasury		Trans-ferred to/from surplus[4]	Transferred to/from surplus and change in accu-mulated other compre-hensive income[5]
				Board expend-itures	Costs of currency	Consumer Financial Protection Bureau and Office of Financial Research[2]			Statutory transfers[3]	Interest on Federal Reserve notes		
1962	1,048,508	161,451	-56	6,655	8,030	n/a	n/a	27,412	n/a	799,366	n/a	45,538
1963	1,151,120	169,638	615	7,573	10,063	n/a	n/a	28,912	n/a	879,685	n/a	55,864
1964	1,343,747	171,511	726	8,655	17,230	n/a	n/a	30,782	n/a	1,582,119	n/a	-465,823
1965	1,559,484	172,111	1,022	8,576	23,603	n/a	n/a	32,352	n/a	1,296,810	n/a	27,054
1966	1,908,500	178,212	996	9,022	20,167	n/a	n/a	33,696	n/a	1,649,455	n/a	18,944
1967	2,190,404	190,561	2,094	10,770	18,790	n/a	n/a	35,027	n/a	1,907,498	n/a	29,851
1968	2,764,446	207,678	8,520	14,198	20,474	n/a	n/a	36,959	n/a	2,463,629	n/a	30,027
1969	3,373,361	237,828	-558	15,020	22,126	n/a	n/a	39,237	n/a	3,019,161	n/a	39,432
1970	3,877,218	276,572	11,442	21,228	23,574	n/a	n/a	41,137	n/a	3,493,571	n/a	32,580
1971	3,723,370	319,608	94,266	32,634	24,943	n/a	n/a	43,488	n/a	3,356,560	n/a	40,403
1972	3,792,335	347,917	-49,616	35,234	31,455	n/a	n/a	46,184	n/a	3,231,268	n/a	50,661
1973	5,016,769	416,879	-80,653	44,412	33,826	n/a	n/a	49,140	n/a	4,340,680	n/a	51,178
1974	6,280,091	476,235	-78,487	41,117	30,190	n/a	n/a	52,580	n/a	5,549,999	n/a	51,483
1975	6,257,937	514,359	-202,370	33,577	37,130	n/a	n/a	54,610	n/a	5,382,064	n/a	33,828
1976	6,623,220	558,129	7,311	41,828	48,819	n/a	n/a	57,351	n/a	5,870,463	n/a	53,940
1977	6,891,317	568,851	-177,033	47,366	55,008	n/a	n/a	60,182	n/a	5,937,148	n/a	45,728
1978	8,455,309	592,558	-633,123	53,322	60,059	n/a	n/a	63,280	n/a	7,005,779	n/a	47,268
1979	10,310,148	625,168	-151,148	50,530	68,391	n/a	n/a	67,194	n/a	9,278,576	n/a	69,141
1980	12,802,319	718,033	-115,386	62,231	73,124	n/a	n/a	70,355	n/a	11,706,370	n/a	56,821
1981	15,508,350	814,190	-372,879	63,163	82,924	n/a	n/a	74,574	n/a	14,023,723	n/a	76,897
1982	16,517,385	926,034	-68,833	61,813	98,441	n/a	n/a	79,352	n/a	15,204,591	n/a	78,320
1983	16,068,362	1,023,678	-400,366	71,551	152,135	n/a	n/a	85,152	n/a	14,228,816	n/a	106,663
1984	18,068,821	1,102,444	-412,943	82,116	162,606	n/a	n/a	92,620	n/a	16,054,095	n/a	161,996
1985	18,131,983	1,127,744	1,301,624	77,378	173,739	n/a	n/a	103,029	n/a	17,796,464	n/a	155,253
1986	17,464,528	1,156,868	1,975,893	97,338	180,780	n/a	n/a	109,588	n/a	17,803,895	n/a	91,954
1987	17,633,012	1,146,911	1,796,594	81,870	170,675	n/a	n/a	117,499	n/a	17,738,880	n/a	173,771
1988	19,526,431	1,205,960	-516,910	84,411	164,245	n/a	n/a	125,616	n/a	17,364,319	n/a	64,971
1989	22,249,276	1,332,161	1,254,613	89,580	175,044	n/a	n/a	129,885	n/a	21,646,417	n/a	130,802
1990	23,476,604	1,349,726	2,099,328	103,752	193,007	n/a	n/a	140,758	n/a	23,608,398	n/a	180,292
1991	22,553,002	1,429,322	405,729	109,631	261,316	n/a	n/a	152,553	n/a	20,777,552	n/a	228,356
1992	20,235,028	1,474,531	-987,788	128,955	295,401	n/a	n/a	171,763	n/a	16,774,477	n/a	402,114
1993	18,914,251	1,657,800	-230,268	140,466	355,947	n/a	n/a	195,422	n/a	15,986,765	n/a	347,583
1994	20,910,742	1,795,328	2,363,862	146,866	368,187	n/a	n/a	212,090	n/a	20,470,011	n/a	282,122
1995	25,395,148	1,818,416	857,788	161,348	370,203	n/a	n/a	230,527	n/a	23,389,367	n/a	283,075
1996	25,164,303	1,947,861	-1,676,716	162,642	402,517	n/a	n/a	255,884	5,517,716	14,565,624	n/a	635,343
1997	26,917,213	1,976,453	-2,611,570	174,407	364,454	n/a	n/a	299,652	20,658,972	0	n/a	831,705
1998	28,149,477	1,833,436	1,906,037	178,009	408,544	n/a	n/a	343,014	17,785,942	8,774,994	n/a	731,575
1999	29,346,836	1,852,162	-533,557	213,790	484,959	n/a	n/a	373,579	n/a	25,409,736	n/a	479,053
2000	33,963,992	1,971,688	-1,500,027	188,067	435,838	n/a	n/a	409,614	n/a	25,343,892	n/a	4,114,865
2001	31,870,721	2,084,708	-1,117,435	295,056	338,537	n/a	n/a	428,183	n/a	27,089,222	n/a	517,580
2002	26,760,113	2,227,078	2,149,328	205,111	429,568	n/a	n/a	483,596	n/a	24,495,490	n/a	1,068,598
2003	23,792,725	2,462,658	2,481,127	297,020	508,144	n/a	n/a	517,705	n/a	22,021,528	n/a	466,796
2004	23,539,942	2,238,705	917,870	272,331	503,784	n/a	n/a	582,402	n/a	18,078,003	n/a	2,782,587
2005	30,729,357	2,889,544	-3,576,903	265,742	477,087	n/a	n/a	780,863	n/a	21,467,545	n/a	1,271,672
2006	38,410,427	3,263,844	-158,846	301,014	491,962	n/a	n/a	871,255	n/a	29,051,678	n/a	4,271,828
2007	42,576,025	3,510,206	198,417	296,125	576,306	n/a	324,481	992,353	n/a	34,598,401	n/a	3,125,533
2008	41,045,582	4,870,374	3,340,628	352,291	500,372	n/a	-3,158,808	1,189,626	n/a	31,688,688	n/a	2,626,053
2009	54,463,121	5,978,795	4,820,204	386,400	502,044	n/a	1,006,813	1,428,202	n/a	47,430,237	n/a	4,564,460
2010	79,300,937	6,270,420	9,745,562	422,200	622,846	42,286	45,881	1,582,785	n/a	79,268,124	n/a	883,724

(continued on next page)

Table 11.—*continued*

Federal Reserve Bank and period	Current income	Net expenses	Net additions or deductions (-)[1]	Assessments by the Board of Governors			Other compre-hensive income (loss)	Dividends paid	Distributions to the U.S. Treasury		Trans-ferred to/from surplus[4]	Transferred to/from surplus and change in accu-mulated other compre-hensive income[5]
				Board expend-itures	Costs of currency	Consumer Financial Protection Bureau and Office of Financial Research[2]			Statutory transfers[3]	Interest on Federal Reserve notes		
2011	85,241,366	7,316,643	2,015,991	472,300	648,798	281,712	-1,161,848	1,577,284	n/a	75,423,597	n/a	375,175
2012	81,586,102	7,798,353	18,380,835	490,001	722,301	387,279	-52,611	1,637,934	n/a	88,417,936	n/a	460,528
2013	91,149,953	9,134,656	-1,029,750	580,000	701,522	563,200	2,288,811	1,649,277	n/a	79,633,271	n/a	147,088
2014	116,561,512	10,714,872	-2,718,283	590,000	710,807	563,000	-1,611,569	1,685,826	n/a	96,901,695	n/a	1,064,952
2015	114,233,676	11,139,956	-1,305,513	705,000	689,288	489,700	366,145	1,742,745	25,955,921	91,143,493	n/a	-18,571,798
2016	111,743,998	17,262,620	-114,255	709,000	700,728	596,200	-183,232	711,423	91,466,545	n/a	n/a	0
2017	114,193,573	33,397,138	1,932,579	740,000	723,534	573,000	650,808	783,599	80,559,689	n/a	n/a	0
2018	112,861,657	47,353,636	-382,959	838,000	848,807	337,100	41,831	998,703	65,319,280	n/a	n/a	-3,175,000
Total 1914–2018	**1,755,847,144**	**218,094,925**	**38,925,252**	**11,286,117**	**16,779,364**	**3,833,477**	**-1,443,298**	**24,718,534**	**307,415,393**	**1,198,433,402**	**-4**	**12,767,389[6]**
Aggregate for each Bank, 1914–2018												
Boston	63,889,866	7,266,637	351,381	485,360	896,172	168,915	1,917	1,081,350	9,014,013	44,842,511	135	488,070
New York	800,030,704	99,910,300[7]	26,405,804	3,195,014	4,401,270	1,226,964	-1,661,116	6,988,554	159,379,577	545,077,826	-433	4,596,318
Philadelphia	55,450,377	7,450,601	810,394	697,633	769,424	257,386	16,822	1,721,812	8,512,009	36,308,189	291	560,246
Cleveland	72,595,936	7,112,715	727,340	847,715	962,834	299,573	13,707	1,845,900	11,802,358	49,612,575	-10	853,321
Richmond	127,820,065	15,906,655	2,355,950	2,157,401	1,440,080	819,877	54,993	4,997,708	21,077,814	81,295,580	-72	2,535,970
Atlanta	115,397,578	15,662,466	1,751,262	748,763	1,826,050	218,320	32,443	1,606,520	20,785,281	75,616,315	5	717,566
Chicago	143,018,934	15,570,926	1,913,712	748,590	1,726,434	122,759	35,510	1,461,388	14,827,596	109,806,844	12	703,619
St. Louis	42,277,054	4,776,964	434,813	181,869	579,929	37,968	26,174	375,699	5,408,061	31,149,772	-27	227,816
Minneapolis	23,308,347	4,683,018	430,264	205,849	328,219	21,673	6,187	451,336	2,428,070	15,436,029	65	190,543
Kansas City	47,124,417	6,837,584	592,996	212,217	594,690	38,550	-3,138	422,760	4,943,309	34,476,668	-9	188,503
Dallas	71,463,609	8,229,570	1,101,627	313,100	1,034,260	55,925	14,274	610,042	12,194,338	49,889,286	55	252,443
San Francisco	193,470,250	24,687,491	2,049,705	1,492,612	2,219,999	565,573	18,929	3,155,465	37,042,970	124,921,807	-17	1,452,977
Total	**1,755,847,144**	**218,094,925**	**38,925,252**	**11,286,117**	**16,779,364**	**3,833,477**	**-1,443,298**	**24,718,534**	**307,415,393**	**1,198,433,402**	**-4**	**12,767,389**

Note: Components may not sum to totals because of rounding.

1 For 1987 and subsequent years, includes the cost of services provided to the Treasury by Federal Reserve Banks for which reimbursement was not received.

2 Starting in 2010, as required under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the Board of Governors began assessing the Reserve Banks to fund the operations of the Consumer Financial Protection Bureau and, for a two-year period beginning July 21, 2010, the Office of Financial Research. These assessments are allocated to the Reserve Banks based on each Reserve Bank's capital and surplus balances as of the most recent quarter.

3 Represents transfers made as a franchise tax from 1917 through 1932; transfers made under section 13b of the Federal Reserve Act from 1935 through 1947; transfers made under section 7 of the Federal Reserve Act for 1996, 1997, and 2015–18.

4 Transfers made under section 13b of the Federal Reserve Act.

5 Transfers made under section 7 of the Federal Reserve Act. Beginning in 2006, accumulated other comprehensive income is reported as a component of surplus.

6 The $12,767,389 thousand transferred to surplus was reduced by direct charges of $500 thousand for charge-off on Bank premises (1927); $139,300 thousand for contributions to capital of the Federal Deposit Insurance Corporation (1934); $4 thousand net upon elimination of section 13b surplus (1958); $106,000 thousand (1996), $107,000 thousand (1997), $3,752,000 thousand (2000) transferred to the Treasury as statutorily required; and $1,848,716 thousand related to the implementation of SFAS No. 158 (2006) and was increased by a transfer of $11,131 thousand from reserves for contingencies (1955), leaving a balance of $6,825,000 thousand on December 31, 2018.

7 This amount is reduced by $8,004,994 thousand for expenses of the System Retirement Plan. See note 4, "Table 10. Income and expenses of the Federal Reserve Banks, by Bank, 2018."

n/a Not applicable.

Table 12. Operations in principal departments of the Federal Reserve Banks, 2015–18

Operation	2018	2017	2016	2015
Millions of pieces				
Currency processed	34,312	32,942	31,504	32,596
Currency destroyed	4,819	4,571	4,837	5,212
Coin received	58,249	58,221	58,223	55,921
Checks handled				
U.S. government checks[1]	53	56	58	60
Postal money orders	83	85	88	92
Commercial	4,740	5,153	5,241	5,452
Securities transfers[2]	17	16	17	17
Funds transfers[3]	158	153	148	143
Automated clearinghouse transactions				
Commercial	14,692	13,749	12,960	12,298
Government	1,668	1,629	1,594	1,558
Millions of dollars				
Currency processed	659,126	644,395	596,053	604,391
Currency destroyed	98,590	112,202	118,199	139,833
Coin received	5,387	5,585	5,563	5,394
Checks handled				
U.S. government checks[1]	148,149	145,599	152,392	143,764
Postal money orders	21,033	20,682	20,672	20,761
Commercial	8,485,159	8,438,008	8,088,569	8,109,457
Securities transfers[2]	296,335,209	299,334,719	286,671,689	295,755,612
Funds transfers[3]	716,211,759	740,096,838	766,961,537	834,630,440
Automated clearinghouse transactions				
Commercial	25,860,072	23,398,576	21,772,168	20,564,724
Government	5,515,114	5,370,695	5,192,786	5,054,219

[1] Includes government checks handled electronically (electronic checks).

[2] Data on securities transfers do not include reversals.

[3] Data on funds transfers do not include non-value transfers.

Table 13. Number and annual salaries of officers and employees of the Federal Reserve Banks, December 31, 2018

Federal Reserve Bank (including branches)	President	Other officers		Employees				Total	
	Annual salary (dollars)[1]	Number	Annual salaries (dollars)[1]	Number			Annual salaries (dollars)[1]	Number	Annual salaries (dollars)[1]
				Full time	Part time	Temporary/ hourly[2]			
Boston	424,700	78	20,167,384	911	18	10	104,925,179	1,018	125,517,263
New York	486,600	590	152,636,817	2,462	28	0	317,654,090	3,081	470,777,507
Philadelphia	410,100	71	15,562,150	778	15	19	79,316,092	884	95,288,342
Cleveland	403,900	67	14,785,917	901	19	40	87,367,071	1,028	102,556,888
Richmond	382,500	81	17,455,228	1,340	15	10	129,946,253	1,447	147,783,981
Atlanta	393,700	98	22,038,480	1,602	21	20	155,534,148	1,742	177,966,328
Chicago	424,700	136	32,649,987	1,391	34	51	153,587,097	1,613	186,661,784
St. Louis	381,000	101	22,964,700	1,258	29	10	120,011,539	1,399	143,357,239
Minneapolis	410,200	62	13,958,112	927	43	9	83,627,557	1,042	97,995,869
Kansas City	381,200	105	21,258,400	1,837	17	4	151,231,532	1,964	172,871,132
Dallas	415,400	78	17,411,852	1,166	10	10	100,729,044	1,265	118,556,296
San Francisco	455,100	108	27,607,550	1,575	18	12	177,489,546	1,714	205,552,196
Federal Reserve Information Technology	n/a	71	16,560,840	1,172	1	10	144,019,244	1,254	160,580,084
Office of Employee Benefits	n/a	15	4,077,865	39	1	0	5,040,770	55	9,118,635
Total	**4,969,100**	**1,661**	**399,135,282**	**17,359**	**269**	**205**	**1,810,479,162**	**19,506**	**2,214,583,544**

Note: Components may not sum to totals because of rounding.

[1] Annualized salary liability (excluding outside agency costs) based on salaries in effect on December 31, 2018.

[2] Temporary/hourly employees are paid by the Bank, generally work less than 780 hours, and are employed on a temporary basis (such as interns).

n/a Not applicable.

Table 14. Acquisition costs and net book value of the premises of the Federal Reserve Banks and Branches, December 31, 2018
Thousands of dollars

Federal Reserve Bank or Branch	Acquisition costs				Net book value	Other real estate
	Land	Buildings (including vaults)[1]	Building machinery and equipment	Total[2]		
Boston	27,293	202,973	47,132	277,398	109,441	n/a
New York	68,872	616,435	135,120	820,427	467,860	n/a
Philadelphia	8,146	134,683	28,046	170,875	81,812	n/a
Cleveland	4,219	152,050	35,015	191,284	103,190	n/a
Cincinnati	3,917	31,280	16,386	51,583	15,159	n/a
Richmond	32,044	179,633	65,462	277,139	135,356	n/a
Baltimore	7,917	42,853	14,109	64,879	28,378	n/a
Charlotte	7,884	45,972	13,993	67,849	31,905	n/a
Atlanta	23,358	163,233	23,580	210,171	132,544	n/a
Birmingham	5,347	13,163	2,446	20,956	10,887	n/a
Jacksonville	2,185	27,915	13,430	43,530	24,530	n/a
New Orleans	3,785	16,321	7,174	27,280	11,558	n/a
Miami	4,509	35,022	13,572	53,103	26,189	n/a
Chicago	7,460	256,603	39,514	303,577	122,669	n/a
Detroit	13,223	74,974	13,122	101,319	71,266	n/a
St. Louis	9,942	146,792	17,434	174,168	97,703	n/a
Memphis	2,472	18,287	6,737	27,496	8,943	n/a
Minneapolis	22,641	111,666	20,840	155,147	86,460	n/a
Helena	3,316	10,327	2,054	15,697	8,081	n/a
Kansas City	38,691	212,954	26,208	277,853	213,989	n/a
Denver	3,696	11,104	5,971	20,771	7,137	n/a
Omaha	4,537	11,154	2,705	18,396	10,444	n/a
Dallas	38,100	139,801	36,149	214,050	112,621	n/a
El Paso	262	5,864	3,360	9,486	3,735	n/a
Houston	32,323	104,574	9,550	146,447	104,364	n/a
San Francisco	20,988	137,983	34,773	193,744	81,489	n/a
Los Angeles	6,306	86,328	26,770	119,404	56,129	n/a
Salt Lake City	1,294	6,552	1,815	9,661	3,167	n/a
Seattle	13,101	49,970	5,829	68,900	51,200	n/a
Total	**417,828**	**3,046,466**	**668,296**	**4,132,590**	**2,218,206**	**n/a**

[1] Includes expenditures for construction at some offices, pending allocation to appropriate accounts.
[2] Excludes charge-offs of $17,699 thousand before 1952.
n/a Not applicable.

12 Federal Reserve System Audits

The Board of Governors, the Federal Reserve Banks, and the Federal Reserve System as a whole are all subject to several levels of audit and review.

The Board's financial statements and internal controls over financial reporting are audited annually by an independent outside auditor retained by the Board's Office of Inspector General (OIG). The outside auditor also tests the Board's compliance with certain provisions of laws, regulations, and contracts affecting those statements.

The Reserve Banks' financial statements are audited annually by an independent outside auditor retained by the Board of Governors. In addition, the Reserve Banks are subject to annual examination by the Board. As discussed in section 6, "Federal Reserve Banks," the Board's examination includes a wide range of ongoing oversight activities conducted on site and off site by staff of the Board's Division of Reserve Bank Operations and Payment Systems.

In addition, the OIG conducts audits, evaluations, investigations, and other reviews relating to the Board's programs and operations as well as to Board functions delegated to the Reserve Banks. Certain aspects of Federal Reserve operations are also subject to review by the Government Accountability Office.

Board of Governors Financial Statements

The financial statements of the Board of Governors were audited by KPMG LLP, independent auditors, for the years ended December 31, 2018 and 2017.

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM
WASHINGTON, D.C. 20551

March 6, 2019

Management's Report on Financial Statements and Internal Control over Financial Reporting

To the Committee on Board Affairs:

The management of the Board of Governors of the Federal Reserve System (the Board) is responsible for the preparation and fair presentation of the balance sheets as of December 31, 2018 and 2017, and the statements of operations and cash flows for the years then ended (the financial statements). The financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America, and, as such, include some amounts that are based on management judgments and estimates. To our knowledge, the financial statements are, in all material respects, fairly presented in conformity with generally accepted accounting principles and include all disclosures necessary for such fair presentation.

The management of the Board is responsible for establishing and maintaining effective internal control over financial reporting as it relates to the financial statements. The Board's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with accounting principles generally accepted in the United States of America. The Board's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the Board's assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that the Board's receipts and expenditures are being made only in accordance with authorizations of its management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Board's assets that could have a material effect on its financial statements.

Even effective internal controls, no matter how well designed, have inherent limitations, including the possibility of human error, and therefore can provide only reasonable assurance with respect to the preparation of reliable financial statements. In addition, projections of effectiveness in the future are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The management of the Board assessed its internal control over financial reporting based upon the criteria established in the *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, we believe that the Board maintained effective internal control over financial reporting.

Michell Clark	Ricardo A. Aguilera
Chief Operating Officer (Acting)	Chief Financial Officer
Director, Management Division	Director, Division of Financial Management

KPMG LLP
Suite 12000
1801 K Street, NW
Washington, DC 20006

Report of Independent Registered Public Accounting Firm

To the Board of Governors of the Federal Reserve System:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying balance sheets of the Board of Governors of the Federal Reserve System (the Board) as of December 31, 2018 and 2017, the related statements of operations and cash flows for the years then ended, and the related notes (collectively, the financial statements). We also have audited the Board's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Board as of December 31, 2018 and 2017, and the results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Board maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018 based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinions

The Board's management is responsible for these financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Board's financial statements and an opinion on the Board's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Board in accordance with the relevant requirements relating to our audit.

We conducted our audits in accordance with the standards of the PCAOB, in accordance with auditing standards generally accepted in the United States of America, and in accordance with the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the financial statements included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

An entity's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. An entity's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the entity; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the entity are being made only in accordance with authorizations of management and directors of the entity; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the entity's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards,* we have also issued a report dated March 6, 2019 on our tests of the Board's compliance with certain provisions of laws, regulations, and contracts and other matters. The purpose of that report is solely to describe the scope of our testing of compliance and the results of that testing, and not to provide an opinion on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Board's compliance.

KPMG LLP

We have served as the Board's auditor since 2015.

Washington, District of Columbia
March 6, 2019

Board of Governors of the Federal Reserve System Balance Sheets

	As of December 31,	
	2018	2017
Assets		
Current assets:		
Cash	$215,087,854	$177,529,448
Accounts receivable – net	2,140,266	2,183,803
Prepaid expenses and other assets	6,602,772	7,335,702
Total current assets	223,830,892	187,048,953
Noncurrent assets:		
Property, equipment, and software – net	337,453,642	266,484,427
Other assets	754,410	941,190
Total noncurrent assets	338,208,052	267,425,617
Total assets	$562,038,944	$454,474,570
Liabilities and cumulative results of operations		
Current liabilities:		
Accounts payable and accrued liabilities	$ 35,437,008	$ 27,203,026
Accrued payroll and related taxes	41,671,555	37,953,047
Accrued annual leave	43,141,495	40,857,846
Capital lease payable	74,164	77,744
Unearned revenues and other liabilities	3,489,739	4,455,970
Total current liabilities	123,813,961	110,547,633
Long-term liabilities:		
Capital lease payable	74,015	140,342
Retirement benefit obligation	106,702,283	102,881,136
Postretirement benefit obligation	14,582,700	15,915,271
Postemployment benefit obligation	6,129,290	7,055,281
Deferred rent	43,056,641	45,418,714
Other liabilities	4,440,119	–
Total long-term liabilities	174,985,048	171,410,744
Total liabilities	298,799,009	281,958,377
Cumulative results of operations:		
Fund balance	300,864,880	222,621,531
Accumulated other comprehensive loss	(37,624,945)	(50,105,338)
Total cumulative results of operations	263,239,935	172,516,193
Total liabilities and cumulative results of operations	$562,038,944	$454,474,570

See notes to financial statements.

Board of Governors of the Federal Reserve System Statements of Operations

	For the years ended December 31,	
	2018	2017
Board operating revenues:		
Assessments levied on Federal Reserve Banks for Board operating expenses and capital expenditures	$838,000,000	$740,000,000
Assessments levied on Federal Reserve Banks for currency-related operating expenses and capital expenditures	43,874,751	44,008,726
Other revenues	16,096,191	17,141,918
Total operating revenues	897,970,942	801,150,644
Board operating expenses:		
Salaries	456,517,512	437,179,633
Retirement, insurance, and benefits	100,550,193	97,442,384
Other components of net periodic pension and postretirement costs	9,206,084	7,330,010
Contractual services and professional fees	63,602,914	65,027,459
Depreciation, amortization, and net gains or losses on disposals	42,325,685	40,023,558
Travel	15,764,961	14,020,574
Non-capital furniture, equipment, postage, and supplies	27,781,455	34,372,697
Data, news, and research	16,705,844	13,372,175
Utilities	7,713,508	8,353,654
Software	18,841,942	16,010,063
Rentals of space and equipment	36,718,324	31,325,898
Repairs and maintenance	7,161,325	8,304,501
Other expenses	16,837,846	17,259,902
Total operating expenses	819,727,593	790,022,508
Net income	78,243,349	11,128,136
Currency costs:		
Assessments levied or to be levied on Federal Reserve Banks for currency costs	804,843,293	679,613,935
Expenses for costs related to currency	804,843,293	679,613,935
Currency assessments over (under) expenses	–	–
Bureau of Consumer Financial Protection (Bureau):		
Assessments levied on the Federal Reserve Banks for the Bureau	337,100,000	573,000,000
Transfers to the Bureau	337,100,000	573,000,000
Bureau assessments over (under) transfers	–	–
Total net income	$ 78,243,349	$ 11,128,136
Other comprehensive income (loss):		
Pension and other postretirement benefit plans:		
Amortization of prior service cost	$ 73,588	$ 138,609
Amortization of net actuarial loss	4,255,630	2,856,656
Net actuarial gain (loss) arising during the year	8,151,175	(21,682,486)
Total other comprehensive income (loss)	12,480,393	(18,687,221)
Comprehensive income (loss)	90,723,742	(7,559,085)
Cumulative results of operations – beginning of period	172,516,193	180,075,278
Cumulative results of operations – end of period	$263,239,935	$172,516,193

See notes to financial statements.

Board of Governors of the Federal Reserve System Statements of Cash Flows

	For the years ended December 31,	
	2018	2017
Cash flows from operating activities:		
Net income	$ 78,243,349	$ 11,128,136
Adjustments to reconcile results of operations to net cash from (used in) operating activities:		
Depreciation and amortization	41,910,585	38,904,644
Net loss on disposal of property and equipment	415,100	1,118,914
Other additional noncash adjustments to results of operations	(14,012)	324,078
(Increase) decrease in assets:		
Accounts receivable	43,537	1,484,872
Prepaid expenses	732,930	(896,622)
Other assets	186,780	(54,276)
Increase (decrease) in liabilities:		
Accounts payable and accrued liabilities	(507,057)	4,498,215
Accrued payroll and related taxes	3,718,508	3,625,316
Accrued annual leave	2,283,649	1,566,437
Unearned revenues and other liabilities	238,952	(360,536)
Net retirement benefit obligation	14,229,828	11,398,148
Net postretirement benefit obligation	739,140	565,113
Net postemployment benefit obligation	(925,991)	(159,866)
Deferred rent	(2,362,073)	(1,625,988)
Net cash from by operating activities	138,933,225	71,516,585
Cash flows used in investing activities:		
Capital expenditures	(101,304,912)	(42,195,544)
Net cash used in investing activities	(101,304,912)	(42,195,544)
Cash flows used in financing activities:		
Capital lease payments	(69,907)	(46,147)
Net cash used in financing activities	(69,907)	(46,147)
Net increase (decrease) in cash	37,558,406	29,274,894
Cash balance – beginning of year	177,529,448	148,254,554
Cash balance – end of year	$ 215,087,854	$177,529,448

See notes to financial statements.

Board of Governors of the Federal Reserve System Notes to Financial Statements as of and for the Years Ended December 31, 2018 and 2017

(1) Structure

The Federal Reserve System (the System) was established by Congress in 1913 and consists of the Board of Governors (the Board), the Federal Open Market Committee (FOMC), the twelve regional Federal Reserve Banks (Reserve Banks), the Federal Advisory Council, and the private commercial banks that are members of the System. The Board, unlike the Reserve Banks, was established as a federal government agency and is located in Washington, D.C. The Federal Reserve System uses advisory and working committees in carrying out its varied responsibilities. Five of these committees advise the Board: the Community Advisory Council, the Community Depository Institutions Advisory Council, the Federal Advisory Council, the Insurance Policy Advisory Committee, and the Model Validation Council. The Federal Advisory Council and the Insurance Policy Advisory Committee were established by law. The Community Advisory Council, the Community Depository Institutions Advisory Council, and the Model Validation Council were created by the Board.

The Board is required by the Federal Reserve Act (the Act) to report its operations to the Speaker of the House of Representatives. The Act also requires the Board, each year, to order a financial audit of each Reserve Bank and to publish each week a statement of the financial condition of each Reserve Bank and a combined statement for all of the Reserve Banks. Accordingly, the Board believes that the best financial disclosure consistent with law is achieved by issuing separate financial statements for the Board and for the Reserve Banks. Therefore, the accompanying financial statements include only the results of operations and activities of the Board. Combined financial statements for the Reserve Banks are included in the Board's annual report to the Speaker of the House of Representatives and weekly statements are available on the Board's public website.

The Dodd-Frank Wall Street Reform and Consumer Financial Protection Act of 2010 (Dodd-Frank Act) established the Bureau of Consumer Financial Protection (Bureau) as an independent bureau within the System and designated the Board's Office of Inspector General (OIG) as the OIG for the Bureau. As required by the Dodd-Frank Act, the Board transferred certain responsibilities to the Bureau. The Dodd-Frank Act requires the Board to fund the Bureau from the combined earnings of the System. Section 1017 of the Dodd-Frank Act provides that the financial statements of the Bureau are not to be consolidated with those of the Board or the System. Accordingly, the Board's financial statements do not include financial data of the Bureau other than the funding that the Board is required by the Dodd-Frank Act to provide.

(2) Operations and Services

The Board's responsibilities require thorough analysis of domestic and international financial and economic developments. The Board carries out those responsibilities in conjunction with the Reserve Banks and the FOMC. The Board also exercises general oversight of the operations of the Reserve Banks and exercises broad responsibility in the nation's payments system. Policy regarding open market operations is established by the FOMC. However, the Board has sole authority over changes in reserve requirements, and it must approve any change in the discount rate initiated by a Reserve Bank. The Board also plays a major role in the

supervision and regulation of the U.S. financial system. It has supervisory responsibilities for state-chartered banks that are members of the System, bank holding companies, savings and loan holding companies, foreign activities of member banks, U.S. activities of foreign banks, and any nonbank financial companies the Financial Stability Oversight Council (FSOC) has determined should be supervised by the Board. Although the Dodd-Frank Act gave the Bureau general rule-writing responsibility for federal consumer financial laws, the Board retains rule-writing responsibility under the Community Reinvestment Act and other specific statutory provisions. The Board also enforces the requirements of federal consumer financial laws for state member banks with assets of $10 billion or less. In addition, the Board enforces certain other consumer laws at all state member banks, regardless of size.

Section 11 of the Federal Reserve Act (as amended) directs the Board to collect assessments, fees, or other charges equal to the total expenses the Board estimates are necessary or appropriate to carry out the supervisory and regulatory responsibilities of the Board for certain bank holding companies and savings and loan holding companies and nonbank financial companies designated for Board supervision by the FSOC. As an agent, the Board does not recognize the supervision and regulation assessments as revenue nor does the Board use the collections to fund Board expenses; the funds are transferred to the United States Treasury (Treasury).

Section 7(a)(3)(A) of the Federal Reserve Act requires that any amount of surplus funds of the Reserve Banks that exceed or would exceed $6.825 billion be transferred to the Treasury via the Board. As an intermediary transfer agent, the Board does not recognize the remittances as revenue nor does the Board use the remittances to fund Board expenses. Additional information and disclosures regarding these remittances to the Treasury can be found in the combined financial statements of the Federal Reserve Banks.

(3) Significant Accounting Policies

Basis of Accounting — The Board prepares its financial statements in accordance with accounting principles generally accepted in the United States (GAAP) on an accrual basis of accounting.

Accounts Receivable and Allowance for Doubtful Accounts — Accounts receivable are recorded when amounts are billed but not yet received and are shown net of the allowance for doubtful accounts. Accounts receivable considered uncollectible are charged against the allowance account in the year they are deemed uncollectible. The allowance for doubtful accounts is adjusted monthly, based upon a review of outstanding receivables.

Prepaid Expenses — The Board recognizes expenses as prepaid for costs paid in advance that will be expensed with the passage of time or upon the occurrence of a triggering event in future periods.

Property, Equipment, and Software — The Board's property, equipment, and software are stated at cost less accumulated depreciation and amortization. Depreciation and amortization are calculated on a straight-line basis over the estimated useful lives of the assets, which range from three to ten years for furniture and equipment, ten to fifty years for building equipment and structures, and two to five years for software. Upon the sale or other disposition of a depreciable asset, the cost and related accumulated depreciation or amortization are removed and any

gain or loss is recognized. Construction in process includes costs incurred for short-term and long-term projects that have not been placed into service; the majority of the balance represents long-term building enhancement projects.

Capitalized assets, including software, buildings, leasehold improvements, furniture, and equipment, are impaired and an adjustment is recorded when events or changes in circumstances indicate that the carrying amount of assets or asset groups is not recoverable and significantly exceeds the assets' fair value.

Operating Leases and Deferred Rent — Leases for certain space contain scheduled rent increases over the term of the lease. Along with rent abatements and lease incentives, the scheduled rent increases are spread on a straight-line basis over the term of the lease in determining the annual rent expense to be recognized. The deferred rent represents the difference between the actual lease payments and the rent expense recognized. Lease incentives impact deferred rent and are noncash transactions.

Benefit Obligations — The Board records annual amounts relating to its nonqualified retirement, postretirement, and postemployment plans based on calculations that incorporate various actuarial and other assumptions, including discount rates, mortality, compensation increases, and health-care cost trends. The Board reviews the assumptions on an annual basis and makes modifications to the assumptions based on a variety of factors. The effect of the modifications is recorded in accumulated other comprehensive income and amortized to net periodic cost over future periods, which is presented in the accumulated other comprehensive income (loss) footnote.

Assessments to Fund the Board — The Federal Reserve Act authorizes the Board to levy an assessment on the Reserve Banks to fund its operations. The Board allocates the assessment to each Reserve Bank based on the Reserve Bank's capital and surplus balances. The Board recognizes the assessment in the period in which it is assessed.

Assessments for Currency Costs — The Board issues the nation's currency (in the form of Federal Reserve notes), and the Reserve Banks distribute currency through depository institutions. The Board incurs costs and assesses the Reserve Banks for these costs related to producing, issuing, and retiring Federal Reserve notes as well as providing other services. The assessment is allocated based on each Reserve Bank's share of the number of notes comprising the System's net liability for Federal Reserve notes on December 31 of the prior year. The Board recognizes the assessment in the year in which the associated costs are incurred. In 2017, the Board started undertaking a greater role in the currency program including the areas of research and development, and quality assurance. See the currency footnote disclosures for more detail on these costs.

Assessments to Fund the Bureau — The Board assesses the Reserve Banks for the funds transferred to the Bureau based on each Reserve Bank's capital and surplus balances. The Board recognizes the assessment in the period in which it is assessed. These assessments and transfers are reported separately from the Board's operating activities in the Board's Statements of Operations.

Art Collections — The Board has collections of works of art, historical treasures, and similar assets. These collections are maintained and held for public exhibition in furtherance of public service. Proceeds from any sales of collections are used to

acquire other items for collections. The cost of collections purchased by the Board is charged to expense in the year purchased and donated collection items are not recorded. The value of the Board's collections has not been determined.

Civil Money Penalties — The Board has enforcement authority over the financial institutions it supervises and their affiliated parties, including the authority to assess civil money penalties. As directed by statute, all civil money penalties that are assessed and collected by the Board are remitted to either the Treasury or the Federal Emergency Management Agency (FEMA). As an agent, the Board does not recognize civil money penalties as revenue nor does the Board use civil money penalties to fund Board expenses. Civil money penalties whose collection is contingent upon fulfillment of certain conditions in the enforcement action are not recorded in the Board's financial records.

Commitments and Contingencies — Liabilities for loss contingencies arising from claims, assessments, litigation, and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. Legal costs incurred in connection with loss contingencies are expensed as incurred.

Estimates — The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant items subject to such estimates include useful lives of property, equipment, and software; allowance for doubtful accounts receivable; accounts payable; benefit obligations; and commitments and contingencies.

Tax Exempt Status — The Board, as a federal government entity, is not subject to state or local income taxes. Federal income tax on corporations does not apply to the Board.

Recently Issued Accounting Standards — In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-02, *Leases* (Topic 842). This update revises the model to assess how a lease should be classified and provides guidance for lessees, requiring lessees to present right-of-use assets and lease liabilities on the balance sheet. Subsequently, in July 2018, the FASB issued a related ASU, ASU 2018-11, *Leases* (Topic 842). This lease accounting guidance is effective no later than the year ended December 31, 2020, although earlier adoption is permitted. The Board is continuing to evaluate the effect of this new guidance on its financial statements.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* (Topic 606). This update was issued to create common revenue recognition guidance for U.S. GAAP and International Financial Reporting Standards. The guidance is applicable to all contracts for the transfer of goods or services regardless of industry or type of transaction. This update requires recognition of revenue in a manner that reflects the consideration that the entity expects to receive in return for the transfer of goods or services to customers. Subsequently, the FASB issued a number of related ASUs, including ASU 2015-14, *Revenue from Contracts with Customers* (Topic 606): *Deferral of the Effective Date*; ASU 2016-08, *Revenue from Contracts with Customers* (Topic 606): *Principal versus Agent Considerations (Reporting Revenue Gross versus Net)*; ASU 2016-10, *Revenue from Contracts with*

Customers (Topic 606): *Identifying Performance Obligations and Licensing*; ASU 2016-12, *Revenue from Contracts with Customers* (Topic 606): *Narrow-Scope Improvements and Practical Expedients*; and ASU 2016-20, *Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers.* This revenue recognition accounting guidance is effective for the Board for the year ending December 31, 2019, and is not expected to have a material effect on the Board's financial statements since the Board reports annually and satisfies all material performance obligations prior to year-end.

In January 2017, the FASB issued ASU 2017-01, *Clarifying the Definition of a Business* (Topic 805). The update clarifies that a set of inputs, processes applied to inputs, and the ability to create outputs is not a business when substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or a group of similar identifiable assets. This standard is effective for the Board for the year ending December 31, 2019. The Board has decided to adopt this guidance early in 2018, as permitted.

In March 2017, the FASB issued ASU 2017-07, *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* (Topic 715). This update requires an employer to disaggregate the service cost component from the other components of net benefit cost. It also provides explicit guidance on how to present the service cost component and the other components of net benefit cost in the income statement and allows only the service cost component of net benefit cost to be eligible for capitalization. This update is effective for the Board for the year ended December 31, 2019, although early adoption is permitted. The Board has decided to adopt this guidance in 2017. See changes reflected in the Statements of Operations.

In August 2018, the FASB issued ASU 2018-14, *Compensation, Retirement Benefits, Defined Benefits Plans, General* (Subtopic 715-20). This update modifies the disclosure requirements for the Board's pension and postretirement plans. The update is effective for the Board for the year ending December 31, 2021, although earlier adoption is permitted. The Board is continuing to evaluate the effect of this new guidance on its disclosures.

In August 2018, the FASB issued ASU 2018-15, *Intangibles, Goodwill and Other Internal Use Software* (Subtopic 350-40). This update aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). This update is effective for the Board for the year ending December 31, 2020, although earlier adoption is permitted. The Board plans to early adopt this standard for the year ended December 31, 2019, and it is not expected to have a material effect on the Board's financial statements.

(4) Property, Equipment, and Software

The following is a summary of the components of the Board's property, equipment, and software, at cost, less accumulated depreciation and amortization as of December 31, 2018 and 2017:

	As of December 31,	
	2018	2017
Land	$ 49,464,201	$ 18,640,314
Buildings and improvements	313,052,243	310,235,261
Construction in process	84,820,423	31,670,962
Furniture and equipment	87,136,166	77,682,539
Software in use	66,188,603	59,373,571
Software in process	3,338,072	3,462,045
Vehicles	2,590,042	2,297,985
Lease – office equipment	283,300	283,300
Subtotal	606,873,050	503,645,977
Less accumulated depreciation and amortization	(269,419,408)	(237,161,550)
Property, equipment, and software – net	$ 337,453,642	$ 266,484,427

Construction in process include costs incurred in the current or prior years for long-term projects and building enhancements. The Board recorded accrued liabilities for noncash capital assets of goods received or services performed of $8,741,000 and $5,946,000 at December 31, 2018 and 2017, respectively. The Board recorded retainage liabilities for noncash capital assets of goods received or services performed of $3,235,000 for the year ended December 31, 2018.

In June 2018, the Board acquired a building and land for $40.8 million from the General Services Administration.

(5) Leases

Capital Leases — The Board entered into capital leases for copier equipment in 2016 with lease terms that extend through 2020. Furniture and equipment includes capitalized leases of $283,000 as of 2018 and 2017. Accumulated depreciation includes $143,000 and $77,000 related to assets under capital leases as of 2018 and 2017, respectively. The depreciation expense for leased equipment is $66,000 and $50,000 for 2018 and 2017, respectively.

The future minimum lease payments required under the capital leases and the present value of the net minimum lease payments as of December 31, 2018, are as follows:

Years Ended December 31,	Amount
2019	$ 77,636
2020	49,698
2021	29,742
2022	22,306
Total minimum lease payments	179,382
Less amount representing maintenance	(35,688)
Net minimum lease payments	143,694
Less amount representing interest	(3,352)
Present value of net minimum lease payments	140,342
Less current maturities of capital lease payments	(66,327)
Long-term capital lease obligations	$ 74,015

Operating Leases — The Board has entered into operating leases for copier equipment and to secure office, training, data center, and warehouse space. Several of the leases are with other governmental agencies and Reserve Banks. Minimum annual payments under the multiyear operating leases having an initial or remaining noncancelable lease term in excess of one year at December 31, 2018, are as follows:

Years Ended December 31,	
2019	$ 37,252,968
2020	36,237,798
2021	36,761,628
2022	24,720,092
2023	20,723,748
After 2023	49,439,916
	$205,136,150

Deferred Rent — The Board recorded noncash lease incentives of $7,734,000 for the year ended December 31, 2017. The Board did not have any new lease incentives for the year ended December 31, 2018.

(6) Retirement Benefits

Substantially all of the Board's employees participate in the Retirement Plan for Employees of the Federal Reserve System (the System Plan). The System Plan provides retirement benefits to employees of the Board, the Reserve Banks, the Office of Employee Benefits of the Federal Reserve System (OEB), and certain employees of the Bureau. The Federal Reserve Bank of New York (FRBNY), on behalf of the System, recognizes the net assets and costs associated with the System Plan in its financial statements; costs associated with the System Plan are not redistributed to the Board.

Employees of the Board who became employed prior to 1984 are covered by a contributory defined benefits program under the System Plan. Employees of the Board who became employed after 1983 are covered by a non-contributory defined benefits program under the System Plan. FRBNY, on behalf of the System, funded $240,000,000 and $720,000,000 during each of the years ended December 31, 2018 and 2017, respectively. The Board was not assessed a contribution for 2018 or 2017.

Annually, the Society of Actuaries releases new mortality tables and updates mortality projection scales. The System analyzed these new tables relative to the System's actual retiree mortality experience. Based on these analyses, the System, in 2018, adopted the modified MP-2018 projection scales and RP-2014 mortality tables with various adjustments to reflect the System's recent mortality experience of System retirees. The adjusted tables and scales included the Board's experience and the Board concurred with the adoption of these changes.

Benefits Equalization Plan — Board employees covered under the System Plan are also covered under a Benefits Equalization Plan (BEP). Benefits paid under the BEP are limited to those benefits that cannot be paid from the System Plan due to limitations imposed by the Internal Revenue Code. Activity for the BEP as of December 31, 2018 and 2017, is summarized in the following tables:

	2018	2017
Change in projected benefit obligation:		
Benefit obligation – beginning of year	$ 66,654,768	$ 41,832,904
Service cost	5,837,651	4,359,375
Interest cost	2,864,362	2,365,386
Plan participants' contributions	–	–
Actuarial (gain) loss	(3,208,061)	18,158,332
Gross benefits paid	(143,137)	(61,229)
Benefit obligation – end of year	$ 72,005,583	$ 66,654,768
Accumulated benefit obligation – end of year	$ 14,288,814	$ 11,854,561
Weighted-average assumptions used to determine benefit obligation as of December 31:		
Discount rate	4.56%	3.75%
Rate of compensation increase	4.25%	4.00%
Change in plan assets:		
Fair value of plan assets – beginning of year	$ –	$ –
Employer contributions	143,137	61,229
Plan participants' contributions	–	–
Gross benefits paid	(143,137)	(61,229)
Fair value of plan assets – end of year	$ –	$ –
Funded status:		
Reconciliation of funded status – end of year:		
Fair value of plan assets	$ –	$ –
Benefit obligation (current)	203,296	145,694
Benefit obligation (noncurrent)	71,802,287	66,509,074
Funded status	(72,005,583)	(66,654,768)
Amount recognized – end of year	$(72,005,583)	$(66,654,768)
Amounts recognized in the balance sheets consist of:		
Asset	$ –	$ –
Liability – current	(203,296)	(145,694)
Liability – noncurrent	(71,802,287)	(66,509,074)
Net amount recognized	$(72,005,583)	$(66,654,768)
Amounts recognized in accumulated other comprehensive income consist of:		
Net actuarial loss	$ 26,737,493	$ 32,673,765
Prior service cost	39,689	122,876
Net amount recognized	$ 26,777,182	$ 32,796,641

Expected cash flows:	
Expected employer contributions – 2019	$ 203,296
Expected benefit payments:*	
2019	$ 203,296
2020	$ 270,457
2021	$ 347,999
2022	$ 439,644
2023	$ 555,449
2024–2028	$5,875,800

* Expected benefit payments to be made by the Board.

	2018	2017
Components of net periodic benefit cost:		
Service cost	$ 5,837,651	$ 4,359,375
Interest cost	$ 2,864,362	$ 2,365,386
Expected return on plan assets	–	–
Amortization:		
Actuarial (gain) loss	$ 2,728,211	$ 1,796,670
Prior service cost	83,187	99,578
Net periodic benefit cost	$11,513,411	$ 8,621,009
Weighted-average assumptions used to determine net periodic benefit cost:		
Discount rate	3.75%	4.32%
Rate of compensation increase	4.00%	4.00%
Other changes in plan assets and benefit obligations recognized in other comprehensive income:		
Current year actuarial (gain) loss	$ (3,208,061)	$18,158,332
Amortization of prior service cost	$ (83,187)	$ (99,578)
Amortization of actuarial gain (loss)	(2,728,211)	(1,796,670)
Total recognized in other comprehensive (income) loss	$ (6,019,459)	$16,262,084
Total recognized in net periodic benefit cost and other comprehensive income	$ 5,493,952	$24,883,093

Estimated amounts that will be amortized from accumulated other comprehensive income into net periodic benefit cost (credit) in 2019 are shown below:

Net actuarial loss	$1,762,415
Prior service cost	39,689
Total	$1,802,104

Pension Enhancement Plan — The Board also provides another non-qualified plan for officers of the Board. The retirement benefits covered under the Pension Enhancement Plan (PEP) increase the pension benefit calculation from 1.8 percent above the Social Security integration level to 2.0 percent. Activity for the PEP as of December 31, 2018 and 2017, is summarized in the following tables:

	2018	2017
Change in projected benefit obligation:		
Benefit obligation – beginning of year	$ 36,590,675	$ 32,378,804
Service cost	1,194,522	1,094,459
Interest cost	1,416,533	1,358,925
Plan participants' contributions	–	–
Actuarial (gain) loss	(3,216,655)	2,164,636
Gross benefits paid	(560,508)	(406,149)
Benefit obligation – end of year	$ 35,424,567	$ 36,590,675
Accumulated benefit obligation – end of year	$ 31,363,223	$ 31,462,483
Weighted-average assumptions used to determine benefit obligation as of December 31:		
Discount rate	4.35%	3.69%
Rate of compensation increase	4.25%	4.00%
Change in plan assets:		
Fair value of plan assets – beginning of year	$ –	$ –
Employer contributions	560,508	406,149
Plan participants' contributions	–	–
Gross benefits paid	(560,508)	(406,149)
Fair value of plan assets – end of year	$ –	$ –
Funded status:		
Reconciliation of funded status – end of year:		
Fair value of plan assets	$ –	$ –
Benefit obligation – current	648,627	456,157
Benefit obligation – noncurrent	34,775,940	36,134,518
Funded status	(35,424,567)	(36,590,675)
Amount recognized – end of year	$(35,424,567)	$(36,590,675)
Amounts recognized in the balance sheets consist of:		
Asset	$ –	$ –
Liability – current	(648,627)	(456,157)
Liability – noncurrent	(34,775,940)	(36,134,518)
Net amount recognized	$(35,424,567)	$(36,590,675)
Amounts recognized in accumulated other comprehensive income consist of:		
Net actuarial loss	$ 8,961,358	$ 13,350,579
Prior service cost	–	–
Net amount recognized	$ 8,961,358	$ 13,350,579

Expected cash flows:	
Expected employer contributions – 2019	$ 648,627
Expected benefit payments:*	
2019	$ 648,627
2020	$ 781,575
2021	$ 919,930
2022	$1,074,821
2023	$1,244,420
2024–2028	$8,824,664

* Expected benefit payments to be made by the Board.

	2018	2017
Components of net periodic benefit cost:		
Service cost	$ 1,194,522	$1,094,459
Interest cost	1,416,533	1,358,925
Expected return on plan assets	–	–
Amortization:		
Actuarial loss	1,172,566	832,304
Prior service cost	–	54,908
Net periodic benefit cost	$ 3,783,621	$3,340,596
Weighted-average assumptions used to determine net periodic benefit cost:		
Discount rate	3.69%	4.22%
Rate of compensation increase	4.00%	4.00%
Other changes in plan assets and benefit obligations recognized in other comprehensive income:		
Current year actuarial (gain) loss	$(3,216,655)	$2,164,636
Amortization of prior service cost	-	(54,908)
Amortization of actuarial gain (loss)	(1,172,566)	(832,304)
Total recognized in other comprehensive (income) loss	$(4,389,221)	$1,277,424
Total recognized in net periodic benefit cost and other comprehensive income	$ (605,600)	$4,618,020

Estimated amounts that will be amortized from accumulated other comprehensive income into net periodic benefit cost (credit) in 2019 are shown below:

Net actuarial loss	$599,512
Prior service cost	–
Total	$599,512

The total accumulated retirement benefit obligation includes a liability for a supplemental retirement agreement and a benefits equalization plan under the System's Thrift Plan. The total obligation as of December 31, 2018 and 2017, is summarized in the following table:

	2018	2017
Retirement benefit obligation:		
Benefit obligation – BEP	$ 72,005,583	$ 66,654,768
Benefit obligation – PEP	35,424,567	36,590,675
Additional benefit obligations	124,056	237,544
Total accumulated retirement benefit obligation	$107,554,206	$103,482,987

A relatively small number of Board employees participate in the Civil Service Retirement System or the Federal Employees' Retirement System. These defined benefit plans are administered by the U.S. Office of Personnel Management, which determines the required employer contribution levels. The Board's contributions to these plans totaled $1,112,000 and $1,080,000 in 2018 and 2017, respectively. The Board has no liability for future payments to retirees under these programs and is not accountable for the assets of the plans.

Employees of the Board may also participate in the System's Thrift Plan or Roth 401(k). Board contributions to members' accounts were $28,833,000 and $27,320,000 in 2018 and 2017, respectively.

(7) Postretirement Benefits

The Board provides certain life insurance programs for its active employees and retirees. Activity as of December 31, 2018 and 2017, is summarized in the following tables:

	2018	2017
Change in benefit obligation:		
Benefit obligation – beginning of year	$ 16,467,035	$ 14,710,985
Service cost	170,564	164,069
Interest cost	595,971	610,434
Plan participants' contributions	–	–
Actuarial (gain) loss	(1,726,457)	1,359,518
Gross benefits paid	(343,937)	(377,971)
Benefit obligation – end of year	15,163,176	16,467,035
Weighted-average assumptions used to determine benefit obligation as of December 31 – discount rate	4.31%	3.64%
Change in plan assets:		
Fair value of plan assets – beginning of year	$ –	$ –
Employer contributions	343,937	377,971
Gross benefits paid	(343,937)	(377,971)
Fair value of plan assets – end of year	$ –	$ –
Funded status:		
Reconciliation of funded status – end of year:		
Fair value of plan assets	$ –	$ –
Benefit obligation – current	580,476	551,764
Benefit obligation – noncurrent	14,582,700	15,915,271
Funded status	(15,163,176)	(16,467,035)
Amount recognized – end of year	$(15,163,176)	$(16,467,035)
Amounts recognized in the balance sheets consist of:		
Asset	$ –	$ –
Liability – current	(580,476)	(551,764)
Liability – noncurrent	(14,582,700)	(15,915,271)
Net amount recognized	$(15,163,176)	$(16,467,035)
Amounts recognized in accumulated other comprehensive income consist of:		
Net actuarial loss	$ 1,984,526	$ 4,065,836
Prior service credit	(98,118)	(107,717)
Net amount recognized	$ 1,886,408	$ 3,958,119

Expected cash flows:	
Expected employer contributions – 2019	$ 580,476
Expected benefit payments:*	
2019	$ 580,476
2020	$ 608,475
2021	$ 654,047
2022	$ 679,536
2023	$ 711,195
2024–2028	$3,961,346

* Expected benefit payments to be made by the Board.

	2018	2017
Components of net periodic benefit cost:		
Service cost	$ 170,564	$ 164,069
Interest cost	595,971	610,434
Expected return on plan assets	–	–
Amortization:		
Actuarial (gain) loss	354,853	227,682
Prior service credit	(9,599)	(15,877)
Net periodic benefit cost	$ 1,111,789	$ 986,308
Weighted-average assumptions used to determine net periodic benefit cost – discount rate	3.64 %	4.14 %
Other changes in plan assets and benefit obligations recognized in other comprehensive income:		
Current year actuarial (gain) loss	$(1,726,459)	$1,359,518
Amortization of prior service credit	9,599	15,877
Amortization of actuarial gain (loss)	(354,853)	(227,682)
Total recognized in other comprehensive (income) loss	$(2,071,713)	$1,147,713
Total recognized in net periodic benefit cost and other comprehensive income	$ (959,924)	$2,134,021

Estimated amounts that will be amortized from accumulated other comprehensive income into net periodic benefit cost (credit) in 2019 are shown below:

Net actuarial loss	$65,950
Prior service credit	(9,599)
Total	$56,351

(8) Postemployment Benefits

The Board provides certain postemployment benefits to eligible former or inactive employees and their dependents. Postemployment costs were actuarially determined using a December 31 measurement date and discount rates of 2.84 percent and 2.59 percent as of December 31, 2018 and 2017, respectively. The net periodic postemployment benefit cost (credit) recognized by the Board as of December 31, 2018 and 2017, was ($284,000) and $1,017,000, respectively.

(9) Accumulated Other Comprehensive Income (Loss)

A reconciliation of beginning and ending balances of accumulated other comprehensive income (loss) for the years ended December 31, 2018 and 2017, is as follows:

	Amount Related to Defined Benefit Retirement Plans	Amount Related to Postretirement Benefits Other Than Pensions	Total Accumulated Other Comprehensive Income (Loss)
Balance – January 1, 2017	$(28,607,712)	$(2,810,405)	$(31,418,117)
Change in accumulated other comprehensive income (loss):			
Net actuarial gain (loss) arising during the year	(20,322,968)	(1,359,518)	(21,682,486)
Other comprehensive income before reclassifications	(20,322,968)	(1,359,518)	(21,682,486)
Amortization of prior service (credit) costs[(a)(b)]	154,486	(15,877)	138,609
Amortization of net actuarial (gain) loss[(a)(b)]	2,628,974	227,682	2,856,656
Amounts reclassified from accumulated other comprehensive income	2,783,460	211,805	2,995,265
Change in accumulated other comprehensive income (loss)	(17,539,508)	(1,147,713)	(18,687,221)
Balance – December 31, 2017	(46,147,220)	(3,958,118)	(50,105,338)
Change in accumulated other comprehensive income (loss):			
Net actuarial (gain) loss arising during the year[(a)]	6,424,716	1,726,459	8,151,175
Other comprehensive income before reclassifications	6,424,716	1,726,459	8,151,175
Amortization of prior service (credit) costs[(a)(b)]	83,187	(9,599)	73,588
Amortization of net actuarial (gain) loss[(a)(b)]	3,900,777	354,853	4,255,630
Amounts reclassified from accumulated other comprehensive income	3,983,964	345,254	4,329,218
Change in accumulated other comprehensive income (loss)	10,408,680	2,071,713	12,480,393
Balance – December 31, 2018	$(35,738,540)	$(1,886,405)	$(37,624,945)

[(a)] These components of accumulated other comprehensive income are included in the computation of net periodic pension cost (see Notes 6 and 7 for additional details).

[(b)] These components of accumulated other comprehensive income are reflected in the "Retirement, insurance, and benefits" line on the Statements of Operations.

(10) Selected Transactions with the Reserve Banks

The Board performs certain functions for the Reserve Banks in conjunction with its responsibilities for the System, and the Reserve Banks provide certain administrative functions for the Board. The Board assesses the Reserve Banks for its operations, to include expenses related to its currency responsibilities, as well as for the funding the Board is required to provide to the Bureau. Selected activity related to the Board and Reserve Banks is summarized in the following table:

	2018	2017
For the years ended December 31:		
Assessments levied or to be levied on Reserve Banks for:		
Currency expenses	$ 848,718,044	$ 723,622,661
Board operations	838,000,000	740,000,000
Transfers of funds to the Bureau	337,100,000	573,000,000
Total assessments levied or to be levied on Reserve Banks	$2,023,818,044	$2,036,622,661

The OEB administers certain System benefit plans on behalf of the Board and the Reserve Banks, and costs associated with the OEB's activities are assessed to the Board and Reserve Banks. The Board was assessed $2,957,000 and $2,733,000 for

the years ended December 31, 2018 and 2017, respectively. Activity related to the Board and the OEB is summarized in the following table:

	2018	2017
As of December 31:		
Accounts receivable due from the Office of Employee Benefits	$839,258	$603,452
Accounts payable due to the Office of Employee Benefits	$ –	$121,184

(11) Federal Financial Institutions Examination Council

The Board is one of the five member agencies of the Federal Financial Institutions Examination Council (the Council), and performs certain administrative functions for the Council. The five agencies that are represented on the Council are the Board, the Federal Deposit Insurance Corporation, the National Credit Union Administration, the Office of the Comptroller of the Currency, and the Bureau.

The Board's financial statements do not include financial data for the Council. The Council expenses charged to the Board were $4,527,000 and $4,179,577 for the years ended December 31, 2018 and 2017, respectively for the assessment of operating, examiner education, and other Council program expenses. The Board expenses charged to the Council were $1,846,000 and $2,990,578 for the years ended December 31, 2018 and 2017, respectively for the reimbursement of data processing and other administrative charges performed on behalf of the Council.

(12) The Bureau of Consumer Financial Protection

Beginning July 2011, section 1017 of the Dodd-Frank Act requires the Board to fund the Bureau from the combined earnings of the System, in an amount determined by the Director of the Bureau to be reasonably necessary to carry out the authorities of the Bureau under federal consumer financial law, taking into account such other sums made available to the Bureau from the preceding year (or quarter of such year). The Dodd-Frank Act limits the amount to be transferred each fiscal year to a fixed percentage of the System's total operating expenses. The Bureau transfers funds to the Board to fund their share of OIG operations. The Board recorded revenue of $12,500,000 related to OIG funding in each of the 2018 and 2017 calendar years.

(13) Currency Costs

The Bureau of Engraving and Printing is the sole supplier for currency printing and also provides currency retirement, new Bureau of Engraving and Printing facility, and meaningful access services. The Board contracts for other services associated with currency, such as shipping, education, and quality assurance. Certain currency amounts relating to the prior year have been reclassified to conform to the current-year presentation. The presentation of $9,597,309 of the $13,117,081 quality assurance services for the year ended December 31, 2017, has been revised to conform to the current-year presentation from other expenses to contractual services and professional fees.

The currency costs incurred by the Board for the years ended December 31, 2018 and 2017, are reflected in the following table:

	2018	2017
Costs related to Bureau of Engraving and Printing:		
Printing	$799,885,504	$673,936,234
Retirement	3,501,362	3,568,867
Meaningful access program	1,452,899	1,425,853
New facility	3,528	682,981
Subtotal related to Bureau of Engraving and Printing	$804,843,293	$679,613,935
Other currency costs:		
Shipping	$ 20,252,210	$ 21,710,886
Research and development	11,961,481	6,831,283
Quality assurance services	9,755,730	13,117,081
Education services	1,905,330	2,349,476
Subtotal of other currency costs	$ 43,874,751	$ 44,008,726
Total currency costs	$848,718,044	$723,622,661

(14) Commitments and Contingencies

Commitments — The Board has entered into an agreement with the Federal Deposit Insurance Corporation and the Office of the Comptroller of the Currency, through the Council, to fund a portion of the enhancements and maintenance fees for a central data repository project that requires maintenance through 2020 which includes option periods.

Litigation and Contingent Liabilities — The Board is subject to contingent liabilities which arise from litigation cases and various business contracts. These contingent liabilities arise in the normal course of operations and their ultimate disposition is unknown. Based on information currently available to management, it is management's opinion that the expected outcome of these matters, in the aggregate, will not have a material adverse effect on the financial statements.

(15) Subsequent Events

There were no subsequent events that require adjustments to or disclosures in the financial statements as of December 31, 2018. Subsequent events were evaluated through March 6, 2019, which is the date the financial statements were available to be issued.

KPMG LLP
Suite 12000
1801 K Street, NW
Washington, DC 20006

Independent Auditors' Report on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance With *Government Auditing Standards*

To the Board of Governors of the Federal Reserve System:

We have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), auditing standards generally accepted in the United States of America, and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the Board of Governors of the Federal Reserve System (the "Board"), which comprise the balance sheet as of December 31, 2018, and the related statement of operations and cash flows for the year then ended, and the related notes to the financial statements. We have issued our report thereon dated March 6, 2019.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Board's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, and contracts, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Board's compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Board's compliance. Accordingly, this communication is not suitable for any other purpose. This report is intended solely for the information and use of the Board of Governors of the Federal Reserve System and is not intended to be and should not be used by anyone other than this specified party.

KPMG LLP

Washington, District of Columbia
March 6, 2019

Federal Reserve Banks Combined Financial Statements

The combined financial statements of the Federal Reserve Banks were audited by KPMG LLP, independent auditors, for the years ended December 31, 2018 and 2017.

KPMG LLP
Suite 12000
1801 K Street, NW
Washington, DC 20006

Independent Auditors' Report

To the Board of Governors of the Federal Reserve System and the Boards of Directors of the Federal Reserve Banks:

We have audited the accompanying combined statements of condition of the Federal Reserve Banks (the "Reserve Banks") as of December 31, 2018 and 2017, and the related combined statements of operations and changes in capital for the years then ended. These combined financial statements are the responsibility of the Division of Reserve Bank Operations and Payment Systems' management. Our responsibility is to express an opinion on these combined financial statements based on our audits.

We conducted our audits in accordance with the auditing standards of the Public Company Accounting Oversight Board (United States) and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As described in Note 3 to the combined financial statements, the Division of Reserve Bank Operations and Payment Systems has prepared these combined financial statements in conformity with the accounting principles established by the Board of Governors of the Federal Reserve System (the "Board"), as set forth in the *Financial Accounting Manual for Federal Reserve Banks*, which is a basis of accounting other than U.S. generally accepted accounting principles.

In our opinion, the combined financial statements referred to above present fairly, in all material respects, the financial position of the Reserve Banks as of December 31, 2018 and 2017, and the results of its operations for the years then ended, on the basis of accounting described in Note 3.

KPMG LLP

Washington, DC
March 8, 2019

Federal Reserve Banks

Abbreviations

ACH	Automated clearinghouse
ASC	Accounting Standards Codification
ASU	Accounting Standards Update
BEP	Benefit Equalization Retirement Plan
Budget Act	Bipartisan Budget Act of 2018
Bureau	Bureau of Consumer Financial Protection
CDS	Credit default swaps
CIP	Committee on Investment Performance (related to System Retirement Plan)
DFMU	Designated financial market utility
FAM	*Financial Accounting Manual for Federal Reserve Banks*
FASB	Financial Accounting Standards Board
FOMC	Federal Open Market Committee
FRBNY	Federal Reserve Bank of New York
GAAP	Accounting principles generally accepted in the United States of America
GSE	Government-sponsored enterprise
IMF	International Monetary Fund
JPMC	JPMorgan Chase & Co.
LLC	Limited liability company
MBS	Mortgage-backed securities
ML	Maiden Lane LLC
RMBS	Residential mortgage-backed securities
OEB	Office of Employee Benefits of the Federal Reserve System
SDR	Special drawing rights
SERP	Supplemental Retirement Plan for Select Officers of the Federal Reserve Banks
SOMA	System Open Market Account
STRIPS	Separate Trading of Registered Interest and Principal of Securities
TBA	To be announced
TDF	Term Deposit Facility
TRS	Total return swap
VIE	Variable interest entity

Combined Statements of Condition
As of December 31, 2018 and December 31, 2017
(in millions)

		2018	2017
ASSETS			
Gold certificates		$ 11,037	$ 11,037
Special drawing rights certificates		5,200	5,200
Coin		1,726	1,892
Loans	Note 4	61	134
System Open Market Account:	Note 5		
Treasury securities, net (of which $25,102 and $28,053 is lent as of December 31, 2018 and 2017, respectively)		2,302,462	2,545,733
Government-sponsored enterprise debt securities, net (of which $0 is lent as of December 31, 2018 and 2017)		2,741	4,752
Federal agency and government-sponsored enterprise mortgage-backed securities, net		1,683,532	1,817,700
Foreign currency denominated investments, net		20,906	21,316
Central bank liquidity swaps		4,207	12,067
Accrued interest receivable		22,236	24,744
Other assets		-	13
Investments held by consolidated variable interest entity, net (of which $0 and $1,712 is measured at fair value as of December 31, 2018 and 2017, respectively)	Note 6	-	1,713
Prepaid pension benefit costs	Note 9	-	14
Bank premises and equipment, net	Note 7	2,553	2,571
Items in process of collection		236	81
Other assets		983	1,001
Total assets		$4,057,880	$4,449,968
LIABILITIES AND CAPITAL			
Federal Reserve notes outstanding, net		$1,671,437	$1,570,727
System Open Market Account:	Note 5		
Securities sold under agreements to repurchase		304,012	563,958
Other liabilities		34	558
Deposits:			
Depository institutions		1,555,954	1,947,633
Treasury, general account		402,138	228,933
Other deposits		78,317	89,816
Interest payable to depository institutions and others		1,381	1,006
Accrued benefit costs	Notes 9, 10	2,558	2,332
Deferred credit items		1,006	1,001
Accrued remittances to the Treasury		1,597	2,337
Other liabilities		286	278
Total liabilities		4,018,720	4,408,579
Capital paid-in		32,335	31,389
Surplus (including accumulated other comprehensive loss of $3,292 and $3,334 at December 31, 2018 and 2017, respectively)		6,825	10,000
Total capital		39,160	41,389
Total liabilities and capital		$4,057,880	$4,449,968

The accompanying notes are an integral part of these combined financial statements.

Combined Statements of Operations

For the years ended December 31, 2018 and December 31, 2017
(in millions)

		2018	2017
INTEREST INCOME			
Loans	Note 4	$ 3	$ 1
System Open Market Account:	Note 5		
Treasury securities, net		62,807	64,267
Government-sponsored enterprise debt securities, net		175	416
Federal agency and government-sponsored enterprise mortgage-backed securities, net		49,289	48,912
Foreign currency denominated investments, net		(29)	(17)
Central bank liquidity swaps		15	14
Total interest income		112,260	113,593
INTEREST EXPENSE			
System Open Market Account:	Note 5		
Securities sold under agreements to repurchase		4,559	3,365
Other		4	7
Deposits:			
Depository institutions and others		38,484	25,849
Term Deposit Facility		2	13
Total interest expense		43,049	29,234
Net interest income		69,211	84,359
OTHER ITEMS OF INCOME (LOSS)			
System Open Market Account:	Note 5		
Treasury securities gains, net		5	28
Federal agency and government-sponsored enterprise mortgage-backed securities (losses) gains, net		(3)	8
Foreign currency translation (losses) gains, net		(390)	1,894
Other		21	27
Income from investments held by consolidated variable interest entity, net	Note 6	9	6
Income from services		443	442
Reimbursable services to government agencies		706	698
Other		69	68
Total other items of income		860	3,171
OPERATING EXPENSES			
Salaries and benefits		3,206	3,085
Occupancy		338	325
Equipment		193	184
Net periodic pension expense	Note 9	484	525
Other		725	682
Assessments:			
Board of Governors operating expenses and currency costs		1,687	1,464
Bureau of Consumer Financial Protection		337	573
Total operating expenses		6,970	6,838
Net income before providing for remittances to the Treasury		63,101	80,692
Earnings remittances to the Treasury:	Note 3o	65,319	80,559
Net (loss) income after providing for remittances to the Treasury		(2,218)	133
Change in prior service costs related to benefit plans	Note 9, 10	31	59
Change in actuarial gains related to benefit plans	Note 9, 10	11	592
Total other comprehensive income		42	651
Comprehensive (loss) income		$ (2,176)	$ 784

The accompanying notes are an integral part of these combined financial statements.

Combined Statements of Changes in Capital
For the years ended December 31, 2018 and December 31, 2017
(in millions, except share data)

	Capital paid-in	Surplus			Total capital
		Net income retained	Accumulated other comprehensive income (loss)	Total surplus	
Balance at December 31, 2016 (608,848,261 shares)	$30,442	$13,985	$(3,985)	$10,000	$40,442
Net change in capital stock issued (18,923,950 shares)	947	-	-	-	947
Comprehensive income:					
Net income	-	133	-	133	133
Other comprehensive loss	-	-	651	651	651
Dividends on capital stock	-	(784)	-	(784)	(784)
Net change in capital	947	(651)	651	-	947
Balance at December 31, 2017 (627,772,211 shares)	$31,389	$13,334	$(3,334)	$10,000	$41,389
Net change in capital stock issued (18,931,796 shares)	946	-	-	-	946
Comprehensive income:					
Net loss	-	(2,218)	-	(2,218)	(2,218)
Other comprehensive income	-	-	42	42	42
Dividends on capital stock	-	(999)	-	(999)	(999)
Net change in capital	946	(3,217)	42	(3,175)	(2,229)
Balance at December 31, 2018 (646,704,007 shares)	$32,335	$10,117	$(3,292)	$ 6,825	$39,160

The accompanying notes are an integral part of these combined financial statements.

(1) Structure

The Federal Reserve Banks (Reserve Banks) are part of the Federal Reserve System (System) created by Congress under the Federal Reserve Act of 1913 (Federal Reserve Act), which established the central bank of the United States. The Reserve Banks are chartered by the federal government and possess a unique set of governmental, corporate, and central bank characteristics.

In accordance with the Federal Reserve Act, supervision and control of each Reserve Bank is exercised by a board of directors. The Federal Reserve Act specifies the composition of the board of directors for each of the Reserve Banks. Each board is composed of nine members serving three-year terms: three directors, including those designated as chairman and deputy chairman, are appointed by the Board of Governors of the Federal Reserve System (Board of Governors) to represent the public, and six directors are elected by member banks. Banks that are members of the System include all nationally-chartered banks and any state-chartered banks that apply and are approved for membership. Member banks are divided into three classes according to size. Member banks in each class elect one director representing member banks and one director representing the public. In any election of directors, each member bank receives one vote, regardless of the number of shares of Reserve Bank stock it holds.

In addition to the 12 Reserve Banks, the System also consists, in part, of the Board of Governors and the Federal Open Market Committee (FOMC). The Board of Governors, an independent federal agency, is charged by the Federal Reserve Act with a number of specific duties, including general supervision over the Reserve Banks. The FOMC is composed of members of the Board of Governors, the president of the Federal Reserve Bank of New York (FRBNY) and, on a rotating basis, four other Reserve Bank presidents.

(2) Operations and Services

The Reserve Banks perform a variety of services and operations. These functions include participating in formulating and conducting monetary policy; participating in the payment system, including transfers of funds, automated clearinghouse (ACH) operations, and check collection; distributing coin and currency; performing fiscal agency functions for the U.S. Department of the Treasury (Treasury), certain federal agencies, and other entities; serving as the federal government's bank; providing short-term loans to depository institutions; providing loans to participants in programs or facilities with broad-based eligibility in unusual and exigent circumstances; serving consumers and communities by providing educational materials and information regarding financial consumer protection rights and laws and information on community development programs and activities; and supervising bank holding companies, state member banks, savings and loan holding companies, U.S. offices of foreign banking organizations, edge and agreement corporations, and certain financial market utilities that have been designated as systemically important. Certain services are provided to foreign official and international account holders, primarily by the FRBNY.

The FOMC, in conducting monetary policy, establishes policy regarding domestic open market operations and oversees these operations. The FOMC has selected the FRBNY to execute open market transactions for the System Open Market Account (SOMA) as provided in its annual authorization. The FOMC authorizes and directs the FRBNY to conduct operations in domestic markets, including the direct purchase and sale of Treasury securities, government-sponsored enterprise

(GSE) debt securities, and federal agency and GSE mortgage-backed securities (MBS); the purchase of these securities under agreements to resell; and the sale of these securities under agreements to repurchase. The FRBNY holds the resulting securities and agreements in a portfolio known as the SOMA. The FRBNY is authorized and directed to lend the Treasury securities and GSE debt securities that are held in the SOMA.

To be prepared to meet the needs specified by the FOMC to carry out the System's central bank responsibilities, the FOMC authorized and directed the FRBNY to execute standalone spot and forward foreign exchange transactions in the resultant foreign currencies, to hold balances in those currencies, and to invest such foreign currency holdings, while maintaining adequate liquidity. The FRBNY holds these securities and agreements in the SOMA. The FOMC also authorized and directed the FRBNY to maintain reciprocal currency arrangements with the Bank of Canada and the Bank of Mexico in the maximum amounts of $2 billion and $3 billion, respectively, and at the request of the Treasury to conduct swap transactions with the United States Exchange Stabilization Fund in the maximum amount of $5 billion, also known as warehousing.

Because of the global character of bank funding markets, the System has, at times, coordinated with other central banks to provide liquidity. The FOMC authorized and directed the FRBNY to maintain standing U.S. dollar liquidity swap arrangements and standing foreign currency liquidity swap arrangements with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, and the Swiss National Bank. The FRBNY holds amounts outstanding under these liquidity swap lines in the SOMA. These liquidity swap lines are subject to annual review and approval by the FOMC.

The FOMC has authorized and directed the FRBNY to conduct small-value exercises periodically for the purpose of testing operational readiness.

Although the Reserve Banks are separate legal entities, they collaborate on the delivery of certain services to achieve greater efficiency and effectiveness. This collaboration takes the form of centralized operations and product or function offices that have responsibility for the delivery of certain services on behalf of the Reserve Banks. Various operational and management models are used and are supported by service agreements among the Reserve Banks. In some cases, costs incurred by a Reserve Bank for services provided to other Reserve Banks are not shared; in other cases, the Reserve Banks are reimbursed for costs incurred in providing services to other Reserve Banks.

(3) Significant Accounting Policies

Accounting principles for entities with the unique powers and responsibilities of the nation's central bank have not been formulated by accounting standard-setting bodies. The Board of Governors has developed specialized accounting principles and practices that it considers to be appropriate for the nature and function of a central bank. These accounting principles and practices are documented in the *Financial Accounting Manual for Federal Reserve Banks* (FAM), which is issued by the Board of Governors. The Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the FAM. The combined financial statements and associated disclosures have been prepared in accordance with the FAM.

Due to the unique nature of the Bank's powers and responsibilities as part of the nation's central bank and given the System's unique responsibility to conduct monetary policy, the Board has adopted accounting principles and practices in the FAM that differ from accounting principles generally accepted in the United States of America (GAAP). The more significant differences are the presentation of all SOMA securities holdings at amortized cost, adjusted for credit impairment, if any, and the recording of all SOMA securities on a settlement-date basis. Amortized cost, rather than the fair value presentation, more appropriately reflects the financial position associated with the Reserve Banks' securities holdings given the System's unique responsibility to conduct monetary policy. Although the application of fair value measurements to the securities holdings may result in values substantially greater or less than their carrying values, these unrealized changes in value have no direct effect on the quantity of reserves available to the banking system or on the ability of the Reserve Banks, as the central bank, to meet their financial obligations and responsibilities. Both the domestic and foreign components of the SOMA portfolio may involve transactions that result in gains or losses when holdings are sold before maturity. Decisions regarding securities and foreign currency transactions, including their purchase and sale, are primarily motivated by monetary policy and financial stability objectives rather than profit. Accordingly, fair values, earnings, and gains or losses resulting from the sale of such securities and currencies are incidental to open market operations and do not motivate decisions related to policy or open market activities. Accounting for these securities on a settlement-date basis, rather than the trade-date basis required by GAAP, better reflects the timing of the transaction's effect on the quantity of reserves in the banking system.

In addition, the Reserve Banks do not present a Combined Statement of Cash Flows as required by GAAP because the liquidity and cash position of the Reserve Banks are not a primary concern given the Reserve Banks' unique powers and responsibilities as a central bank. Other information regarding the Reserve Banks' activities is provided in, or may be derived from, the Combined Statements of Condition, Operations, and Changes in Capital, and the accompanying notes to the combined financial statements. Other than those described above, the accounting policies described in FAM are generally consistent with those in GAAP and the references to GAAP in the notes to the combined financial statements highlight those areas where FAM is consistent with GAAP.

Preparing the combined financial statements in conformity with the FAM requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the combined financial statements, and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates.

Certain amounts relating to the prior year have been reclassified in the Combined Statements of Condition to conform to the current year presentation. $1,722 million previously reported as "Assets: Investments held by consolidated variable interest entity" and $9 million previously reported as "Liabilities and capital: Liabilities of consolidated variable interest entity," as of December 31, 2017, have been combined and reported in a new line titled "Assets: Investments held by consolidated variable interest entity, net." Also, parenthetical fair value amounts $1,720 million and $8 million previously reported as of December 31, 2017 in the line headings of "Assets: Investments held by consolidated variable interest entity" and "Liabilities and capital: Liabilities of consolidated variable interest entity,"

have been combined and reported parenthetically in the line "Assets: Investments held by consolidated variable interest entity, net."

Certain amounts relating to the prior year have been reclassified in the Combined Statements of Operations to conform to the current year presentation. $15 million and $9 million previously reported for the year ended December 31, 2017 as "Interest income: Investments held by consolidated variable interest entity" and "Non-interest income: Investments held by consolidated variable interest entity losses, net" have been combined and reported in a new line titled "Other items of income (loss): Income from investments held by consolidated variable interest entity, net."

Certain amounts relating to the prior year have been reclassified in the Combined Statements of Condition to conform to the current year presentation. $6,798 million previously reported as "Liabilities and capital: Deposits: Depository institutions" as of December 31, 2017 have been reclassified as "Liabilities and capital: Deposits: Other deposits."

Significant accounts and accounting policies are explained below.

a. Consolidation

The combined financial statements include the accounts and results of operations of the Reserve Banks as well as a variable interest entity (VIE), Maiden Lane Limited Liability Company (LLC) (ML). The consolidation of the VIE was assessed in accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 810 (ASC 810), *Consolidation*, which requires a VIE to be consolidated by its controlling financial interest holder. Intercompany balances and transactions have been eliminated in consolidation. See Note 6 for additional information on the VIE. The combined financial statements of the Reserve Banks also include accounts and results of operations of Maiden and Nassau LLC, a Delaware LLC wholly-owned by the FRBNY, which was formed to own and operate the FRBNY-owned 33 Maiden Lane building.

A Reserve Bank consolidates a VIE if it has a controlling financial interest, which is defined as the power to direct the significant economic activities of the entity and the obligation to absorb losses or the right to receive benefits of the entity that could potentially be significant to the VIE. To determine whether it is the controlling financial interest holder of a VIE, the Reserve Bank evaluates the VIE's design, capital structure, and relationships with the variable interest holders. The Reserve Bank reconsiders whether it has a controlling financial interest in a VIE, as required by ASC 810, at each reporting date or if there is an event that requires consideration.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) established the Bureau of Consumer Financial Protection (Bureau) as an independent bureau within the System that has supervisory authority over some institutions previously supervised by the Reserve Banks in connection with those institutions' compliance with consumer protection statutes. Section 1017 of the Dodd-Frank Act provides that the financial statements of the Bureau are not to be consolidated with those of the Board of Governors or the System. The Board of Governors funds the Bureau through assessments on the Reserve Banks as required by the Dodd-Frank Act. The Reserve Banks reviewed the law and evaluated the design of and their relationship to the Bureau and deter-

mined that it should not be consolidated in the Reserve Banks' combined financial statements.

b. Gold and Special Drawing Rights Certificates

The Secretary of the Treasury is authorized to issue gold certificates to the Reserve Banks. Upon authorization, the Reserve Banks acquire gold certificates by crediting equivalent amounts in dollars to the account established for the Treasury. The gold certificates held by the Reserve Banks are required to be backed by the gold owned by the Treasury. The Treasury may reacquire the gold certificates at any time, and the Reserve Banks must deliver them to the Treasury. At such time, the Treasury's account is charged, and the Reserve Banks' gold certificate accounts are reduced. The value of gold for purposes of backing the gold certificates is set by law at $42 2/9 per fine troy ounce. Gold certificates are recorded by the Reserve Banks at original cost. The Board of Governors allocates the gold certificates among the Reserve Banks once a year based on each Reserve Bank's average Federal Reserve notes outstanding during the preceding 12 months.

Special drawing rights (SDR) are issued by the International Monetary Fund (IMF) to its members in proportion to each member's quota in the IMF at the time of issuance. SDRs serve as a supplement to international monetary reserves and may be transferred from one national monetary authority to another. Under the law providing for U.S. participation in the SDR system, the Secretary of the Treasury is authorized to issue SDR certificates to the Reserve Banks. When SDR certificates are issued to the Reserve Banks, equivalent amounts in U.S. dollars are credited to the account established for the Treasury and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDR certificates, at the direction of the Treasury, for the purpose of financing SDR acquisitions or for financing exchange-stabilization operations. At the time SDR certificate transactions occur, the Board of Governors allocates the SDR certificates among the Reserve Banks based upon each Reserve Bank's Federal Reserve notes outstanding at the end of the preceding calendar year. SDR certificates are recorded by the Reserve Banks at original cost.

c. Coin

The amount reported as coin in the Combined Statements of Condition represents the face value of all United States coin held by the Reserve Banks. The Reserve Banks buy coin at face value from the U.S. Mint in order to fill depository institution orders.

d. Loans

Loans to depository institutions are reported at their outstanding principal balances and interest income is recognized on an accrual basis.

Loans are impaired when current information and events indicate that it is probable that the Reserve Banks will not receive the principal and interest that are due in accordance with the contractual terms of the loan agreement. Impaired loans are evaluated to determine whether an allowance for loan loss is required. The Reserve Banks have developed procedures for assessing the adequacy of any allowance for loan losses using all available information to identify incurred losses. This assessment includes monitoring information obtained from banking supervisors, borrowers, and other sources to assess the credit condition of the borrowers and, as appropriate, evaluating collateral values. Generally, the Reserve Banks would discontinue recognizing interest income on impaired loans until the borrower's repayment performance demonstrates principal and interest would be received in

accordance with the terms of the loan agreement. If the Reserve Banks discontinue recording interest on an impaired loan, cash payments are first applied to principal until the loan balance is reduced to zero; subsequent payments are applied as recoveries of amounts previously deemed uncollectible, if any, and then as interest income.

e. Securities Purchased Under Agreements to Resell, Securities Sold Under Agreements to Repurchase, and Securities Lending

The FRBNY may engage in purchases of securities under agreements to resell (repurchase agreements) with primary dealers. Transactions under these repurchase agreements are typically settled through a tri-party arrangement, in which a commercial custodial bank manages the collateral clearing, settlement, pricing, and pledging, and provides cash and securities custodial services for and on behalf of the FRBNY and the counterparty. The collateral pledged must exceed the principal amount of the transaction by a margin determined by the FRBNY for each class and maturity of acceptable collateral. Collateral designated by the FRBNY as acceptable under repurchase agreements primarily includes Treasury securities (including Treasury Inflation-Protected Securities, Separate Trading of Registered Interest and Principal of Securities (STRIPS) Treasury securities, and Treasury Floating Rate Notes); direct obligations of several federal and GSE-related agencies, including Federal National Mortgage Association, Federal Home Loan Mortgage Corporation, and Federal Home Loan Banks; and pass-through federal agency and GSE MBS. The repurchase agreements are accounted for as financing transactions with the associated interest income recognized over the life of the transaction. These repurchase agreements are reported at their contractual amounts as "System Open Market Account: Securities purchased under agreements to resell" and the related accrued interest receivable is reported as a component of "System Open Market Account: Accrued interest receivable" in the Combined Statements of Condition. Interest income is reported as a component of "System Open Market Account: Securities purchased under agreements to resell" in the Combined Statements of Operations.

The FRBNY may engage in sales of securities under agreements to repurchase (reverse repurchase agreements) with primary dealers and with a set of expanded counterparties that includes banks, savings associations, GSEs, and domestic money market funds. Transactions under these reverse repurchase agreements are designed to have a margin of zero and are settled through a tri-party arrangement, similar to repurchase agreements. Reverse repurchase agreements may also be executed with foreign official and international account holders as part of a service offering. Reverse repurchase agreements are collateralized by a pledge of an amount of Treasury securities, GSE debt securities, or federal agency and GSE MBS that are held in the SOMA. Reverse repurchase agreements are accounted for as financing transactions, and the associated interest expense is recognized over the life of the transaction. These reverse repurchase agreements are reported at their contractual amounts as "System Open Market Account: Securities sold under agreements to repurchase" and the related accrued interest payable is reported as a component of "System Open Market Account: Other liabilities" in the Combined Statements of Condition. Interest expense is reported as a component of "System Open Market Account: Securities sold under agreements to repurchase" in the Combined Statements of Operations.

Treasury securities and GSE debt securities held in the SOMA may be lent to primary dealers, typically overnight, to facilitate the effective functioning of the domestic securities markets. The amortized cost basis of securities lent continues

to be reported as “System Open Market Account: Treasury securities, net” and “System Open Market Account: Government-sponsored enterprise debt securities, net,” as appropriate, in the Combined Statements of Condition. Securities lending transactions are fully collateralized by Treasury securities based on the fair values of the securities lent increased by a margin determined by the FRBNY. The FRBNY charges the primary dealer a fee for borrowing securities, and these fees are reported as a component of “Other items of income (loss): System Open Market Account: Other” in the Combined Statements of Operations.

Activity related to repurchase agreements, reverse repurchase agreements, and securities lending is allocated to each of the Reserve Banks on a percentage basis derived from an annual settlement of the interdistrict settlement account that occurs in the second quarter of each year.

f. Treasury Securities, Government-Sponsored Enterprise Debt Securities, Federal Agency and Government-Sponsored Enterprise Mortgage-Backed Securities, and Foreign Currency Denominated Investments

Interest income on Treasury securities, GSE debt securities, federal agency and GSE MBS, and foreign currency denominated investments included in the SOMA is recorded when earned and includes amortization of premiums and accretion of discounts using the effective interest method. Interest income on federal agency and GSE MBS also includes gains or losses associated with principal paydowns. Premiums and discounts related to federal agency and GSE MBS are amortized or accreted over the term of the security to stated maturity, and the amortization of premiums and accretion of discounts are accelerated when principal payments are received. Gains and losses resulting from sales of securities are determined by specific issue based on average cost. Treasury securities, GSE debt securities, and federal agency and GSE MBS are reported net of premiums and discounts in the Combined Statements of Condition and interest income on those securities is reported net of the amortization of premiums and accretion of discounts in the Combined Statements of Operations.

In addition to outright purchases of federal agency and GSE MBS that are held in the SOMA, the FRBNY enters into dollar roll transactions (dollar rolls), which primarily involve an initial transaction to purchase or sell “to be announced” (TBA) MBS for delivery in the current month combined with a simultaneous agreement to sell or purchase TBA MBS on a specified future date. During the years ended December 31, 2018 and 2017, the FRBNY executed dollar rolls to facilitate settlement of outstanding purchases of federal agency and GSE MBS. The FRBNY accounts for dollar rolls as individual purchases and sales, on a settlement-date basis. Accounting for these transactions as purchases and sales, rather than as financing transactions, is appropriate because the purchase or sale component of the MBS TBA dollar roll is paired off or assigned prior to settlement and, as a result, there is no transfer and return of securities. Net gains (losses) resulting from MBS transactions are reported as a component of “Other items of income (loss): System Open Market Account: Federal agency and government-sponsored enterprise mortgage-backed securities (losses) gains, net” in the Combined Statements of Operations.

Foreign currency denominated investments, which can include foreign currency deposits, repurchase agreements, and government debt instruments, are revalued daily at current foreign currency market exchange rates in order to report these assets in U.S. dollars. Any negative interest associated with these foreign currency denominated investments is included as a component of “Interest income: System

Open Market Account: Foreign currency denominated investments, net" in the Combined Statements of Operations. Foreign currency translation gains and losses that result from the daily revaluation of foreign currency denominated investments are reported as "Other items of income (loss): System Open Market Account: Foreign currency translation (losses) gains, net" in the Combined Statements of Operations.

Because the FRBNY enters into commitments to buy Treasury securities, federal agency and GSE MBS, and foreign government debt instruments and records the related securities on a settlement-date basis in accordance with the FAM, the related outstanding commitments are not reflected in the Combined Statements of Condition.

Activity related to Treasury securities, GSE debt securities, and federal agency and GSE MBS, including the premiums, discounts, and realized gains and losses, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of the interdistrict settlement account that occurs in the second quarter of each year. Activity related to foreign currency denominated investments, including the premiums, discounts, and realized and unrealized gains and losses, is allocated to each Reserve Bank on a percentage basis, adjusted annually in the second quarter of each year, calculated as the ratio of each Reserve Bank's capital and surplus to the Reserve Banks' aggregate capital and surplus at the preceding December 31.

The FRBNY is authorized to hold foreign currency working balances and execute foreign exchange contracts to facilitate international payments and currency transactions it makes on behalf of foreign central bank and U.S. official institution customers. These foreign currency working balances and contracts are not related to the FRBNY's monetary policy operations. Foreign currency working balances are reported as a component of "Other assets" in the Combined Statements of Condition and the related foreign currency translation gains and losses that result from the daily revaluation of the foreign currency working balances and contracts are reported as a component of "Other items of income (loss): Other" in the Combined Statements of Operations.

g. Central Bank Liquidity Swaps

Central bank liquidity swaps, which are transacted between the FRBNY and a foreign central bank, can be structured as either U.S. dollar or foreign currency liquidity swap arrangements.

Central bank liquidity swaps activity, including the related income and expense, is allocated to each Reserve Bank based on a percentage basis, adjusted annually in the second quarter of each year, calculated as the ratio of each Reserve Bank's capital and surplus to the Reserve Banks' aggregate capital and surplus at the preceding December 31.

U.S. dollar liquidity swaps

At the initiation of each U.S. dollar liquidity swap transaction, the foreign central bank transfers a specified amount of its currency to a restricted account for the FRBNY in exchange for U.S. dollars at the prevailing market exchange rate. Concurrent with this transaction, the FRBNY and the foreign central bank agree to a second transaction that obligates the foreign central bank to return the U.S. dollars and the FRBNY to return the foreign currency on a specified future date at the same exchange rate as the initial transaction. The foreign currency amounts that

the FRBNY acquires are reported as "System Open Market Account: Central bank liquidity swaps" in the Combined Statements of Condition. Because the swap transaction will be unwound at the same U.S. dollar amount and exchange rate that were used in the initial transaction, the recorded value of the foreign currency amounts is not affected by changes in the market exchange rate.

The foreign central bank compensates the FRBNY based on the amount outstanding and the rate under the swap agreement. The Reserve Banks recognize compensation received during the term of the swap transaction, which is reported as "Interest income: System Open Market Account: Central bank liquidity swaps" in the Combined Statements of Operations.

Foreign currency liquidity swaps

Foreign currency liquidity swap transactions involve the transfer by the FRBNY, at the prevailing market exchange rate, of a specified amount of U.S. dollars to an account for the foreign central bank in exchange for its currency. The foreign currency amounts that the FRBNY receives are recorded as a liability.

h. Consolidated VIE – Investments and Liabilities

The investments held by the consolidated VIE consist primarily of cash and cash equivalents, short-term investments with maturities of greater than three months and less than one year, and swap contracts. Swap contracts consist of credit default swaps (CDS). Investments are reported as "Investments held by consolidated variable interest entity, net" in the Combined Statements of Condition. Changes in fair value of the investments are recorded in "Other items of income (loss): Income from investments held by consolidated variable interest entity, net" in the Combined Statements of Operations.

Investments in debt securities are accounted for in accordance with FASB ASC Topic 320, *Investments – Debt and Equity Securities*, and the VIE elected the fair value option for all eligible assets and liabilities in accordance with FASB ASC Topic 825 (ASC 825), *Financial Instruments*. Other financial instruments, including swap contracts, are recorded at fair value in accordance with FASB ASC Topic 815 (ASC 815), *Derivatives and Hedging*.

The liabilities of the consolidated VIE consist primarily of swap contracts, cash collateral on swap contracts, and accruals for operating expenses. Swap contracts are recorded at fair value in accordance with ASC 815. Liabilities are reported in "Investments held by consolidated variable interest entity, net" in the Combined Statements of Condition. Changes in fair value of the liabilities are recorded in "Other items of income (loss): Income from investments held by consolidated variable interest entity, net" in the Combined Statements of Operations.

i. Bank Premises, Equipment, and Software

Bank premises and equipment are stated at cost less accumulated depreciation. Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets, which range from 2 to 50 years. Major alterations, renovations, and improvements are capitalized at cost as additions to the asset accounts and are depreciated over the remaining useful life of the asset or, if appropriate, over the unique useful life of the alteration, renovation, or improvement. Maintenance, repairs, and minor replacements are charged to operating expense in the year incurred. Reserve Banks may transfer assets to other Reserve Banks or may lease property of other Reserve Banks.

Costs incurred to acquire software are capitalized based on the purchase price. Costs incurred during the application development stage to develop internal-use software are capitalized based on the cost of direct services and materials associated with designing, coding, installing, and testing the software. Capitalized software costs are amortized on a straight-line basis over the estimated useful lives of the software applications, which generally range from two to five years. Maintenance costs and minor replacements related to software are charged to operating expense in the year incurred. Leased assets that meet the criteria of FASB ASC Topic 840, *Leases,* are capitalized and amortized over the shorter of the useful life of the asset or the term of the lease.

Capitalized assets, including software, buildings, leasehold improvements, furniture, and equipment, are impaired and an adjustment is recorded when events or changes in circumstances indicate that the carrying amount of assets or asset groups is not recoverable and significantly exceeds the assets' fair value.

j. Federal Reserve Notes

Federal Reserve notes are the circulating currency of the United States. These notes, which are identified as issued to a specific Reserve Bank, must be fully collateralized. All of the Reserve Banks' assets are eligible to be pledged as collateral. The collateral value is equal to the book value of the collateral tendered with the exception of securities, for which the collateral value is equal to the par value of the securities tendered. The par value of securities pledged as collateral under reverse repurchase agreements is deducted from the eligible collateral value.

The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize outstanding Federal Reserve notes. To satisfy the obligation to provide sufficient collateral for outstanding Federal Reserve notes, the Reserve Banks have entered into an agreement that provides for certain assets of the Reserve Banks to be jointly pledged as collateral for the Federal Reserve notes issued to all Reserve Banks. In the event that this collateral is insufficient, the Federal Reserve Act provides that Federal Reserve notes become a first and paramount lien on all the assets of the Reserve Banks. Finally, Federal Reserve notes are obligations of the United States government.

"Federal Reserve notes outstanding, net" in the Combined Statements of Condition represents the Reserve Banks' Federal Reserve notes outstanding, reduced by the Reserve Banks' currency holdings of $190 billion and $175 billion at December 31, 2018 and 2017, respectively.

At December 31, 2018 and 2017, all Federal Reserve notes outstanding, net, were fully collateralized. At December 31, 2018 and 2017, all gold certificates, all SDR certificates, and $1,655 billion and $1,554 billion, respectively, of domestic securities held in the SOMA were pledged as collateral. At December 31, 2018 and 2017, no investments denominated in foreign currencies were pledged as collateral.

k. Deposits

Depository Institutions

Depository institutions' deposits represent the reserve and service-related balances in the accounts that depository institutions hold at the Reserve Banks. Required reserve balances are those that a depository institution must hold to satisfy its reserve requirement. Reserve requirements are the amount of funds that a depository institution must hold in reserve against specified deposit liabilities. Excess

reserves are those held by the depository institutions in excess of their required reserve balances. The interest rates paid on required reserve balances and excess balances are determined by the Board of Governors, based on an FOMC-established target range for the federal funds rate. Interest expense on depository institutions' deposits is accrued daily at the appropriate rate. Interest payable is reported as a component of "Interest payable to depository institutions and others" in the Combined Statements of Condition.

The Term Deposit Facility (TDF) consists of deposits with specific maturities held by eligible institutions at the Reserve Banks. The Reserve Banks pay interest on these deposits at interest rates determined by auction. Interest expense on deposits held by the Reserve Banks under the TDF is accrued daily at the appropriate rate. Interest payable is reported as a component of "Interest payable to depository institutions and others" in the Combined Statements of Condition. There were no deposits held by the Reserve Banks under the TDF at December 31, 2018 and 2017.

Treasury

The Treasury general account is the primary operational account of the Treasury and is held at the FRBNY.

Other

Other deposits include foreign central bank and foreign government deposits held at the FRBNY. Other deposits also include cash collateral, deposits of designated financial market utilities (DFMUs), and GSE deposits held by the Reserve Banks. The Reserve Banks pay interest on deposits held by DFMUs at the rate paid on balances maintained by depository institutions or another rate determined by the Board of Governors from time to time, not to exceed the general level of short term interest rates. Interest payable is reported as a component of "Interest payable to depository institutions and others" in the Combined Statements of Condition.

l. Items in Process of Collection and Deferred Credit Items

Items in process of collection primarily represents amounts attributable to checks that have been deposited for collection and that, as of the balance sheet date, have not yet been presented to the paying bank. Deferred credit items represent the counterpart liability to items in process of collection. The amounts in this account arise from deferring credit for deposited items until the amounts are collected.

m. Capital Paid-in

The Federal Reserve Act requires that each member bank subscribe to the capital stock of the Reserve Bank in an amount equal to 6 percent of the capital and surplus of the member bank. These shares are nonvoting, with a par value of $100, and may not be transferred or hypothecated. As a member bank's capital and surplus changes, its holdings of Reserve Bank stock must be adjusted. Currently, only one-half of the subscription is paid in, and the remainder is subject to call. A member bank is liable for Reserve Bank liabilities up to twice the par value of stock subscribed by it.

The Federal Reserve Act requires each Reserve Bank to pay each member bank an annual dividend based on the amount of the member bank's paid-in capital stock and a rate determined by the member bank's total consolidated assets. Member banks with total consolidated assets in excess of a threshold established in the Federal Reserve Act receive a dividend equal to the smaller of 6 percent or the rate

equal to the high yield of the 10-year Treasury note auctioned at the last auction held prior to the payment of the dividend. Member banks with total consolidated assets equal to or less than the threshold receive a dividend of 6 percent. The threshold for total consolidated assets was $10.2 billion and $10.1 billion for the years ended December 31, 2018 and 2017, respectively. This threshold is adjusted annually based on the Gross Domestic Product Price Index, which is published by the Bureau of Economic Analysis. The dividend is paid semiannually and is cumulative.

n. Surplus

The Federal Reserve Act limits aggregate Reserve Bank surplus. Effective February 9, 2018, the Bipartisan Budget Act of 2018 (Budget Act) reduced the statutory limit on aggregate Reserve Bank surplus from $10 billion to $7.5 billion. Effective May 24, 2018, the Economic Growth, Regulatory Relief, and Consumer Protection Act (Economic Growth Act), further reduced the statutory limit on aggregate Reserve Bank surplus from $7.5 billion to $6.825 billion. Reserve Bank surplus is allocated among the Reserve Banks based on the ratio of each Reserve Bank's capital paid-in to total Reserve Bank capital paid-in as of December 31 of each year.

Accumulated other comprehensive income is reported as a component of "Surplus" in the Combined Statements of Condition and the Combined Statements of Changes in Capital. Additional information regarding the classifications of accumulated other comprehensive income is provided in Notes 9, 10, and 11.

o. Earnings Remittances to the Treasury

The Federal Reserve Act requires that any amounts of the surplus funds of the Reserve Banks that exceed, or would exceed, the aggregate surplus limitation shall be transferred to the Board of Governors for transfer to the Treasury. The Reserve Banks remit excess earnings to the Treasury after providing for the cost of operations, payment of dividends, and reservation of an amount necessary to maintain surplus at the Reserve Bank's allocated portion of the aggregate surplus limitation. Remittances to the Treasury are made on a weekly basis. The amount of the remittances to the Treasury is reported as "Earnings remittances to the Treasury" in the Combined Statements of Operations. The amount due to the Treasury is reported as "Accrued remittances to the Treasury" in the Combined Statements of Condition. See Note 12 for additional information on earnings remittances to the Treasury.

If earnings during the year are not sufficient to provide for the costs of operations, payment of dividends, and maintaining surplus at an amount equal to the Reserve Bank's allocated portion of the aggregate surplus limitation, remittances to the Treasury are suspended. This decrease in earnings remittances to the Treasury results in a deferred asset that represents the amount of net earnings a Reserve Bank will need to realize before remittances to the Treasury resume.

p. Income and Costs Related to Treasury Services

When directed by the Secretary of the Treasury, the Reserve Banks are required by the Federal Reserve Act to serve as fiscal agent and depositary of the United States Government. By statute, the Treasury has appropriations to pay for these services. During the years ended December 31, 2018 and 2017, the Bank was reimbursed for all services provided to the Treasury as its fiscal agent.

q. Assessments

The Board of Governors assesses the Reserve Banks to fund its operations and the operations of the Bureau. These assessments are allocated to each Reserve Bank based on each Reserve Bank's capital and surplus balances. The Board of Governors also assesses each Reserve Bank for expenses related to producing, issuing, and retiring Federal Reserve notes based on each Reserve Bank's share of the number of notes comprising the System's net liability for Federal Reserve notes on December 31 of the prior year.

The Dodd-Frank Act requires that, after the transfer of its responsibilities to the Bureau on July 21, 2011, the Board of Governors fund the Bureau in an amount not to exceed a fixed percentage of the total operating expenses of the System as reported in the Board of Governor's 2009 annual report, which totaled $4.98 billion. After 2013, the amount will be adjusted annually in accordance with the provisions of the Dodd-Frank Act. The percentage of total operating expenses of the System for the years ended December 31, 2018 and 2017 was 13.31 percent ($663.0 million) and 12.98 percent ($646.2 million), respectively. The Bank's assessment for Bureau funding is reported as "Operating expenses: Assessments: Bureau of Consumer Financial Protection" in the Combined Statements of Operations.

r. Fair Value

Investments and liabilities of the Combined VIE and assets of the Retirement Plan for Employees of the System are measured at fair value in accordance with FASB ASC Topic 820 (ASC 820), *Fair Value Measurement*. ASC 820 defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. ASC 820 establishes a three-level fair value hierarchy that distinguishes between assumptions developed using market data obtained from independent sources (observable inputs) and the Reserve Banks' assumptions developed using the best information available in the circumstances (unobservable inputs). The three levels established by ASC 820 are described as follows:

- Level 1 – Valuation is based on quoted prices for identical instruments traded in active markets.
- Level 2 – Valuation is based on quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.
- Level 3 – Valuation is based on model-based techniques that use significant inputs and assumptions not observable in the market. These unobservable inputs and assumptions reflect the Reserve Banks' estimates of inputs and assumptions that market participants would use in pricing the assets and liabilities. Valuation techniques include the use of option pricing models, discounted cash flow models, and similar techniques.

The inputs or methodology used for valuing assets and liabilities are not necessarily an indication of the risk associated with those assets and liabilities.

s. Taxes

The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property. The Reserve Banks' real property taxes were $53 million and $49 million for the years ended December 31, 2018 and 2017, respectively, and are

reported as a component of "Operating expenses: Occupancy" in the Combined Statements of Operations.

t. Restructuring Charges

The Reserve Banks recognize restructuring charges for exit or disposal costs incurred as part of the closure of business activities in a particular location, the relocation of business activities from one location to another, or a fundamental reorganization that affects the nature of operations. Restructuring charges may include costs associated with employee separations, contract terminations, and asset impairments. Expenses are recognized in the period in which the Bank commits to a formalized restructuring plan or executes the specific actions contemplated in the plan and all criteria for financial statement recognition have been met.

The Bank had no significant restructuring activities in 2018 and 2017.

u. Recently Issued Accounting Standards

Other than the significant differences described in Note 3, the accounting policies described in FAM are generally consistent with those in GAAP. The following items represent recent GAAP accounting standards and describe how FAM was or will be revised to be consistent with these standards.

In May 2014, the FASB issued Accounting Standards Update (ASU) 2014-09, *Revenue from Contracts with Customers (Topic 606)*. This update was issued to create common revenue recognition guidance for U.S. GAAP and International Financial Reporting Standards. The guidance is applicable to all contracts for the transfer of goods or services regardless of industry or type of transaction. This update requires recognition of revenue in a manner that reflects the consideration that the entity expects to receive in return for the transfer of goods or services to customers. Subsequently, the FASB issued a number of related ASUs including ASU 2015-14, *Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date;* ASU 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net);* ASU 2016-10, *Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing;* ASU 2016-12, *Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients*;and ASU 2016-20, *Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers*. This revenue recognition accounting guidance is effective for the Reserve Banks for the year ending December 31, 2019, and is not expected to have a material effect on the Reserve Banks' combined financial statements.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments – Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*. The amendments in this update eliminate the requirement to disclose methods and significant assumptions used to estimate the fair value for financial instruments measured at amortized cost on the balance sheet. This update is effective for the Reserve Banks for the year ending December 31, 2019, and is not expected to have a material effect on the Reserve Banks' combined financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. This update revises the model to assess how a lease should be classified and provides guidance for lessees, requiring lessees to present right-of-use assets and lease liabilities on the

balance sheet. Subsequently, in July 2018, the FASB issued additional related ASUs, ASU 2018-10, *Codification Improvements to Topic 842, Leases* and ASU 2018-11, *Leases (Topic 842): Targeted Improvements*;and in November 2018, ASU 2018-20, *Leases (Topic 842): Narrow-scope Improvements for Lessors*. This lease accounting guidance is effective for the Reserve Banks for the year ending December 31, 2020. The Board of Governors is continuing to evaluate the effect of this guidance on the Reserve Banks' combined financial statements, and is considering the information and processes necessary to adopt the guidance.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. This update revises the methodology for assessing expected credit losses and requires consideration of reasonable and supportable information to inform credit loss estimates. Subsequently, in November 2018, the FASB issued one related ASU, ASU 2018-19, *Codification Improvements to Topic 326, Financial Instruments—Credit Losses*. The update is effective for the Reserve Banks for the year ending December 31, 2022, although earlier adoption is permitted, and is not expected to have a material effect on the Banks' combined financial statements.

In March 2017, the FASB issued ASU 2017-07, *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. This update requires an employer to disaggregate the service cost component from the other components of net benefit cost. It also provides explicit guidance on how to present the service cost component and the other components of net benefit cost in the income statement and allows only the service cost component of net benefit cost to be eligible for capitalization. This update is effective for the Reserve Banks for the year ending December 31, 2019, and is not expected to have a material effect on the Reserve Banks' combined financial statements.

In March 2017, the FASB issued ASU 2017-08, *Receivables—Nonrefundable Fees and Other Costs (Subtopic 310-20) – Premium Amortization on Purchased Callable Debt Securities*. This update shortens the amortization period for certain callable debt securities held at a premium. Specifically, the amendments require the premium to be amortized to the earliest call date. The amendments do not require an accounting change for securities held at a discount; the discount continues to be amortized to maturity. This update is effective for the Reserve Banks for the year ending December 31, 2019, and is not expected to have a material effect on the Reserve Banks' combined financial statements.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820)*. This update modifies disclosure requirements for fair value measurements in Topic 820 to provide users of financial statements with information about assets and liabilities measured at fair value, including the valuation techniques, the uncertainty in fair value measurements, and how changes in the measurements will affect financial performance. This update is effective for the Reserve Banks for the year ending December 31, 2020. The Board of Governors is continuing to evaluate the effect of this new guidance on the Reserve Banks' combined financial statements.

In August 2018, the FASB issued ASU 2018-14, *Retirement Benefits-Defined Benefits Plans-General (Subtopic 715-20)*. This update modifies the disclosure requirements for pension and postretirement plans. The update is effective for the Reserve Banks for the year ending December 31, 2021, although earlier adoption is permit-

ted. The Board of Governors is continuing to evaluate the effect of this new guidance on the Reserve Banks' combined financial statements.

In August 2018, the FASB issued ASU 2018-15, *Intangibles-Goodwill and Other-Internal-Use Software (Subtopic 350-40)*. This update aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). This update is effective for the Reserve Banks for the year ending December 31, 2021, although earlier adoption is permitted. The Board of Governors plans to early adopt this standard for the year ending December 31, 2019, and it is not expected to have a material effect on the Reserve Banks' combined financial statements.

(4) Loans

Loans to Depository Institutions

The Reserve Banks offer primary, secondary, and seasonal loans to eligible borrowers (depository institutions that maintain reservable transaction accounts or nonpersonal time deposits and have established discount window borrowing privileges). Each program has its own interest rate and interest is accrued using the applicable interest rate established at least every 14 days by the Reserve Banks' board of directors, subject to review and determination by the Board of Governors. Primary and secondary loans are extended on a short-term basis, typically overnight, whereas seasonal loans may be extended for a period of up to nine months.

Primary, secondary, and seasonal loans are collateralized to the satisfaction of the Reserve Bank to reduce credit risk. Assets eligible to collateralize these loans include consumer, business, and real estate loans; Treasury securities; GSE debt securities; foreign sovereign debt; municipal, corporate, and state and local government obligations; asset-backed securities; corporate bonds; commercial paper; and bank-issued assets, such as certificates of deposit, bank notes, and deposit notes. Collateral is assigned a lending value that is deemed appropriate by the Reserve Bank, which is typically fair value reduced by a margin. Loans to depository institutions are monitored daily to ensure that borrowers continue to meet eligibility requirements for these programs. If a borrower no longer qualifies for these programs, the Reserve Bank will generally request full repayment of the outstanding loan or, for primary or seasonal loans, may convert the loan to a secondary credit loan. Collateral levels are reviewed daily against outstanding obligations, and borrowers that no longer have sufficient collateral to support outstanding loans are required to provide additional collateral or to make partial or full repayment.

The remaining maturity distribution of loans to depository institutions outstanding as of December 31, 2018 and 2017 was as follows (in millions):

	Within 15 days	16 days to 90 days	Total
December 31, 2018	$ 61	$ -	$ 61
December 31, 2017	$133	$1	$134

At December 31, 2018 and 2017, the Reserve Banks did not have any loans that were impaired, restructured, past due, or on non-accrual status, and no allowance for loan losses was required. There were no impaired loans during the years ended

December 31, 2018 and 2017. Interest income attributable to loans to depository institutions was immaterial during the years ended December 31, 2018 and 2017.

(5) System Open Market Account

a. Domestic Securities Holdings

The FRBNY executes domestic open market operations and, on behalf of the Reserve Banks, holds the resulting securities in the SOMA.

Pursuant to FOMC directives, during the period from January 1, 2017 through September 30, 2017, the FRBNY continued to reinvest all principal payments from the SOMA's holdings of GSE debt securities and federal agency and GSE MBS in federal agency and GSE MBS and to roll over maturing Treasury securities at auction. In October 2017, the FOMC initiated a balance sheet normalization program intended to reduce gradually the SOMA holdings by decreasing reinvestment of the principal payments received from securities held in the SOMA through the implementation of monthly caps. Effective from October 2017 and through December 2017, the FOMC directed the FRBNY to roll over principal payments from the SOMA holdings of Treasury securities maturing during each calendar month that exceeded a $6 billion cap, and to reinvest in federal agency and GSE MBS the amount of principal payments from the SOMA holdings of GSE debt securities and federal agency and GSE MBS received during each calendar month that exceeded a $4 billion cap. Effective 2018, the monthly cap on Treasury redemptions increased in steps of $6 billion at three-month intervals until it reached $30 billion per month, and the monthly cap for federal agency and GSE MBS increased in steps of $4 billion at three-month intervals until it reached $20 billion per month. The FOMC also anticipates that the caps will remain in place so that the SOMA holdings will continue to decline in a gradual and predictable manner until the FOMC judges that the SOMA is holding no more securities than necessary to implement monetary policy efficiently and effectively.

The total Treasury securities, GSE debt securities, and federal agency and GSE MBS, net, excluding accrued interest, held in the SOMA at December 31, 2018 and 2017 was as follows (in millions):

	2018			
	Par	Unamortized premiums	Unaccreted discounts	Total amortized cost
Treasury securities				
Notes	$1,382,654	$ 5,434	$ (4,159)	$1,383,929
Bonds	839,893	87,579	(8,939)	918,533
Total Treasury securities	$2,222,547	$93,013	$(13,098)	$2,302,462
GSE debt securities	$ 2,409	$ 332	$ -	$ 2,741
Federal agency and GSE MBS	$1,637,123	$46,738	$ (329)	$1,683,532

	2017			
	Par	Unamortized premiums	Unaccreted discounts	Total amortized cost
Treasury securities				
Notes	$1,624,620	$ 9,665	$ (4,714)	$1,629,571
Bonds	829,588	95,574	(9,000)	916,162
Total Treasury securities	$2,454,208	$105,239	$(13,714)	$2,545,733
GSE debt securities	$ 4,391	$ 361	$ -	$ 4,752
Federal agency and GSE MBS	$1,764,929	$ 53,160	$ (389)	$1,817,700

There were no material transactions related to repurchase agreements during the years ended December 31, 2018 and 2017.

During the years ended December 31, 2018 and 2017, the FRBNY entered into reverse repurchase agreements as part of its monetary policy activities. These operations have been undertaken as necessary to maintain the federal funds rate in a target range. In addition, reverse repurchase agreements are entered into as part of a service offering to foreign official and international account holders. Financial information related to reverse repurchase agreements held in the SOMA for the years ended December 31, 2018 and 2017 was as follows (in millions):

	2018	2017
Primary dealers and expanded counterparties:		
Contract amount outstanding, end of year	$ 41,848	$319,595
Average daily amount outstanding, during the year	12,552	145,959
Maximum balance outstanding, during the year	319,595	468,355
Securities pledged (par value), end of year	42,485	302,690
Securities pledged (fair value), end of year	41,919	320,048
Foreign official and international accounts:		
Contract amount outstanding, end of year	$262,164	$244,363
Average daily amount outstanding, during the year	236,818	241,581
Maximum balance outstanding, during the year	262,164	264,290
Securities pledged (par value), end of year	261,615	240,660
Securities pledged (fair value), end of year	262,184	244,417
Total contract amount outstanding, end of year	$304,012	$563,958
Supplemental information - interest expense:		
Primary dealers and expanded counterparties	$ 186	$ 1,224
Foreign official and international accounts	4,373	2,141
Total interest expense - securities sold under agreements to repurchase	$ 4,559	$ 3,365

Securities pledged as collateral, at December 31, 2018 and 2017, consisted solely of Treasury securities. The contract amount outstanding as of December 31, 2018 of reverse repurchase agreements that were transacted with primary dealers and expanded counterparties had a term of one business day and matured on January 2, 2019. The contract amount outstanding as of December 31, 2018 of reverse repurchase agreements that were transacted with foreign official and international account holders had a term of one business day and matured on January 2, 2019.

The remaining maturity distribution of Treasury securities, GSE debt securities, federal agency and GSE MBS bought outright, and reverse repurchase agreements at December 31, 2018 and 2017 was as follows (in millions):

	Within 15 days	16 days to 90 days	91 days to 1 year	Over 1 year to 5 years	Over 5 years to 10 years	Over 10 years	Total
December 31, 2018:							
Treasury securities (par value)	$ 2,092	$ 92,622	$290,222	$ 958,065	$260,898	$ 618,648	$2,222,547
GSE debt securities (par value)	-	62	-	-	-	2,347	2,409
Federal agency and GSE MBS (par value)[1]	-	-	4	214	62,706	1,574,199	1,637,123
Securities sold under agreements to repurchase (contract amount)	304,012	-	-	-	-	-	304,012
December 31, 2017:							
Treasury securities (par value)	$ 20,601	$107,658	$315,420	$1,077,270	$310,375	$ 622,884	$2,454,208
GSE debt securities (par value)	-	-	1,982	62	-	2,347	4,391
Federal agency and GSE MBS (par value)[1]	-	-	1	173	20,013	1,744,742	1,764,929
Securities sold under agreements to repurchase (contract amount)	563,958	-	-	-	-	-	563,958

[1] The par amount shown for federal agency and GSE MBS is the remaining principal balance of the securities.

Federal agency and GSE MBS are reported at stated maturity in the table above. The estimated weighted-average life of these securities, which differs from the stated maturity primarily because it factors in scheduled payments and prepayment assumptions, was approximately 7.0 and 6.9 years as of December 31, 2018 and 2017, respectively.

The amortized cost and par value of Treasury securities that were loaned from the SOMA under securities lending agreements at December 31, 2018 and 2017 were as follows (in millions):

	2018	2017
Treasury securities (amortized cost)	$25,102	$28,053
Treasury securities (par value)	24,761	26,990

Securities pledged as collateral by the counterparties in the securities lending arrangements at December 31, 2018 and 2017 consisted solely of Treasury securities. The securities lending agreements outstanding as of December 31, 2018 had a term of one business day and matured on January 2, 2019.

The FRBNY enters into commitments to buy and sell Treasury securities and records the related securities on a settlement-date basis. As of December 31, 2018, there were no outstanding commitments.

The FRBNY enters into commitments to buy and sell federal agency and GSE MBS and records the related securities on a settlement-date basis. As of December 31, 2018, the total purchase price of the federal agency and GSE MBS under outstanding purchase commitments was $294 million, none of which was related

to dollar rolls. These commitments, which had contractual settlement dates extending through January 2019, are for the purchase of TBA MBS for which the number and identity of the pools that will be delivered to fulfill the commitment are unknown at the time of the trade. As of December 31, 2018, there were no outstanding sales commitments for federal agency and GSE MBS. MBS commitments are subject to varying degrees of off-balance-sheet market risk and counterparty credit risk that result from their future settlement. The FRBNY requires the posting of cash collateral for MBS commitments as part of its risk management practices used to mitigate the counterparty credit risk.

Other assets held in the SOMA consist primarily of cash and short-term investments related to the federal agency and GSE MBS portfolio and were immaterial and $13 million at December 31, 2018 and 2017, respectively. Other liabilities include the FRBNY's accrued interest payable related to repurchase agreements transactions, obligations to return cash margin posted by counterparties as collateral under commitments to purchase and sell federal agency and GSE MBS, and obligations that arise from the failure of a seller to deliver MBS to the FRBNY on the settlement date. Although the FRBNY has ownership of and records its investments in the MBS as of the contractual settlement date, it is not obligated to make payment until the securities are delivered, and the amount included in other liabilities represents the FRBNY's obligation to pay for the securities when delivered. The amount of other liabilities held in the SOMA at December 31, 2018 and 2017 was as follows (in millions):

	2018	2017
Other liabilities:		
Accrued interest payable	$25	$ 63
Cash margin	8	481
Obligations from MBS transaction fails	1	14
Total other liabilities	$34	$558

In 2018, the description of the line item "Other liabilities: Other" has been revised to "Other liabilities: Accrued interest payable" in the preceding table to better reflect the nature of the item. The amount related to this line item was not changed from the prior year, only the nomenclature for the line item was revised.

Accrued interest receivable on domestic securities held in the SOMA was $22,160 million and $24,655 million as of December 31, 2018 and 2017, respectively. These amounts are reported as a component of "System Open Market Account: Accrued interest receivable" in the Combined Statements of Condition.

Information about transactions related to Treasury securities, GSE debt securities, and federal agency and GSE MBS held in the SOMA during the years ended December 31, 2018 and 2017, is summarized as follows (in millions):

Total SOMA						
	Bills	Notes	Bonds	Total Treasury securities	GSE debt securities	Federal agency and GSE MBS
Balance at December 31, 2016	$ -	$1,647,339	$920,083	$2,567,422	$ 16,648	$1,795,003
Purchases[1]	-	161,378	15,849	177,227	-	324,524
Sales[1]	-	(124)	(326)	(450)	-	(331)
Realized gains (losses), net[2]	-	(2)	30	28	-	2
Principal payments and maturities	-	(175,933)	(13,402)	(189,335)	(11,789)	(290,939)
Amortization of premiums and accretion of discounts, net	-	(3,796)	(7,917)	(11,713)	(107)	(10,559)
Inflation adjustment on inflation-indexed securities	-	709	1,845	2,554	-	-
Subtotal of activty	-	(17,768)	(3,921)	(21,689)	(11,896)	22,697
Balance at December 31, 2016	$ -	$1,629,571	$916,162	$2,545,733	$ 4,752	$1,817,700
Purchases[1]	126	192,346	15,560	208,032	-	121,190
Sales[1]	(47)	(49)	(65)	(161)	-	(253)
Realized gains (losses), net[2]	-	(1)	6	5	-	(5)
Principal payments and maturities	(79)	(435,970)	(7,731)	(443,780)	(1,982)	(246,316)
Amortization of premiums and accretion of discounts, net	-	(2,929)	(7,781)	(10,710)	(29)	(8,784)
Inflation adjustment on inflation-indexed securities	-	961	2,382	3,343	-	-
Subtotal of activty	-	(245,642)	2,371	(243,271)	(2,011)	(134,168)
Balance at December 31, 2018	$ -	$1,383,929	$918,533	$2,302,462	$ 2,741	$1,683,532
Year-ended December 31, 2017						
Supplemental information - par value of transactions:						
Purchases[3]	$ -	$ 161,796	$ 15,976	$ 177,772	$ -	$ 314,797
Sales	-	(125)	(275)	(400)	-	(320)
Year-ended December 31, 2018						
Supplemental information - par value of transactions:						
Purchases[3]	$126	$ 193,093	$ 15,713	$ 208,932	$ -	$ 118,762
Sales[3]	(47)	(51)	(59)	(157)	-	(251)

[1] Purchases and sales may include payments and receipts related to principal, premiums, discounts, and inflation compensation adjustments to the basis of inflation-indexed securities. The amount reported as sales includes the realized gains and losses on such transactions. Purchases and sales exclude MBS TBA transactions that are settled on a net basis.

[2] Realized gains (losses), net is the offset of the amount of realized gains and losses included in the reported sales amount.

[3] Includes inflation compensation.

b. Foreign Currency Denominated Investments

The FRBNY conducts foreign currency operations and, on behalf of the Reserve Banks, holds the resulting foreign currency denominated investments in the SOMA.

The FRBNY holds foreign currency deposits with foreign central banks and invests in foreign government debt instruments of France, Germany, the Netherlands, and Japan. These foreign government debt instruments are backed by the full faith and credit of the issuing foreign governments. In addition, the FRBNY may enter into repurchase agreements to purchase government debt securities for which the accepted collateral is the debt instruments issued by a foreign government.

At December 31, 2018 and 2017, there were no repurchase agreements outstanding and, consequently, no related foreign securities held as collateral.

Information about foreign currency denominated investments recorded at amortized cost and valued at foreign currency market exchange rates held in the SOMA at December 31, 2018 and 2017 was as follows (in millions):

	2018	2017
Euro:		
Foreign currency deposits	$ 6,390	$ 6,070
French government debt instruments	3,045	3,089
Dutch government debt instruments	1,511	1,626
German government debt instruments	1,440	2,239
Japanese yen:		
Foreign currency deposits	7,286	6,765
Japanese government debt instruments	1,234	1,527
Total	$20,906	$21,316

Net interest income earned on foreign currency denominated investments for the years ended December 31, 2018 and 2017 held in the SOMA as follows (in millions):

	2018	2017
Net interest income:[1]		
Euro	$(30)	$(19)
Japanese yen	1	2
Total net interest income	$(29)	$(17)

[1] As a result of negative interest rates in certain foreign currency denominated investments held in the SOMA, interest income on foreign currency denominated investments, net contains negative interest of $43 million and $36 million for the years ended December 31, 2018 and 2017, respectively.

Accrued interest receivable on foreign currency denominated investments, net was $72 million and $82 million as of December 31, 2018 and 2017, respectively. These amounts are reported as a component of "System Open Market Account: Accrued interest receivable" in the Combined Statements of Condition.

The remaining maturity distribution of foreign currency denominated investments at December 31, 2018 and 2017 was as follows (in millions):

	Within 15 days	16 days to 90 days	91 days to 1 year	Over 1 year to 5 years	Over 5 years to 10 years	Total
December 31, 2018:						
Euro	$ 6,425	$ 81	$ 448	$2,792	$2,640	$12,386
Japanese yen	7,286	90	301	843	-	8,520
Total	$13,711	$171	$ 749	$3,635	$2,640	$20,906
December 31, 2017:						
Euro	$ 6,162	$102	$1,228	$3,134	$2,398	$13,024
Japanese yen	6,765	62	263	1,202	-	8,292
Total	$12,927	$164	$1,491	$4,336	$2,398	$21,316

There were no foreign exchange contracts related to foreign currency operations outstanding as of December 31, 2018.

The FRBNY enters into commitments to buy foreign government debt instruments and records the related securities on a settlement-date basis. As of December 31, 2018, there were no outstanding commitments to purchase foreign government debt instruments. During 2018, there were purchases, sales, and maturities of foreign government debt instruments of $842 million, $2 million, and $1,734 million, respectively.

In connection with its foreign currency activities, the FRBNY may enter into transactions that are subject to varying degrees of off-balance-sheet market risk and counterparty credit risk that result from their future settlement. The FRBNY controls these risks by obtaining credit approvals, establishing transaction limits, receiving collateral in some cases, and performing monitoring procedures.

Foreign currency working balances held and foreign exchange contracts executed by the FRBNY to facilitate international payments and currency transactions made on behalf of foreign central banks and U.S. official institution customers were immaterial as of December 31, 2018 and 2017.

c. Central Bank Liquidity Swaps

U.S. Dollar Liquidity Swaps

The total foreign currency held in the SOMA under U.S. dollar liquidity swaps at December 31, 2018 and 2017 was $4,207 million and $12,067 million.

The remaining maturity distribution of U.S. dollar liquidity swaps at December 31, 2018 and 2017 was as follows (in millions):

	2018	2017
	Within 15 days	Within 15 days
Euro	$4,197	$11,907
Japanese yen	10	160
Total	$4,207	$12,067

Foreign Currency Liquidity Swaps

At December 31, 2018 and 2017, there was no balance outstanding related to foreign currency liquidity swaps.

d. Fair Value of SOMA Assets and Liabilities

The fair value amounts below are presented solely for informational purposes and are not intended to comply with the fair value disclosures required by ASC 820. Although the fair value of SOMA security holdings can be substantially greater than or less than the recorded value at any point in time, these unrealized gains or losses have no effect on the ability of the Reserve Banks, as the central bank, to meet their financial obligations and responsibilities. Because SOMA securities are recorded at amortized cost, cumulative unrealized gains (losses) are not recognized in the Combined Statements of Condition and the changes in cumulative unrealized gains (losses) are not recognized in the Combined Statements of Operations.

The fair value of the Treasury securities, GSE debt securities, federal agency and GSE MBS, and foreign government debt instruments held in the SOMA is subject to market risk, arising from movements in market variables such as interest rates and credit risk. The fair value of federal agency and GSE MBS is also affected by the expected rate of prepayments of mortgage loans underlying the securities. The

fair value of foreign government debt instruments is also affected by currency risk. Based on evaluations performed as of December 31, 2018 and 2017, there are no credit impairments of SOMA securities holdings.

The following table presents the amortized cost, fair value, and cumulative unrealized gains (losses) on the Treasury securities, GSE debt securities, and federal agency and GSE MBS held in the SOMA at December 31, 2018 and 2017 (in millions):

	2018			2017		
	Amortized cost	Fair value	Cumulative unrealized gains (losses), net	Amortized cost	Fair value	Cumulative unrealized gains (losses), net
Treasury securities:						
Notes	$1,383,929	$1,370,515	$(13,414)	$1,629,571	$1,624,540	$ (5,031)
Bonds	918,533	967,479	48,946	916,162	1,008,468	92,306
Total Treasury securities	2,302,462	2,337,994	35,532	2,545,733	2,633,008	87,275
GSE debt securities	2,741	3,222	481	4,752	5,383	631
Federal agency and GSE MBS	1,683,532	1,641,381	(42,151)	1,817,700	1,809,918	(7,782)
Total domestic SOMA portfolio securities holdings	$3,988,735	$3,982,597	$ (6,138)	$4,368,185	$4,448,309	$80,124
Memorandum - Commitments for:						
Purchases of Treasury securities	$ -	$ -	$ -	$ 11,447	$ 11,467	$ 20
Purchases of Federal agency and GSE MBS	294	296	2	19,257	19,285	28
Sales of Federal agency and GSE MBS	-	-	-	-	-	-

The fair value of Treasury securities and GSE debt securities was determined using pricing services that provide market consensus prices based on indicative quotes from various market participants. The fair value of federal agency and GSE MBS was determined using pricing services that utilize a model-based approach that considers observable inputs for similar securities.

The cost bases of repurchase agreements, reverse repurchase agreements, central bank liquidity swaps, and other investments held in the SOMA portfolio approximate fair value. Due to the short-term nature of these agreements and the defined amount that will be received upon settlement, the cost basis approximates fair value.

At December 31, 2018 and 2017, the fair value of foreign currency denominated investments held in the SOMA was $20,957 million and $21,348 million, respectively. The fair value of foreign government debt instruments was determined using pricing services that provide market consensus prices based on indicative quotes from various market participants. Due to the short-term nature of foreign currency deposits, the cost basis is estimated to approximate fair value.

The following table provides additional information on the amortized cost and fair value of the federal agency and GSE MBS portfolio held in the SOMA at December 31, 2018 and 2017 (in millions):

Distribution of MBS holdings by coupon rate	2018		2017	
	Amortized cost	Fair value	Amortized cost	Fair value
Total SOMA:				
2.0%	$ 7,532	$ 7,296	$ 8,968	$ 8,739
2.5%	92,877	89,530	110,452	108,371
3.0%	601,805	577,317	674,138	660,939
3.5%	585,114	571,406	630,590	630,245
4.0%	297,546	294,038	289,819	291,868
4.5%	69,474	71,559	68,069	71,896
5.0%	23,296	24,128	28,352	30,048
5.5%	5,097	5,277	6,318	6,739
6.0%	691	722	870	939
6.5%	100	108	124	134
Total	$1,683,532	$1,641,381	$1,817,700	$1,809,918

The following tables present the realized gains (losses) and the change in the cumulative unrealized gains (losses) related to SOMA domestic securities holdings held in the SOMA during the years ended December 31, 2018 and 2017 (in millions):

	2018		2017	
	Realized gains (losses), net[1, 2]	Change in cumulative unrealized gains (losses)[3]	Realized gains (losses), net[1, 2]	Change in cumulative unrealized gains (losses)[3]
Treasury securities	$ 5	$(51,743)	$28	$13,991
GSE debt securities	-	(150)	-	(163)
Federal agency and GSE MBS	(3)	(34,369)	8	(263)
Total	$ 2	$(86,262)	$36	$13,565

1 Realized gains (losses) for Treasury securities are reported in "Other items of income (loss): System Open Market Account: Treasury securities gains, net" in the Combined Statements of Operations.

2 Realized gains (losses) for federal agency and GSE MBS are reported in "Other items of income (loss): System Open Market Account: Federal agency and government-sponsored enterprise mortgage-backed securities (losses) gains, net" in the Combined Statements of Operations.

3 Because SOMA securities are recorded at amortized cost, the change in the cumulative unrealized gains (losses) is not reported in the Combined Statements of Operations.

The amount of change in cumulative unrealized gains (losses) position, net related to foreign currency denominated investments was a gain of $19 million and a loss of $36 million for the years ended December 31, 2018 and 2017, respectively. Realized gains, net related to foreign currency denominated investments was immaterial for the years ended December 31, 2018 and 2017.

Treasury securities, GSE debt securities, federal agency and GSE MBS, and foreign government debt instruments are classified as Level 2 within the ASC 820 hierarchy because the fair values are based on indicative quotes and other observable inputs obtained from independent pricing services. The fair value hierarchy level of SOMA financial assets is not necessarily an indication of the risk associated with those assets.

(6) Consolidated Variable Interest Entity

a. Description of Consolidated VIE

To facilitate the merger of The Bear Stearns Companies, Inc. (Bear Stearns) and JPMorgan Chase & Co. (JPMC), the FRBNY extended credit to ML in June 2008. ML is a Delaware LLC formed by the FRBNY to acquire certain assets of Bear Stearns and to manage those assets. The assets acquired by ML were valued at $29.9 billion as of March 14, 2008, the date that the FRBNY committed to the transaction, and largely consisted of federal agency and GSE MBS, non-agency residential mortgage-back securities (RMBS), commercial and residential mortgage loans, and derivatives and associated hedges.

The FRBNY extended a senior loan of approximately $28.8 billion and JPMC extended a subordinated loan of $1.15 billion to finance the acquisition of the assets, both of which were repaid in full plus interest in 2012. During 2018, the FRBNY sold all remaining securities from the ML portfolio and in accordance with the ML agreements, net proceeds were distributed to the FRBNY. On November 1, 2018, ML LLC was dissolved. While its affairs are being wound up, ML LLC will retain minimal cash to meet trailing expenses and other obligations as required by law. The costs to wind up ML LLC are not expected to be material.

b. Summary Information for Consolidated VIE

As of December 31, 2018, investments held by the consolidated VIE consisted primarily of $0.4 million in cash equivalents. The classification of significant assets and liabilities of ML at December 31, 2017 is summarized in the following table (in millions):

	2017
Assets:	
Short-term investments	$ 998
Swap contracts	5
Other investments	1
Subtotal	1,004
Cash, cash equivalents, accrued interest receivable, and other receivables	716
Cash collateral on swap contracts	2
Total investments held by consolidated VIE	$1,722
Liabilities:	
Swap contracts	$ 8
Other liabilities	1
Total liabilities of consolidated VIE	9
Investments held by consolidated VIE, net	$1,713

At December 31, 2018, FRBNY had no remaining exposure to loss from its investments. At December 31, 2017, FRBNY's approximate maximum exposure to loss was $1,004 million. This estimate incorporates potential losses associated with the investments recorded on the FRBNY's balance sheet.

The net income attributable to ML for the year ended December 31, 2018 and 2017 was as follows (in millions):

	2018	2017
Other items of income:		
Interest income: Investments held by consolidated VIE	$ 20	$15
Realized portfolio holdings losses, net	(58)	(6)
Unrealized portfolio holdings gains (losses), net	47	(3)
Other items of income: Consolidated VIE, net	9	6
Less: Professional fees	2	2
Net income attributable to consolidated VIE	$ 7	$ 4

i. Debt Securities

ML had short-term investments with maturities of greater than three months and less than one year when acquired. As of December 31, 2018 there were no remaining investments in debt securities held in ML. As of December 31, 2017, ML's short-term investments consisted of U.S. Treasury bills.

ii. Derivative Instruments

Derivative contracts are instruments, such as swap contracts, that derive their value from underlying assets, indexes, reference rates, or a combination of these factors. As of December 31, 2018, there were no remaining derivative financial instruments in ML and the total return swap (TRS) with JPMC was terminated on September 11, 2018. As of December 31, 2017, the ML portfolio was composed of derivative financial instruments included in a TRS agreement with JPMC. ML and JPMC entered into the TRS with reference obligations representing CDS primarily on commercial mortgage-backed securities and RMBS, with various market participants, including JPMC.

c. Fair Value Measurement

ML has adopted ASC 820 and ASC 825 and has elected the fair value option for all holdings. The accounting and classification of these investments appropriately reflect ML's and the FRBNY's intent with respect to the purpose of the investments and most closely reflect the amount of the assets available to liquidate the entity's obligations.

Determination of Fair Value

ML values its investments and cash equivalents on the basis of last available bid prices or current market quotations provided by dealers or pricing services selected under the supervision of the FRBNY's designated investment manager. To determine the value of a particular investment, pricing services may use certain information with respect to market transactions in such investments or comparable investments, various relationships observed in the market between investments, quotations from dealers, and pricing metrics and calculated yield measures based on valuation methodologies commonly employed in the market for such investments. The fair value of swap contracts is provided by JPMC as calculation agent and is reviewed by the investment manager.

Market quotations may not represent fair value in certain instances in which the investment manager and the VIE believe that facts and circumstances applicable to an issuer, a seller, a purchaser, or the market for a particular investment cause such market quotations to not reflect the fair value of an investment. In such cases or when market quotations are unavailable, the investment manager applies propri-

etary valuation models that use collateral performance scenarios and pricing metrics derived from the reported performance of investments with similar characteristics as well as available market data to determine fair value.

Due to the uncertainty inherent in determining the fair value of investments that do not have a readily available fair value, the fair value of these investments may differ from the values that may ultimately be realized and paid.

As of December 31, 2018, all remaining assets, consisting entirely of cash equivalents, were classified as Level 1. There were no remaining Level 2 or Level 3 assets or liabilities held in ML as of December 31, 2018. The following table presents the financial instruments recorded in the VIE at fair value as of December 31, 2017 by ASC 820 hierarchy (in millions):

	Level 1[1]	Level 2[1]	Level 3[1]	Netting[2]	Total fair value
Assets:					
Short-term investments	$ 998	$ -	$ -	$ -	$ 998
Cash equivalents[3]	716	-	-	-	716
Swap contracts	-	-	6	(1)	5
Other investments	-	1	-	-	1
Total assets	$1,714	$1	$ 6	$(1)	$1,720
Liabilities:					
Swap contracts	$ -	$ -	$14	$(6)	$ 8
Investments held by consolidated VIE, net	$1,714	$1	$ (8)	$ 5	$1,712

1 There were no transfers between Levels during the year ended December 31, 2017.

2 Derivative receivables and payables and the related cash collateral received and paid are shown net when a master netting agreement exists.

3 Cash equivalents consist primarily of money market funds.

Certain amounts relating to the prior year have been revised in the preceding table. $716 million previously reported as of December 31, 2017 as "Assets: Short-term investments" has been revised to $998 million. $998 million previously reported as of December 31, 2017 as "Assets: Cash equivalents" has been revised to $716 million.

As of December 31, 2017, both the Level 3 assets and liabilities held in the Combined Statements of Condition as "Investments held by consolidated variable interest entity, net", and the associated unrealized gains and losses related to those assets and liabilities are immaterial.

(7) Bank Premises, Equipment, and Software

Bank premises and equipment at December 31, 2018 and 2017 were as follows (in millions):

	2018	2017
Bank premises and equipment:		
Land and land improvements	$ 418	$ 408
Buildings	2,978	2,923
Building machinery and equipment	668	633
Construction in progress	68	64
Furniture and equipment	1,068	1,077
Subtotal	5,200	5,105
Accumulated depreciation	(2,647)	(2,534)
Bank premises and equipment, net	$ 2,553	$ 2,571
Depreciation expense, for the years ended December 31	$ 223	$ 217

Reserve Bank premises and equipment at December 31, 2018 and 2017 included the following amounts for capitalized leases (in millions):

	2018	2017
Leased premises and equipment under capital leases	$ 30	$ 29
Accumulated depreciation	(21)	(23)
Leased premises and equipment under capital leases, net	$ 9	$ 6
Depreciation expense related to leased premises and equipment under capital leases, for the years ended December 31	$ 4	$ 3

The Reserve Banks lease space to outside tenants with remaining lease terms ranging from 1 to 15 years. Rental income from such leases was $41 million and $40 million for the years ended December 31, 2018 and 2017, respectively, and is reported as a component of "Other items of income (loss): Other" in the Combined Statements of Operations. Future minimum lease payments that the Reserve Banks will receive under non-cancelable lease agreements in existence at December 31, 2018, are as follows (in millions):

2019	$ 38
2020	36
2021	32
2022	28
2023	23
Thereafter	55
Total	$212

The Reserve Banks had capitalized software assets, net of amortization, of $436 million and $438 million at December 31, 2018 and 2017, respectively. Amortization expense was $134 million and $122 million for the years ended December 31, 2018 and 2017, respectively. Capitalized software assets are reported as a component of "Other assets" in the Combined Statements of Condition and the related amortization is reported as a component of "Operating expenses: Other" in the Combined Statements of Operations.

(8) Commitments and Contingencies

In conducting their operations, the Reserve Banks enter into contractual commitments, normally with fixed expiration dates or termination provisions, at specific rates and for specific purposes.

At December 31, 2018, the Reserve Banks were obligated under non-cancelable leases for premises and equipment with remaining terms ranging from 1 to approximately 11 years. These leases provide for increased lease payments based upon increases in real estate taxes, operating costs, or selected price indexes.

Rental expense under operating leases for certain operating facilities, warehouses, and data processing and office equipment (including taxes, insurance, and maintenance when included in rent), net of sublease rentals, was $14 million and $16 million for the years ended December 31, 2018 and 2017, respectively.

Future minimum lease payments under non-cancelable operating leases, net of sublease rentals, with remaining terms of one year or more, at December 31, 2018, are as follows (in millions):

	Operating leases
2019	$ 5
2020	5
2021	3
2022	3
2023	3
Thereafter	6
Future minimum lease payments	$25

At December 31, 2018, the Reserve Banks had unrecorded unconditional purchase commitments and long-term obligations extending through the year 2022 with a remaining fixed commitment of $118 million. Purchases of $36 million and $37 million were made against these commitments during 2018 and 2017, respectively. These commitments represent maintenance of currency processing machines and development of new equipment and have variable and fixed components. The variable portion of the commitments is for additional services above the fixed contractual service limits. The fixed payments for the next five years under these commitments are as follows (in millions):

2019	$18
2020	42
2021	29
2022	29

Under the Insurance Agreement of the Reserve Banks, each of the Reserve Banks has agreed to bear, on a per-incident basis, a share of certain losses in excess of 1 percent of the capital paid-in of the claiming Reserve Bank, up to 50 percent of the total capital paid-in of all Reserve Banks. Losses are borne in the ratio of a Reserve Bank's capital paid-in to the total capital paid-in of all Reserve Banks at the beginning of the calendar year in which the loss is shared. No claims were outstanding under the agreement at December 31, 2018 and 2017.

The Reserve Banks are involved in certain legal actions and claims arising in the ordinary course of business. Although it is difficult to predict the ultimate outcome of these actions, in management's opinion, based on discussions with coun-

sel, the legal actions and claims will be resolved without material adverse effect on the financial position or results of operations of the Reserve Banks.

(9) Retirement and Thrift Plans

Retirement Plans

The Reserve Banks currently offer three defined benefit retirement plans to its employees, based on length of service and level of compensation. Substantially all of the employees of the Reserve Banks, Board of Governors, and Office of Employee Benefits of the Federal Reserve System (OEB) participate in the Retirement Plan for Employees of the Federal Reserve System (System Plan).[1] Under the Dodd-Frank Act, eligible Bureau employees may participate in the System Plan and, during the years ended December 31, 2018 and 2017, certain costs associated with the System Plan were reimbursed by the Bureau. In addition, employees at certain compensation levels participate in the Benefit Equalization Retirement Plan (BEP) and certain Reserve Bank officers participate in the Supplemental Retirement Plan for Select Officers of the Federal Reserve Banks (SERP).

The FRBNY, on behalf of the System, recognizes the net asset or net liability and costs associated with the System Plan in its consolidated financial statements. The net costs related to the System Plan, as well as the costs related to the BEP and SERP, as a component of "Operating expenses: Net periodic pension expense" in its Combined Statements of Operations. Accrued pension benefit costs are reported as a component of "Prepaid pension benefit costs" if the funded status is a net asset or "Accrued benefit costs" if the funded status is a net liability in the Combined Statements of Condition.

Following is a reconciliation of the beginning and ending balances of the System Plan benefit obligation for the years ended December 31, 2018 and 2017 (in millions):

	2018	2017
Estimated actuarial present value of projected benefit obligation at January 1	$16,501	$14,642
Service cost-benefits earned during the period	576	486
Interest cost on projected benefit obligation	622	614
Actuarial loss (gain)	(1,621)	1,179
Contributions by plan participants	6	4
Special termination benefits	12	11
Benefits paid	(463)	(435)
Estimated actuarial present value of projected benefit obligation at December 31	$15,633	$16,501

Annually, the Society of Actuaries released new mortality tables and updated mortality projection scales. The System analyzed these new tables relative to the System's actual retiree mortality experience. Based on these analyses, the System in 2018 adopted the modified MP-2018 projections scales and RP-2014 mortality tables with various adjustments to reflect the System's recent mortality experience of System retirees. These adjustments resulted in a reduction to the System Plan projected benefit obligation of approximately $62 million and $70 million in 2018 and 2017, respectively.

[1] The OEB was established by the System to administer selected System benefit plans.

Following is a reconciliation showing the beginning and ending balance of the System Plan assets, the funded status, and the accrued pension benefit costs for the years ended December 31, 2018 and 2017 (in millions):

	2018	2017
Estimated plan assets at January 1 (of which $16,454 and $13,671 is measured at fair value as of January 1, 2018 and 2017, respectively)	$16,515	$13,699
Actual return on plan assets	(920)	2,497
Contributions by the employer	276	750
Contributions by plan participants	6	4
Benefits paid	(463)	(435)
Estimated plan assets at December 31 (of which $15,389 and $16,454 is measured at fair value as of December 31, 2018 and 2017, respectively)	$15,414	$16,515
Funded status and accrued pension benefit costs	$ (219)	$ 14
Amounts included in accumulated other comprehensive loss are shown below:		
Prior service cost	$ (20)	$ (82)
Net actuarial loss	(3,167)	(3,045)
Total accumulated other comprehensive loss	$ (3,187)	$ (3,127)

The FRBNY, on behalf of the System, funded $240 million and $720 million during the years ended December 31, 2018 and 2017, respectively. The Bureau is required by the Dodd-Frank Act to fund the System plan for each Bureau employee based on an established formula. During the years ended December 2018 and 2017, the Bank received contributions from the Bureau of $36 million and $30 million, respectively.

The accumulated benefit obligation for the System Plan, which differs from the estimated actuarial present value of projected benefit obligation because it is based on current rather than future compensation levels, was $13,705 million and $14,376 million at December 31, 2018 and 2017, respectively.

The weighted-average assumptions used in developing the accumulated pension benefit obligation for the System Plan as of December 31 were as follows:

	2018	2017
Discount rate	4.36%	3.65%
Rate of compensation increase	4.25%	4.00%

Net periodic benefit expenses for the years ended December 31, 2018 and 2017 were actuarially determined using a January 1 measurement date. The weighted-average assumptions used in developing net periodic benefit expenses for the System Plan for the years were as follows:

	2018	2017
Discount rate	3.65%	4.15%
Expected asset return	6.00%	6.50%
Rate of compensation increase	4.00%	4.00%

Discount rates reflect yields available on high-quality corporate bonds that would generate the cash flows necessary to pay the System Plan's benefits when due. The expected long-term rate of return on assets is an estimate that is based on a combination of factors, including the System Plan's asset allocation strategy and historical returns; surveys of expected rates of return for various asset classes; and projected returns for equities and fixed income investments based on observable

inputs for real interest rates, inflation expectations, and equity risk premiums. In 2018, a change in estimate was made to the discount rate methodology used by the actuarial model to determine the System Plan's projected benefit obligation. Specifically, the discount rate methodology was refined to expand the universe of eligible fixed income securities and market pricing data. This change was applied prospectively and resulted in a reduction to the System Plan projected benefit obligation of approximately $324 million for the year ended December 31, 2018.

The components of net periodic pension benefit expense (credit) for the System Plan for the years ended December 31, 2018 and 2017 are shown below (in millions):

	2018	2017
Service cost - benefits earned during the period	$ 576	$ 486
Interest cost on projected benefit obligation	622	614
Amortization of prior service cost	62	88
Amortization of net loss	160	209
Expected return on plan assets	(983)	(899)
Net periodic pension benefit expense	437	498
Special termination benefits	12	11
Bureau of Consumer Financial Protection contributions	(36)	(30)
Total periodic pension benefit expense	$ 413	$ 479

Estimated amounts that will be amortized from accumulated other comprehensive loss into net periodic pension benefit expense in 2019 are shown below (in millions):

Prior service cost	$ 9
Net actuarial loss	160
Total	$169

The recognition of special termination benefits is primarily the result of enhanced retirement benefits provided to employees in the normal course of operations. Following is a summary of expected benefit payments, excluding enhanced retirement benefits (in millions):

2019	$ 539
2020	577
2021	616
2022	656
2023	697
2024 - 2028	4,094
Total	$7,179

The System's Committee on Plan Administration is responsible for oversight of the operations of the Retirement Plan, which includes the Retirement Plan trust and for determining the amounts necessary to maintain the Retirement Plan on an actuarially sound basis and the amounts that employers must contribute to pay the expenses of OEB and the Retirement Plan.

The System's Committee on Investment Performance (CIP) is responsible for establishing investment policies, selecting investment managers, and monitoring the investment managers' compliance with its policies. At December 31, 2018, the System Plan's assets were held in 25 investment vehicles: 5 actively-managed long-duration fixed income portfolios, a passively-managed long-duration fixed income portfolio, an indexed U.S. equity fund, an indexed non-U.S. developed-markets

equity fund, an indexed emerging-markets equity fund, 4 private equity limited partnerships, a private equity separate account, 4 core real estate funds, 6 real estate limited partnerships, and a money market fund.

The diversification of the System Plan's investments is designed to limit concentration of risk and the risk of loss related to an individual asset class. The three actively-managed long-duration fixed income portfolios are separate accounts benchmarked to a custom benchmark of 55 percent Barclays Long Credit Index and 45 percent of either Bloomberg, Barclays, or Citigroup 15+ years U.S. Treasury STRIPS Index. This custom benchmark was selected as a proxy to match the liabilities of the System Plan and the guidelines for these portfolios are designed to limit portfolio deviations from the benchmark. The passively-managed long-duration fixed-income portfolio is invested in 2 commingled funds and is benchmarked to 55 percent Barclays Long Credit Index and 45 percent Barclays 20+ STRIPS Index. The indexed U.S. equity fund is intended to track the overall U.S. equity market across market capitalizations and is benchmarked to the CRSP U.S. Total Market Index. The indexed non-U.S. developed-markets equity fund is intended to track the Morgan Stanley Capital International (MSCI) World ex-US Investible Markets Index (IMI), which includes stocks from 22 markets deemed by MSCI to be "developed markets." The indexed emerging-markets equity fund is intended to track the MSCI Emerging Markets IMI Index, which includes stocks from 24 markets deemed by MSCI to be "emerging markets."

The 3 indexed equity funds include stocks from across the market capitalization spectrum (i.e., large-, mid- and small-cap stocks).

The 4 private equity limited partnerships invest globally across various private equity strategies and the private equity separate account invests in various private equity investments globally across various strategies. The private equity separate account invests in various private equity funds (both primary and secondary interests) and coinvestment opportunities globally in private companies and targets returns in excess of public markets over a complete market cycle.

The 4 core real estate funds invest in high quality, well leased, low leverage commercial real estate throughout the U.S.

The 6 real estate limited partnerships invest in non-core U.S. and international commercial real estate including development and repositioning of assets. Finally, the money market fund, which invests in short term Treasury and agency debt and repurchase agreements backed by Treasury and agency debt, is the repository for cash balances and adheres to a constant dollar methodology.

Permitted and prohibited investments, including the use of certain derivatives, are defined in either the trust agreement (for the passively-managed long-duration fixed income portfolio) or the investment guidelines (for the remaining investments). The CIP reviews the trust agreement and approves all investment guidelines as part of the selection of each investment to ensure that they are consistent with the CIP's investment objectives for the System Plan's assets.

The System Plan's policy weight and actual asset allocations at December 31, 2018 and 2017 by asset category, are as follows:

	2018 Policy weight	Actual asset allocations	
		2018	2017
Fixed income	50.0%	51.6%	48.6%
U.S. equities	21.9%	21.1%	22.8%
International equities	14.0%	13.3%	16.0%
Emerging markets equities	4.7%	4.4%	5.1%
Private equity	4.7%	5.1%	3.6%
Real estate	4.7%	3.8%	2.9%
Cash	0.0%	0.7%	1.0%
Total	100.0%	100.0%	100.0%

Employer contributions to the System Plan may be determined using different assumptions than those required for financial reporting. The System Plan's anticipated funding level for 2019 is $180 million. In 2019, the FRBNY plans to make monthly contributions of $15 million and will reevaluate the monthly contributions upon completion of the 2019 actuarial valuation. The Reserve Banks' projected benefit obligation, funded status, and net pension expenses for the BEP and the SERP at December 31, 2018 and 2017, and for the years then ended, were immaterial.

Determination of Fair Value

The System Plan's publicly available investments are valued on the basis of the last available bid prices or current market quotations provided by dealers, or pricing services. To determine the value of a particular investment, pricing services may use information on transactions in such investments, quotations from dealers, pricing metrics, market transactions in comparable investments, relationships observed in the market between investments, and calculated yield measures based on valuation methodologies commonly employed in the market for such investments.

Collective trust funds are valued using the net asset value, calculated daily, based on the fair value of the underlying investments. Private equity and real estate investments are valued using the net asset value, as a practical expedient, which is based on the fair value of the underlying investments. The net asset value is adjusted for contributions, distributions, and both realized and unrealized gains and losses incurred during the period. The realized and unrealized gains and losses are based on reported valuation changes.

Because of the uncertainty inherent in determining the fair value of investments that do not have a readily available fair value, the fair value of these investments may differ significantly from the values that would have been reported if a readily available fair value had existed for these investments and may differ materially from the values that may ultimately be realized.

The following tables present the financial instruments recorded at fair value as of December 31, 2018 and 2017 by ASC 820 hierarchy (in millions):

Description	2018			
	Level 1	Level 2	Level 3	Total[1]
Short-term investments	$ 159	$ -	$ -	$ 159
Treasury and Federal agency securities	136	2,697	-	2,833
Corporate bonds	-	2,844	-	2,844
Other fixed income securities	-	327	-	327
Collective trusts	7,844	-	-	7,844
Investments measured at net asset value[2]	-	-	-	1,375
Total investments at fair value[3]	$8,139	$5,868	$ -	$15,382

1 There were no transfers between Levels during the year ended December 31, 2018.

2 Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been categorized in the fair value hierarchy.

3 In addition to total investments, the System Plan holds future margin receivable of $14 million and future margin payable of $7 million at December 31, 2018.

Description	2017			
	Level 1	Level 2	Level 3	Total[1]
Short-term investments	$ 226	$ -	$ -	$ 226
Treasury and Federal agency securities	87	2,785	-	2,872
Corporate bonds	-	3,072	-	3,072
Other fixed income securities	-	381	-	381
Collective trusts	8,838	-	-	8,838
Investments measured at net asset value[2]	-	-	-	1,062
Total investments at fair value[3]	$9,151	$6,238	$ -	$16,451

1 There were no transfers between Levels during the year ended December 31, 2017.

2 Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been categorized in the fair value hierarchy.

3 In addition to total investments, the System Plan holds future margin receivable of $4 million and future margin payable of $1 million at December 31, 2017.

The System Plan enters into futures contracts, traded on regulated exchanges, to manage certain risks and to maintain appropriate market exposure in meeting the investment objectives of the System Plan. The System Plan bears the market risk that arises from any unfavorable changes in the value of the securities or indexes underlying these futures contracts. The use of futures contracts involves, to varying degrees, elements of market risk in excess of the amount recorded in the Combined Statements of Condition. The guidelines established by the CIP further reduce risk by limiting the net futures positions, for most fund managers, to 15 percent of the market value of the advisor's portfolio.

At December 31, 2018 and 2017, a portion of short-term investments was available for futures trading. There were $5 million and $7 million of Treasury securities pledged as collateral for the years ended December 31, 2018 and 2017, respectively.

Thrift Plan

Employees of the Reserve Banks participate in the defined contribution Thrift Plan for Employees of the Federal Reserve System (Thrift Plan). The Reserve Banks match 100 percent of the first 6 percent of employee contributions from the date of hire and provides an automatic employer contribution of 1 percent of eli-

gible pay. The Reserve Banks' Thrift Plan contributions totaled $141 million and $136 million for the years ended December 31, 2018 and 2017, respectively, and are reported as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

(10) Postretirement Benefits other than Retirement Plans and Postemployment Benefits

Postretirement Benefits Other Than Retirement Plans

In addition to the Reserve Banks' retirement plans, employees who have met certain age and length-of-service requirements are eligible for both medical and life insurance benefits during retirement.

The Reserve Banks and plan participants fund benefits payable under the medical and life insurance plans as due and the plans have no assets.

Following is a reconciliation of the beginning and ending balances of the benefit obligation for the years ended December 31, 2018 and 2017 (in millions):

	2018	2017
Accumulated postretirement benefit obligation at January 1	$1,865	$1,751
Service cost benefits earned during the period	86	75
Interest cost on accumulated benefit obligation	68	70
Net actuarial loss (gain)	(117)	48
Contributions by plan participants	28	26
Benefits paid	(104)	(103)
Medicare Part D subsidies	2	2
Plan amendments	(1)	(4)
Accumulated postretirement benefit obligation at December 31	$1,827	$1,865

At December 31, 2018 and 2017, the weighted-average discount rate assumptions used in developing the postretirement benefit obligation were 4.26 percent and 3.59 percent, respectively.

Discount rates reflect yields available on high-quality corporate bonds that would generate the cash flows necessary to pay the plan's benefits when due. The System Plan discount rate assumption setting convention uses an unrounded rate.

Following is a reconciliation of the beginning and ending balance of the plan assets, and the unfunded postretirement benefit obligation and accrued postretirement benefit costs for the years ended December 31, 2018 and 2017 (in millions):

	2018	2017
Fair value of plan assets at January 1	$ -	$ -
Contributions by the employer	74	75
Contributions by plan participants	28	26
Benefits paid	(104)	(103)
Medicare Part D subsidies	2	2
Fair value of plan assets at December 31	$ -	$ -
Unfunded obligation and accrued postretirement benefit cost	$1,827	$1,865
Amounts included in accumulated other comprehensive loss are shown below:		
Prior service cost	$ 98	$ 128
Net actuarial loss	(203)	(336)
Deferred curtailment gain	-	1
Total accumulated other comprehensive loss	$ (105)	$ (207)

Accrued postretirement benefit costs are reported as a component of "Accrued benefit costs" in the Combined Statements of Condition.

For measurement purposes, the assumed health-care cost trend rates at December 31, 2018 and 2017 are provided in the table below:

	2018	2017
Health-care cost trend rate assumed for next year	6.25%	6.20%
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)	4.75%	4.75%
Year that the rate reaches the ultimate trend rate	2025	2022

Assumed health-care cost trend rates have a significant effect on the amounts reported for health-care plans. A one percentage point change in assumed health-care cost trend rates would have the following effects for the year ended December 31, 2018 (in millions):

	One percentage point increase	One percentage point decrease
Effect on aggregate of service and interest cost components of net periodic postretirement benefit costs	$ 28	$ (23)
Effect on accumulated postretirement benefit obligation	241	(203)

The following is a summary of the components of net periodic postretirement benefit expense for the years ended December 31, 2018 and 2017 (in millions):

	2018	2017
Service cost-benefits earned during the period	$ 86	$ 75
Interest cost on accumulated benefit obligation	68	70
Amortization of prior service cost	(32)	(33)
Amortization of net actuarial loss	18	11
Total periodic expense	140	123
Curtailment gain	(1)	-
Net periodic postretirement benefit expense	$139	$123

Estimated amounts that will be amortized from accumulated other comprehensive loss into net periodic postretirement benefit expense in 2019 are shown below:

Prior service cost	$(31)
Net actuarial loss	8
Total	$(23)

Net postretirement benefit costs are actuarially determined using a January 1 measurement date. At January 1, 2018 and 2017, the weighted-average discount rate assumptions used to determine net periodic postretirement benefit costs were 3.59 percent and 4.07 percent, respectively.

Net periodic postretirement benefit expense is reported as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

The Medicare Prescription Drug, Improvement and Modernization Act of 2003 established a prescription drug benefit under Medicare (Medicare Part D) and a federal subsidy to sponsors of retiree health-care benefit plans that provide benefits that are at least actuarially equivalent to Medicare Part D. The benefits provided under the Reserve Banks' plan to certain participants are at least actuarially equivalent to the Medicare Part D prescription drug benefit. The estimated effects of the subsidy are reflected in the actuarial loss in the accumulated postretirement benefit obligation and net periodic postretirement benefit expense.

Federal Medicare Part D subsidy receipts were immaterial in the years ended December 31, 2018 and 2017. Expected receipts in 2019, related to benefits paid in the years ended December 31, 2018 and 2017, are immaterial.

Following is a summary of expected postretirement benefit payments (in millions):

	Without subsidy	With subsidy
2019	$ 78	$ 77
2020	86	85
2021	91	90
2022	97	95
2023	103	101
2024 - 2028	593	581
Total	$1,048	$1,029

Postemployment Benefits

The Reserve Banks offer benefits to former qualifying or inactive employees. Postemployment benefit costs are actuarially determined using a December 31 measurement date and include the cost of providing disability; medical, dental, and vision insurance; survivor income benefits, and certain workers' compensation expenses. The accrued postemployment benefit costs recognized by the Reserve Banks at December 31, 2018 and 2017 were $110 million and $131 million, respectively. This cost is included as a component of "Accrued benefit costs" in the Combined Statements of Condition. Net periodic postemployment benefit expense included in 2018 and 2017 operating expenses were $3 million and $13 million, respectively, and are recorded as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

(11) Accumulated Other Comprehensive Income and Other Comprehensive Income

Following is a reconciliation of beginning and ending balances of accumulated other comprehensive income (loss) as of December 31, 2018 and 2017 (in millions):

	2018			2017		
	Amount related to defined benefit retirement plan	Amount related to postretirement benefits other than retirement plans	Total accumulated other comprehensive income (loss)	Amount related to defined benefit retirement plan	Amount related to postretirement benefits other than retirement plans	Total accumulated other comprehensive income (loss)
Balance at January 1	$(3,127)	$(207)	$(3,334)	$(3,844)	$(141)	$(3,985)
Change in funded status of benefit plans:						
Prior service costs arising during the year	-	1	1	-	4	4
Amortization of prior service cost	62[1]	(32)[2]	30	88[1]	(33)[2]	55
Change in prior service costs related to benefit plans	62	(31)	31	88	(29)	59
Net actuarial gain (loss) arising during the year	(282)	116	(166)	420	(48)	372
Amortization of net actuarial loss	160[1]	18[2]	178	209[1]	11[2]	220
Amortization of deferred curtailment gain	-	(1)	(1)	-	-	-
Change in actuarial gain (loss) related to benefit plans	(122)	133	11	629	(37)	592
Change in funded status of benefit plans—other comprehensive income (loss)	(60)	102	42	717	(66)	651
Balance at December 31	$(3,187)	$(105)	$(3,292)	$(3,127)	$(207)	$(3,334)

[1] Reclassification is reported as a component of "Operating expenses: Net periodic pension expense" in the Combined Statements of Operations.

[2] Reclassification is reported as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

Additional detail regarding the classification of accumulated other comprehensive loss is included in Note 9 and 10.

(12) Reconciliation of Total Distribution of Comprehensive Income

In accordance with the Federal Reserve Act, the Reserve Banks remit excess earnings to the Treasury after providing for the cost of operations, payment of dividends, and reservation of an amount necessary to maintain the Reserve Bank's allocated portion of the aggregate surplus limitation.

For the year ending December 31, 2017 and through February 8, 2018, the aggregate surplus limitation was $10 billion. On February 9, 2018, the Budget Act reduced the aggregate surplus limitation to $7.5 billion, which required the Reserve Banks to make a lump-sum payment to the Treasury in the amount of $2.5 billion, and the payment was remitted to the Treasury on February 22, 2018.

On May 24, 2018, the Economic Growth Act reduced the aggregate surplus limitation to $6.825 billion, which required the Reserve Banks to make a lump-sum payment to the Treasury in the amount of $675 million, and the payment was remitted to the Treasury on June 21, 2018.

The following table presents the distribution of the System total comprehensive income for the years ended December 31, 2018 and 2017 (in millions):

	2018	2017
Net income before providing for remittances to Treasury	$63,101	$80,692
Other comprehensive income	42	651
Comprehensive income - available for distribution	$63,143	$81,343
Distribution of comprehensive income (loss):		
Transfer from surplus	$ (3,175)	$ -
Dividends	999	784
Earnings remittances to the Treasury[1]	65,319	80,559
Total distribution of comprehensive income	$63,143	$81,343

[1] Inclusive of lump-sum payments required by legislation enacted during the year ended December 31, 2018.

(13) Subsequent Events

There were no subsequent events that required adjustments to or disclosures in the combined financial statements as of December 31, 2018. Subsequent events were evaluated through March 8, 2019, which is the date that the combined financial statements were available to be issued.

Office of Inspector General Activities

The Office of Inspector General (OIG) for the Federal Reserve Board, which is also the OIG for the Consumer Financial Protection Bureau (CFPB), operates in accordance with the Inspector General Act of 1978, as amended. The OIG plans and conducts audits, inspections, evaluations, investigations, and other reviews relating to Board and CFPB programs and operations, including functions that the Board has delegated to the Federal Reserve Banks. It also retains an independent public accounting firm to annually audit the Board's and the Federal Financial Institutions Examination Council's financial statements. These activities promote economy and efficiency; enhance policies and procedures; and prevent and detect waste, fraud, and abuse. In addition, the OIG keeps the Congress, the Board of Governors, and the CFPB director fully informed about serious abuses and deficiencies.

During 2018, the OIG issued 26 reports (table 1) to the Board and the CFPB and conducted follow-up reviews to evaluate actions taken on prior recommendations. Because of the sensitive nature of some of the material, the OIG issued four nonpublic reports to the Board and three nonpublic reports to the CFPB, as indicated. Regarding the OIG's investigative work related to the Board and the CFPB, 29 investigations were opened and 31 investigations were closed during the year. OIG investigative work resulted in 4 indictments, 10 convictions, and 4 prohibitions from the banking industry, as well as $1.34 billion in criminal fines and restitution. The OIG also issued its listings of major management challenges facing the Board and the CFPB. Further, the OIG issued two semiannual reports to Congress and performed approximately 30 reviews of legislation and regulations related to the operations of the Board, the CFPB, or the OIG.

For more information and to view OIG reports, visit the OIG's website at https://oig.federalreserve.gov. Specific details about the OIG's body of work also may be found in the OIG's *Work Plan* and semiannual reports to Congress.

Table 1. OIG reports issued in 2018

Report title	Month issued
The CFPB Can Further Strengthen Controls Over Certain Offboarding Processes and Data	January
Audit of the CFPB's Encryption of Data on Mobile Devices (nonpublic report)	January
Report on the Independent Audit of the Consumer Financial Protection Bureau's Privacy Program	February
Fiscal Year 2017 Risk Assessment of the CFPB's Travel Card Program	February
Fiscal Year 2017 Risk Assessment of the CFPB's Purchase Card Program	February
Federal Financial Institutions Examination Council Financial Statements as of and for the Years Ended December 31, 2017 and 2016, and Independent Auditors' Reports	February
Board of Governors of the Federal Reserve System Financial Statements as of and for the Years Ended December 31, 2017 and 2016, and Independent Auditors' Reports	March
Security Control Review of the RADAR Data Warehouse (nonpublic report)	March
Review of the Failure of Allied Bank	March
Security Control Review of the Board's Public Website (nonpublic report)	March
Closure of the Security Control Review of the CFPB's SQL Operating Environment (nonpublic report)	March
Independent Accountants' Report on the Bureau Civil Penalty Fund's 2017 Compliance With the Improper Payments Information Act of 2002, as Amended	May
In Accordance With Applicable Guidance, Reserve Banks Rely on the Primary Federal Regulator of the Insured Depository Institution in the Consolidated Supervision of Regional Banking Organizations, but Document Sharing Can Be Improved	June
The Bureau Could Have Better Managed Its GMMB Contract and Should Strengthen Controls for Contract Financing and Contract Management	June
Security Control Review of the Bureau's Mosaic System (nonpublic report)	June
Knowledge Management for the Board's Comprehensive Liquidity Analysis and Review Is Generally Effective and Can Be Further Enhanced	September
The Bureau's Travel Card Program Controls Are Generally Effective but Could Be Further Strengthened	September
Review of the Failure of Fayette County Bank	September
Security Control Review of the Board Division of Research and Statistics' General Support System (nonpublic report)	September
2018 Audit of the Board's Information Security Program	October
2018 Audit of the Bureau's Information Security Program	October
Evaluation of the Board's Implementation of Splunk (nonpublic report)	November
The Board Can Strengthen Information Technology Governance	November
The Board's Currency Shipment Process Is Generally Effective but Can Be Enhanced to Gain Efficiencies and to Improve Contract Administration	December
Bureau Purchase Card Program Controls Appear to Be Operating Effectively	December
The Board Can Strengthen Controls Over Its Academic Assistance Program	December

Government Accountability Office Reviews

The Federal Banking Agency Audit Act (Pub. L. No. 95–320) authorizes the Government Accountability Office (GAO) to audit certain aspects of Federal Reserve System operations. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) directs the GAO to conduct additional audits with respect to these operations. In 2018, the GAO completed 18 projects that involved the Federal Reserve (table 1). Twelve projects were ongoing as of December 31, 2018 (table 2).

Table 1. Reports completed during 2018

Report title	Report number	Month issued (2018)
Dodd-Frank Regulations: Consumer Financial Protection Bureau Needs a Systematic Process to Prioritize Consumer Risks	GAO-19-158	December
Financial Technology: Agencies Should Provide Clarification on Lenders' Use of Alternative Data	GAO-19-111	December
Financial Company Bankruptcies: Experts Had Mixed Views on Companies' Controls for Mitigating Obstacles	GAO-19-30	December
Financial Audit: Bureau of the Fiscal Service's Fiscal Years 2018 and 2017 Schedules of Federal Debt	GAO-19-113	November
Community Banks: Effect of Regulations on Small Business Lending and Institutions Appears Modest, but Lending Data Could Be Improved	GAO-18-312	September
Freedom of Information Act: Agencies Are Implementing Requirements but Additional Actions Are Needed	GAO-18-365	June
Small Business Loans: Additional Actions Needed to Improve Compliance with the Credit Elsewhere Requirement	GAO-18-421	June
Puerto Rico: Factors Contributing to the Debt Crisis and Potential Federal Actions to Address Them	GAO-18-387	May
Bureau of Engraving and Printing: Options for and Costs of a Future Currency Production Facility	GAO-18-338	May
Management Report: Areas for Improvement in the Federal Reserve Banks' Information System Controls	GAO-18-334R	April
Financial Technology: Additional Steps by Regulators Could Better Protect Consumers and Aid Regulatory Oversight	GAO-18-254	March
Community Reinvestment Act: Options for Treasury to Consider to Encourage Services and Small-Dollar Loans When Reviewing Framework	GAO-18-244	March
Commercial Real Estate Lending: Banks Potentially Face Increased Risk; Regulators Generally Are Assessing Banks' Risk Management Practices	GAO-18-245	March
Homeownership: Information on Mortgage Options and Effects on Accelerating Home Equity Building	GAO-18-297	March
Remittances to Fragile Countries: Treasury Should Assess Risks from Shifts to Non-Banking Channels	GAO-18-313	March
Community Banks and Credit Unions: Regulators Could Take Additional Steps to Address Compliance Burdens	GAO-18-213	February
Bank Secrecy Act: Derisking along the Southwest Border Highlights Need for Regulators to Enhance Retrospective Reviews	GAO-18-263	February
Financial Services Regulations: Procedures for Reviews under Regulatory Flexibility Act Need to Be Enhanced	GAO-18-256	January

Table 2. Projects active at year-end 2018

Subject of project	Month initiated	Status
Impact of de-risking on money transmitters	October 2016	Open
Bank regulatory oversight	April 2017	Open
Tax-time financial products	August 2017	Open
Potential changes to coin and currency	January 2018	Closed 3/21/2019
Credit reporting agencies' data security	January 2018	Closed 3/26/2019
Data governance good practices and lessons learned	March 2018	Open
Bank Secrecy Act implementation	March 2018	Open
Public comment fraud	April 2018	Open
Fair credit reporting for student loans	July 2018	Open
Consumer reporting agencies' data accuracy and protection	September 2018	Open
Bank Secrecy Act costs and benefits	October 2018	Open
Federal debt management and demand for Treasury securities	December 2018	Open

13 Federal Reserve System Budgets

The Federal Reserve Board of Governors and the Federal Reserve Banks prepare annual budgets as part of their efforts to ensure appropriate stewardship and accountability.[1] This section presents information on the 2018 budget performance of the Board and Reserve Banks and on their 2019 budgets, budgeting processes, and trends in expenses and employment. This section also presents information on the costs of new currency.

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1 Before 2013, information about the budgeted expenses of the Board and Reserve Banks was presented in a separate report titled *Annual Report: Budget Review*. Copies of that report are available at https://www.federalreserve.gov/publications/budget-review/default.htm.

Each budget covers one calendar year.

System Budgets Overview

Tables 1 and 2 summarize the Federal Reserve Board of Governors' and Federal Reserve Banks' 2018 budgeted, 2018 actual, and 2019 budgeted operating expenses and employment.[2]

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2 Substantially all employees of the Board and Reserve Banks participate in the Retirement Plan for Employees of the Federal Reserve System (System Plan). Reserve Bank employees at certain compensation levels participate in the Benefit Equalization Plan, and certain Reserve Bank officers participate in the Supplemental Retirement Plan for Select Officers of the Reserve Banks. The operating expenses of the Reserve Banks presented in this section do not include expenses related to the retirement plans; however, the 2018 claims for reimbursement include the allocated portion of the pension. Additional information about these expenses can be found in section 11, "Statistical Tables"

Table 1. Total operating expenses of the Federal Reserve System, net of receipts and claims for reimbursement, 2018–19

Millions of dollars, except as noted

Item	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Board	766.7	739.0	-27.7	-3.6	793.6	54.6	7.4
Office of Inspector General	35.9	33.3	-2.7	-7.4	35.4	2.1	6.3
Reserve Banks[1]	4,451.3	4,394.1	-57.2	-1.3	4,573.8	179.6	4.1
Currency	861.7	848.8	-13.0	-1.5	955.8	107.0	12.6
Total System operating expenses[2]	6,115.7	6,015.1	-100.5	-1.6	6,358.5	343.4	5.7
Revenue from priced services	441.7	442.5	0.8	0.2	440.3	-2.2	-0.5
Claims for reimbursement[3]	668.2	706.1	37.9	5.7	709.2	3.1	0.4
Other income[4]	2.5	3.0	0.5	21.7	2.9	-0.1	-3.8
Revenue and claims for reimbursement[5]	1,112.4	1,151.6	39.2	3.5	1,152.4	0.8	0.1
Total System operating expenses, net of revenue and claims for reimbursement	**5,003.3**	**4,863.5**	**-139.8**	**-2.8**	**5,206.1**	**342.6**	**7.0**

Note: Here and in subsequent tables, components may not sum to totals and may not yield percentages shown because of rounding.

1 Excludes Reserve Bank assessments by the Board of Governors for costs related to currency and the operations of the Board of Governors, Office of Inspector General, and the Consumer Financial Protection Bureau (CFPB).

2 Includes total operating expenses of the Federal Reserve Information Technology (FRIT) support function and the System's Office of Employee Benefits (OEB), the majority of which are in the Reserve Banks.

3 Reimbursable claims include the expenses of fiscal agency. In 2018 actual, the fiscal agency allocated portion of the pension is also included but is not included for the budget. The fiscal agency budgeted pension expense is $40.7 million in 2018 and $57.4 million in 2019.

4 Fees that depository institutions pay for the settlement component of the Fedwire Securities Service transactions for Treasury securities transfers.

5 Excludes annual assessments for the supervision of large financial companies pursuant to Regulation TT, which are not recognized as revenue or used to fund Board expenses (see section 4, "Supervision and Regulation," for more information).

Table 2. Employment in the Federal Reserve System, 2018–19

Item	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Board[1]	2,847	2,847	0	0.0	2,861	14	0.5
Office of Inspector General[1]	132	132	0	0.0	132	0	0.0
Reserve Banks[2]	19,878	19,577	-300	-1.5	19,856	279	1.4
Total System employment	**22,857**	**22,556**	**-300**	**-1.3**	**22,849**	**293**	**1.3**

Note: Employment numbers presented include authorized position counts for the Board and average number of personnel (ANP) for the Reserve Banks. ANP is the average number of employees expressed in terms of full-time positions for the period and includes outside agency help.

1 Budget represents authorized position count at the beginning of the year and actual represents authorized position count at year-end.

2 Includes employment of the FRIT support function and the OEB.

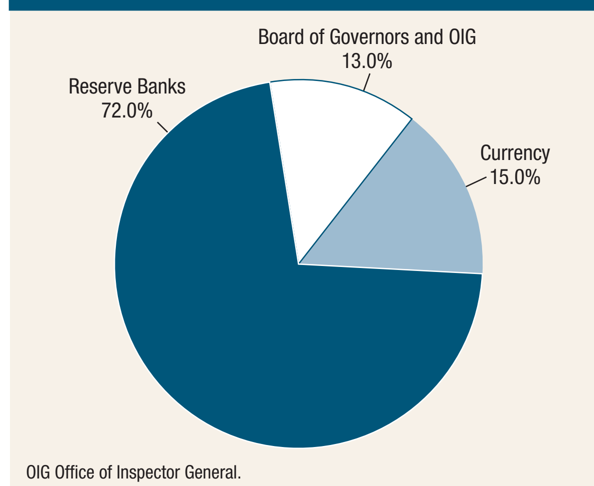
2018 Budget Performance

In carrying out its responsibilities in 2018, the Federal Reserve System incurred $4,863.5 million in net expenses. Total System operating expenses of $6,015.1 million were offset by $1,151.6 million in revenue from priced services, claims for reimbursement, and other income. Total 2018 System operating expenses were $139.8 million, or 2.8 percent, less than the amount budgeted for 2018.

2019 Operating Expense Budget

Budgeted 2019 System operating expenses of $5,206.1 million, net of revenue and reimbursements, are $342.6 million, or 7.0 percent, higher than 2018 actual expenses. The Reserve Bank budgets comprise almost three-quarters of the System budget (figure 1). Budgeted 2019 revenue from priced services is 0.5 percent lower than 2018 actual revenue, driven largely by decreased check volumes, offset by higher FedACH volumes, and incremental revenue for the new Exception Resolution Service.[3]

Figure 1. Distribution of budgeted expenses of the Federal Reserve System, 2019



OIG Office of Inspector General.

Trends in Expenses and Employment

From the actual 2009 level to the budgeted 2019 amount, the total operating expenses of the Federal Reserve System have increased an average of 4.6 percent per year (figure 2). Over the same period, nondefense discretionary spending by the federal government has increased an average of 0.8 percent per year (figure 3). Staffing has increased in information technology (IT) to support large application-development projects, information security efforts, end-user services, and the central computing environment. Supervision resource levels were augmented to meet requirements of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) and to support portfolio growth (figure 4).

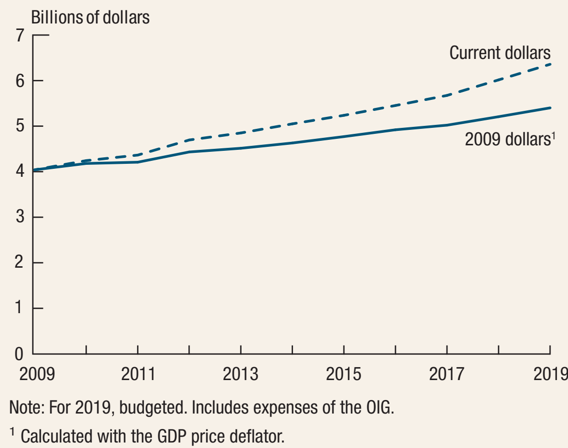
Growth in supervision expenses over the past 10 years has been driven by additional supervisory resources needed to respond to the financial crisis and a growth in the state member bank portfolio, to implement expanded responsibilities mandated by the Dodd-Frank Act, to build out the cybersecurity supervision program, and to support other strategic

(see Table 10. "Income and expenses of the Federal Reserve Banks, by Bank").

Board employees also participate in the Benefit Equalization Plan, and Board officers participate in the Pension Enhancement Plan for Officers of the Board of Governors of the Federal Reserve System (PEP). The operating expenses of the Board presented in this section include expenses related to Board participants in the Benefit Equalization Plan and PEP but do not include expenses related to the System Plan.

3 Exception Resolution Service provides an automated means for participants to manage ACH exceptions for entries settled through FedACH.

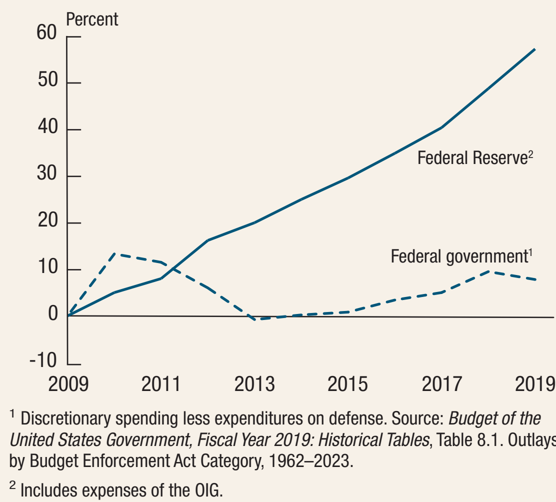
Figure 2. Total expenses of the Federal Reserve System, 2009–19



Note: For 2019, budgeted. Includes expenses of the OIG.

[1] Calculated with the GDP price deflator.

Figure 3. Cumulative change in Federal Reserve System expenses and federal government expenses, 2009–19



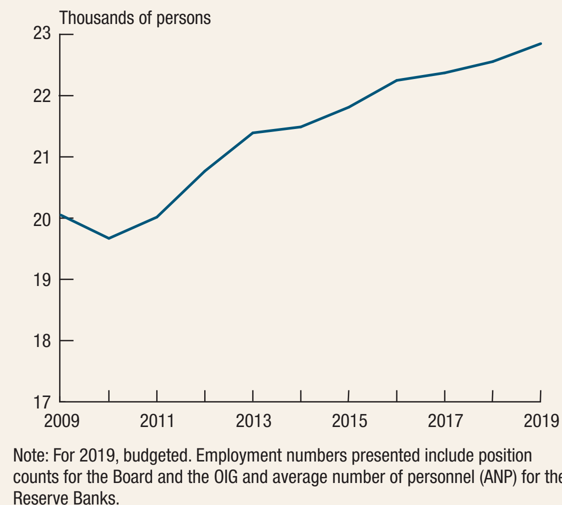
[1] Discretionary spending less expenditures on defense. Source: *Budget of the United States Government, Fiscal Year 2019: Historical Tables*, Table 8.1. Outlays by Budget Enforcement Act Category, 1962–2023.

[2] Includes expenses of the OIG.

national initiatives. However, supervision growth is moderating as supervisory conditions improve, efficiencies are found, and resources are shifted toward higher-risk activities and emerging risks. Expense growth in the monetary policy area during the financial crisis has been followed more recently by increased investment in financial stability monitoring and the dedication of additional resources to regional economic research.

Federal Reserve Bank expenses in the cash area have increased as a result of a multiyear investment program to modernize the cash-processing and inventory-tracking infrastructure. These increases

Figure 4. Employment in the Federal Reserve System, 2009–19



Note: For 2019, budgeted. Employment numbers presented include position counts for the Board and the OIG and average number of personnel (ANP) for the Reserve Banks.

have been partially offset by lower expenses because of efficiency improvements in cash operations. Treasury services expenses have increased to meet evolving needs, including the automation of the Treasury's collection and payment services, the addition of Treasury applications to the Treasury Web Application Infrastructure (TWAI), and other requested projects.[4]

2019 Capital Budgets

The capital budgets for the Board and Reserve Banks total \$185.6 million and \$483.4 million, respectively.[5] As in previous years, the 2019 capital budgets include funding for projects that support the strategic direction outlined by the Board and each Reserve Bank. These strategic goals emphasize investments that continue to improve operational efficiencies, enhance services to Bank customers, and ensure a safe and productive work environment.

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[4] TWAI is a dedicated, distributed computing environment that houses multiple Treasury applications.

In 2018, the Reserve Banks successfully concluded a multiyear fiscal agency consolidation effort, which reduced the number of Reserve Banks that provide services to the Treasury to increase operational efficiency and effectiveness and provide long-term cost savings.

[5] The capital budget reported for the Board includes single-year capital expenditures and 2019 expected capital expenditures from multiyear projects of the Board and the Office of Inspector General. The capital budget reported for the Reserve Banks includes the amounts budgeted for the Federal Reserve Information Technology support function and the Office of Employee Benefits.

Board of Governors Budgets

Board of Governors

The Board's budget is grounded in the principles established by the *Strategic Plan 2016–19* and provides funding to advance the Plan's goals, objectives, and initiatives.[6] The budget is structured by division, office, or special account.

The Board's budget process is as follows:

- At the start of the budget process, the chief operating officer and chief financial officer meet with the Committee on Board Affairs (CBA) to recommend a specific growth target for the Board's operating budget. For 2019, the recommended growth target included known changes in the run-rate of the Board's ongoing operations, projected increases to centrally managed retirement and post-retirement benefits, known strategic priorities for 2019, and the 2019 triennial Survey of Consumer Finances. After the CBA endorses the growth target, staff from the Division of Financial Management briefs the Board members and the Executive Committee, which comprises the directors of each division, on the target.
- To achieve the CBA's growth target, divisions allocate resources to their highest priorities and seek tradeoffs and efficiencies. For 2019, this included reducing several accounts in goods and services to reflect historic utilization and adjusting general lapse rates (vacancy) to more closely align with historic hiring and attrition rates.
- Division of Financial Management staff review initial budget requests submitted by divisions and collaborate with all divisions to achieve the growth target.
- The chief operating officer and chief financial officer subsequently meet with the Executive Committee and the CBA to further review and refine the budget submissions. Once the budget is finalized, the administrative governor submits the budget to the full Board for review and final approval.
- Expenses are monitored throughout the year. Quarterly financial forecasts provide insights into budgetary pressures. Variances are analyzed and reported to senior management.

Tables 3 and 4 summarize the Board's 2018 budgeted and actual expenses and its 2019 budgeted expenses by division, office, or special account and by account classification, respectively. Table 5 summarizes the Board's budgeted and actual authorized position count for 2018 and 2019. Each table includes a line item for the Office of Inspector General (OIG), which is discussed later in this section.

2018 Budget Performance

Total expenses for Board operations were $739.0 million, which was $27.7 million, or 3.6 percent, less than the approved 2018 budget of $766.7 million.

Personnel services expenses were $13.8 million less than budgeted primarily because of lower employment levels, which caused higher-than-budgeted vacancy rates. The underrun in personnel services was partially offset by an overrun in centrally managed retirement and post-retirement benefits, which was driven by changes in actuarial assumptions.

Goods and services expenses were $13.9 million less than budgeted. Lower utilization of contractual professional services and reduced travel expenses driven by lower employment levels contributed heavily to the underrun. Additional underruns occurred because of reduced telecommunications expenses and lower depreciation expenses driven by purchase delays and lower capital expenditures.

The Board's 2018 single-year capital spending was less than budgeted by $3.7 million, or 21.6 percent. Multiyear capital projects remained within their overall project budgets; however, actual spending in 2018 was less than budgeted by $87.9 million, or 46.9 percent, because of schedule delays for building improvement projects. Table 6 summarizes the Board's budgeted and actual capital expenditures for 2018 and 2019.

2019 Operating Expense Budget

The 2019 budget for Board operations is $793.6 million, which is $54.6 million higher than 2018 actual expenses. Excluding the Survey of Consumer Finances, the 2019 budget has grown by 5.5 percent

[6] *The Strategic Plan 2016–19*, which was approved by the Board in July 2015, continues the work of the *Strategic Framework 2012–15*. In addition to investing in ongoing operations, the Board is prioritizing investments and dedicating resources to six pillars over the 2016–19 period, which will allow the Board to advance its mission and respond to continuing and evolving challenges. The six pillars are project development and resource allocation, workforce, physical infrastructure, technology, data, and public engagement and accountability. More information may be found at https://www.federalreserve.gov/publications/gpra/files/2016-2019-gpra-strategic-plan.pdf.

Table 3. Operating expenses of the Board of Governors, by division, office, or special account, 2018–19
Millions of dollars, except as noted

Division, office, or special account	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Research and Statistics	85.0	81.5	-3.5	-4.2	85.6	4.1	5.1
International Finance	34.7	31.8	-2.9	-8.4	35.0	3.2	10.1
Monetary Affairs	43.4	42.1	-1.3	-3.0	44.7	2.6	6.2
Financial Stability	13.1	12.9	-0.3	-2.0	13.5	0.6	5.0
Supervision and Regulation	144.8	142.1	-2.7	-1.9	151.4	9.4	6.6
Consumer and Community Affairs	37.6	35.3	-2.3	-6.0	38.1	2.7	7.7
Reserve Bank Operations and Payment Systems	46.3	44.5	-1.8	-3.9	45.7	1.2	2.6
Board Members	28.5	27.1	-1.4	-5.0	28.9	1.8	6.8
Secretary	12.0	11.9	-0.1	-0.7	12.3	0.5	4.0
Legal	32.0	30.0	-1.9	-6.1	32.2	2.2	7.3
Chief Operating Officer	19.2	17.2	-1.9	-10.1	19.2	2.0	11.3
Financial Management	13.1	13.2	0.1	0.5	14.0	0.8	6.4
Information Technology	118.2	114.4	-3.8	-3.2	117.2	2.9	2.5
IT income	-52.8	-52.8	0.0	0.0	-55.8	-3.0	5.7
Management	137.7	133.8	-3.9	-2.9	139.3	5.5	4.1
Special projects[1]	14.5	15.2	0.7	4.9	12.9	-2.3	-15.4
Centrally managed benefits[2]	17.4	19.4	2.0	11.4	21.1	1.7	8.9
Extraordinary items[3]	20.9	17.6	-3.3	-15.9	29.7	12.1	68.9
Savings and reallocations[4]	0.0	0.0	0.0	n/a	-7.4	-7.4	n/a
Survey of Consumer Finances[5]	1.2	2.0	0.8	66.7	16.0	14.0	700.0
Total, Board operations	**766.7**	**739.0**	**-27.7**	**-3.6**	**793.6**	**54.6**	**7.4**
Office of Inspector General	35.9	33.3	-2.7	-7.4	35.4	2.1	6.3

n/a Not applicable.
[1] Includes centralized Boardwide benefit programs.
[2] Retirement and post-retirement benefits fluctuate due to changes in actuarial assumptions and demographics.
[3] Includes several strategic projects, including the Martin Building renovation, and a centralized position pool that was approved with the 2019 budget.
[4] For 2019, includes centralized budget execution adjustments.
[5] The survey collects information about family incomes, net worth, balance sheet components, credit use, and other financial outcomes, and is conducted every three years.

over 2018 actual expenses, and 7.4 percent including the survey. The operating budget includes funding for the Board's ongoing operations and support for the six overarching pillars identified in the Board's *Strategic Plan 2016–19*.

The 2019 budget includes employment growth expected to occur in 2019, funding for the Board's compensation and benefit programs, projected increases to centrally managed retirement and post-retirement benefits, and expenses related to the 2019 triennial Survey of Consumer Finances. The budget allows for continued investments in strategic, high-priority projects in support of the plan's pillars—project development and resource allocation, workforce, physical infrastructure, technology, data, and public engagement and accountability.

For 2019, the Board added 14 positions in support of a centralized position pool, which leadership may allocate to strategic areas of growth. As a result, the Board's total authorized position count for 2019 increased from 2,847 to 2,861.

Risks in the 2019 Budget

The budget process required all divisions to make tradeoffs and prioritize resources to fund mission-critical activities. Specifically, divisions were asked to align their goods and services budgets for continuing operations with historical spending trends. In addition, Division of Financial Management staff incorporated centralized adjustments into the budget to reflect historical under-execution.

Staff from the Division of Financial Management will monitor spending and work closely with all divisions throughout the year to mitigate potential budget overruns. Building improvement projects will continue to be an area of focus, from both a budget and a project management perspective, given their size, complexity, and strategic importance.

Table 4. Operating expenses of the Board of Governors, by account classification, 2018–19
Millions of dollars, except as noted

Account classification	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Personnel services							
Salaries	449.8	435.9	-13.9	-3.1	461.3	25.4	5.8
Retirement/Thrift plans	61.7	56.1	-5.6	-9.0	58.4	2.3	4.1
Employee insurance and other benefits	42.8	39.2	-3.6	-8.3	41.1	1.8	4.6
Net periodic benefits costs[1]	0.0	9.2	9.2	n/a	9.0	-0.2	-2.1
Subtotal, personnel services	554.3	540.5	-13.8	-2.5	569.7	29.3	5.4
Goods and services							
Postage and shipping	0.3	0.3	0.1	23.4	0.2	-0.1	-34.6
Travel	17.1	14.9	-2.1	-12.5	15.0	0.1	0.6
Telecommunications	7.2	6.0	-1.2	-16.6	6.1	0.1	2.3
Printing and binding	1.8	0.5	-1.3	-69.7	0.5	-0.1	-14.1
Publications	0.6	0.4	-0.2	-34.9	0.6	0.2	53.7
Stationery and supplies	1.4	1.2	-0.2	-13.6	1.4	0.1	11.1
Software	17.0	17.7	0.8	4.6	19.4	1.7	9.5
Furniture and equipment (F&E)	6.3	5.6	-0.7	-11.6	6.5	0.9	16.3
Rentals	32.5	33.5	1.0	3.0	33.9	0.4	1.1
Data, news, and research	14.8	16.6	1.8	12.3	32.0	15.4	92.6
Utilities	2.3	1.6	-0.7	-31.0	2.0	0.4	27.3
Repairs and alterations—building	2.5	2.7	0.1	4.2	3.4	0.7	27.9
Repairs and maintenance—F&E	4.7	4.5	-0.2	-5.0	4.5	0.0	-0.5
Contractual professional services	54.2	46.8	-7.4	-13.7	52.8	6.0	12.9
Interest	0.0	0.0	0.0	171.7	0.0	0.0	-34.0
Training and dues	4.7	4.3	-0.4	-9.1	4.9	0.6	14.8
Subsidies and contributions	2.1	2.0	-0.1	-4.6	3.1	1.1	54.6
All other	4.0	2.7	-1.3	-32.3	3.3	0.6	22.0
Depreciation/amortization	43.2	41.2	-2.0	-4.6	39.8	-1.5	-3.6
IT user charge	52.2	52.2	0.0	-0.1	55.2	3.0	5.7
IT income	-52.8	-52.8	0.0	-0.1	-55.8	-3.0	5.8
Income	-3.8	-3.5	0.2	-6.3	-4.9	-1.4	39.4
Subtotal, goods and services	212.4	198.5	-13.9	-6.5	223.9	25.3	12.8
Total, Board operations	**766.7**	**739.0**	**-27.7**	**-3.6**	**793.6**	**54.6**	**7.4**
Office of Inspector General							
Personnel services	27.7	25.8	-1.8	-6.7	27.4	1.6	6.2
Goods and services	8.3	7.4	-0.8	-9.9	7.9	0.5	6.9
Total, OIG operations	**35.9**	**33.3**	**-2.7**	**-7.4**	**35.4**	**2.1**	**6.3**

n/a Not applicable.

[1] Account was established after the approval of the 2018 budget to track net periodic benefits costs other than services costs related to pension and post-retirement benefits.

2019 Capital Budgets

The Board's 2019 single-year capital budget totals $19.5 million, which is $6.0 million higher than 2018 actual capital expenditures. The increase is primarily driven by the continuation of software development projects in supervision and regulation, which was previously classified in the multiyear capital budget.

The Board's multiyear capital budget totals $634.5 million, which includes 2019 expected capital expenditures of $165.8 million. The budget reflects funding for the acquisition of the 1951 Constitution Avenue, NW building, renovation of the Martin Building, and planned renovations of the 1951, Eccles, and New York Avenue buildings. The Board has developed its capital spending plans to provide a secure, modern environment that meets the needs of the workforce, promotes efficiency, supports resiliency and continuity efforts, and maximizes productivity. Table 6 summarizes the Board's budgeted and actual capital expenditures for 2018 and 2019.

Table 5. Positions authorized by the Board of Governors, by division, office, or special account, 2018–19

Division, office, or special account	2018 budget[1]	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Research and Statistics	356	356	0	0.0	356	0	0.0
International Finance	155	156	1	0.6	156	0	0.0
Monetary Affairs	172	171	-1	-0.6	171	0	0.0
Financial Stability	55	55	0	0.0	55	0	0.0
Supervision and Regulation	493	493	0	0.0	493	0	0.0
Consumer and Community Affairs	131	131	0	0.0	131	0	0.0
Reserve Bank Operations and Payment Systems	183	183	0	0.0	183	0	0.0
Board Members	121	121	0	0.0	121	0	0.0
Secretary	53	53	0	0.0	53	0	0.0
Legal	125	125	0	0.0	125	0	0.0
Chief Operating Officer	67	62	-5	-7.5	62	0	0.0
Financial Management	69	69	0	0.0	69	0	0.0
Information Technology	413	413	0	0.0	413	0	0.0
Management	454	459	5	1.1	459	0	0.0
Extraordinary items[2]	0	0	0	n/a	14	14	n/a
Total, Board operations	**2,847**	**2,847**	**0**	**0.0**	**2,861**	**14**	**0.5**
Office of Inspector General	132	132	0	0.0	132	0	0.0

n/a Not applicable.

[1] Budget represents authorized position count at the beginning of the year and actual represents authorized position count at year-end.

[2] Includes a centralized position pool, which will be used for strategic areas of growth.

Office of Inspector General

The budget for the OIG is grounded in the goals established in its strategic plan, which are delivering results that promote agency excellence; promoting a diverse, skilled, and engaged workforce and fostering an inclusive and collaborative environment; optimizing external stakeholder engagement; and advancing organizational effectiveness and modeling a culture of continuous improvement.[7]

[7] Additional information is available at https://oig.federalreserve.gov/strategic-plan.htm.

Table 6. Capital expenditures of the Board of Governors, by capital type, 2018–19
Millions of dollars, except as noted

Item	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Board							
Single-year capital expenditures	17.3	13.6	-3.7	-21.6	19.5	6.0	44.1
Multiyear capital expenditures[1]	187.6	99.6	-87.9	-46.9	165.8	66.2	66.5
Total capital expenditures	**204.8**	**113.2**	**-91.7**	**-44.8**	**185.3**	**72.2**	**63.8**
Office of Inspector General							
Single-year capital expenditures	0.1	0.1	0.0	1.0	0.2	0.1	68.4
Multiyear capital expenditures	0.0	0.0	0.0	n/a	0.0	0.0	n/a
Total capital expenditures	**0.1**	**0.1**	**0.0**	**1.0**	**0.2**	**0.1**	**68.4**
Board and OIG total capital expenditures	**205.0**	**113.3**	**-91.7**	**-44.7**	**185.6**	**72.3**	**63.8**

Note: The amount reported for the multiyear capital budget represents the expected expenditure for the budget year.

n/a Not applicable.

[1] In May 2018, the Board of Governors approved a budget amendment, which included a revision to the 2018 multiyear capital budget. The initial multiyear capital budget was $140.6 million.

In keeping with its statutory independence, the OIG prepares its proposed budget apart from the Board's budget. The OIG presents its budget directly to the Board for approval.

2018 Budget Performance

Total expenses for OIG operations were $33.3 million, which was $2.7 million, or 7.4 percent, less than the approved 2018 budget of $35.9 million. Personnel services expenses were $1.8 million less than budgeted because of slower-than-expected net employment activities. Goods and services expenses were $0.8 million less than budgeted. The OIG slightly exceeded its single-cycle capital budget in 2018 by less than $0.1 million, or 1.0 percent, because of higher-than-expected costs for vehicle life-cycle replacements. The overexpenditure was approved through its 2019 budget memorandum. Table 6 summarizes the OIG's budgeted and actual capital expenditures for 2018 and 2019.

2019 Operating Expense Budget

The 2019 budget for OIG operations is $35.4 million, which is $2.1 million, or 6.3 percent, higher than 2018 actual expenses. The OIG's total authorized position count for 2019 remains unchanged at 132.

2019 Capital Budget

The OIG's 2019 single-year capital budget totals $0.2 million, which is $0.1 million higher than 2018 actual capital expenditures.

Federal Reserve Banks Budgets

Each Reserve Bank establishes major operating goals for the coming year, devises strategies for attaining those goals, estimates required resources, and monitors results. The Reserve Banks structure their budgets around specific functional areas reflecting the core responsibilities of the Federal Reserve:

- contributing to the formulation of monetary policy and enhancing monetary policy implementation to become more effective, flexible, and resilient
- promoting financial stability through effective monitoring, analysis, and policy development
- promoting safety and soundness of financial institutions through effective supervision
- leading efforts to enhance the security, resiliency, functionality, and efficiency of services provided to financial institutions and the public

The Reserve Bank budget process is as follows:

- The Conference of Presidents, operating through its Committee on Spend Stewardship, defines, in close consultation with the Board's Committee on Federal Reserve Bank Affairs (BAC), key strategic objectives for the System. Considering longer-term environmental trends and historical growth rates of expense, these governance bodies articulate an aggregate System-level growth expectation for a multiyear period.
- The Reserve Banks develop budgets that reflects this direction through appropriate trade-offs, and senior leadership in the Reserve Banks reviews the budgets for alignment with Reserve Bank and System priorities.
- The Reserve Banks submit preliminary budget information to the Board for review, including documentation to support the budget request.
- Board staff analyzes the Banks' budgets, both individually and in the context of System initiatives.
- The BAC reviews the Bank budgets.
- The Reserve Banks make any needed changes, and the BAC chair submits the revised budgets to Board members for review and final action.
- Throughout the year, Reserve Bank and Board staffs monitor actual performance and compare it with approved budgets and forecasts.

In addition to the budget approval process, the Reserve Banks must submit proposals for certain capital expenditures to the Board for further review and approval.

Tables 7, 8, and 9 summarize the Reserve Banks' 2018 budgeted and actual expenses and 2019 budgeted expenses by Reserve Bank, functional area, and account classification.[8] Table 10 shows the Reserve Banks' budgeted and actual employment for 2018 and budgeted employment for 2019. In addition, table 11 shows the Reserve Banks' budgeted and actual capital expenditures for 2018 and budgeted capital for 2019.

2018 Budget Performance

Total 2018 operating expenses for the Reserve Banks were $4,394.1 million, which is $57.2 million, or

[8] Additional information about the operating expenses of each of the Reserve Banks can be found in section 11, "Statistical Tables" (see Table 10. "Income and expenses of the Federal Reserve Banks, by Bank").

Table 7. Operating expenses of the Federal Reserve Banks, by District, 2018–19
Millions of dollars, except as noted

District	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Boston	233.0	221.4	-11.5	-4.9	231.6	10.1	4.6
New York	1,006.7	1,002.4	-4.2	-0.4	1,043.5	41.0	4.1
Philadelphia	191.8	191.4	-0.4	-0.2	194.8	3.5	1.8
Cleveland	203.3	199.3	-4.0	-2.0	209.4	10.1	5.1
Richmond	479.8	469.0	-10.8	-2.2	503.6	34.5	7.4
Atlanta	420.3	410.5	-9.8	-2.3	415.5	5.0	1.2
Chicago	397.8	388.1	-9.6	-2.4	396.1	8.0	2.1
St. Louis	412.0	410.1	-2.0	-0.5	431.2	21.1	5.1
Minneapolis	174.0	171.5	-2.5	-1.4	180.0	8.5	4.9
Kansas City	307.3	310.8	3.4	1.1	332.7	21.9	7.1
Dallas	238.6	234.5	-4.0	-1.7	239.1	4.6	1.9
San Francisco	386.8	385.1	-1.7	-0.4	396.5	11.4	3.0
Total Reserve Bank operating expenses	**4,451.3**	**4,394.1**	**-57.2**	**-1.3**	**4,573.8**	**179.6**	**4.1**

Note: Includes expenses of the FRIT support function and the OEB and reflects all redistributions for support and allocation for overhead. Excludes Reserve Bank capital expenditures as well as assessments by the Board of Governors for costs related to currency and the operations of the Board of Governors and the CFPB.

1.3 percent, less than the approved 2018 budget of $4,451.3 million. The actual average number of personnel (ANP) was 19,577 ANP, an underrun of 300 ANP, or 1.5 percent, from 2018 budgeted staffing levels, largely because of slower-than-forecasted hiring in the supervision, support and overhead, and IT functions. The Reserve Banks' 2018 capital expenditures were less than budgeted by $66.5 million, or 16.4 percent, because of changes in timing and scope for numerous initiatives.

Revised project plans, benefits assumptions, and less-than-planned personnel expenses driven by delays in hiring contributed to the 2018 operating expense budget underrun. The underrun is partially offset by increased expenses for several Treasury-related initiatives, including the TWAI, the Treasury auction program, and a software write-off for the Post Payment System initiative, which will be strategically reset and redeveloped as the Post Payment Modernization Initiative in 2019.[9]

[9] The Post Payment System initiative was a multiyear effort to modernize several of the Treasury's legacy post-payment processing systems into a single application to enhance operations, reduce expenses, improve data analytics capabilities, and provide a centralized and standardized set of payment data. The Post Payment Modernization Initiative will modernize and consolidate five of Treasury's legacy post-payment processing systems into a single application.

Table 8. Operating expenses of the Federal Reserve Banks, by operating area, 2018–19
Millions of dollars, except as noted

Operating area	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Monetary and economic policy	721.5	720.4	-1.1	-0.2	756.7	36.3	5.0
Services to the U.S. Treasury and other government agencies	616.1	608.3	-7.7	-1.3	657.0	48.6	8.0
Services to financial institutions and the public	1,211.6	1,199.6	-11.9	-1.0	1,245.2	45.6	3.8
Supervision and regulation	1,449.3	1,424.2	-25.1	-1.7	1,473.6	49.4	3.5
Fee-based services to financial institutions	452.9	441.5	-11.3	-2.5	441.2	-0.3	-0.1
Total Reserve Bank operating expenses[1]	**4,451.3**	**4,394.1**	**-57.2**	**-1.3**	**4,573.8**	**179.6**	**4.1**

[1] Operating expenses exclude pension costs, reimbursements, and operating expense of the Board of Governors (see table 4).

Table 9. Operating expenses of the Federal Reserve Banks, by account classification, 2018–19
Millions of dollars, except as noted

Account classification	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Salaries and other benefits[1]	3,330.2	3,253.9	-76.3	-2.3	3,394.5	140.5	4.3
Building	335.2	340.4	5.1	1.5	343.8	3.5	1.0
Software costs	264.6	278.5	14.0	5.3	275.3	-3.2	-1.1
Equipment	192.4	193.7	1.3	0.7	197.9	4.3	2.2
Recoveries[2]	-394.4	-374.7	19.6	-5.0	-384.1	-9.3	2.5
Expenses capitalized	-76.5	-66.9	9.5	-12.5	-87.2	-20.3	30.3
All other[3]	799.8	769.3	-30.5	-3.8	833.4	64.1	8.3
Total Reserve Bank operating expenses	**4,451.3**	**4,394.1**	**-57.2**	**-1.3**	**4,573.8**	**179.6**	**4.1**

1 Includes salaries, other personnel expense, and retirement and other employment benefit expenses. It does not include pension expenses related to all the participants in the Retirement Plan for Employees of the Federal Reserve System and the Reserve Bank participants in the Benefit Equalization Plan and the Supplemental Retirement Plan for Select Officers of the Federal Reserve Banks. These expenses are recorded as a separate line item in the financial statements; see "Table 10. Income and expenses of the Federal Reserve Banks, by Bank" in section 11, "Statistical Tables."

2 Includes tenant rent recoveries.

3 Includes fees, materials and supplies, travel, communications, and shipping.

2019 Operating Expense Budget

The 2019 operating budgets of the Reserve Banks total $4,573.8 million, which is $179.6 million, or 4.1 percent, higher than 2018 actual expenses.[10]

Supervision expenses are increasing primarily for the ongoing support of the supervision portfolio,

10 On December 11, 2018, the Board of Governors approved the 2019 Reserve Bank operating and capital budgets, including conditionally approved expenditures associated with services to the Treasury. The U.S. Department of the Treasury's Bureau of the Fiscal Service provided final authorization of its requested services on December 19, which resulted in aggregate reductions of $10.7 million and $1.8 million for the operating expense and capital budgets, respectively. The 2019 Reserve Bank operating and capital budgets discussed here reflect the updated expectations from Fiscal Service. Additional information is available at https://www.federalreserve.gov/foia/files/2019ReserveBankBudgets.pdf.

Table 10. Employment at the Federal Reserve Banks, by District, and at FRIT and OEB, 2018–19

District	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Boston	1,086	1,053	-32	-3.0	1,037	-16	-1.5
New York	3,277	3,182	-96	-2.9	3,232	51	1.6
Philadelphia	876	885	9	1.0	859	-26	-2.9
Cleveland	999	982	-16	-1.6	988	5	0.5
Richmond	1,498	1,458	-40	-2.7	1,481	24	1.6
Atlanta	1,774	1,761	-13	-0.7	1,737	-24	-1.4
Chicago	1,605	1,558	-47	-2.9	1,599	40	2.6
St. Louis	1,442	1,396	-46	-3.2	1,435	39	2.8
Minneapolis	1,030	1,018	-12	-1.2	1,060	42	4.1
Kansas City	1,910	1,951	41	2.1	2,006	55	2.8
Dallas	1,320	1,284	-36	-2.7	1,278	-6	-0.5
San Francisco	1,732	1,712	-20	-1.2	1,765	52	3.1
Total, all Districts	**18,550**	**18,241**	**-309**	**-1.7**	**18,477**	**235**	**1.3**
Federal Reserve Information Technology	1,270	1,281	12	0.9	1,321	39	3.1
Office of Employee Benefits	58	55	-3	-5.4	59	4	7.7
Total	**19,878**	**19,577**	**-300**	**-1.5**	**19,856**	**279**	**1.4**

Table 11. Capital expenditures of the Federal Reserve Banks, by District, and of FRIT and OEB, 2018–19
Millions of dollars, except as noted

District	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Boston	20.5	11.1	-9.4	-45.8	15.1	4.0	36.2
New York	92.0	108.7	16.8	18.2	125.6	16.9	15.6
Philadelphia	34.6	20.7	-13.9	-40.1	36.2	15.4	74.4
Cleveland	13.7	12.6	-1.1	-8.1	23.1	10.5	83.6
Richmond	20.4	15.8	-4.6	-22.7	15.2	-0.6	-3.9
Atlanta	21.1	19.3	-1.7	-8.2	23.2	3.8	19.8
Chicago	22.3	11.5	-10.8	-48.6	26.7	15.2	132.4
St. Louis	6.6	5.4	-1.2	-18.3	6.7	1.3	23.5
Minneapolis	19.3	11.4	-7.9	-40.8	26.0	14.5	127.4
Kansas City	23.4	20.4	-3.1	-13.0	32.9	12.5	61.5
Dallas	20.1	15.0	-5.1	-25.3	24.2	9.1	60.7
San Francisco	30.9	23.4	-7.4	-24.1	53.1	29.7	126.9
Total, all Districts	**324.9**	**275.4**	**-49.5**	**-15.2**	**407.9**	**132.5**	**48.1**
Federal Reserve Information Technology	81.6	64.6	-17.0	-20.8	75.3	10.6	16.4
Office of Employee Benefits	0.1	*	*	-35.0	0.2	0.2	607.7
Total	**406.6**	**340.1**	**-66.5**	**-16.4**	**483.4**	**143.3**	**42.1**

* Less than $50,000.

national and horizontal review initiatives, and the continued development and implementation of the cybersecurity supervision program. Treasury expenses are increasing primarily to support new and ongoing technology development for the Treasury auction program, TWAI, Stored Value Card (SVC), and the Treasury Retail Investment Manager initiative.[11] Additionally, increases in cash expenses are driven by the first phase of the next-generation currency-processing program (NextGen).[12] Growth in monetary policy reflects increased resources dedicated to regional economic research, including new studies on inflation and low- and moderate-income communities.

Total 2019 budgeted employment for the Reserve Banks, FRIT, and OEB is 19,856 ANP, an increase of 279 ANP, or 1.4 percent, from 2018 actual employment levels. In IT, resource additions will support information security initiatives, application development projects for Treasury and Supervision, and application development projects to enhance data analytics and integration services. In Treasury services, the increase is attributable to updated requirements for new and ongoing programs, including the Treasury auction program, SVC, Do Not Pay, and Fiscal Accounting.[13]

Support and overhead functions plan to add resources to strengthen strategic planning, enterprise

In addition, the chair of the BAC designated a portion of the 2019 operating expense budgets ($15.5 million) associated with the adoption, integration, and implementation of the procurement, financial management, and human capital technology initiatives for conditional approval, requiring additional review and approval by the director of the Division of Reserve Bank Operations and Payment Systems. The multiyear initiative will replace legacy procurement, financial management, and human capital systems to allow for greater capability and flexibility in managing, reporting, and analyzing System financial and human capital information.

[11] The SVC program comprises three military cash-management programs: EagleCash, EZpay, and Navy Cash. These programs provide electronic payment methods for goods and services on military bases and Navy ships, both domestic and overseas, to reduce costs and increase convenience for the military and service members. The Treasury Retail Investment Manager will be the primary vehicle used by individual and entity investors to interact directly with Treasury to purchase and manage savings bonds and marketable securities.

[12] The NextGen program is a multiyear initiative to replace high-speed currency-processing equipment and sensors in cash offices across the Federal Reserve System.

[13] Do Not Pay helps agencies mitigate and eliminate improper payment. Fiscal Accounting maintains the federal government's set of accounts and serves as a repository for information pertaining to the government's financial position.

risk management, and law enforcement capabilities. Further contributing to the growth are resources to support regional economic research and outreach initiatives, the NextGen program, and a multiyear effort to enhance the resiliency, security, and customer experience of the FedLine access solutions.[14]

Increases are offset by reductions in the check function in recognition of operational efficiencies; in ACH following the planned completion of the multiyear ACH Modernization initiative; and in supervision related to efficiency efforts, changes in supervisory responsibilities, and the enactment of Economic Growth, Regulatory Relief, and Consumer Protection Act.[15]

Reserve Bank officer and staff personnel expenses for 2019 total $2,644.9 million, an increase of $123.1 million, or 4.9 percent, from 2018 actual expenses. The increase reflects expenses associated with additional staff and budgeted salary administration adjustments.[16]

The 2019 Reserve Bank budgets include a salary administration program for eligible officers, senior professionals, and staff totaling $100.8 million and a variable pay program totaling $213.8 million.

2019 Capital Budgets

The 2019 capital budgets for the Reserve Banks, FRIT, and OEB total $483.4 million. The increase in the 2019 capital budget is $143.3 million, or 42.1 percent, more than the 2018 actual levels of $340.1 million, largely reflecting ongoing multiyear building and information technology projects. Initiatives in the 2019 capital budget include supporting workspace renovations, addressing aging building infrastructure, and providing application upgrades and releases.

Capital Expenditures Designated for Conditional Approval

The BAC chair designated projects with an aggregate cost of $138.4 million in 2019 for conditional approval, requiring additional review and approval by the Board's director of the Division of Reserve Bank Operations and Payment Systems before the commitment of funds.[17] The expenditures designated for conditional approval by the chair of the BAC include large-scale building projects to renovate office space, increase parking, and upgrade mechanical and electrical infrastructure. Technology projects include Fedwire and FedLine initiatives and updates to supervision applications.[18]

Other Capital Expenditures

Significant capital expenditures (typically expenditures exceeding $1 million) that are not designated for conditional approval include total multiyear budgeted expenditures of $566.6 million for 2019 and future years, of which the single-year 2019 budgeted expenditures are $247.8 million. This category includes building expenditures for office space renovations, infrastructure upgrades, building automation, and security enhancements. IT projects include ongoing IT infrastructure investments; initiatives that enable better access to data and enhance cybersecurity and cyberresiliency; and applications to support fee-based services, supervision, cash, and open market operations.

Capital initiatives that are individually less than $1 million are budgeted at an aggregate amount of $97.2 million for 2019 and include building maintenance expenditures, scheduled software and equipment upgrades, and equipment and furniture replacements.

Currency Budget

The Board is the issuing authority for Federal Reserve notes. As the issuing authority, the Board has a wide range of responsibilities, from ensuring an adequate supply of notes in circulation to protecting

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[14] FedLine provides financial institutions with direct access to Federal Reserve System services.

[15] The ACH Modernization program is a multiyear technology initiative designed to replace the Federal Reserve's current core ACH processing system with a new, modern technology solution. The Economic Growth, Regulatory Relief, and Consumer Protection Act, enacted in May of 2018, aims to right-size the regulatory system for smaller financial institutions, allowing community banks and credit unions to succeed and invest further in their local areas.

[16] The salary administration program includes a budgeted pool for merit increases, equity adjustments, and promotions.

[17] Generally, capital expenditures that are designated for conditional approval include certain building projects, District expenditures that substantially affect or influence future System direction or the manner in which significant services are performed, expenditures that may be inconsistent with System direction or vary from previously negotiated purchasing agreements, and local expenditures that duplicate national efforts.

[18] The Reserve Banks operate two key payment and settlement systems—the Fedwire Funds Service and the Fedwire Securities Service (collectively, "Fedwire Services"), among other services.

the integrity of and maintaining confidence in U.S. currency. The Board works with the Reserve Banks, the Treasury Department, the Treasury's Bureau of Engraving and Printing (BEP), and the U.S. Secret Service to ensure that the notes meet quality standards from production through destruction; monitors counterfeiting threats for each denomination; and conducts adversarial analysis on existing and new security features to ensure they are robust to counterfeiting. The currency budget funds the Board's and BEP's activities related to note production and issuance.[19]

The annual currency budget process is as follows:

- Each August, based on Board staff's assessment of currency demand and other factors, the Board's director of the Division of Reserve Bank Operations and Payment Systems submits a fiscal year print order for notes to the director of the BEP.
- Each fourth quarter, Board staff estimates expenses for the calendar-year currency budget, including BEP printing expenses (based on estimated production costs provided by the BEP); BEP facility reimbursements; BEP support costs; and expenses for currency transportation, research and development, annual contributions and management support, quality assurance, counterfeit deterrence, currency education, capital expenses, and depreciation.
- Each December, the BAC reviews the proposed currency budget.
- The BAC chair submits the proposed currency budget to Board members for review and final action.

2018 Budget Performance

The Board's 2018 actual operating expenses for new currency were $848.8 million, a decrease of $13.0 million, or 1.5 percent, from the 2018 budget. This budget underrun is primarily attributable to lower-than-budgeted expenses for currency quality assurance (CQA), currency transportation, and research and development. Board staff focused CQA design work on security feature development and delayed planned design work until more progress was made on security of the next family of notes. In addition, budget underruns resulted from Board staff using a secure, but lower-cost mode of transportation to ship $20 notes to Reserve Banks from the BEP and shipped fewer notes than planned overall from the BEP to the Reserve Banks.[20] The research and development program eliminated certain options for security feature development to focus on the most promising features and to ensure that the program's requirements could be met.

2019 Budget

The 2019 operating budget for currency is $955.8 million, and the multicycle capital budget is $3.2 million. The proposed 2019 operating budget represents an increase of $107.0 million, or 12.6 percent, from 2018 actual expenses, and includes $210.0 million in reimbursements to the BEP to fund facilities improvement costs. The two improvement projects are an expansion of the Fort Worth, Texas, facility and new design and engineering studies in support of a new facility to replace the BEP's existing Washington, D.C., facility.[21]

The proposed multicycle capital budget is an increase of $3.2 million (there were no multicycle capital expenses in 2018) and covers information technology equipment for exploratory research and development for prototypes that would enable an automated counterfeit inspection system. BEP costs are 95 percent of the operating budget. Board expenses for currency transportation, research and development, annual contributions and management support, quality assurance, currency education, and depreciation make up the remaining 5 percent of the operating budget (table 12).

Printing of Federal Reserve Notes

The currency budget includes $690.8 million in printing costs for 2019, which represents a decrease of $109.1 million, or 13.6 percent, from 2018 actual expenses. The decrease is attributable to a reduction of 11.7 percent in the number of notes the BEP expects to print in calendar year 2019. This decrease

[19] The Board reimburses the BEP for all costs related to the production of currency because the BEP does not receive federal appropriations. All operations of the BEP are financed by a revolving fund that is reimbursed through product sales, virtually all of which are sales of Federal Reserve notes to the Board to fulfill its annual print order. Section 16 of the Federal Reserve Act requires that all costs incurred for the issuing of notes shall be paid for by the Board and included in its assessments to the Reserve Banks. Customer billings are the BEP's only means of recovering costs of operations and generating funds necessary for capital investment.

[20] After consultation with Reserve Banks and armored carriers, the Board determined $20 notes could be shipped using a lower-cost mode of transportation that improved operational efficiency, appropriately mitigated risk, and reduced overall costs.

[21] Excluding reimbursements for these BEP facilities improvements, the proposed 2019 operating budget is $745.8 million, which is $103.0 million, or 12.1 percent, less than 2018 actual expenses.

Table 12. Federal Reserve currency budget, 2018 and 2019
Thousands of dollars, except as noted

Item	2018 budget	2018 actual	Variance 2018 actual to 2018 budget		2019 budget	Variance 2019 budget to 2018 actual	
			Amount	Percent		Amount	Percent
Printing Federal Reserve notes							
BEP fixed printing costs	468,876.0	468,876.0	0.0	0.0	401,938.0	-66,938.0	-14.3
BEP variable printing costs	332,118.9	331,009.5	-1,109.4	-0.3	288,822.1	-42,187.4	-12.7
BEP facility reimbursements							
Fort Worth facility expansion	0.0	0.0	0.0	n/a	150,000.0	150,000.0	n/a
D.C. facility design work	0.0	3.5	3.5	n/a	60,000.0	59,996.5	*
BEP support costs							
Other[1]	3,697.2	3,501.4	-195.9	-5.3	3,672.7	171.3	4.9
Currency reader	1,285.6	1,452.9	167.3	13.0	956.8	-496.1	-34.1
Board expenses							
Currency transportation	24,260.5	20,252.2	-4,008.3	-16.5	22,496.7	2,244.5	11.1
Research and development	7,740.0	5,383.7	-2,356.3	-30.4	11,767.7	6,384.0	118.6
Annual contributions and management support[2]	7,145.1	6,577.8	-567.3	-7.9	7,100.4	522.6	7.9
Currency quality assurance	14,000.0	9,755.7	-4,244.3	-30.3	6,500.0	-3,255.7	-33.4
Currency education	2,531.0	1,905.3	-625.7	-24.7	2,430.2	524.9	27.5
Depreciation	80.2	62.9	-17.3	-21.6	74.5	11.7	18.5
Operating budget	**861,734.5**	**848,780.9**	**-12,953.5**	**-1.5**	**955,759.1**	**106,978.2**	**12.6**
Capital expenses							
Multiyear cycle capital	0.0	0.0	0.0	n/a	3,207.3	3,207.3	n/a

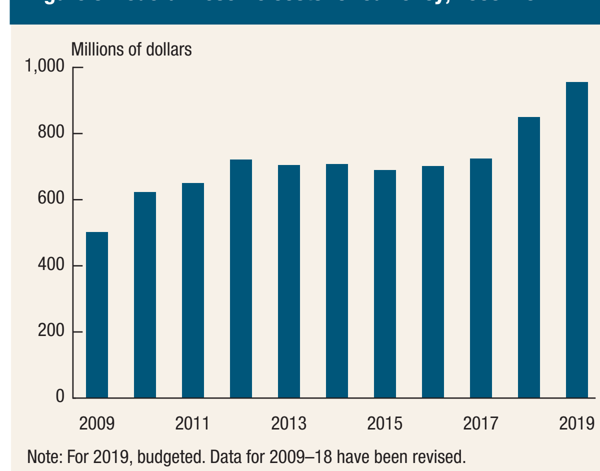
* The percentage change is greater than 100 percent and based on comparison to a *de minimis* value in the prior year.

n/a Not applicable.

[1] Other BEP expenses include costs to reimburse the BEP for expenses incurred by its Destruction Standards and Compliance Division of the Office of Compliance and Mutilated Currency Division of the Office of Financial Management.

[2] The annual contributions and management support budget category was previously titled counterfeit deterrence.

Figure 5. Federal Reserve costs for currency, 2009–19



Note: For 2019, budgeted. Data for 2009–18 have been revised.

in new notes printed does not represent a decline in currency demand, but rather a difference in the timing of BEP deliveries to the Board.[22] The printing budget includes $401.9 million (58 percent) in fixed printing costs and $288.8 million (42 percent) in variable printing costs.

BEP Facility Reimbursements

The proposed budget for BEP Fort Worth facility expansion and preliminary studies and contractor expenses in support of a replacement of the Washington, D.C., facility costs is $210.0 million.[23] Of the total, the BEP expects to spend $150.0 million for the Fort Worth facility expansion and $60.0 million for architectural and engineering work in support of the D.C. replacement facility.

BEP Support Costs

The 2019 budget for BEP support costs is $4.6 million, which is a decrease of $0.3 million, or 6.6 per-

[22] The BEP fulfilled the fiscal year 2018 print order; however, the BEP operates on a fiscal year that begins on October 1 and ends September 30. This difference in timing requires that the Board estimate its calendar-year budget for new currency by eliminating the estimated volume of notes that the BEP will produce in the first quarter of its fiscal year and estimating the volume of notes projected to be produced by the BEP in the fourth quarter of the calendar year.

[23] In 2018, there were *de minimis* facility reimbursement expenses of $4,000 for requirements definition work done for the BEP by the General Services Administration. These are included in table 12 for comparison with the proposed 2019 budget.

cent, from 2018 actual expenses. The 2019 budget for other reimbursements to the BEP is $3.7 million, which is an increase of $0.2 million from 2018 actual expenses. This funding reimburses the BEP for expenses incurred by its Destruction Standards and Compliance Division of the Office of Compliance and Mutilated Currency Division of the Office of Financial Management. The Office of Compliance develops standards for cancellation and destruction of unfit currency and for note accountability at the Reserve Banks and reviews Reserve Banks' cash operations for compliance with those standards. As a public service, the Mutilated Currency Division also processes claims for the redemption of damaged or mutilated currency.

The 2019 currency reader budget is $1.0 million, which is $0.5 million lower than 2018 actual expenses. The budget allows the BEP to distribute currency readers to qualified blind or visually impaired individuals at no cost to the user; to reimburse the Library of Congress for administering the currency reader program through the existing infrastructure of its book reader program, which is managed by the National Library Service; and other administrative and outreach expenses.

Transportation

The 2019 currency transportation budget is $22.5 million, an increase of $2.2 million, or 11.1 percent, from 2018 actual expenses. The budget includes the cost of shipping new notes from the BEP to Reserve Banks, of intra-System shipments of fit and unprocessed notes, and of returning pallets from the Reserve Banks to the BEP. The majority of the increase is attributable to the increase in armored carrier rates between 2018 and 2019, as specified in the existing multiyear armored carrier contracts. In addition, the budget includes funds to ship a larger volume of notes from the BEP to the Reserve Banks in 2019 because the Board did not ship all of the notes the BEP produced in the previous year.

Research and Development

The 2019 budget for research and development is $11.8 million, which is $6.4 million higher than 2018 actual expenses. The Board will develop, test, and evaluate new and existing security features in support of the new family of notes. In addition, the Board will continue development work on optical-inspection technology and will integrate data from a prototype counterfeit-inspection system. The Board also will continue work on cognitive and perception studies to help inform the U.S. currency program about security feature and banknote design decisions.

Annual Contributions and Management Support

The 2019 budget for annual contributions and management support is $7.1 million, which is $0.5 million, or 7.9 percent, higher than 2018 actual expenses. The budget funds membership in the Central Bank Counterfeit Deterrence Group, which is an association of central banks charged with combating digital counterfeiting, and funds the Reproduction Research Center to perform adversarial analysis on design concepts and potential security features in a shared member-central bank facility.

Currency Quality Assurance

The 2019 budget for quality assurance initiatives is $6.5 million, which is $3.3 million less than 2018 actual expenses. The decrease is attributable to a reduction in consultant work needed in this final contract year in support of the CQA program. This reduction also is attributed to a reallocation of design activities from the CQA budget category to the research and development budget. The CQA consultants will help facilitate executive program review meetings between the Board and BEP and recommend operational, cost, and performance metrics that are intended to measure the overall health of the U.S. currency program and result in more operational and cost transparency and better decisionmaking capabilities among executives responsible for the U.S. currency program.

Currency Education Program

The 2019 budget for the currency education program (CEP) is $2.4 million, which is $0.5 million higher than 2018 actual expenses. The CEP works to protect and maintain confidence in U.S. currency worldwide by providing information on all circulating designs of notes to the global public and key stakeholder groups. In 2019, the CEP will continue to conduct outreach to domestic and international businesses and retailers, maintain the uscurrency.gov educational website, and further develop digital resources to reach a broader community of users.

Capital Budget

The 2019 capital budget includes $3.2 million of multiyear capital to develop requirements for and support the integration of prototype optical technology intended to automate the counterfeit analysis function into the Board's broader information technology

infrastructure. This capital item includes funds to reimburse the Board's Division of Information Technology for capitalized internal software development, capital equipment lease, and capital equipment needed for the effort.

14 Federal Reserve System Organization

Congress designed the Federal Reserve System to give it a broad perspective on the economy and on economic activity in all parts of the nation. As such, the System is composed of a central, governmental agency—the Board of Governors—in Washington, D.C., and 12 regional Federal Reserve Banks. This section lists key officials across the System, including the Board of Governors, its officers, Federal Open Market Committee members, several System councils, and Federal Reserve Bank and Branch directors and officers.

Board of Governors

Members

The Board of Governors of the Federal Reserve System is composed of seven members, who are nominated by the President and confirmed by the Senate. The Chair and the Vice Chair of the Board are also named by the President from among the members and are confirmed by the Senate. This section lists Board members who served in 2018. For a full listing of Board members from 1914 through the present, visit www.federalreserve.gov/aboutthefed/bios/board/boardmembership.htm.

Jerome H. Powell
Chair (as of February 3, 2018)

Janet L. Yellen
Chair (through February 3, 2018)

Richard H. Clarida
Vice Chair (as of September 17, 2018)

Randal K. Quarles
Vice Chair for Supervision

Michelle W. Bowman
(as of November 26, 2018)

Lael Brainard

Divisions and Officers

Fifteen divisions support and carry out the mission of the Board of Governors, which is based in Washington, D.C.

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Assistant to the Board

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Assistant to the Board

David W. Skidmore
Assistant to the Board

Jennifer C. Gallagher
Special Assistant to the Board for Congressional Liaison

Jon Faust
Senior Special Adviser to the Chairman

Antulio Bomfim
Special Adviser to the Chairman

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Associate General Counsel

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Associate General Counsel

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Assistant General Counsel

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Assistant Director

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Assistant Director

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Deputy Associate Director

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Deputy Associate Director

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Scott Meyerle
Assistant Director

Can Xuan Nguyen
Assistant Director

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Assistant Director

Langston Shaw
Assistant Director

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Assistant Director

Eric C. Turner
Assistant Director

Virginia M. Wall
Assistant Director

Edgar Wang
Assistant Director

Ivan K. Wun
Assistant Director

Tillena G. Clark
Adviser

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Inspector General

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Associate Inspector General

Melissa Heist
Associate Inspector General

Peter Sheridan
Associate Inspector General

Gerald Maye
Assistant Inspector General

Federal Open Market Committee

The Federal Open Market Committee is made up of the seven members of the Board of Governors; the president of the Federal Reserve Bank of New York; and four of the remaining eleven Federal Reserve Bank presidents, who serve one-year terms on a rotating basis. During 2018, the Federal Open Market Committee held eight regularly scheduled meetings (see section 9, "Minutes of Federal Open Market Committee Meetings").

Members

Janet L. Yellen
Chair, Board of Governors *(through February 3, 2018)*

Jerome H. Powell
Chair, Board of Governors *(as of February 3, 2018; previously, Member)*

William C. Dudley
Vice Chairman, President, Federal Reserve Bank of New York *(through June 17, 2018)*

John C. Williams
Vice Chairman, President, Federal Reserve Bank of New York *(as of June 18, 2018; previously, President, Federal Reserve Bank of San Francisco)*

Thomas I. Barkin
President, Federal Reserve Bank of Richmond

Raphael W. Bostic
President, Federal Reserve Bank of Atlanta

Michelle W. Bowman
Member, Board of Governors *(as of November 26, 2018)*

Lael Brainard
Member, Board of Governors

Richard H. Clarida
Member, Board of Governors *(as of September 17, 2018)*

Mary C. Daly
President, Federal Reserve Bank of San Francisco *(as of October 1, 2018; previously, Associate Economist)*

Loretta J. Mester
President, Federal Reserve Bank of Cleveland

Randal K. Quarles
Member, Board of Governors

Alternate Members

James Bullard
President, Federal Reserve Bank of St. Louis

Charles L. Evans
President, Federal Reserve Bank of Chicago

Esther L. George
President, Federal Reserve Bank of Kansas City

Eric Rosengren
President, Federal Reserve Bank of Boston

Michael Strine
First Vice President, Federal Reserve Bank of New York

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Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Mark E. Van Der Weide
General Counsel

Michael Held
Deputy General Counsel

Richard M. Ashton
Assistant General Counsel

Steven B. Kamin
Economist

Heinrich T. Laubach
Economist

David W. Wilcox
Economist

David Altig
Associate Economist

Kartik B. Arthreya
Associate Economist

Thomas A. Connors
Associate Economist

Mary C. Daly
Associate Economist (through September 30, 2018)

David E. Lebow
Associate Economist

Trevor A. Reeve
Associate Economist

Argia M. Sbordone
Associate Economist

Ellis W. Tallman
Associate Economist

William Wascher
Associate Economist

Beth Anne Wilson
Associate Economist

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Board of Governors Advisory Councils

The Federal Reserve Board uses advisory committees in carrying out its varied responsibilities. To learn more, visit www.federalreserve.gov/aboutthefed/advisorydefault.htm.

Federal Advisory Council

The Federal Advisory Council—a statutory body established under the Federal Reserve Act—consults with and advises the Board of Governors on all matters within the Board's jurisdiction. It is composed of one representative from each Federal Reserve District, chosen by the Reserve Bank in that District. The president and vice president of the council are selected from amongst council members. The Federal Reserve Act requires the council to meet in Washington, D.C., at least four times a year. In 2018, the council met on February 8–9, May 10–11, September 6–7, and December 6–7. The council met with the Board on February 9, May 11, September 7, and December 7, 2018.

Members

District 1
Bruce W. Van Saun
Chairman and Chief Executive Officer, Citizens Financial Group, Inc., Stamford, CT

District 2
Michael L. Corbat
Chief Executive Officer, Citigroup, New York, NY

District 3
Mark A. Turner
President and Chief Executive Officer, WSFS Bank, Wilmington, DE

District 4
Beth E. Mooney
Chairman and Chief Executive Officer, KeyCorp, Cleveland, OH

District 5
Brian T. Moynihan
Chairman and Chief Executive Officer, Bank of America, Charlotte, NC

District 6
William H. Rogers, Jr.
Chairman and Chief Executive Officer, SunTrust Banks, Inc., Atlanta, GA

District 7
Jeffrey J. Brown
Chief Executive Officer, Ally Financial Inc., Detroit, MI

District 8
Ronald J. Kruszewski
Chairman, President, and Chief Executive Officer, Stifel Financial Corp., St. Louis, MO

District 9
Kenneth J. Karels
President and Chief Executive Officer, Great Western Bank, Sioux Falls, SD

District 10
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President and Chief Executive Officer, Bank of Bennington, Bennington, NE

District 11
Phillip D. Green
Chairman and Chief Executive Officer, Cullen/Frost Bankers Inc., San Antonio, TX

District 12
James H. Herbert, II *Chairman and CEO*, First Republic Bank, San Francisco, CA

Officers

Michael L. Corbat
President

Kenneth J. Karels
Vice President

Herb Taylor
Secretary

Community Depository Institutions Advisory Council

The Community Depository Institutions Advisory Council advises the Board of Governors on the economy, lending conditions, and other issues of interest to community depository institutions. Members are selected from among representatives of banks, thrift institutions, and credit unions who are serving on local advisory councils at the 12 Federal Reserve Banks. One member of each of the Reserve Bank councils serves on the Community Depository Institutions Advisory Council. The president and vice president are selected from amongst council members. The council usually meets with the Board twice a year in Washington, D.C. In 2018, the council met on April 13 and November 16.

Members

District 1
Gilda M. Nogueira
President and Chief Executive Officer, East Cambridge Savings Bank, Cambridge, MA

District 2
Tyrone E. Muse
President and Chief Executive Officer, Visions Federal Credit Union, Endicott, NY

District 3
Christopher D. Maher
President and Chief Executive Officer, OceanFirst Financial Corporation and OceanFirst Bank, Toms River, NJ

District 4
Thomas J. Fraser
President and Chief Executive Officer, First Federal Lakewood, Lakewood, OH

District 5
Robert A. DeAlmeida
President and Chief Executive Officer, Hamilton Bank, Baltimore, MD

District 6
Alvin J. Cowans
President and Chief Executive Officer, McCoy Federal Credit Union, Orlando, FL

District 7
Christopher J. Murphy, III
Chairman and Chief Executive Officer, 1st Source Corporation and 1st Source Bank, South Bend, IN

District 8
Ann Wells
Chief Executive Officer, Commonwealth Bank & Trust Company, Louisville, KY

District 9
Lora Benrud
Chief Executive Officer, WESTconsin Credit Union Menomonie, WI

District 10
Kyle Heckman
Chairman, President, and Chief Executive Officer, Flatirons Bank, Boulder, CO

District 11
Joe Quiroga
President, Texas National Bank, Edinburg, TX

District 12
Richard M. Sanborn
President and Chief Executive Officer, Seacoast Commerce Bank and Seacoast Commerce Banc Holdings, San Diego, CA

Officers

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President

Christopher D. Maher
Vice President

Community Advisory Council

The Community Advisory Council was formed in 2015 to advise the Board of Governors on the economic circumstances and financial services needs of consumers and communities, with a particular focus on the concerns of low- and moderate-income populations. The council is composed of a diverse group of experts and representatives of consumer and community development organizations and interests, including from such fields as affordable housing, community and economic development, employment and labor, financial services and technology, small business, and asset and wealth building. One member of the council serves as its chair. The council first met with the Board in November 2015, and meets with the Board twice each year. In 2018, the council met with the Board on May 4 and October 5.

Members

Roberto Barragan
Principal, Aquaria Funding Solutions, Los Angeles, CA

Angela Glover Blackwell
Founder and Chief Executive Officer, PolicyLink, Oakland, CA

Juan Bonilla
Deputy Director, Lawrence Community Works, Lawrence, MA

Barrett Burns
President and CEO, VantageScore Solutions LLC, Stamford, CT

Vanessa Calderon-Rosado
CEO, IBA (Inquilinos Boricuas en Accion), Boston, MA

Patrick Dujakovich
President, Greater Kansas City AFL-CIO, Kansas City, MO

Donald Hinkle-Brown
President and CEO, Reinvestment Fund, Philadelphia, PA

Barb Lau
Executive Director, Association of Women Contractors, St. Paul, MN

Andrea Levere
President, Prosperity Now, Washington, DC

Ben Mangan
Executive Director and Lecturer, Haas School of Business, U.C. Berkeley, Center for Social Sector Leadership, Berkeley, CA

Rodrick Miller
Founder and CEO, Ascendant Global, Detroit, MI

Jonny Price
Director of Business Development, Wefunder, San Francisco, CA

Gerry Roll
Executive Director, Foundation for Appalachian Kentucky, Chavies, KY

Bethany Sanchez
Fair Lending Director, Metropolitan Milwaukee Fair Housing Council, Milwaukee, WI

Sue Taoka
Executive Vice President, Craft3, Seattle, WA

Officers

Roberto Barragan
Chair

Andrea Levere
Vice Chair

Model Validation Council

The Model Validation Council was established in 2012 by the Board of Governors to provide expert and independent advice on its process to rigorously assess the models used in stress tests of banking institutions. The Dodd-Frank Wall Street Reform and Consumer Protection Act required the Federal Reserve to conduct annual stress tests of large bank holding companies and systemically important, nonbank financial institutions supervised by the Board. The Model Validation Council provides input on the Board's efforts to assess the effectiveness of the models used in the stress tests. The council is intended to improve the quality of the Federal Reserve's model assessment program and to strengthen the confidence in the integrity and independence of the program.

Members

Gregory Duffee
Professor, John Hopkins University

Monika Piazzesi
Professor, Stanford University

Jennie Bai
Assistant Professor, Georgetown University

Robert Stine
Professor, University of Pennsylvania

Paul Glasserman
Professor, Columbia University

Federal Reserve Banks and Branches

To carry out the day-to-day operations of the Federal Reserve System, the nation has been divided into 12 Federal Reserve Districts, each with a Reserve Bank. The majority of Reserve Banks also have at least one Branch.

Reserve Bank and Branch Directors

As required by the Federal Reserve Act, each Federal Reserve Bank is supervised by a nine-member board with three different classes of three directors each: Class A directors, who are nominated and elected by the member banks in that District to represent the stockholding banks; Class B directors, who are nominated and elected by the member banks to represent the public; and Class C directors, who are appointed by the Board of Governors to represent the public. Class B and Class C directors are selected with due, but not exclusive, consideration to the interests of agriculture, commerce, industry, services, labor, and consumers. Each Federal Reserve Bank Branch also has a board with either five or seven directors. A majority of the directors on each Branch board are appointed by the Federal Reserve Bank, with the remaining directors appointed by the Board of Governors.

For more information on Reserve Bank and Branch directors, see www.federalreserve.gov/aboutthefed/directors/about.htm.

Reserve Bank and Branch directors are listed below. For each director, the class of directorship, the director's principal place of business, and the expiration date of the director's current term are shown.

District 1–Boston

Class A

Chandler Howard, 2018
President and Chief Executive Officer, Liberty Bank, Middletown, CT

Joseph L. Hooley, 2019
Chairman and Chief Executive Officer, State Street Corporation, Boston, MA

Michael E. Tucker, 2020
President and Chief Executive Officer, Greenfield Cooperative Bank, Greenfield, MA

Class B

Roger S. Berkowitz, 2018
President and Chief Executive Officer, Legal Sea Foods, LLC, Boston, MA

Niraj Shah, 2019
Chief Executive Officer, Co-Founder, and Co-Chairman, Wayfair, Boston, MA

Kathleen E. Walsh, 2020
President and Chief Executive Officer, Boston Medical Center, Boston, MA

Class C

Phillip L. Clay, 2018
Professor – Department of Urban Studies & Planning, Massachusetts Institute of Technology (MIT), Cambridge, MA

Christina Hull Paxson, 2019
President, Brown University, Providence, RI

Gary L. Gottlieb, MD, 2020
Chief Executive Officer, Partners In Health, Boston, MA

District 2–New York

Class A

James P. Gorman, 2018
Chairman and Chief Executive Officer, Morgan Stanley, New York, NY

Gerald H. Lipkin, 2019
Chairman, Valley National Bank and Valley National Bancorp, Wayne, NJ

Paul P. Mello, 2020
President and Chief Executive Officer, Solvay Bank, Solvay, NY

Class B

Glenn H. Hutchins, 2018
Chairman, North Island, and *Co-Founder*, Silver Lake, New York, NY

Vacancy, 2019

Charles Phillips, 2020
Chief Executive Officer, Infor, New York, NY

Class C

Sara Horowitz, 2018
Chief Executive Officer and Founder, Trupo, Inc., Brooklyn, NY

Denise Scott, 2019
Executive Vice President, Local Initiatives Support Corporation, New York, NY

Rosa Gil, 2020
President and Chief Executive Officer, Comunilife, Inc., New York, NY

District 3–Philadelphia

Class A

David R. Hunsicker, 2018
Chairman, President, and Chief Executive Officer, New Tripoli Bank, New Tripoli, PA

William S. Aichele, 2019
Chairman, Univest Corporation of Pennsylvania, Souderton, PA

Jon S. Evans, 2020
President and Chief Executive Officer, Atlantic Community Bankers Bank, Camp Hill, PA

Class B

Carol J. Johnson, 2018
Retired President and Chief Operating Officer, AlliedBarton Security Services, Conshohocken, PA

Anthony Ibarguen, 2019
President, AquaVenture Holdings, Ltd., and *Chief Executive Officer*, Quench USA, Inc., King of Prussia, PA

Patricia Hasson, 2020
President and Executive Director, Clarifi, Philadelphia, PA

Class C

Phoebe Haddon, 2018
Chancellor, Rutgers University–Camden, Camden, NJ

Brian M. McNeill, 2019
President and Chief Executive Officer, TouchPoint, Inc., Concordville, PA

Madeline Bell, 2020
President and Chief Executive Officer, The Children's Hospital of Philadelphia – CHOP, Philadelphia, PA

District 4–Cleveland

Class A

Claude E. Davis, 2018
Executive Chairman, First Financial Bancorp, Cincinnati, OH

Stephen D. Steinour, 2019
Chairman, President, and Chief Executive Officer, Huntington Bancshares Incorporated, Columbus, OH

Dean J. Miller, 2020
President and Chief Executive Officer, First National Bank, Bellevue, OH

Class B

George S. Barrett, 2018
Former Chairman and Chief Executive Officer, Cardinal Health, Inc., Dublin, OH

David Megenhardt, 2019
Executive Director, United Labor Agency, Cleveland, OH

Charles H. Brown, 2020
Executive Adviser, Toyota Motor North America, Erlanger, KY

Class C

Dawne S. Hickton, 2018
President and Founding Partner, Cumberland Highstreet Partners, Sewickley, PA

Dwight E. Smith, 2019
President and Chief Executive Officer, Sophisticated Systems, Inc., Columbus, OH

Doris Carson Williams, 2020
President and Chief Executive Officer, African American Chamber of Commerce of Western Pennsylvania, Pittsburgh, PA

Cincinnati Branch

Appointed by the Federal Reserve Bank

Tucker Ballinger, 2018
President and Chief Executive Officer, Forcht Bank, N.A., Lexington, KY

Darin C. Hall, 2019
President and Chief Executive Officer, Civitas Development Group, Cincinnati, OH

Alfonso Cornejo, 2020
President, Hispanic Chamber Cincinnati USA, Cincinnati, OH

David C. Evans, 2020
President and Chief Executive Officer, TESSEC LLC, Dayton, OH

Appointed by the Board of Governors

Christopher C. Cole, 2018
Founder, Intelligrated Inc., Mason, OH

Valarie L. Sheppard, 2019
Senior Vice President, Comptroller, and Treasurer, The Procter & Gamble Company, Cincinnati, OH

Jenell R. Ross, 2020
President, Bob Ross Auto Group, Centerville, OH

Pittsburgh Branch

Appointed by the Federal Reserve Bank

Dmitri D. Shiry, 2018
Managing Partner, Deloitte LLP, Pittsburgh, PA

Shelley L. Fant, 2019
President and Chief Executive Officer, FCG Solutions, Inc., Pittsburgh, PA

Audrey Dunning, 2020
Senior Vice President, CGI Group, Inc., Pittsburgh, PA

Robert I. Glimcher, 2020
President, Glimcher Group Inc., Pittsburgh, PA

Appointed by the Board of Governors

Stefani Pashman, 2018
Chief Executive Officer, Allegheny Conference on Community Development, Pittsburgh, PA

Kathryn Z. Klaber, 2019
Managing Partner, The Klaber Group, Sewickley, PA

Suzanne Mellon, 2020
President, Carlow University, Pittsburgh, PA

District 5–Richmond

Class A

Susan K. Still, 2018
President and Chief Executive Officer, HomeTown Bankshares Corporation and HomeTown Bank, Roanoke, VA

William A. Loving, Jr., 2019
President and Chief Executive Officer, Pendleton Community Bank, Franklin, WV

Robert R. Hill, Jr., 2020
Chief Executive Officer, South State Corporation, Columbia, SC

Class B

Catherine A. Meloy, 2018
President and Chief Executive Officer, Goodwill of Greater Washington/Goodwill Excel Center, Washington, DC

Ángel Cabrera, 2019
President, George Mason University, Fairfax, VA

Thomas C. Nelson, 2020
Chairman, President, and Chief Executive Officer, National Gypsum Company, Charlotte, NC

Class C

Vacancy, 2018

Margaret G. Lewis, 2019
Retired President, HCA Capital Division, Richmond, VA

Kathy J. Warden, 2020
President and Chief Operating Officer, Northrop Grumman Corporation, Falls Church, VA

Baltimore Branch

Appointed by the Federal Reserve Bank

Christopher J. Estes, 2018
Vice President, Business Development and Advocacy, Rebuilding Together of Washington, DC, Washington, DC

Laura L. Gamble, 2018
Regional President Greater Maryland, PNC, Baltimore, MD

Mary Ann Scully, 2019
Chairman, President, and Chief Executive Officer, Howard Bancorp, Ellicott City, MD

Austin J. Slater, Jr., 2020
President and Chief Executive Officer, Southern Maryland Electric Cooperative, Inc., Hughesville, MD

Appointed by the Board of Governors

Kenneth R. Banks, 2018
President and Chief Executive Officer, Banks Contracting Company, Greenbelt, MD

Wayne A. I. Frederick, MD, 2019
President, Howard University, Washington, DC

Susan J. Ganz, 2020
Chief Executive Officer, Lion Brothers Company, Inc., Owings Mills, MD

Charlotte Branch

Appointed by the Federal Reserve Bank

Michael D. Garcia, 2018
President, Pulp and Paper, Domtar Corp., Fort Mill, SC

Jerry L. Ocheltree, 2018
President and Chief Executive Officer, Carolina Trust Bank, Lincolnton, NC

Michael C. Crapps, 2019
President and Chief Executive Officer, First Community Bank, Lexington, SC

Laura C. Meagher, 2020
Vice President, General Counsel, and Secretary, VF Corporation, Greensboro, NC

Appointed by the Board of Governors

Laura Y. Clark, 2018
Executive Vice President and Chief Impact Officer, United Way of Central Carolinas, Charlotte, NC

Michelle A. Mapp, 2019
Chief Executive Officer, South Carolina Community Loan Fund, Charleston, SC

R. Glenn Sherrill, Jr., 2020
Chairman and Chief Executive Officer, SteelFab Inc., Charlotte, NC

District 6–Atlanta

Class A

Gerard R. Host, 2018
President and Chief Executive Officer, Trustmark Corporation, Jackson, MS

Robert W. Dumas, 2019
President and Chief Executive Officer, AuburnBank, Auburn, AL

O.B. Grayson Hall, Jr., 2020
Chairman and Chief Executive Officer, Regions Financial Corporation, Birmingham, AL

Class B

Elizabeth A. Smith, 2018
Chairman and Chief Executive Officer, Bloomin' Brands, Inc., Tampa, FL

Mary A. Laschinger, 2019
Chairman and Chief Executive Officer, Veritiv Corporation, Atlanta, GA

Jonathan T.M. Reckford, 2020
Chief Executive Officer, Habitat for Humanity International, Atlanta, GA

Class C

Thomas A. Fanning, 2018
Chairman, President, and Chief Executive Officer, Southern Company, Atlanta, GA

Mike J. Jackson, 2019
Chairman, Chief Executive Officer, and President, AutoNation, Inc., Fort Lauderdale, FL

Myron A. Gray, 2020
Retired President, U.S. Operations, United Parcel Service, Atlanta, GA

Birmingham Branch

Appointed by the Federal Reserve Bank

David M. Benck, 2018
Vice President and General Counsel, Hibbett Sports, Birmingham, AL

Michael Case, 2018
Retired President and Chief Executive Officer, The Westervelt Company, Tuscaloosa, AL

Brian C. Hamilton, 2019
President and Chief Executive Officer, Trillion Communications Corp., Bessemer, AL

Herschell L. Hamilton, 2020
Chief Strategic Officer, BLOC Global Group, Birmingham, AL

Appointed by the Board of Governors

Pamela B. Hudson, MD, 2018
Chief Executive Officer, Crestwood Medical Center, Huntsville, AL

Merrill H. Stewart, Jr., 2019
President, The Stewart/Perry Company, Inc., Birmingham, AL

Nancy C. Goedecke, 2020
Chairman and Chief Executive Officer, Mayer Electric Supply Company, Inc., Birmingham, AL

Jacksonville Branch

Appointed by the Federal Reserve Bank

John Hirabayashi, 2018
President and Chief Executive Officer, Community First Credit Union of Florida, Jacksonville, FL

Dawn Lockhart, 2018
Director of Strategic Partnerships, Office of the Mayor, City of Jacksonville, Jacksonville, FL

Paul G. Boynton, 2019
Chairman, President, and Chief Executive Officer, Rayonier Advanced Materials, Inc., Jacksonville, FL

William O. West, 2020
Chief Executive Officer, The Bank of Tampa, Tampa, FL

Appointed by the Board of Governors

Timothy P. Cost, 2018
President, Jacksonville University, Jacksonville, FL

Nicole B. Thomas, 2019
Hospital President, Baptist Medical Center South, Jacksonville, FL

Troy D. Taylor, 2020
Chairman and Chief Executive Officer, Coca-Cola Beverages Florida, LLC, Tampa, FL

Miami Branch

Appointed by the Federal Reserve Bank

Millar Wilson, 2018
Vice Chairman and Chief Executive Officer, Mercantil Commercebank, Coral Gables, FL

Eduardo Arriola, 2019
Chairman and Chief Executive Officer, Apollo Bank, Miami, FL

N. Maria Menendez, 2020
Chief Financial Officer, GL Homes of Florida Holding, Sunrise, FL

Victoria E. Villalba, 2020
President and Chief Executive Officer, Victoria & Associates Career Services, Inc., Miami, FL

Appointed by the Board of Governors

Michael A. Wynn, 2018
Board Chairman and President, Sunshine Ace Hardware, Bonita Springs, FL

Ana M. Menendez, 2019
Chief Financial Officer and Treasurer, Watsco, Inc., Miami, FL

Keith T. Koenig, 2020
President, City Furniture, Tamarac, FL

Nashville Branch

Appointed by the Federal Reserve Bank

Kent M. Adams, 2018
Former President and Chief Executive Officer, Caterpillar Financial Services Corp., Nashville, TN

Beth R. Chase, 2018
Senior Managing Director, Ankura Consulting Group, Nashville, TN

Claire W. Tucker, 2019
President and Chief Executive Officer, CapStar Financial Holdings, Inc., Nashville, TN

John W. Garratt, 2020
Executive Vice President and Chief Financial Officer, Dollar General, Goodlettsville, TN

Appointed by the Board of Governors

Richard D. Holder, 2018
President and Chief Executive Officer, NN, Inc., Johnson City, TN

Matthew S. Bourlakas, 2019
President and Chief Executive Officer, Goodwill Industries of Middle Tennessee, Inc., Nashville, TN

Benjamin G. Brock, 2020
President and Chief Executive Officer, Astec Industries, Inc., Chattanooga, TN

New Orleans Branch

Appointed by the Federal Reserve Bank

Phillip R. May, 2018
President and Chief Executive Officer, Entergy Louisiana, LLC and Entergy Gulf States Louisiana, L.L.C., Jefferson, LA

Suzanne T. Mestayer, 2018
Managing Principal, ThirtyNorth Investments, LLC, New Orleans, LA

Elizabeth A. Ardoin, 2019
Senior Executive Vice President – Director of Communications, IBERIABANK, Lafayette, LA

Lampkin Butts, 2020
President and Chief Operating Officer, Sanderson Farms, Inc., Laurel, MS

Appointed by the Board of Governors

Art E. Favre, 2018
President and Chief Executive Officer, Performance Contractors, Inc., Baton Rouge, LA

G. Janelle Frost, 2019
President and Chief Executive Officer, AMERISAFE, Inc., DeRidder, LA

Michael E. Hicks, 2020
President and Chief Executive Officer, Hixardt Technologies, Inc., Pensacola, FL

District 7–Chicago

Class A

William M. Farrow, 2018
Former President and Chief Executive Officer, Urban Partnership Bank, Chicago, IL

Abram A. Tubbs, 2019
Chairman and Chief Executive Officer, Ohnward Bank & Trust, Cascade, IA

David W. Nelms, 2020
Chairman, Discover Financial Services, Riverwoods, IL

Class B

Susan M. Collins, 2018
Professor of Public Policy and Economics, University of Michigan, Ann Arbor, MI

Jorge Ramirez, 2019
Managing Director, GCM Grosvenor, Chicago, IL

Wright L. Lassiter III, 2020
President and Chief Executive Officer, Henry Ford Health System, Detroit, MI

Class C

Greg Brown, 2018
Chairman and Chief Executive Officer, Motorola Solutions, Inc., Chicago, IL

Anne R. Pramaggiore, 2019
Senior Executive Vice President, Exelon Corp., and *Chief Executive Officer*, Exelon Utilities, Chicago, IL

E. Scott Santi, 2020
Chairman and Chief Executive Officer, Illinois Tool Works Inc., Glenview, IL

Detroit Branch

Appointed by the Federal Reserve Bank

Rip Rapson, 2018
President and Chief Executive Officer, The Kresge Foundation, Troy, MI

Michael L. Seneski, 2019
Chief Financial Officer, Credibly, Troy, MI

Sandy K. Baruah, 2020
President and Chief Executive Officer, Detroit Regional Chamber, Detroit, MI

Sandra E. Pierce, 2020
Chairman and Senior Executive Vice President, Private Client Group and Regional Banking Director, Huntington Michigan, Southfield, MI

Appointed by the Board of Governors

James M. Nicholson, 2018
Co-Chairman, PVS Chemicals, Inc. Detroit, MI

Linda P. Hubbard, 2019
President and Chief Operating Officer, Carhartt, Inc., Dearborn, MI

Joseph B. Anderson, Jr., 2020
Chairman and Chief Executive Officer, TAG Holdings, LLC, Wixom, MI

District 8–St. Louis

Class A

Patricia L. Clarke, 2018
President and Chief Executive Officer, First National Bank of Raymond, Raymond, IL

D. Bryan Jordan, 2019
Chairman, President, and Chief Executive Officer, First Horizon National Corporation, Memphis, TN

Elizabeth G. McCoy, 2020
President and Chief Executive Officer, Planters Bank, Hopkinsville, KY

Class B

Daniel J. Ludeman, 2018
President and Chief Executive Officer, Concordance Academy of Leadership, St. Louis, MO

Alice K. Houston, 2019
Chief Executive Officer, HJI Supply Chain Solutions, Louisville, KY

John N. Roberts III, 2020
President and Chief Executive Officer, J.B. Hunt Transport Services, Inc., Lowell, AR

Class C

Suzanne Sitherwood, 2018
President and Chief Executive Officer, Spire Inc., St. Louis, MO

Kathleen M. Mazzarella, 2019
Chairman, President, and Chief Executive Officer, Graybar Electric Company, Inc., St. Louis, MO

James M. McKelvey, Jr., 2020
Chief Executive Officer, Invisibly, St. Louis, MO

Little Rock Branch

Appointed by the Federal Reserve Bank

Jeff Lynch, 2018
President and Chief Executive Officer, Eagle Bank and Trust, Little Rock, AR

R. Andrew Clyde, 2019
President and Chief Executive Officer, Murphy USA Inc., El Dorado, AR

Keith Glover, 2020
President and Chief Executive Officer, Producers Rice Mill, Inc., Stuttgart, AR

Karama Neal, 2020
Chief Operating Officer, Southern Bancorp Community Partners, Little Rock, AR

Appointed by the Board of Governors

Robert Martinez, 2018
Owner, Rancho La Esperanza, De Queen, AR

Millie A. Ward, 2019
President, Stone Ward, Little Rock, AR

Vickie D. Judy, 2020
Chief Financial Officer and Vice President, America's Car-Mart, Inc, Bentonville, AR

Louisville Branch

Appointed by the Federal Reserve Bank

Ben Reno-Weber, 2018
Co-Founder, MobileServe, Louisville, KY

Patrick J. Glotzbach, 2019
President and Chief Executive Officer, New Independent Bancshares, Inc., Charlestown, IN

Emerson M. Goodwin, 2020
Corporate Regional Director, ARcare d/b/a KentuckyCare, Paducah, KY

Blake B. Willoughby, 2020
President, First Breckinridge Bancshares, Inc., Irvington, KY

Appointed by the Board of Governors

Susan E. Parsons, 2018
Chief Financial Officer, Secretary, and Treasurer, Koch Enterprises, Inc., Evansville, IN

Randy W. Schumaker, 2019
Former President and Chief Management Officer, Logan Aluminum, Inc., Russellville, KY

Sadiqa N. Reynolds, 2020
President and Chief Executive Officer, Louisville Urban League, Louisville, KY

Memphis Branch

Appointed by the Federal Reserve Bank

Julianne Goodwin, 2018
Owner, Express Employment Professionals, Tupelo, MS

J. Brice Fletcher, 2019
Chairman, First National Bank of Eastern Arkansas, Forrest City, AR

Michael E. Cary, 2020
President and Chief Executive Officer, Carroll Bank and Trust, Huntingdon, TN

Michael Ugwueke, 2020
President and Chief Executive Officer, Methodist Le Bonheur Healthcare, Memphis, TN

Appointed by the Board of Governors

Eric D. Robertson, 2018
President, Community LIFT Corporation, Memphis, TN

Carolyn Chism Hardy, 2019
President and Chief Executive Officer, Chism Hardy Investments, LLC, Collierville, TN

David T. Cochran, Jr., 2020
Partner, CoCo Planting Co., Avon, MS

District 9–Minneapolis

Class A

Randy L. Newman, 2018
Chairman and Chief Executive Officer, Alerus Financial, NA & Alerus Financial Corp., Grand Forks, ND

Catherine T. Kelly, 2019
Regional President, PNC Bank, Minneapolis-St. Paul, Minneapolis, MN

Thomas W. Armstrong, 2020
President, First National Bank of Park Falls, Park Falls, WI

Class B

Christine E. Hamilton, 2018
Managing Partner, Christiansen Land and Cattle, Ltd., Kimball, SD

David R. Emery, 2019
Chairman and Chief Executive Officer, Black Hills Corporation, Rapid City, South Dakota

Kathleen Neset, 2020
President, Neset Consulting Service, Tioga, ND

Class C

Harry D. Melander, 2018
President, Minnesota Building and Construction Trades Council, St. Paul, MN

Kendall J. Powell, 2019
Retired Chairman, General Mills, Inc., Minneapolis, MN

Srilata Zaheer, 2020
Dean, Carlson School of Management, University of Minnesota, Minneapolis, MN

Helena Branch

Appointed by the Federal Reserve Bank

Barbara Stiffarm, 2018
Executive Director, Opportunity Link, Inc., Havre, MT

Norma Nickerson, 2019
Director, Institute for Tourism & Recreation Research, University of Montana, Missoula, MT

William E. Coffee, 2020
Chief Executive Officer, Stockman Financial Corporation, Billings, MT

Appointed by the Board of Governors

Marsha Goetting, 2018
Professor and Extension Family Economics Specialist, Montana State University, Bozeman, MT

Sarah Walsh, 2020
Chief Operating Officer, PayneWest Insurance, Helena, MT

District 10–Kansas City

Class A

Mark A. Zaback, 2018
President and Chief Executive Officer, Jonah Bank of Wyoming, Casper, WY

Gregory Hohl, 2019
Chairman and President, Wahoo State Bank, Wahoo, NE

Patricia J. Minard, 2020
President and Chief Executive Officer, Southwest National Bank, Wichita, KS

Class B

Brent A. Stewart, Sr., 2018
President and Chief Executive Officer, United Way of Greater Kansas City, Kansas City, MO

Douglas J. Stussi, 2019
Executive Vice President and Treasurer, Love's Travel Stops & Country Stores, *Managing Director*, Love Family Office, Oklahoma City, OK

Lilly Marks, 2020
Vice President for Health Affairs, University of Colorado and Anschutz Medical Campus, Aurora, CO

Class C

Steve Maestas, 2018
Chief Executive Officer, Maestas Development Group, Albuquerque, NM

Rose M. Washington, 2019
Executive Director, Tulsa Economic Development Corporation, Tulsa, OK

James C. Farrell, 2020
President and Chief Executive Officer, Farmers National Company, Omaha, NE

Denver Branch

Appointed by the Federal Reserve Bank

Edmond Johnson, 2018
President and Owner, Premier Manufacturing Inc., Frederick, CO

Katharine W. Winograd, 2018
President, Central New Mexico Community College, Albuquerque, NM

Jeffrey C. Wallace, 2019
Chief Executive Officer, Wyoming Bank & Trust, Cheyenne, WY

Ashley J. Burt, 2020
President and Chief Executive Officer, The Gunnison Bank and Trust Company, Gunnison, CO

Appointed by the Board of Governors

Richard L. Lewis, 2018
President and Chief Executive Officer, RTL Networks, Inc., Denver, CO

Taryn Edwards, 2019
Senior Vice President, Saunders Construction, Englewood, CO

Denny Marie Post, 2020
Chief Executive Officer, Red Robin International, Greenwood Village, CO

Oklahoma City Branch

Appointed by the Federal Reserve Bank

Michael C. Coffman, 2018
Retired President and Chief Executive Officer, Panhandle Oil and Gas, Inc., Oklahoma City, OK

Susan Chapman Plumb, 2019
Board Chair and Chief Executive Officer, Bank of Cherokee County, Tahlequah, OK

Christopher C. Turner, 2019
President and Chief Financial Officer, The First State Bank, Oklahoma City, OK

Dana S. Weber, 2020
President and Chief Executive Officer, Webco Industries, Inc., Sand Springs, OK

Appointed by the Board of Governors

Tina Patel, 2018
Chief Financial Officer, Promise Hotels, Inc., Tulsa, OK

Clint D. Abernathy, 2019
President, Abernathy Farms, Inc., Altus, OK

Katrina Washington, 2020
Owner, Stratos Realty Group LLC, Oklahoma City, OK

Omaha Branch

Appointed by the Federal Reserve Bank

Brian D. Esch, 2018
President and Chief Executive Officer, MNB Bank, McCook, NE

Thomas J. Henning, 2018
President and Chief Executive Officer, Cash-Wa Distributing Co., Kearney, NE

Annette Hamilton, 2019
Chief Operating Officer, Ho-Chunk, Inc. Winnebago, NE

Dwayne W. Sieck, 2020
President and Chief Operating Officer, Mutual of Omaha Bank, Omaha, NE

Appointed by the Board of Governors

Kimberly A. Russel, 2018
President and Chief Executive Officer, Bryan Health, Lincoln, NE

John F. Bourne, 2019
Retired International Representative, International Brotherhood of Electrical Workers, Omaha, NE

Eric L. Butler, 2020
Retired Executive Vice President and Chief Administrative Officer, Union Pacific Railroad, Omaha, NE

District 11–Dallas

Class A

Allan James Rasmussen, 2018
President and Chief Executive Officer, HomeTown Bank, N.A., Galveston, TX

J. Russell Shannon, 2019
President and Chief Executive Officer, National Bank of Andrews, Andrews, TX

Christopher C. Doyle, 2020
President and Chief Executive Officer, Texas First Bank, Texas City, TX

Class B

Ann B. Stern, 2018
President and Chief Executive Officer, Houston Endowment Inc., Houston, TX

Curtis V. Anastasio, 2019
Chairman, GasLog Partners L.P., San Antonio, TX

Gerald B. Smith, 2020
Chairman and Chief Executive Officer, Smith, Graham & Company Investment Advisors, L.P., Houston, TX

Class C

Greg L. Armstrong, 2018
Chairman, Plains All American Pipeline L.P., Houston, TX

Matthew K. Rose, 2019
Executive Chairman, BNSF Railway Company, Fort Worth, TX

Mary E. Kipp, 2020
President and Chief Executive Officer, El Paso Electric Company, El Paso, TX

El Paso Branch

Appointed by the Federal Reserve Bank

William Serrata, 2018
President, El Paso Community College, El Paso, TX

Paul L. Foster, 2019
President, Franklin Mountain Management, LLC, El Paso, TX

Sally A. Hurt-Deitch, 2020
Group President/Chief Executive Officer El Paso Rio Grande Valley, The Hospitals of Providence/Tenet, El Paso, TX

Teresa O. Molina, 2020
President, First New Mexico Bank, Deming, NM

Appointed by the Board of Governors

Renard U. Johnson, 2018
President and Chief Executive Officer, Management & Engineering Technologies International, Inc. (METI, Inc.), El Paso, TX

Julio Chiu, 2019
Founder and Chief Executive Officer, SEISA Medical, Inc., El Paso, TX

Richard D. Folger, 2020
Managing General Partner, Colbridge Partners Ltd., Midland, TX

Houston Branch

Appointed by the Federal Reserve Bank

David Zalman, 2018
Chairman and Chief Executive Officer, Prosperity Bancshares, Houston, TX

Darryl L. Wilson, 2019
Vice President and Chief Commercial Officer, General Electric Company, Houston, TX

Albert Chao, 2020
President and Chief Executive Officer, Westlake Chemical Corp., Houston, TX

Gina Luna, 2020
Chief Executive Officer, Luna Strategies, LLC, Houston, TX

Appointed by the Board of Governors

Janiece Longoria, 2018
Chairman, Port Commision of the Port of Houston Authority, Houston, TX

Marcus A. Watts, 2019
President, The Friedkin Group, Houston, TX

Cynthia Taylor, 2020
President and Chief Executive Officer, Oil States International Inc., Houston, TX

San Antonio Branch

Appointed by the Federal Reserve Bank

Alfred B. Jones, 2018
President and Director, American Bank Holding Corp., Corpus Christi, TX

Charles E. Amato, 2019
Chairman and Co-Founder, Southwest Business Corp. (SWBC), San Antonio, TX

Paula Gold-Williams, 2020
President and Chief Executive Officer, CPS Energy, San Antonio, TX

Robert L. Lozano, 2020
President/Owner, Lynn Lee Inc./Dairy Queen, Pharr, TX

Appointed by the Board of Governors

Jesús Garza, 2018
Retired President and Chief Executive Officer, Seton Healthcare Family, Austin, TX

James Conrad Weaver, 2019
Chief Executive Officer, McCombs Partners, San Antonio, TX

Marie T. Mora, 2020
Professor of Economics and Associate Provost for Faculty Diversity, The University of Texas, Rio Grande Valley, Edinburg, TX

District 12–San Francisco

Class A

Peter S. Ho, 2018
Chairman, President, and Chief Executive Officer, Bank of Hawaii and Bank of Hawaii Corporation, Honolulu, HI

Steven R. Gardner, 2019
Chairman and Chief Executive Officer, Pacific Premier Bank, Irvine, CA

S. Randolph Compton, 2020
Chief Executive Officer and Co-Chair of the Board, Pioneer Trust Bank, N.A., Salem, OR

Class B

Steven E. Bochner, 2018
Partner, Wilson, Sonsini, Goodrich, & Rosati, P.C., Palo Alto, CA

Sanford L. Michelman, 2019
Chairman, Michelman & Robinson, LLP, Los Angeles, CA

Tamara L Lundgren, 2020
President and Chief Executive Officer, Schnitzer Steel Industries, Inc., Portland, OR

Class C

Alexander R. Mehran, 2018
Chairman and Chief Executive Officer, Sunset Development Company, San Ramon, CA

Barry M. Meyer, 2019
Retired Chairman and Chief Executive Officer, Warner Bros., *Founder and Chairman*, North Ten Mile Associates, Los Angeles, CA

Rosemary Turner, 2020
President, UPS North California District, Oakland, CA

Los Angeles Branch

Appointed by the Federal Reserve Bank

Ilyanne Morden Kichaven, 2018
Executive Director, Los Angeles, SAG-AFTRA, Los Angeles, CA

Luis Faura, 2018
President and Chief Executive Officer, C&F Foods, Inc., City of Industry, CA

Steven W. Streit, 2019
Founder, President, and Chief Executive Officer, Green Dot Bank and Green Dot Corporation, Pasadena, CA

Carl J.P. Chang, 2020
Chief Executive Officer, Redwood-Kairos Real Estate Partners and Pieology Pizzeria, Rancho Santa Margarita, CA

Appointed by the Board of Governors

Anita V. Pramoda, 2018
Chief Executive Officer, Owned Outcomes, Las Vegas, NV

James A. Hughes, 2019
Former Director and Chief Executive Officer, First Solar, Inc., Tempe, AZ

Robert H. Gleason, 2020
President and Chief Executive Officer, Evans Hotels, San Diego, CA

Portland Branch

Appointed by the Federal Reserve Bank

Stacey M.L. Dodson, 2018
Market President, Portland and Southwest Washington, U.S. Bank, Portland, OR

Steven J. Zika, 2019
Chief Executive Officer, Hampton Lumber, Portland, OR

Hilary K. Krane, 2020
Executive Vice President, Chief Administrative Officer, and General Counsel, Nike, Inc., Beaverton, OR

Cheryl R. Nester Wolfe, 2020
President and Chief Executive Officer, Salem Health Hospital and Clinics, Salem, OR

Appointed by the Board of Governors

Román D. Hernández, 2018
Partner, Troutman Sanders, LLP, Portland, OR

Anne C. Kubisch, 2019
President and Chief Executive Officer, The Ford Family Foundation, Roseburg, OR

Charles A. Wilhoite, 2020
Managing Director, Willamette Management Associates, Portland, OR

Salt Lake City Branch

Appointed by the Federal Reserve Bank

Susan D. Mooney Johnson, 2018
President Emeritus, Futura Industries, Clearfield, UT

Peter R. Metcalf, 2019
Founder, Brand Advocate, and Chief Executive Officer Emeritus, Black Diamond, Inc., Salt Lake City, UT

Park Price, 2020
Chief Executive Officer Emeritus and Chairman, Bank of Idaho, Idaho Falls, ID

Vacancy, 2020

Appointed by the Board of Governors

Arthur F. Oppenheimer, 2018
Chairman and Chief Executive Officer, Oppenheimer Companies, Inc., Boise, ID

Russel A. Childs, 2019
Chief Executive Officer and President, SkyWest, Inc., St. George, UT

Patricia R. Richards, 2020
President and Chief Executive Officer, SelectHealth, Inc., Murray, UT

Seattle Branch

Appointed by the Federal Reserve Bank

Cheryl B. Fambles, 2018
Chief Executive Officer, Pacific Mountain Workforce Development Council, Tumwater, WA

Andrew Wolff, 2019
Chief Financial Officer, International and Channel Development, Starbucks Coffee Company, Seattle, WA

Craig Dawson, 2020
President and Chief Executive Officer, Retail Lockbox, Inc., Seattle, WA

Laura Lee Stewart, 2020
President and Chief Executive Officer, Sound Community Bank and Sound Financial Bancorporation, Seattle, WA

Appointed by the Board of Governors

West Mathison, 2018
President, Stemilt Growers, LLC, Wenatchee, WA

Sophie Minich, 2019
President and Chief Executive Officer, Cook Inlet Region, Inc., Anchorage, AK

Elaine S. Couture, 2020
Executive Vice President and Chief Executive Officer, Washington and Montana Region, Providence St. Joseph Health, Spokane, WA

Reserve Bank and Branch Leadership

Each year, the Board of Governors designates one Class C director to serve as chair, and one Class C director to serve as deputy chair, of each Reserve Bank board. Reserve Banks also have a president and first vice president who are appointed by the Bank's Class C, and certain Class B, directors, subject to approval by the Board of Governors. Each Reserve Bank selects a chair for every Branch in its District from among the directors on the Branch board who were appointed by the Board of Governors. For each Branch, an officer from its Reserve Bank is also charged with the oversight of Branch operations.

Boston

Gary L. Gottlieb, MD, *Chair*

Phillip L. Clay, *Deputy Chair*

Eric S. Rosengren, *President and Chief Executive Officer*

Kenneth C. Montgomery, *First Vice President and Chief Operating Officer*

New York

Sara Horowitz, *Chair*

Denise Scott, *Deputy Chair*

John C. Williams, *President*

Michael Strine, *First Vice President*

Additional office at East Rutherford, NJ

Philadelphia

Brian M. McNeill, *Chair*

Phoebe Haddon, *Deputy Chair*

Patrick T. Harker, *President*

James D. Narron, *First Vice President*

Cleveland

Dawne S. Hickton, *Chair*

Dwight E. Smith, *Deputy Chair*

Loretta J. Mester, *President*

Gregory Stefani, *First Vice President*

Cincinnati

Valarie L. Sheppard, *Chair*

Gary Wagner, *Senior Regional Officer*

Pittsburgh

Stefani Pashman, *Chair*

Guhan Venkatu, *Senior Regional Officer*

Richmond

Margaret G. Lewis, *Chair*

Kathy J. Warden, *Deputy Chair*

Thomas I. Barkin, *President*

Becky C. Bareford, *First Vice President*

Baltimore

Susan J. Ganz, *Chair*

David E. Beck, *Senior Vice President and Baltimore Regional Executive*

Charlotte

Laura Y. Clark, *Chair*

Matthew A. Martin, *Senior Vice President and Charlotte Regional Executive*

Atlanta

Mike J. Jackson, *Chair*

Myron A. Gray, *Deputy Chair*

Raphael W. Bostic, *President*

Andre Anderson, *First Vice President*

Birmingham

Nancy C. Goedecke, *Chair*

Lesley McClure, *Vice President and Regional Executive*

Jacksonville

Christopher L. Oakley, *Vice President and Regional Executive*

Miami

Michael A. Wynn, *Chair*

Karen Gilmore, *Vice President and Regional Executive*

Nashville

Richard D. Holder, *Chair*

Lee C. Jones, *Vice President and Regional Executive*

New Orleans

G. Janelle Frost, *Chair*

Adrienne C. Slack, *Vice President and Regional Executive*

Chicago

Anne R. Pramaggiore, *Chair*

E. Scott Santi, *Deputy Chair*

Charles L. Evans, *President*

Ellen J. Bromagen, *First Vice President and Chief Operating Officer*

Additional office at Des Moines, IA

Detroit

Joseph B. Anderson, Jr, *Chair*

Theresa Chiang, *Office Manager and Branch Contact*

St. Louis

Kathleen M. Mazzarella, *Chair*

Suzanne Sitherwood, *Deputy Chair*

James Bullard, *President*

David A. Sapenaro, *First Vice President and Chief Operating Officer*

Little Rock

Millie A. Ward, *Chair*

Robert A. Hopkins, *Senior Vice President and Regional Executive*

Louisville

Susan E. Parsons, *Chair*

Nikki R. Jackson, *Senior Vice President and Regional Executive*

Memphis

Eric D. Johnson, *Chair*

Douglas G. Scarboro, *Senior Vice President and Regional Executive*

Minneapolis

Kendall J. Powell, *Chair*

Harry D. Melander, *Deputy Chair*

Neel T. Kashkari, *President*

Ron Feldman, *First Vice President*

Helena

Susan Woodrow, *Assistant Vice President and Branch Executive*

Kansas City

Rose M. Washington, *Chair*

Steve Maestas, *Deputy Chair*

Esther L. George, *President*

Kelly J. Dubbert, *First Vice President*

Denver

Richard L. Lewis, *Chair*

Alison Felix, *Vice President and Branch Executive*

Oklahoma City

Clint D. Abernathy, *Chair*

Chad R. Wilkerson, *Vice President and Branch Executive*

Omaha

Eric L. Butler, *Chair*

Nathan Kauffman, *Assistant Vice President and Branch Executive*

Dallas

Matthew K. Rose, *Chair*

Greg L. Armstrong, *Deputy Chair*

Robert S. Kaplan, *President*

Meredith N. Black, *First Vice President*

El Paso

Renard U. Johnson, *Chair*

Roberto A. Coronado, *Officer in Charge*

Houston

Marcus A. Watts, *Chair*

Daron D. Peschel, *Officer in Charge*

San Antonio

James Conrad Weaver, *Chair*

Blake Hastings, *Officer in Charge*

San Francisco

Alexander R. Mehran, *Chair*

Barry M. Meyer, *Deputy Chair*

Mary Daly, *President*

Mark A. Gould, *First Vice President*

Additional office at Phoenix, AZ

Los Angeles

Robert Gleason, *Chair*

Roger W. Replogle, *Regional Executive*

Portland

Román D. Hernández, *Chair*

Lynn Jorgensen, *Regional Executive*

Salt Lake City

Patricia R. Richards, *Chair*

Robin A. Rockwood, *Regional Executive*

Seattle

West Mathison, *Chair*

Darlene Wilczynski, *Regional Executive*

Leadership Conferences

Conference of Chairs

The chairs of the Federal Reserve Banks are organized into the Conference of Chairs, which meets to consider matters of common interest and to consult with and advise the Board of Governors. Such meetings, also attended by the deputy chairs, were held in Washington, D.C., on May 22–23, 2018 and November 13–14, 2018. The conference's executive committee members for 2018 are listed below.[1]

Conference of Chairs Executive Committee—2018

Rose M. Washington, *Chair*, Federal Reserve Bank of Kansas City

Kendall J. Powell, *Vice Chair*, Federal Reserve Bank of Minneapolis

Dawne Hickton, *Member*, Federal Reserve Bank of Cleveland

Conference of Presidents

The presidents of the Federal Reserve Banks are organized into the Conference of Presidents, which meets periodically to identify, define, and deliberate issues of strategic significance to the Federal Reserve System; to consider matters of common interest; and to consult with and advise the Board of Governors. The chief executive officer of each Reserve Bank was originally labeled governor and did not receive the title of president until the passage of the Banking Act of 1935. Consequently, when the Conference was first established in 1914 it was known as the Conference of Governors. Conference officers for 2018 are listed below.

Conference of Presidents—2018

Eric S. Rosengren, *Chair*, Federal Reserve Bank of Boston

Charles L. Evans, *Vice Chair*, Federal Reserve Bank of Chicago

Joel W. Werkema, *Secretary*, Federal Reserve Bank of Boston

Keri Trolson, *Assistant Secretary*, Federal Reserve Bank of Chicago

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[1] On November 14, 2018, the Conference of Chairs elected Kendall J. Powell, chair of the Federal Reserve Bank of Minneapolis, as chair of the conference's executive committee for 2019. The conference also elected Dawne S. Hickton, chair of the Federal Reserve Bank of Cleveland for 2018 as vice chair, and Phillip L. Clay, deputy chair of the Federal Reserve Bank of Boston for 2018, as the executive committee's third member.

Conference of First Vice Presidents

The Conference of First Vice Presidents of the Federal Reserve Banks was organized in 1969 to meet periodically for the consideration of operations and other matters. Conference officers for 2018 are listed below.[2]

Conference of First Vice Presidents—2018

Kelly J. Dubbert, *Chair*,
Federal Reserve Bank of
Kansas City

Michael Strine, *Vice Chair*,
Federal Reserve Bank of
New York

Erika Hamilton, *Secretary*,
Federal Reserve Bank of
Kansas City

Laura Forman, *Assistant Secretary*,
Federal Reserve Bank of
New York

[2] On December 5, 2017, the conference elected Kelly J. Dubbert, Federal Reserve Bank of Kansas City, as chair for 2018–19 and Michael Strine, Federal Reserve Bank of New York, as vice chair. The conference also elected Erika Hamilton, Federal Reserve Bank of Kansas City, as secretary and Laura Forman, Federal Reserve Bank of New York, as assistant secretary.

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