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FINANCING A GLOBAL GREEN NEW DEAL



UNITED NATIONS

A. Introduction

The transformation of banking has been at the heart of the financialized transition to a hyperglobalized world. The blending of retail and investment activities, the shift to packaging, repackaging and trading existing assets, the manufacture of new financial products and the drive to hide these activities from prying regulators have led to highly concentrated financial markets. These in turn are overseen by banks that indulge in speculative and often predatory practices and have grown in the process to become too big to fail. The global financial crisis revealed the extent of the waste and damage that financialized markets can generate, while previous chapters of this Report have noted that despite the proliferation of credit and the surge of cross-border capital flows, productive investment has suffered both in the private and public sectors. While some have argued that the reforms that have been implemented since the crisis have made the current system “safer, simpler and fairer” (FSB, 2017), this is debatable, with even those at the heart of the financial establishment still wary of the “lies of finance” (Carney, 2018).

However, while public policy has fallen short of the required response to the crisis, public banking is undergoing something of a renaissance. This is partly in response to concerns that private banking has failed to do enough for development, and partly in recognition of the positive role public banks have played in providing countercyclical finance. Many new public banks and funds have been established in the years following the global financial crisis, particularly in the developing world, while existing public banks are being strengthened and their roles expanded. Some new banks already dwarf the Bretton Woods institutions in their asset sizes, lending and spread. Can these banks become a locus for the big investment push required

to meet the 2030 Agenda and a Global Green New Deal?

Clearly, such public institutions would be the most direct way to increase the availability of development finance, especially to the developing world. But the paradox today is that while there is broad consensus that far more long-term finance is required to meet infrastructure needs and the Sustainable Development Goals (SDGs), the lead shareholders of the major multilateral financial institutions show little appetite to strengthen them. Rather, as noted in chapter II, the intention is to try to induce a significant scaling-up of private sector financing for infrastructure investment.

There are four points to note in order to transcend this paradox. First, capital that is patient and catalytic tends to be public, not private. Second, while the type of credit created by these banks is important, the amount also matters; and too few public banks are sufficiently funded. Third, the “rediscovery” of public banking must not end up with them being diverted towards private and speculative needs rather than productive ones; this requires a clear mandate that values social returns more than strictly financial returns. Fourth, and perhaps most important, the mere existence of public banks in name does not mean they are automatically “public” or developmental in impact: for this to occur, banks need to be articulated with other financial institutions in an overall system that supports inclusive and sustainable development. Thus far, some of the most striking responses to current challenges have come from public banks and funds in the South. Southern-led initiatives include the concerted creation and expansion of regional development banks and infrastructure funds; national banks that lend to investors at regional as well as

national levels; and the use of central banks to create, allocate and regulate credit to its most needed uses. Some Northern banks are also doing these, but much more is needed; and even the high-profile Southern initiatives need more support to live up to the high hopes held for them.

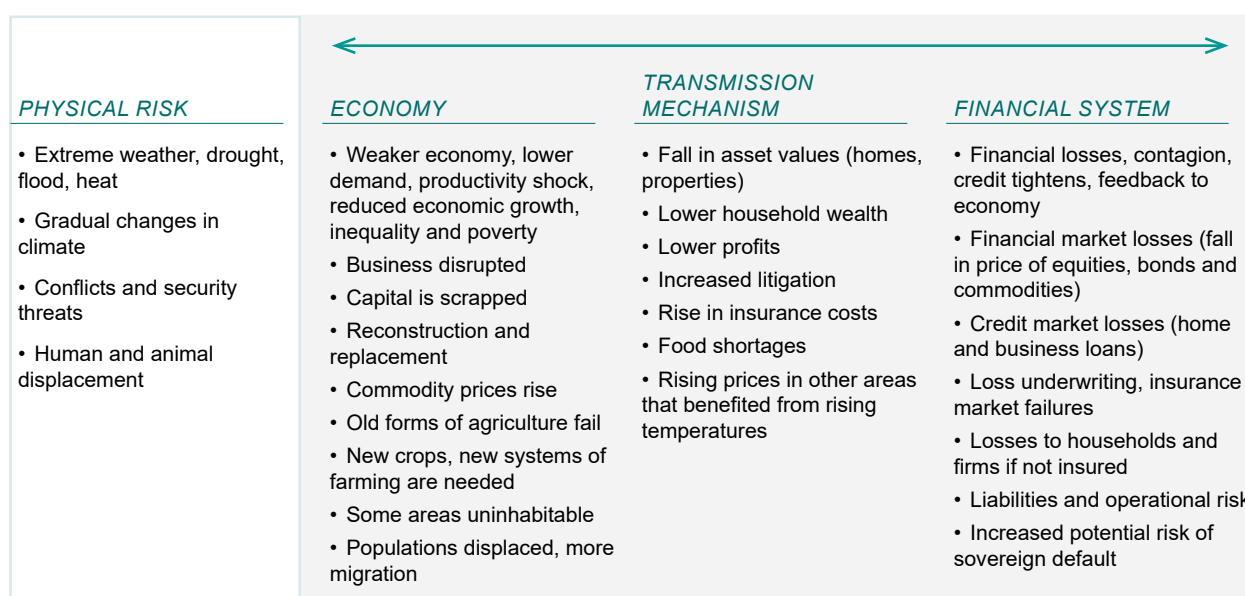
However, even as there is a growing chorus of voices in support of public banking, some countries are going in a different direction. In Brazil, for example, under the new federal government, the public development bank BNDES has recently come under pressure to pay back in advance the loans it has received from the national Treasury, which has been the bank’s main source of funding. The bank’s funding base could be further reduced under a new proposal to use national compulsory savings to support social security spending in Brazil. These measures would have an adverse impact on the ability of Brazil to finance long-term investments, since BNDES is currently responsible for financing over half of those over five-year long-term loans (Rossi, 2018). Meanwhile, in India, there are calls to privatize the state-owned banks.

Therefore, while for many the case for public banking is as strong as or stronger than it has ever been, efforts still need to be made to convince others of their benefits. This chapter aims to do that, highlighting some of the promising areas for public banking as

an important source of finance for a Global Green New Deal. It begins with a brief mapping of the public banking system and a reminder that this has worked best when nested within a well-articulated and development-oriented system of financial institutions (section B). Some current threats to this are highlighted, including new versions of securitization. Section C considers the supportive financing roles that can be played by central banks, national public banks, regional banks and other vehicles such as sovereign wealth funds (SWFs). This discussion leads to the conclusion (section D) that even in the current global environment, it is possible for developing countries to make better use of these powerful resources effectively and relatively quickly.

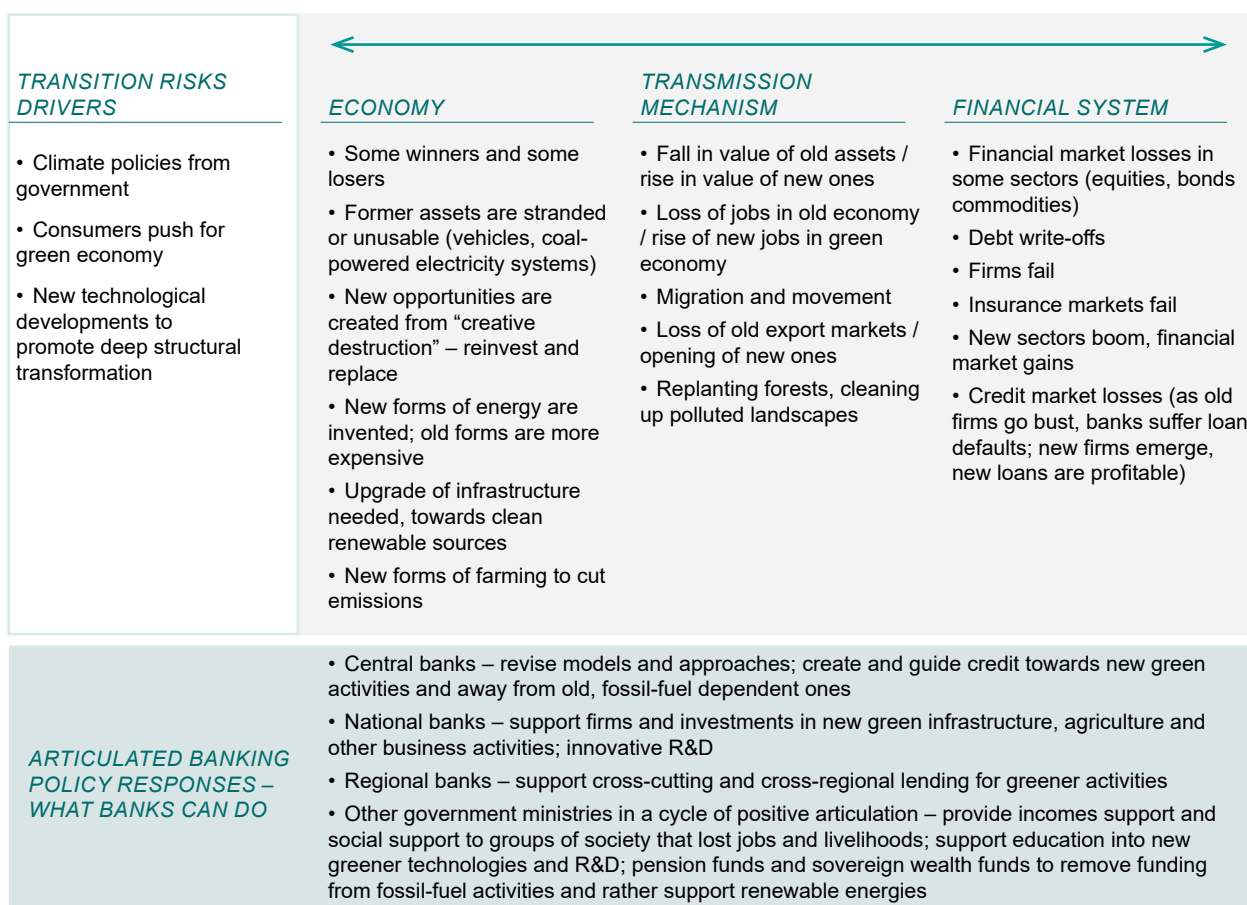
The significance of this is evident from figures 6.1 and 6.2, which describe the links between climate change and the financial system, and show how public banking can play an important role in financing climate-change mitigation and structural transformation. It illustrates the need for coherence between policy efforts to reduce carbon emissions on the one hand and the world of finance and investment on the other. If financial portfolios are not aligned with climate policies, there could be a “climate Minsky moment” where a rapid system-wide adjustment to climate change threatened financial stability, in addition to wider impacts on productivity and growth (Scott et al., 2017: 104).

FIGURE 6.1 Climate change causes a negative feedback cycle between economic and financial risk



Source: UNCTAD secretariat, expanding on NGFS, 2019; Campiglio et al., 2017; 2018; Scott et al., 2017; and Tooze, 2019.

FIGURE 6.2 The transition to a green economy causes different financial stability risks



Source: see figure 6.1.

B. Public banking for development

1. Mapping of the public banking system

The World Bank estimated in 2012 that state-owned public banks accounted for a quarter of the total assets in banking systems around the world, rising to 30 per cent for the European Union, and higher still for many developing countries (de Luna-Martínez and Vicente, 2012: 2). Some more recent studies find similar results, identifying close to 700 public banks around the world (defined conservatively), controlling some \$38 trillion worth of assets, equivalent to 48 per cent of global GDP and around 20 per cent of all bank assets (Marois, 2019: 155). These values would obviously be much larger if central banks, multilateral banks, pension funds and SWFs were also included.

Some of today’s public banks have long histories¹ but a number are very new, reflecting the recent reassessment of the role of public banking after

several decades when development banks in particular declined or were actively discouraged. As many as a quarter of the total number of public banks responding to the most recent World Bank survey were established since 2000.² Advanced economies are also re-emphasizing national development banks, showing that even in the deepest and broadest financial systems in the world there is still a need for government-supported public banking.³ National public banks are therefore to be found in most countries in all regions of the world.⁴

Much has changed at the regional and international levels as well, with the New Development Bank set up by the BRICS countries (Brazil, the Russian Federation, India, China and South Africa), the Asian Infrastructure Investment Bank (AIIB) and the Banco del Sur. Meanwhile, long-standing international banks such as the Islamic Development Bank and the Latin American Corporación Andina de Fomento

(CAF) have significantly increased their scale and scope. These new and existing Southern-led regional banks have the potential to expand the scale of finance available to developing countries and dwarf the older multilateral development banks (table 6.1).⁵

A second striking feature of the last decade is the establishment of new non-bank public financial institutions to support long-term investment, often working along with banks. These include public investors like SWFs that are capitalized by government (often from royalties earned by exports of commodities, but also sometimes with loans from the central bank or grants from the treasury) and in some cases have an explicit developmental mandate (table 6.2).

There are other public financial institutions that are beyond the scope of this chapter, which play an important role in the public-banking landscape. These include export–import finance institutions, guarantee institutions and insurance companies, all of which can incorporate banking functions and may work closely with banks; as well as the many smaller, often community- or enterprise-based public banks and mutual associations that contribute significantly to the diversity of the public banking system (e.g. Steinfert, 2019).

Five features determine the extent to which these public institutions can be catalytic and transformational, and thereby support inclusive growth and the SDGs:⁶

- A clear mandate to deliver sustainable development outcomes, to help regions or peoples most in need, and to support the development plans of the government. Ideally, social and economic returns should be valued beyond financial returns.
- Reliable and sufficient sources of finance, which determine the scale at which institutions can operate, and their ability to fulfil their mandate. Ideally, a solid infusion of finance should come from the central bank or treasury, since institutions that are heavily dependent on depositors or private capital markets (and therefore on credit-rating agencies) are more constrained in their lending patterns.
- Close and consistent articulation with other financial institutions in a network with the central bank at the apex, aligned with a developmental plan and supported by other policies (such as capital account management, trade, industrial, environmental and incomes policies, etc.).

- Performance monitoring that links public financial support with outcomes. Financial returns from loans and investments should not be the only or the most important goal; achieving long-term social and economic goals should be identified and prioritized.
- The need for banks and finance institutions to be more transparent and accountable in their activities, as well as more aware of particular social contexts, including gender constructions of society, other forms of discrimination and exclusion and possible human rights abuses.

a) *The contribution of public banking*

Public banking is clearly different in nature and orientation from both government budgetary finance and private banking. Compared with private banking, there is, first, typically a focus on projects for which the social and/or developmental benefits exceed the purely commercial returns; on projects with long or uncertain lead times; on sectors or locations where private finance will not go; and on borrowers who may be small, new, lack collateral or a credit history. Second, the expectation is that loans are offered under more favourable conditions than private or commercial banks, reflecting the initial government seed funding and public mandate. Third, costs are usually recovered, but not necessarily or always to their full extent, and repayment may occur over a longer time period. Some banks are expected to make a profit and others are not; but compared to private banks, profit is never supposed to be the sole measure of success.

These expectations and pressures are why public banks need to have sufficiently large initial capitalization from government and reliable and stable sources of funds over time. Many have to engage in a difficult balancing act, making profits on some projects and accepting losses on others, so that on average, costs are sufficiently recovered and the banks can remain viable. The inability to cover basic operating costs can affect lending practices, especially if it leads to such banks subsequently targeting more profitable activities and hence competing with private banks, rather than offering something distinctively different.⁷

Along a broad continuum of public and private financial institutions, public finance (based on tax revenues) rather than public banking is appropriate when risks and uncertainty are high (for example, projects with very long lead times or unpredictable processes) coupled with a low chance of recovering

TABLE 6.1 Public development banks: Selected characteristics

		Assets / Outstanding loans (Billions of dollars)	Distinctive features
Regional development banks^a		40.2	Southern regional banks are mostly owned by and directed towards the South, although some have minority Northern shareholders; loans are often concessional and non-conditional.
New Southern banks^b		249.4	
Multilateral^c	World Bank Group	300.0	Still dominantly controlled by major advanced countries, while loans are primarily to the South, and with conditions. Long-term loans including for infrastructure; new reforms for scaling-up include securitization (see box 6.1).
	African Development Bank; Asian Development Bank; Inter-American Development Bank	197.0	30–50% ownership by the global North; lending is regional.

Source: UNCTAD secretariat compilation.

Note:

- a** 2017 outstanding loans from the Trade and Development Bank, East African Development Bank, West African Development Bank, Central African States Development Bank, CAF, Caribbean Development Bank and Central American Bank for Economic Integration.
- b** Potential lending capacity of AIIB and New Development Bank based on banks' total equities and a loan-to-equity ratio of 5, plus China-backed investment funds, as reported in UNCTAD, 2018b.
- c** Bank's outstanding loans in 2016.

TABLE 6.2 Sovereign wealth funds: Selected characteristics

Region or Country group	Number of institutions	Assets (Billions of dollars)	Distinctive features
Africa	5	70.5	For the most part SWFs make portfolio choices similar to private investors, favouring investment in advanced economies and profitable sectors such as real estate, telecommunications and finance. A subset of funds invests in infrastructure, but many are disallowed from investing domestically, although this may be changing in some countries. A few significant exceptions have invested in regional infrastructure in developing countries. Patent-based SWFs are a new trend, with mixed potential.
Asia	15	3556.0	
Europe	2	81.6	
Latin America and the Caribbean	7	42.4	
Middle East	12	2612.8	
Total developing regions	41	6363.2	Most SWFs are funded through oil or commodity royalties, although a few were set up with export revenues or direct infusions from the national budget.
Developed economies	20	1532.1	Some of the first SWFs began in the United States in the 1800s, financed by oil revenues; however, many current funds are new, initiated after the 2008–2009 crisis.
Total	61	7895.3	

Source: UNCTAD secretariat, based on data from Sovereign Wealth Fund Institute, 2019. Includes SWFs with \$1 billion or more of total assets under management.

Note: Sums may vary from the total due to rounding.

costs (for example, public goods). At the other end of the continuum, private finance and private banking typically engage more when risks are lower and the chances of recovering costs are higher (for example, when service users can be excluded if they do not pay). Public banking occupies the space in between, the boundaries of which can be fluid, changing over time and with circumstances (as projects mature, or as infant industries grow).⁸

Ideally, a national banking system will contain a large number of different banking institutions distributed across the continuum, each with a different mandate, source of finance, performance indicators and role, thereby offering a broad menu of possibilities to meet the specific needs of different borrowers. National systems vary greatly with respect to this, even within regions, reflecting regulatory frameworks and historical contexts. For example, Germany has a more diverse range of banking entities compared to its fellow members of the European Union, with different types of institutions, objectives and instruments. Consequently, it has avoided the general trend of concentration seen elsewhere.⁹ In addition to the well-known KfW development bank, first created in 1948 to support post-Second World War reconstruction efforts and still very active, there are another 16 development banks and 1,200 cooperative banks.¹⁰ Such diversity is also found in some late industrializers like the Republic of Korea. In addition to the ability to cater to different types of customers, this can add to the ability of public banks to form partnerships and co-financing with other public and private financing institutions that can also offer technical expertise and management skills.

2. *Articulation challenges for public banking*

Public banking is most effective when it is part of a closely integrated framework that can articulate relationships between central banks, governments and other financial institutions. The rapid industrializers of East Asia, who transformed their economies (thanks, in part, to their governments' ability to create, guide and allocate finance to new industries) had the central bank at the apex of their financial systems, following the model set by Germany. These central banks worked closely with governments to design and implement policy; they were not "independent" nor confined simply to controlling inflation.

A typical argument against such involvement of central banks today is that they may become "captured" by vested interests, with credit directed in wasteful or damaging ways compared to market-determined outcomes, thereby undermining trust in the wider financial system. Successful industrializers have had systems to ensure that bank support is aligned with the developmental plan, with mechanisms for monitoring and ensuring feedback while remaining flexible enough to adapt to changing circumstances in the financing and implementation of projects. Critically, support from government was predicated upon performance, and failures were addressed quickly.¹¹

Central banks in such systems also closely regulated the financial sector as a whole, determining what was and what was not a bank, what banks could do, how much they could lend, and under what conditions. They therefore had the capacity to ration and direct credit, favouring sectors that were considered strategic or important for development and withdrawing the availability of credit (or making it more expensive) for activities that were not considered productive.

Today's policymakers operate in a very different, hyperglobalized and hyperfinancialized world. Hardly any government today would be able to pull off the record of countries such as the Republic of Korea, which in the 1970s could ensure that as much as 50 per cent of total credit available to investors was in the form of "policy-based" loans, subsidized and guided to support an agreed development strategy (UNCTAD, 2016; Cho and Kim, 1995). By contrast, it is more common today to find banking systems directed towards external capital and foreign investors rather than articulated with national development plans. Examples of this latter strategy (Thailand in Asia, and several Latin American countries, such as Mexico) did not manage to create the same process of domestic credit expansion linked to domestic industrialization (Epstein, 2015).

For public banks to play this kind of role today, a fundamental restructuring of the domestic financial architecture would be required in most countries, along with capital account regulation, as discussed in chapter V. Unfortunately, many countries have now opened their financial markets and locked such liberalization in through hundreds of trade and economic partnership agreements that restrict or exclude effective capital account management (Gallagher et al., 2019).

Some countries never liberalized to the same extent, including China, which now operates a new “consortia approach” to articulation (Gallagher, 2017). China continues to have a closely integrated national development strategy built around state-owned banks, but with increasing separation of roles for different actors. In the 1994 reforms of the Chinese banking system, three “policy banks” were established to “explicitly support the government’s policy objectives” so that the pre-existing “Big Four” Chinese Banks (Bank of China, China Construction Bank, Agricultural Bank of China, and Industrial and Commercial Bank of China) could concentrate on commercial lending and thereby be judged on market performance rather than public-oriented goals (Brautigam, 2009: 79). The China Development Bank (CDB) has operated with greater levels of autonomy and taken loan decisions in response to both local and wider requirements. The bank’s \$1.6 trillion loans primarily support investments related to the Five-Year Plans of China and around three quarters of its new loans are directed to eight priority areas.¹² The China Export-Import Bank makes \$422 billion worth of loans to facilitate the export and import of Chinese mechanical, electronic and high-tech products; to assist Chinese companies in offshore contracting and outward investment; and to promote international economic cooperation and trade (China Exim Bank, 2017).

On the funding side, a key feature of the banking system in China is the wholehearted support given to major public banks by the government, as reflected by the zero risk weight assigned to their bond issues by the regulator, similar to Treasury bonds. This allows them to access the markets at lower cost than would be the case otherwise, making it easier for them to provide finance to long-term projects (UNCTAD, 2016; Sanderson and Forsythe, 2013: 69–71). China has also created or co-created and contributed capital for two new multilateral development banks, the New Development Bank and the AIIB (see section C.3) as well as at least 13 additional bilateral and regional investment funds. This highly engaged stance is very different from that of most other countries, where public banking has adopted much narrower mandates, focusing closely on inflation and (with the notable exception of quantitative easing following the economic crisis) keeping mostly distant from government policy design and implementation (see section C.1).

The overall economic policy stance of government also matters: whether it is broadly expansionary and supportive of development or more focused on fiscal austerity. This impacts on public banking in many ways (see section C.5), including on banks’ ability to raise capital.

A particularly broad and deep articulation will be needed if current proposals to create a specialist global green bank, such as a World Carbon Bank (Rogoff, 2019), are to be effective. Such focused financial institutions could build up technical expertise and knowledge about new technology and business models for the green economy and coordinate aid and technical transfer between countries. Operating globally would probably require a network of associate institutions, similarly specializing in green lending, all of which could coordinate among themselves and with their shareholder governments. Moreover, focusing solely on climate-related investments opens the door to these (and existing) institutions being potentially financed in part by green-related taxes (such as a carbon tax)¹³ or other such revenue streams, which again requires close integration with member governments. Other global public-banking networks are already contributing to more globalized coordination in other ways, such as the newly founded Network for Greening the Financial System (NGFS), which is bringing together central banks and supervisors interested in research and advocacy activities to help scale up green finance. Many development banks are already part of broader associations at the regional or global level (the Global Network of Export–Import and Development Finance Institutions or G-NEXID and the Southern African Development Community-Development Finance Resource Centre or SADC-DFRC, among others) and there are further parallels whereby some Southern development banks, such as the Islamic Development Bank, are formally promoting links between member governments and their banks, in order to share technology and knowledge as well as finance.

3. *The dead weight of securitization*

This chapter does not focus much on the role of the World Bank, as there is a large literature on this already, and rather aims to focus attention on other new and emerging public players in developmental banking and public banking more generally. Nonetheless, the World Bank’s efforts to leverage

private finance for infrastructure are extremely important, not only for their own sake but also because they provide a guideline for other multilateral financial institutions, and more broadly are seen as the route to achieve the SDGs.

A favoured strategy is the “cascade approach” (WBG, 2017a, 2017b). Its first step is to try to mobilize commercial finance by inducing “upstream” reforms to address so-called market failures and other impediments to private-sector investment in host countries. If this is not sufficient to attract private investors, the second step is to provide subsidies to the private sector, in the form of guarantees and other approaches, such as securitization, to attract other investors (see box 6.1). Only when the first two steps are

exhausted as policy options is the third step taken, involving public and concessional finance, with an initial focus on infrastructure projects, followed by projects related to finance, education, health and agribusiness (WBG, 2017b). There are many concerns about this strategy, including its complexity, high transaction costs, the required upstream structural adjustments and, perhaps most significantly, the uneven distribution of benefits and costs. In short, as shown in box 6.1, securitization in particular is not a new story for banking, but its latest version is potentially very damaging. If the point of such procedures and instruments is to scale up capital for public banking, then it is worth noting that this can be done in other less risky ways, as explored in the next sections.

BOX 6.1 Risks of the march towards securitization

Securitization is being increasingly considered by multilateral development banks (MDBs) as a means to bring private investors into financing development. It involves pooling various types of contractual debt or other non-debt assets that generate returns and selling their associated cash flows to third-party investors. In the past, MDBs have directly sold loans from their balance sheets to private investors in order to free up capital to increase their loan operations. However, securitization can take different forms and a real concern is that MDBs are considering adopting some of its more complex forms, which can create both financial and reputational risks. In addition, securitization still involves a risk for the public sphere, if things go wrong. This can then hamper governments’ efforts to enhance (or restore) their public spending capacity to support the SDGs.

More complex forms of securitization can involve what are termed “synthetic” transactions. The African Development Bank (AfDB) has recently announced such a transaction between itself, private and public investors and a public fund. The deal transfers the credit risk associated with \$1 billion worth of AfDB non-sovereign infrastructure loans. It thereby reduces the amount of capital needed for the loans, and frees up \$650 million in lending capacity. The transaction is “synthetic” because the loans are not technically removed from the balance sheet of the AfDB. Rather, the private/public investors (Mariner Investment Group and Africa50) take on \$152.5 million of credit risk, while the European Commission’s European Fund for Sustainable Development provides an added \$100 million guarantee. In return, the investors and the European Commission Fund receive a fee for the risk they assume (AfDB, 2018; Hay, 2018; Allen, 2018).

Another elaborate form of securitization occurs when financial institutions remove loans from their balance sheets and put them into an external special purpose vehicle (SPV) that issues bonds that are sold to investors. This frees up further lending capacity of the bank, while the bond investors receive repayments from the original borrowers of the underlying loans. A key feature that can be found in that form of asset-backed securitization, which was at the heart of the global financial crisis of 2008–2009, involves the use of collateralized loan obligations (CLOs). These are financial instruments that enable loans to be sliced into tranches with different levels of seniority, thereby attracting investors with different risk profiles. As part of the menu of options to scale up finance for the SDGs, proposals have been made that securitization by MDBs could involve the use of CLOs (Arezki et al., 2016). One risk of this is that using this instrument to finance infrastructure projects could bring short-term capital to projects that are essentially long term, with attendant consequences.

Worryingly, the ongoing debate is not about weighing up the various risks involving different forms of securitization, but, instead, on how more complex forms of securitization by MDBs can attract private investors to projects in developing countries. The idea is to establish infrastructure firmly as an asset class for institutional investors seeking high risk-adjusted returns. Even the proponents of securitization by MDBs see an inherent ceiling to such transactions, as most MDBs extend loans to governments that are priced at subsidized rates. This makes it difficult to securitize since private investors use risk-based pricing (Humphrey, 2018b). To smooth the path to securitization, the G20, with the support of the OECD and the MDBs, has established a road map seeking to promote greater standardization in infrastructure loans through improved project development

(contractual and financial standardization, project preparation and data collection) and improved investment environment (financial engineering; risk allocation; mitigation, regulatory and capital market frameworks; and quality infrastructure projects) (OECD, 2018; G20 et al., 2018). These new project requirements introduce new layers of complexity and impose a further burden of high transaction costs on developing countries. They also draw on the limited administrative capacity that could probably be deployed more effectively in the real economy rather than in such financial engineering. Indeed, the required regulatory and capital market frameworks can even be inimical to the pursuit of autonomous development strategies (*TDR 2018*: chap. IV).

C. Patient and catalytic banking – the main institutions in the landscape of public banking

1. Central banks and a Global Green New Deal: A closer look

There is an extensive literature on the origins,¹⁴ evolution and functions¹⁵ of central banks. History suggests that in almost all successful development experiences, central banks have been significant in governments' efforts to foster structural transformation.

The Great Depression and the Second World War were watershed moments for central banks in the advanced world, as they extended their roles as guarantors of banking systems to financing war efforts and managing government debts accumulated during the war, rebuilding and restructuring national economies when the war ended and backstopping the fiscal commitment to full employment. These activities were closely articulated with national development goals and government macroeconomic policies. Central banks utilized a wide variety of techniques to guide credit to sectors and activities that the market would not have generated on its own. These included financing government debt at lower interest rates; reducing the flow of credit to less desired activities of the private sector; and promoting the allocation of resources to priority uses (Bezemer et al., 2018).

After the Second World War, in the postcolonial developing world, some central banks became agents of economic development (Epstein, 2006), often with “wide and flexible powers” (Bloomfield, 1957: 191). These included tools that had been used by Europe, Japan and the United States, such as selective credit controls, allowing special credit institutions catering to special needs, and influencing bank lending policies, with the aim “to re-channel real resources in desired directions, both within the public and

private sector and within the private sector itself” (Bloomfield, 1957: 198).

A different approach to central banking emerged in the 1980s as part of the broader pro-market Washington Consensus. This involved breaking various links with government: central banks should be independent of the government and therefore no longer be required to finance government deficits and specific activities; they should narrow their focus to price stability, with inflation targets; and they should use indirect methods of monetary policy such as short-term interest rates rather than direct methods such as credit ceilings or other tools that had been used extensively before. As a result of this transformed approach, over the period 1970–2012, in more than 180 countries, at least 270 changes in central bank policy involved tightening and narrowing their mandates (Garriga, 2016 and with updated data provided by the author). This also reduced diversity: now most central banks are more or less the same, whereas before they had very different policy stances reflecting their different economic sizes and contexts. The majority have made the conduct of monetary policy their dominant role, with the specific goal of maintaining price stability as measured by an inflation target. When other macroeconomic objectives are included, whether by law or extra-statutory practice, these are usually subordinated to the goal of price stability.

However, even this role can be interpreted relatively widely, as became evident following the financial crisis of 2008–2009, when central banks showed they could adapt and change dramatically when times were tough and political will forthcoming. Even those that had adopted narrow mandates for inflation targeting once again linked monetary and financial

stability with the real economy and created new money on a vast scale in order to boost demand and promote recovery after the crisis.

In the wake of this new-found central bank activism, there has recently been a wave of calls for them to respond to the challenge of climate change. Therefore, the question now is not so much whether central banks should use their role to support government policies for a Global New Deal, but rather how.

(a) Policy space for central banking

Despite the shift to more narrow central banking mandates, the space for broader goals and practices has not completely disappeared. A survey of 45 central banks (BIS, 2009) differentiated between 19 central banks whose sole objective is price stability; another 24 with secondary macro objectives; and three with multiple objectives in no order of priority. Even when price stability is the primary objective, there is scope for considering other objectives.

Financial stability is the second most dominant objective for central banks. Ninety per cent of the banks surveyed by the Bank for International Settlements (BIS) said they have full or shared responsibility for financial stability policy and oversight of the financial system. This objective of financial stability can be a challenge, partly because “there is (no) generally agreed way of measuring financial stability, which makes it especially difficult to identify how much financial stability is intended and whether the appropriate amount has been achieved” (BIS, 2009: 33)(see also Levine and Lima, 2015). There are also many different views on how to achieve it, as evident in research confirming the links between inequality and financial instability, or climate change and financial instability (NGFS, 2019; Rudebusch, 2019; Marois, 2019; Scott et al., 2017; Campiglio et al., 2018, among others).

The most obvious examples of central banks discovering greater “space” with regard to their policymaking capacities were after the 2008–2009 financial crisis, when the major advanced economies introduced a series of innovative, structured monetary policy tools that were quite unlike anything they had done in the preceding decades. This suggests they do have the ability to make the changes that would be needed for a Global Green New Deal, if sufficient political will can be found. Even central banks that focus just on inflation targeting have opened up to new tools,¹⁶

calling into question the so-called “independence” of central banks from government and reminding us of the benefits of the more engaged partnerships between banks and governments in the past.¹⁷

For some countries, the role of their central banks was never confined just to price stability or even financial stability alone, and the link with government policymaking never broken in the first place. As noted earlier, central banks actively and directly supported East Asian industrialization during the 1950s and 1960s (Amsden, 2001; UNCTAD, 2016) and more recent examples can be readily found in the developing and developed world – for example, the central bank in China has always aimed to consider government industrial policy objectives in a coordinated manner along with monetary ones.¹⁸

This reveals a very different view on central bank “independence” which is starting to be picked up elsewhere in the world as well (see for example Andersson and Claussen, 2017; Blanchard et al., 2013; Derviş, 2012; Epstein and Yeldan, 2008; Münchau, 2017; Rosengren, 2013). The main rationale for cutting the links between central banks and government was to keep central banks free from negative political interference, for example, by being pressured to set interest rates according to the electoral rather than the economic cycle. This focus on the negative synergies ignores the possibility of positive ones. Further, even in cases where the mandate of the central bank is restricted to just one goal and just one instrument, it is debatable whether the task can ever be purely technical. For one thing, much depends on the underlying models of the economy and how different elements are expected to respond. Changing one parameter or one data point can yield entirely different results, and such modelling is as much art as science. In any case, so-called technical decision-making has never been neutral, because different groups of people are always affected differently. Importers prefer highly valued currencies while exporters prefer lower values; savers expect high interest rates whereas property developers want them very low. Trading off or balancing these different interests therefore is not a technical decision but involves political decision-making and consideration of national goals, which means that elected officials need a voice alongside the appointed technocrats. At the very least, communication between the central bank and government can promote better coordination between monetary and fiscal policy, or at least give

rise to fewer contradictions. It also adds democratic legitimacy.

(b) Going green

With reference to a Global Green New Deal, central banks can play multidimensional roles, both directly and indirectly, acting in concert with other development financing institutions. In narrow terms, such a role would be defined as stabilizing: safeguarding the stability of the financial and economic system and smoothing out the economic and social upheavals caused by the “creative destruction” of a transformative shift to a greener economy. It could also be more ambitious and catalytic: working alongside government to create credit and guide the banking system to assist in the transformation of investment, production and consumption.

Some central banks already recognize that climate change could disrupt the effective functioning and stability of the financial system, including, as noted in the introduction, the Bank of England’s warning of a possible “climate Minsky moment” (Scott et al., 2017: 104). Storm or flood damage brings extreme insurance risks; stranded assets such as fossil-fuel reserves that can no longer be used can have a powerful negative impact on balance sheets. Climate-induced financial risks “could ultimately justify the implementation of measures aimed at mitigating them across all central banking operations” (Campiglio et al., 2018: 466). Moreover, policy stances can be taken under this rationale without changing the mandate of many central banks, although it would involve quite fundamental changes to the technical models and assumptions used to guide bank analysis and forecasting.

Some central bankers have already started viewing this problem technically as a “tragedy of the horizon” (Carney, 2015, in a reference to Coase’s famous “tragedy of the commons”). Most monetary stability policies have a two- to three-year time frame and financial stability policies have a ten-year time frame, but climate-change adaptation and transformation require many more years. The recent establishment of a central bankers’ Network for Greening the Financial System reflects these concerns,¹⁹ with some members already offering loans at below market rates to financial institutions to support green lending. Active policy changes are not confined to banks within the network: the Reserve Bank of India, Bangladesh Bank and Banque du Liban are among

a number of central banks already using minimum quotas and other tools to promote green lending (see table 6.3).

Policies that can be taken up by central banks, even without broadening their mandates include the following:

- New analytical approaches to macroeconomic modelling, more accurately incorporating exposure to climate change risks. Even for countries with limited direct exposure to fossil-fuel production, the broader exposure to carbon-intensive sectors can be large enough to pose systemic risk, as found in a Dutch national bank study (Vermeulen et al., 2018). Bank stress tests also need to measure such exposure.
- Full disclosure of risks. Most companies and investors are unaware of how exposed their portfolios are, and hence have little incentive to change. The Financial Stability Board Task Force for Climate-Related Financial Disclosures shows how companies could voluntarily disclose this information to better inform investors, lenders and underwriters; in France, this is a legal requirement of the Energy Transition Law. Indeed, central banks themselves need to disclose their own exposure in their own asset portfolios.
- Financial regulations and instruments in some cases currently go in the wrong direction, in that low-carbon investments are seen as being more experimental and risky, with lower liquidity and long lead times (Campiglio et al., 2018: 464). Central banks in charge of banking regulation could remove this bias. Some authors have suggested that institutions with carbon-intensive assets should be required to hold higher levels of capital, on the grounds that they will face higher risks and higher costs of transition. This is essentially a backdoor way of getting central banks to support greener lending without altering their narrow mandate. However, the Basel capital framework, which is based on risk assessment for capital determination, already involves some confusion and complexity; therefore, some caution is warranted in using capital allocation as a tool for this purpose (*TDR 2015*: chap. IV). Alternatively, capital could be used as a tool to incentivize credit to green sectors, not because they are more or less “risky” but because that is the direction governments have decided structural transformation should take. Similarly, institutions with less desired assets could be required to hold

TABLE 6.3 Central banks: Supporting the green economy

<i>Research and dissemination policy instruments</i>	<i>Practical implementation</i>	<i>Some current examples</i>
Assess climate-related financial risks	Understanding the impact of climate change on financial and real economy Develop and apply methodologies to identify and measure climate-risks to financial institutions	Reviews of impact of climate change on banks, insurance companies and financial institutions; Bank of England; Dutch National Bank; European Systemic Risk Board; Network for Greening the Financial System (NGFS)
Analytics and macro models of transition to low carbon	Modelling tools to assess wider impact of transition	A major gap in the literature and debate; currently, only private sector and academia
Support to educational activities on green finance	Research on green finance and growth, improve knowledge and cooperation Capacity-building and training (lack of expertise on environmental and sustainability risk is a major hurdle for the wider uptake of greener finance)	Bank of Bangladesh – banks are required to educate borrowers on environmental regulations G20 Green Finance Study Group, Bank of England and China bilateral collaboration on green finance Recommended by NGFS
Disclose climate-related financial risks	Enforce or encourage disclosure by firms and investors	Disclose investments in fossil fuels – California Department of Insurance FSB Task Force on Climate-related Financial Disclosures Disclose how portfolios align with climate targets – French Energy Transition Law (article 174, para. VI) Recommended by NGFS
Regulations and policy instruments to safeguard financial stability and promote structural transition to a lower carbon economy	Practical implementation	Some current examples
Environmentally aligned prudential and macroprudential regulations	Stress testing different financial instability scenarios, what would happen if there was a sudden re-pricing of carbon-intensive assets Include environmental concerns into prudential regulations	Bank of Brazil – requires commercial banks to stress test lending against environmental and social risks and hold additional capital against those risks
Active policies for credit allocation to green activities and sectors	Reduced reserve requirements on loans to environmentally friendly projects Placing caps on loan-to-value and loan-to-income for financing by commercial banks, depending on carbon-intensity of underlying activities Finer tuning by restricting lending by exposure to sector, location or counterparty Targeted lines offering refinancing for commercial banks at subsidized rates for priority sectors Mandatory or minimum quotas requiring banks to allocate a particular share of their portfolio to green sectors Maximum quotas for lending to carbon-intensive sectors Central bank support for development banks, including buying their equity and bonds and creating markets for their bonds	China Banking Regulatory Commission issued guidelines seeking to repress credit to carbon-intensive industries and encourage lending to green projects Bank of Lebanon – ‘greener’ commercial banks are allowed to hold lower reserves. Verified by the Lebanese Centre for Energy Conservation Bangladesh Bank – commercial banks and non-bank financial institutions required to allocate 5% of total loans to green sectors: green refinancing subsidies to renewable energy and energy efficiency Banco do Brazil – restrictions on lending in environmentally sensitive areas People’s Bank of China – preferential interest rates for green loans in particular regions. Reserve Bank of India – loans to renewable energy companies included in the bank’s Priority Sector Loans scheme. Quota: 40% of net commercial bank credit must be to support priority sectors Bank of Korea – fiscal policy used to support subsidies for low-interest rate loans for energy efficiency and renewable energy European Union support to Bank of Lebanon to provide subsidized loans for energy efficient and renewable energy loans; also longer maturity
Eligibility criteria	Include green criteria in evaluation of overall risk of an asset purchased or accepted as collateral	DNB, Norges Bank (but only for own purchase)
Green Quantitative Easing	Purchase green assets as part of quantitative easing Green bonds	European Investment Bank dedicates minimum of 25% of its lending to climate action projects
Other green activities – green bonds; guidelines for green finance	Support to development finance institutions issuing bonds, capacity-building Guidelines for greener finance can be created or supported (e.g. environment and sustainability risk management); make these mandatory or voluntary	Banks of Indonesia, India and China issued voluntary green lending guidelines Central banks helping to support green bond initiatives, including in China, India and Republic of Korea. Green bonds in many countries; some involve global banks also, such as IFC anchor investor with Bank of India

Source: UNCTAD secretariat, based on Scott et al., 2017; van Lerven, 2017; NEF, 2017; Campiglio et al., 2017, 2018; MPAG, 2019; NGFS, 2019; and central banks annual reports and publications.

more equity relative to debt. If this rejigging of regulations leads to an increase in the cost of financing high-carbon activities, this would indirectly guide lending towards low-carbon activities.

Some countries are already undertaking some of these measures. The central bank of Lebanon, Banque du Liban, differentiates reserve requirement ratios (the required ratio of central bank reserves held by private banks relative to their stock of deposits) according to the amount of bank lending that is directed to renewable energy and energy efficiency projects (Ministry of the Environment, Lebanon, 2014). The central bank of Brazil requires commercial banks to incorporate environmental risk factors into their governance framework and show how these risks are evaluated when calculating their capital needs (NEF, 2017). The People's Bank of China offers firms support for green financing (MPAG, 2019: 39). Similarly, in advanced economies, the European Union High-Level Expert Group on Sustainable Finance has suggested introducing “brown penalizing” or “green supporting” capital requirements, depending on the sustainability risks of borrowing sectors (European Commission, 2018; Thomä and Hilke, 2018). More generally, the European Commission proposed that the European Supervisory Agencies integrate environmental, societal and governance criteria into their general operations. This would enable them to understand and monitor how financial institutions identify, report and address the risks that climate change and the transition process poses to financial stability (European Commission, 2017). However, support for such measures requires compelling evidence that the exposure of the financial sector to these risks is sufficiently large – going back to the need for new analytical models and more climate stress testing and macro modelling, to show the financial risks associated with climate change.

(c) Green quantitative easing

Corporate bond purchases by central banks may currently favour large carbon-intensive companies, reflecting the fact they have relatively strong credit ratings and that low-carbon firms tend to be too small to issue corporate bonds (Campiglio et al., 2018). This process becomes self-reinforcing, because the market sees them as being less risky than other, less liquid bonds. To avoid “carbon lock-in” of the economic system, central banks could reduce or stop buying carbon-intensive financial assets and buy

low-carbon ones instead. Or they could introduce a parallel programme of purchasing new low-carbon financial assets, to help create liquidity for companies interested in shifting to clean green forms of production. The potential values are high – overall purchases by the European Central Bank in 2017 amounted to €730 billion, while the total additional annual investment needed to achieve European Union energy and climate targets is estimated to be one quarter of that (European Commission, 2018; Anderson, 2015). Central banks could also expand their purchases of green bonds, which represent a relatively new but expanding market, estimated to be worth some \$167 billion in 2018. The cumulated value of green bonds issued since 2007 is estimated to be just over \$520 billion, with most issued by the United States, followed by China and France (Climate Bonds Initiative, 2018).²⁰ While this is an encouraging start, more generally central banks could have a much bolder role and more fully support green bond issuing and green finance by public banks and governments (Tooze, 2019). Returning to the crucial role of a positive articulation between banks and government policy goals discussed in section B.2, the long-term nature of climate-change-related investments coupled with today's combination of low aggregate demand, historically low interest rates and the likely continuation of quantitative easing in many countries, make a case for funding a large part of this decarbonization drive through the issuance of long-term debt. It is not the business of central banks to issue such loans – the debts should be issued by public investment banks or directly by national governments. But it should be the job of central banks to support this push by acting as a buyer of last resort for those long-term debts.

One argument against this kind of strategy is that central banks have been using quantitative easing as a temporary, countercyclical stimulus, rather than the more strategic and long-term approach that a Global Green New Deal would require. However, quantitative easing does not look like ending any time soon. Another argument is that it would divert banks' attention from their main task of maintaining financial stability – although figures 6.1 and 6.2 argue it can be countered that green quantitative easing is precisely related to this. A third argument is that new “green bonds” would not meet the existing financial risk standards for being included in the list of eligible assets for central banks to purchase, which mostly includes investment-grade bonds with perceived low default risk. Purchasing green assets

could be riskier, especially if central banks lack the technical expertise to judge the relative merits of the technologies in question. Moreover, while the growth in green bonds may provide additional finance for the transformative investments needed, the trend is also for them to offer ever shorter maturities – the majority of the latest issuances are for five years and less, with only a small proportion offering the 10 years or more that is needed (Climate Bonds Initiative, 2018: 16). For these and other reasons, the idea of a green programme of quantitative easing has been rejected until now. However, something like this is already happening through the purchase of bonds issued by public-sector entities that finance low-carbon activities. While these particular policies may not be feasible for developing countries that are unable to follow quantitative-easing policies without risking exchange-rate and balance-of-payment crises, it is possible for green quantitative-easing policies in advanced countries to be used to support green investments in developing countries.

(d) Eligibility criteria and collateral frameworks

The list of assets considered eligible for purchase by central banks as part of their standard portfolio management is usually publicly available. Central banks could send a strong signal to the rest of the market as well as a practical financial boost, if they include assets that are more environmentally oriented or directed to a public investment push that is part of a Green New Deal. Some banks are already doing this, such as using green criteria for their own-account investments, having ethical criteria to decide foreign equity purchases or excluding coal-based firms from the government's pension fund portfolio (including the Dutch, Norwegian and Swiss national banks).

The same principle can be extended to central banks' collateral frameworks. Sometimes described as “the open secret of central banks” (Nyborg, 2017), the framework determines which assets financial institutions can pledge as collateral when they borrow from the central bank as well as the amount of money they can borrow against those assets. The criteria used to establish whether assets are eligible to be used as collateral or not, and then the difference between such assets' market value and their value as collateral, determines their attractiveness and thus their market price. In France, a change in central bank eligibility criteria led to an increase in the supply of credit to small and medium-sized firms that had

previously been considered ineligible, at a time when credit to other firms actually fell (Mésonnier et al., 2017).

2. Potential for national public banks

If central banks are the command centre of a country's banking system, then national public banks are the engine room – intimately involved in the heavy lifting. They can be distinctively different from private banks when they have developmental and/or socially oriented mandates, with related credit strategies. While they do need to ensure a sustainable business model, they usually have more leeway to target projects that generate positive externalities, to loan at submarket interest rates and to extend coverage to underserved areas and categories of borrowers. In addition, they can act countercyclically in times of crises when credit from private financial institutions becomes scarce. This countercyclical power is often more pronounced among public commercial banks than development banks, given the former's larger scale of operations in most countries where they exist.

National development banks (NDBs) are, in most instances, publicly owned and therefore are a subset of public banks. Although differences between them and other public banks are not always clear cut, they can be singled out by a few key characteristics: their more narrowly defined mandate to support socio-developmental projects, their equity participation in riskier and uncertain businesses but with potentially vast payoffs in the very long term, their in-house expertise and specialized knowledge, their track record of risk assessment and management of large and complex projects, and their special ability to finance long-term projects and bring in finance from other institutions.

In principle, NDBs are potent policy instruments, as they operate in market segments at the core of the process of structural transformation. Their main function is to address imperfect capital markets that are unwilling to bear the risks associated with extending finance to large-scale capital-intensive projects (or new sectors, products) characterized by high degrees of uncertainty, and long gestation and learning periods. As private investors cannot capture the positive externalities often generated from such projects, the result is underinvestment in these areas. NDBs can institutionally bridge asset–liability mismatches between long-term investment in infrastructure

projects and short-term deposits in the banking system. NDBs can also play a proactive role by utilizing their accumulation of research, technical support and institutional capabilities to shape and create markets, and acting as an investor of “first-resort” in anticipation of demand and in coordination of domestic supply responses (UNCTAD, 2016; Macfarlane and Mazzucato, 2018).

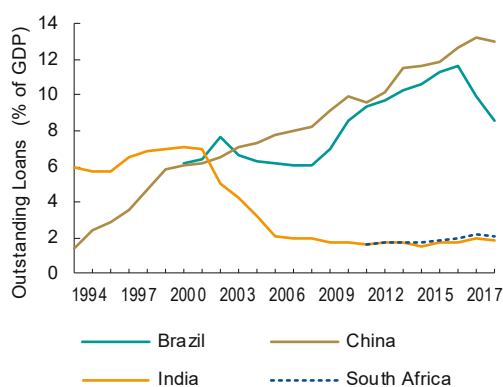
In practice, the effectiveness of some NDBs as a policy tool has been uneven and their role contested. With the rise of the Washington Consensus, NDBs became subjected to a more critical analysis. By the 2008–2009 financial crisis, however, as lending from private-sector banks dried up, NDBs regained prominence as key sources of long-term and countercyclical finance for investment in infrastructure, public facilities and strategic sectors. The crisis underscored the enduring importance of development finance, as policymakers began rethinking the role of NDBs in structural transformation and how to effectively wield them (Kozul-Wright and Poon, 2018).

Figure 6.3 shows how experiences with development finance at the national level can vary widely. In Brazil and China, the outstanding loans of NDBs increased significantly as a share of GDP. By contrast, NDB

loans in India stagnated at low levels over the past decade, having fallen dramatically from early 2000 levels. While data availability is more limited in the case of South Africa, the role of its NDBs has been steadily rising at least since 2010, but remains at a relatively low level.

Unlike most deposit-taking institutions, NDBs typically rely on broad-based and long-term funding, such as national treasury resources, debt securities and, in some instances, what might be termed “forced” or “compulsory” savings, for example when linked with workers’ savings programmes as in the case of Brazil.²¹ It is this funding base that gives them the ability to provide support to long-term, risky, innovative and complex projects that are essential for structural transformation. Their origins go back to late development efforts in continental Europe, where weak or non-existent capital markets constrained industrial and infrastructural development and monitoring mechanisms were missing for firms looking to borrow (Chandrasekhar, 2016; UNCTAD, 2016). These early examples provided the institutional template for countries mobilizing industrial finance for reconstruction and industrialization in the immediate post-Second World War period, such as the German KfW²² and the Japan Development Bank.²³

FIGURE 6.3 Role of national development banks, selected emerging countries, 1994–2017



Source: UNCTAD secretariat calculations, based on annual and financial reports of BNDES, CDB, IDC and DBSA (various years); Reserve Bank of India Handbook of Statistics on Indian Economy (various years); and International Monetary Fund International Financial Statistics.

Note: Brazil includes BNDES; China includes CDB; India includes ICICI, Industrial Development Bank of India, IFCI, National Bank for Agricultural and Rural Development, National Housing Bank, state finance corporations, Small industries Development Bank of India and India EXIM; South Africa includes Industrial Development Corp. (IDC) and Development Bank of Southern Africa (DBSA).

These experiences would shape state-led policy paradigms and practices in the early post-war period, as decolonization identified industrial development and infrastructure provision as key to structural transformation. For instance, the Korean Development Bank (KDB), established in 1954, initially used aid from the United States as its main source of funding, and extended credit to basic industries such as those producing fertilizer, cement and electricity, which were destroyed during the Korean War (Lee, 2017). BNDES, created in Brazil in 1952 with a different funding model, focused on financing infrastructure sectors like transportation and electricity generation, before switching to other sectors such as non-ferrous metals, chemicals, petrochemicals, paper, machinery and other industries in the 1960s and 1970s (UNCTAD, 2016).

One of the more significant risks of not relying on NDBs that can provide long-term finance for risky and long-term but socially desired projects, is that their functions get taken over by more problematic sources of finance, such as shadow banks (as described in box 6.2).

BOX 6.2 Shadow banking in China and India

Shadow banks, or financial institutions not considered to be primary depository institutions like banks subject to regulation but undertaking bank-like activities, are a significant presence in economies that have liberalized their financial sectors. They have in part become risk-burdened and fragile alternatives to public banks and development finance institutions, as the roles of the latter are reduced or done away with as part of liberalization. Not being subject to oversight and strict prudential regulation, these institutions tend to lend to and invest in areas banks either cannot enter because of restrictions or choose not to enter. As borrowed funds, often obtained using past acquisitions as collateral, are the main sources of funds for shadow banks, they transmit the risk inherent in their assets to the rest of the financial system. Shadow-banking activities tend to grow rapidly in environments in which, encouraged by financial liberalization and looking for higher return, banks have become important providers of finance to these institutions.

Two emerging markets where such growth has been marked are China and India. In China this was partly the result of the nature and sequencing of liberalization. On the one hand, even as policymakers were experimenting with liberalization, the core of the banking system remained regulated: for example, controls were maintained on loan volume and allocation; State-Owned Commercial Banks (SOCBs) preferred lending to State-Owned Enterprises (SOEs) instead of new and smaller private firms; and bank depositors had limited options, while bank deposit-rate ceilings and loan-rate floors were only liberalized in 2015 and 2013, respectively. Moreover, faced with a surge in local government borrowing, in 1994 the central government imposed a ban on budget deficits and bond sales at the local government level (UNCTAD, 2016: 29; Tobin and Volz, 2018: 11, 21). But the freedom to establish new non-banking financial institutions was exploited by local governments to set up local government financing vehicles that used borrowed funds to finance infrastructural and capital-intensive projects. Banks supported this “off-budget” borrowing, partly under pressure from local government leaders. Over time, on occasions when the central government found the need to “stimulate” the economy, it found these institutions to be convenient instruments to kick-start credit-financed spending, making them an important presence in the financial landscape.

In India, financial liberalization or “reform” led more directly to the growth of large shadow-banking institutions. With public spending limited by fiscal reform, the government chose to rely on public–private partnerships and private investment in crucial infrastructural areas. With the private sector unwilling to risk too much of its own capital in these ventures, they needed to be backed with credit. Coincidentally, this was a period when as a part of reform, Indian policymakers decided to wind down the activities of the specialized development financing institutions that had been established in the years of planned development. Two of the most important such institutions were transformed into conventional commercial banks. One way in which this absence of financing sources for large projects was addressed was the creation, with public bank investments in equity, of institutions that were to be run on commercial lines but with a development financing mandate. An example was the infrastructure financier Infrastructure Leasing and Financial Services (IL&FS) (Chandrasekhar and Ghosh, 2019), which sourced capital using short-term instruments such as commercial paper to fund long-term investments. This maturity mismatch did not prove to be a problem at first, because of the presumption that being a government-sponsored entity it enjoyed a sovereign guarantee. One third owned by state-owned financial entities, IL&FS was one of the largest issuers of commercial paper and enjoyed a triple-A credit rating. However, by late August 2018, the company suffered a series of bond defaults by group entities, leading to a change in management, legal proceedings and a painful restructuring of the company, which is still under way.

In the 1980s and 1990s, policymakers shifted their attention to external sources of finance, with a greater emphasis on private capital flows and private foreign and domestic enterprises, along with conditional aid from donor governments and MDBs. With financial liberalization as part of structural adjustment programmes, and changes in the role of central banks as described above, many national public banks in developing countries were scaled down or retasked, privatized or simply shut down. Today, the public banks that remain are generally more commercially oriented than has historically been the case.

An analysis of 13 national public commercial and development banks from nine countries – Brazil, China, India, Malaysia, Mexico, the Republic of Korea, the Russian Federation, South Africa and Turkey – shows a diverse group of banks in terms of degree of public ownership, funding sources and loan patterns. It emerges that patterns of ownership and funding affect the nature of lending. The three largest such lenders – CDB in China, KDB in the Republic of Korea and BNDES in Brazil – are wholly state owned and their funding is mostly based on long-term liabilities. Consequently, it appears from

information in banks' annual reports, that as much as 83–100 per cent of their total loans goes to productive sectors and a significant share goes to infrastructure: at least 70 per cent of CDB loans and 38 per cent of BNDES loans do so.

At the same time, banks that mainly rely on customer deposits have a lower focus on infrastructure projects, even if they have a relatively high proportion of loans to productive sectors. They tend to have a higher share of loans with medium-term maturities

TABLE 6.4 Selected developing country public banks: Loans and institutional features. 2017

	<i>National Development Bank (NDB)</i>	<i>Country</i>	<i>Outstanding loans (net \$ millions)</i>	<i>Outstanding loans (% of GDP)</i>	<i>Distribution of loans to productive sectors (% of total loans)^b</i>	<i>Loans as instrument (% of total assets)</i>	<i>Primary source of funding (% of total liabilities and equity)</i>	<i>State Ownership (%)</i>
1	China Development Bank (CDB)	China	1.634.820	13.4	100.0	66.7	Debt securities (52.9%)	Wholly
2	Korean Development Bank (KDB)	Korea	159.999 ^a	10.5	90.1	54.3	Debt securities (30.3%)	Wholly
3	Brazilian Development Bank (BNDES)	Brazil	190.287 ^a	9.3	83.4	63.3 ^c	National treasury (43.8%)	Wholly
4	Halkbank	Turkey	54.379	6.4	84.6	65.8	Customer deposits (61.9%)	Majority (51.1%)
5	Vakıfbank	Turkey	49.825	5.9	58.5	67.4	Customer deposits (53.0%)	Majority (58.5%)
6	Export-Import Bank of China	China	421.884	3.4	n/a	75.4	Debt securities (67.9%)	Wholly
7	Bank of Development and Foreign Economic Affairs (Vnesheconombank)	Russia	30.972	2.0	53.0	52.8	Debt securities (31.8%)	Wholly
8	Development Bank of Southern Africa (DBSA)	South Africa	6.383 ^a	1.8	89.1	85.5	Debt securities (44.7%)	Wholly
9	Bank Pembangunan Malaysia Berhad (BPMB)	Malaysia	4.863	1.5	90.3	73.1	Customer deposits (30.2%)	Wholly
10	Industrial Development Bank of India (IDBI)	India	37.809 ^a	1.4	77.3	52.7	Customer deposits (74.2%)	Majority (74%)
11	Industrial Development Corp. (IDC)	South Africa	3.796 ^a	1.1	82.3	20.5	Equity (67.3%)	Wholly
12	National Bank for Agriculture and Rural Development (NABARD)	India	28.244	1.1	100.0	80.3	Customer deposits (61.8%)	Wholly
13	National Financial (NAFIN)	Mexico	11.190	1.0	30.0	42.9	Customer deposits and securities (47.8%)	Wholly

Source: UNCTAD secretariat calculations, based on banks' annual and financial reports.

Note:

a Figures include equity investments in associates. The figure for DBSA also includes development bonds.

b Loans to all agriculture, industry (including infrastructure), and services (sub)sectors, except for: financial and insurance institutions; real estate; tourism; accommodation, dining and catering services; housing; personal service activities; and consumer loans and credit cards.

c Includes bank loans and on-lending operations.

(as opposed to long-term maturities) possibly due to their generally short-term funding. The majority state-owned commercial Halkbank in Turkey relies on customer deposits with a maturity of less than one year and its infrastructure-related lending is only 24 per cent of its total exposure. Likewise, Vakıfbank, another majority state-owned commercial bank from Turkey that relies on short-term deposits, provides only 21 per cent of its total loans to infrastructure sectors.²⁴

A further consequence of the financial liberalization-cum-privatization reforms of the 1990s was descaling and a loss in focus of banks that were previously designed for development lending. The Industrial Development Bank of India (IDBI) is a case in point. Created in 1964, IDBI was until the 1990s a leading financial institution, providing finance to all major industries and playing a catalytic role in the industrial and infrastructure development of India. As an apex institution, it supported the creation of other development finance institutions and helped to coordinate their activities. However, in the early 1990s it was commercialized and part of its ownership was sold to the private sector; and since the 2000s it has transformed into a universal bank, which includes retail lending. As a result, IDBI currently does not do development lending and also has a drastically reduced loan and equity portfolio, equivalent to just 1.4 per cent of the GDP of India, compared with BNDES' portfolio corresponding to 9.3 per cent of the GDP of Brazil (see table 6.4).

Challenges facing public banks and how to support them

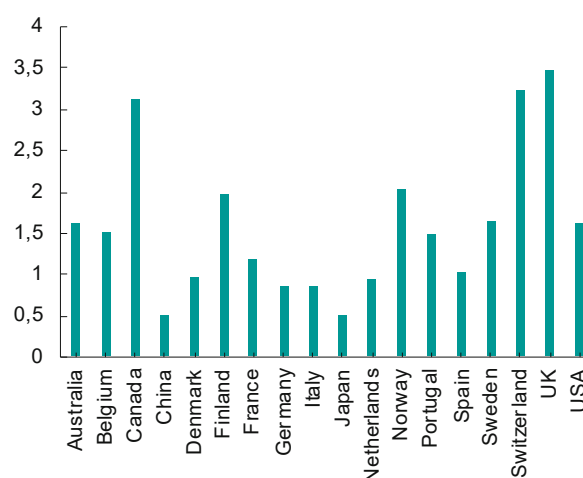
In order for national public banks to distinguish themselves from other banks by lending mostly to productive and socially valued sectors, they must have both the mandate and the financial support that can enable them to take on longer term and riskier projects. Therefore, it is essential to protect and expand their long-term funding sources, as only long-term liabilities can put banks on a solid footing to finance long-term projects. Diversity of the funding base is also important. BNDES, in Brazil, has a relatively high reliance on the national treasury, which can make the bank vulnerable to sudden changes in domestic political priorities (Macfarlane and Mazzucato, 2018: 53). But BNDES funding also draws on institutional savings in the form of FAT (Workers' Assistance Fund) and PIS/PASEP (Social Integration Programme / Civil Servants'

Savings Programme) funds. Other funding sources are shareholders' equity and foreign bond issues. This diversified funding base protects the bank against risks and gives it a more sustainable funding profile.

Financial regulation, particularly the Basel Capital Accords, can affect the ability of public banks to finance long-term, risky or complex projects. Some Basel norms and rules have an in-built bias against such projects and clearly discourage both long-term and riskier lending by banks. These include the liquidity and funding requirements under Basel III, which are intended to shorten maturities; the high risk-weights attached to exposures to equity investments, especially those considered speculative in nature, which may be about taking risks in desirable blue sky projects; and restrictions on the large exposures such as large-scale infrastructure projects.

An important challenge for the future, given the financing needs of structural transformation and the 2030 Agenda, is the need for scaling-up. Public banks should be strongly capitalized so that they can expand their loans; while those that went into decline should be assisted to recover and grow. In countries such as China, Germany and Japan, where development and other public banks have an important footprint in their national financial systems, this is already the case. But in the absence of such a strategy, a large proportion of total credit goes to households and other

FIGURE 6.4 Ratio of household loans to business loans in selected countries, average 2014–2016



Source: UNCTAD secretariat, derived from data from Jordà et al., 2017, and People's Bank of China (monetary policy reports, various years).

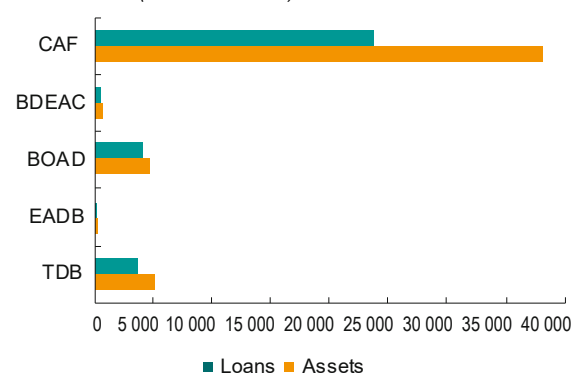
non-productive sectors (see figure 6.4). Scaling up or rescaling public banks is also important for the countercyclical role they play, as the bigger they are, the larger the macroeconomic impacts of countercyclical lending will be.

3. Scaling up regional development banks: New trends and opportunities

The expansion of regional public banking by Southern-led and Southern-oriented banks (such as the New Development Bank, the AIIB, etc.) is one of the most significant trends in the provision of long-term public finance in recent years. Both the additional finance they have created and the clear developmental mandate have the potential to offer qualitative differences in governance and lending decisions compared to older multilateral banks. Just a handful of the regional development banks from the South have significantly increased the amount of long-term lending available globally. These regional banks also tend to offer loans quickly, with no conditionality other than the condition of being repaid, and give developing countries a voice in governance more commensurate with their economic weight (Barrowclough and Gottschalk, 2018: 10). They have relied on partnerships and co-financing with other banks and firms, offering not only finance but also technical expertise and experience sharing. However, not all regions have been equally well served and important gaps remain. Most importantly, the funds available are still too small relative to needs, which ultimately reflects their narrow capital base.

The situation of regional development banks in Africa is particularly difficult, but indicative of the wider challenge. Four of Africa's main regional banks – the East African Development Bank (EADB), the West African Development Bank (BOAD), the Central African States Development Bank (BDEAC) and the Trade and Development Bank (TDB) – have existed for more than 35 years, supporting development projects in their borrowing countries. They are currently in solid financial positions, have achieved investment grades in credit rating, have strong shareholders and are well embedded in the regional economic communities they serve.²⁵ They also complement other financial institutions, with a significant amount of co-financing and on-lending. However, their lending capacity is very limited. Even after a significant increase in lending from 2016 to 2017, the amounts loaned are still extremely low, especially in light of

FIGURE 6.5 Regional banks' total assets and outstanding loans, 2017
(Millions of dollars)



Source: UNCTAD secretariat, based on banks' annual reports.

what is needed. Despite recent expansion, the total portfolios of loans and assets are in the \$4 billion to \$5 billion range in the cases of BOAD and TDB and in the \$200 million to \$700 million range in the cases of EADB and BDEAC, figures that are considerably smaller compared with those of the Latin American development bank CAF (see figure 6.5).

The biggest binding constraint to their ability to provide loans, and other forms of finance, is their total equity.²⁶ Equally important, though, is to consider banks' reliance on borrowed funds, or their own loan-to-equity ratios, also known as gearing ratios. At end of 2017, these were at 3.1 for BDEAC, 3.1 for BOAD, 0.73 for EADB and 3.7 for TDB (compared to 3.5 on average for the World Bank and 5.4 for EIB) (UNCTAD, 2018b).

It has been argued that one of the problems EADB faces is the low credit quality of the bank's shareholders, which constrains its credit rating (Moody's, 2018: 5). To compensate for this weakness, EADB has aimed for a low gearing ratio, resulting in low levels of outstanding loans. This strategy apparently helped the bank to be awarded an investment grade by Moody's. That said, the other banks, including BOAD, all have been awarded investment grades as well, despite their higher gearing ratios. All these development banks look to financial markets, including at the international level, as funding sources. As discussed in section C.5, high investment-grade ratings from credit-rating agencies allow them to raise long-term finance in these markets at lower costs, which then permits them to provide loans and finance for development projects on reasonable terms. This funding model, thus, explains why their behaviour is influenced by rating agencies and reiterates the

point that banks' ownership structure and sources of finance matter a great deal.

One route to expanding the lending capacity of these banks is to increase their gearing ratios. Another route is to expand the capital base, possibly through an injection from the region's SWFs (section C.4(c)); foreign reserves (some of which are held by the Central Bank of France); or even adding new shareholders, including from outside the region. The CAF bank in Latin America did this, including Spain and Portugal as shareholders; similarly, the AIIB has a long list of Northern shareholders. Calculations by UNCTAD based on current capital ownership structure show that core shareholders – African member governments – could let non-African states and institutions contribute additional capital while retaining control over the banks.²⁷ Currently, African member states and institutions hold 90 per cent or more of total shares of these banks, so African member states could let other states and institutions contribute additional capital while maintaining full control over the banks.

4. *Alternative sources of long-term finance*

(a) *Can regional capital markets provide the required funds? The case of the Asian Bond Markets Initiative*

Regional capital markets are sometimes seen as an important complement to development banks, and the Asian region has been particularly keen on exploring this possibility. The Asian Bond Markets Initiative (ABMI) was created in 2002 by ASEAN+3, with the broad aims of developing local currency bond markets and promoting regional financial cooperation and integration. Along with the Chiang Mai Initiative, it was very much a reaction to the East Asian crisis, when East Asian emerging market economies that had liberalized their capital accounts were buffeted by a sudden massive withdrawal of foreign capital from the region. ABMI was designed to help Asian countries move away from their overreliance on international banks' provision of short-term finance and in this way reduce currency and maturity mismatches of borrowing in the Asian region. Some also saw it an initial stepping stone towards a possible larger, concerted effort towards loosening the grip of Western finance over East Asia (Park and Bae, 2002).

Under some yardsticks, ABMI has been very successful. Local currency bonds in the region grew from about \$1.1 trillion in 2002 to \$10.2 trillion in December 2016, and such bond markets grew in every emerging East Asian country absolutely and as share of GDP (ADB, 2017). However, as these economies maintained financial openness to external capital, the ABMI resulted in the rapid growth of holdings of sovereign debt securities by international investors. This further exposed Asian economies to unpredictable and rapidly changing international capital flows and even exacerbated market volatility, as currency risk was transferred to international investors, who since then have become more risk sensitive (ADB, 2017). Despite ABMI, intraregional investment did not pick up and the region maintained high reliance on external capital despite high domestic saving rates (Lim and Lim, 2012). Bond financing for infrastructure projects is still limited in the region (ADB, 2017: 6), and is likely to remain so, as the promotion of a regionally integrated market presupposes complete capital account liberalization among participating countries. For many now well-known reasons, this would be a risky strategy with uncertain benefits. It therefore appears that this strategy of encouraging capital markets has not done away with the risks and concerns of external capital market integration for developing countries.

(b) *Creating a network of green, public banks*

A proposal long discussed in Europe and currently being mooted in the United States is to create a network of green, public banks, radiating from a similarly green-oriented central bank. This harks back to the public institution mandated to finance the original Roosevelt New Deal, the Reconstruction Finance Corporation (RFC). By the time the RFC was officially dissolved in 1957, it was described as “among the largest and undoubtedly the most complex of all Federal lending agencies” (Secretary of the Treasury, 1959: v); it grew from small beginnings (a capital of just \$500 million paid in by the Treasury and the right to leverage up to three times its equity) to create tens of billions of dollars of lending for the Depression Era reconstruction programmes. It first issued bonds of \$1.5 billion, using the borrowed moneys to pay for roads, bridges, dams, universities and much more. In subsequent years it created loans for the United States war effort and eventually for American business. Proceeds from the loans repaid the bonds, and by the time the RFC was wound up decades later, it had borrowed a total of \$54 billion

and made a net profit for its government owner, as well as repaying most of the initial capitalization and generating income.

The network of public banks that could be at the heart of a Global Green New Deal has been described as a decentralized version of the RFC (Brown, 2019). Today's United States version of this concept envisages a combination of the Federal Reserve and a new system of regional and specialized public banks, which could include banks owned by cities and states. The public banks would help pay for a Global Green New Deal by making low-interest loans for building and upgrading infrastructure, deploying clean energy resources and so on; and the federal government would help by capitalizing the public banks, setting environmental standards for loan programmes, and tying tax incentives to participating in public bank loans.

In the European Union context, creating such a network of banks also addresses the challenge of scaling up for a whole region in an economic union of individual countries that does not have a system of fiscal federalism. In one proposal, the European Investment Bank would issue “green investment bonds” using a network of public banks spread across the various member states, to on-lend these funds to investors in a broad range of activities that aim to tackle environmental mitigation, create jobs and transform the economy. It is argued that European Investment Bank bond issues could be in order of 3–5 per cent of European GDP (see for example the policies recommended by the political movement DiEM25, 2019; Taylor and Neslen, 2019). Such a network can be established without changing any existing treaties or arrangements; it would not need continent-wide fiscal support because the bonds would be paid back through the revenues earned on the loans; and it would not add to the national debt of the individual European Union member states. An important part of one proposal is that the European Central Bank should also stand ready to buy back the bonds, should their price fall below a certain yield, essentially underwriting the project and guaranteeing that bond purchasers do not make a loss.

Other sources of finance suggested to support the public banks include a financial transactions tax or stamp duty proportional to the size of corporate balance sheets; redirecting central bank seigniorage profits to be used to strengthen the equity in

development banks; charging a dividend on shares from corporate initial public offerings and capital increases; or adopting the carbon taxes mentioned in section B.2. Of course, for many countries, control of illicit financial flows (see chapter V) could be one of the most important sources of finance to boost governments' fiscal capacities, which could be used to capitalize their banks. If this also had the effect of keeping private capital within national borders, it could further serve to increase the resources potentially available to the banking sector.

(c) Public assets such as sovereign wealth funds

Another source of capital that could be used to scale up public banking could come from SWFs. These are not banks, but publicly owned assets. Some of them, although not many, are mandated with broadly similar purposes as development banks and could potentially be called upon to support a Global Green New Deal. Some SWFs are really pension and life insurance funds, with a long-term mandate to provide a stream of revenues into the future with which governments can fund their social obligations. These large reserves of publicly owned assets have long been a part of international capital flows and they could be applied in ways that offer more direct, public support for the needs of developing countries.

There has been rapid growth in their number and financial firepower: many new funds were established in recent years, and total SWF assets are currently worth at least \$7.9 trillion (see table 6.2). The interest in SWFs to support development banks stems in part from their very size – especially in Asia or the Middle Eastern region, where the SWFs are measured in trillions of dollars and far exceed the size of the development banks. In sub-Saharan Africa, some nine funds currently hold assets worth around \$12 billion. While this is less than the size of its regional development banks and those national development banks investing outside their own national borders, such funds could be a helpful source of additional capital for development banks (section C.2). The SWFs could provide equity capital for the banks and act as partners in projects with high risk but the potential for big returns. Using examples from biotechnology, the Internet and renewable energy in China and the United States, among other countries, Mazzucato (2011) and others argue that the public sector should engage as an equity partner rather than giving grant finance when it comes to R&D, as in this

way the benefits of future revenue streams would pass to the public as well as the private sector.

Another indirect benefit of SWFs is that their presence can help provide extra liquidity for regional and local debt and equity markets, which would help address some of the challenges described above. However, only a few funds currently have the legal right to invest in their own countries and most use their vast resources to buy debt or equities in advanced economies abroad. If they invest conservatively, they may be unlikely to choose green or innovative new firms and investments. Even so, some SWFs do hint at what can be achieved, as they are using such investments to promote climate-change adaptation (Norway), regional growth and development (Singapore) or to support struggling domestic economies (France, Ireland).

For funds to be directed to public needs, a clear publicly oriented mandate is needed even for those institutions required to operate under commercial terms and especially when it comes to less commercial operations. Khazanah in Malaysia, for example, divides its SWF into a commercial fund and a “strategic investment fund” which also favours economic developmental impacts. However, even the strategic fund is expected to be self-sustaining and must generate at least the same yield as the government’s ten-year securities and deliver a financial return in addition to its economic impact outcomes.

5. Making banking work better for development: The role of credit-ratings agencies

For public banks to scale up in ways that do not undermine their developmental mandate, it is essential to revisit the role of credit-rating agencies (CRAs). Since banks have a fixed capital base, the scale of their lending activities and their perceived risk is limited by the way the market views their solvency – which is determined to a large extent by the ratings given them by the CRAs. This affects the scale of additional funds that banks can borrow on the market, and their cost. The World Bank and all the major regional MDBs have always been rated AAA with all the three largest rating agencies.²⁸ Many banks’ shareholders require this; for one bank it is explicitly spelled out that they must get AAA with all top three agencies; for others, it is simply designated AAA without specifying which agencies

(Humphrey, 2018a). These requirements put banks in a position where they must balance the twin goals of AAA ratings and meeting their developmental goals, which are by definition supposed to include the kinds of projects that are of ambiguous or even high risk. Indeed, paragraph 110 of the Addis Ababa Action Agenda describes mechanistic reliance on credit ratings, including problems of conflict of interest, as a systemic issue impacting finance for development.²⁹

Standard & Poor’s (S&P) describes this tension as a conundrum, because G20 leaders have called on banks to increase their lending, but without committing additional capitalization (S&P Global Ratings, 2017: 2). Their action plan, rather, calls on banks to investigate different ways of unlocking capital to optimize their balance sheets. A consequence of this tension is that banks are being excessively cautious, even according to the CRAs. Looking at 19 MDBs in 2016, S&P showed that these banks could collectively expand their lending by about \$1 trillion without damaging their credit ratings, a massive step change of more than 70 per cent of the banks’ lending and roughly the equivalent of doubling the loan portfolio of the World Bank. Banks could also opt for a lower rating, say AA+ rating rather than AAA. Several development banks such as the Latin American bank CAF already operate successfully at this level (Humphrey, 2018a). Research suggests that if the seven major MDBs “broke the triple-A taboo” and instead targeted ratings of AA+, this would increase their lending headroom by a further \$1 trillion (Settimo, 2017).

Another move would be for governments to stop diverting income from their banks. The World Bank’s shareholders have transferred over \$23 billion of income out of the Bank through 2017 (Humphrey, 2018a: 25) an amount nearly two times bigger than the Bank’s latest round of capital increase. With stronger support from government shareholders, MDBs could also potentially be able to use their callable capital (the portion of capital that is not yet paid in by the bank’s shareholders).

Part of the problem is that the methods used by CRAs to arrive at their ratings are opaque and the individual elements can be highly debatable (Munir and Gallagher, 2018). Moreover, as noted by *TDR 2015*, CRAs’ assessment shows a systematic favouring of countries that use conservative Washington Consensus-type policies, despite the evidence

that these simply made matters worse during the global financial crisis. More generally, the CRAs are criticized for giving a large weight to banks that hold liquid reserves rather than loans, which in turn

encourages the banks to hold more cash reserves than they might otherwise; and for undervaluing the benefits of Preferred Creditor Treatment and callable capital.

D. What developing countries can do now

Public banking can be a positive force for development, especially if it is catalytic and market-shaping and not restricted to the minor role of reacting to so-called “market failure” or filling gaps. An important new opportunity exists to use public banking to achieve a Global Green New Deal, but this will not happen automatically and policy support will be essential. Some important policy suggestions emanating from this discussion are as follows:

- Development banks and long-term finance institutions can make a significant contribution to a Global Green New Deal, but they will be much more effective when they are part of a pro-development articulation with the central bank at the apex of the system, supported by a diverse mixture of financial institutions with differentiated and distinctive roles, and positively integrated with broader government policy and national development goals.
- Central banks can free themselves from recent years’ narrow focus on price stability/inflation targeting and once again include critical developmental concerns. There may be more policy space for this than usually imagined. The wave of public support for a new approach to deal with climate change offers an encouraging opportunity that can be expanded to the global commons and a Global Green New Deal more generally.
- Central banks should have a much bolder role and fully support green bond issuing and green finance by public banks and governments; including by acting as buyer of last resort.
- Governments need to be careful not to give away the space they have – through international trade or investment treaties that limit central banks’ capacities to use macroprudential measures such as capital-account management, for example. Where possible these rights should be taken back.
- Development banks need to be better supported so they can scale up finance for development. This requires enabling them to lend more with their current capital levels as well as expanding their capital base.
- At the same time, banks need to have incentives aligned so that they can lend to projects that are truly development-oriented. Concerns for financial sustainability should not undermine their ability to lend to projects or areas where the development returns are high, even when financial returns may be low.
- Governments need to signal their support for development banks, including their mandate to be developmental. Since capital markets assess who owns the banks and whether they will support them if things go wrong, banks are undermined when there is a sense that some governments are unwilling to fully support them.
- Government shareholders may also reduce the revenues they are receiving from their banks and, rather, reinvest their profits back into the banks.
- Sovereign wealth funds offer potential firepower that could be better directed towards developmental needs, including supporting development banks.
- Better performance metrics and reporting systems that appropriately value the social and economic contributions of development finance institutions, rather than just financial viability, can help to address the tension that exists between financial sustainability and perceived economic effectiveness. This remains an important gap in research, in funding and in the wider political debate.
- Support for development finance institutions to act collectively to share experiences, technology and learnings as well as finance, in particular South–South interchanges may be particularly effective.
- Developing countries need to ensure that regulatory framework for banks takes into due consideration the specific features of public and especially development banks. The Basel Capital Accords do not provide a clear distinction between banks of different character.

At the national level, country regulators have the discretion to adapt Basel rules as necessary and therefore could either leave development banks outside of the Basel framework as some countries do already, or, alternatively, give them special treatment, in recognition of their specific funding features and their developmental mandates.

- The constraints posed by credit-rating requirements need to be reconsidered. Governments could review their requirements for banks to achieve consistently high credit ratings and challenge the “triple-A taboo”. A review of the costs and benefits of banks trying to achieve AAA status is needed, with particular focus on the trade-offs taking place as banks try to balance the competing goals of AAA status and developmental mandates.
- An external review of the capital adequacy of development finance institutions needs to be conducted by a credible external agency with specialist knowledge of development finance institutions as compared to “ordinary” banks. BIS, for example, could give appropriate analysis and weight to their special financial situation and mandate in a way that CRAs – which are required to assess a very broad spectrum of institutions and firms – cannot be expected to.
- At the international level, the critical issue is the grip that international CRAs have over MDBs. Such agencies follow closely Basel rules for capital determination when assessing how much capital such banks should hold for different categories of assets, but their assessment could be modified in recognition of banks’ developmental mandates and the fact they are owned by governments.
- Some green credit creation and guidance mechanisms, such as quantitative easing, may not be feasible for developing countries that risk provoking exchange-rate and balance-of-payment crises. However green quantitative-easing policies by banks in advanced countries could be used to support green investments in developing countries.
- New analytical approaches to macroeconomic modelling on the part of central banks are long overdue – including those that more accurately incorporate exposure to climate-change risks. It should also be compulsory to disclose these.
- It is equally essential to revisit the analytical modelling relating to the effect of economic austerity policies, in particular their negative effects in terms of inequality, deflation and depressed effective demand. ■

Notes

- 1 For example, the Bank of North Dakota (BND) was formed in 1919 to provide low-price credit for farmers, and now provides student loans and credit for local small and medium-sized enterprises, as well as funding local government by purchasing municipal bonds. The Norwegian Kommunalbanken was established in 1926. The Ziraat Bank was formed in Turkey in 1888 to support agricultural development.
- 2 Some public banks created recently include the SME Development Bank of Thailand (2002); the Agencia Financiera de Desarrollo (AFD) in Paraguay (2005); the Banco de Desarrollo Productivo (BDP) in Bolivia (2007); Belarus Development Bank; Tanzania Agricultural Development Bank (2012); Malawi Export Development Fund (2012); BanEcuador BP (2015); Nepal Infrastructure Bank (2019); and Uzbekistan Development Bank (2019).
- 3 Some examples are the Green Investment Bank in the United Kingdom (2012); the new Canadian export credit agency, FinDev Canada (2017); Bpifrance (2012).
- 4 UNCTAD secretariat estimations suggest that public

banks with sociodevelopmental orientation currently number 80 in developing Asia, 75 in Africa, 70 in Latin America and the Caribbean, 20 in the Middle East and 8 in the Pacific.

- 5 For more detailed surveys, see for example Barrowclough and Gottschalk, 2018; Eurodad, 2017; Grabel, 2017; Griffith-Jones and Ocampo, 2018; Studart and Gallagher, 2016; UNCTAD, 2016, 2018a, 2018b; World Bank, 2018b; Xu et al., 2019; among others.
- 6 See Eurodad, 2017, for another, related, description.
- 7 To avoid such potential for cherry-picking or crowding out, the Production Development Corporation (CORFO) in Chile, which is an agency financed by the Treasury rather than a bank, switched to offering grants for the most needy cases rather than subsidized loans (Griffith-Jones et al., 2018), meaning they targeted a different kind of borrower.
- 8 In the case of SWFs, most tend to operate more in the same profit-oriented territory as private firms and investors. However, there are some notable exceptions where funds invest domestically or in the region

- in strategic and developmental activities, including the Singaporean Temasek infrastructure investments in the region, the Khazanah fund in Malaysia, which invests in national infrastructure and other areas with developmental impact, and French and Italian funds set up following the 2008–2009 crisis to invest in domestic firms and enterprises.
- 9 Table 11 in ECB, 2017.
 - 10 OECD, 2010. Note: this annual series ceased in 2010.
 - 11 See Amsden, 2001, UNCTAD, 2016, and Barrowclough and Kozul-Wright, 2018, on the “reciprocal control” mechanism.
 - 12 Electric power, road and railway construction, agriculture and related industries, public infrastructure, petroleum and petrochemicals, coal, post and telecoms (CDB, 2017).
 - 13 In Canada, where carbon taxes were adopted in 2019, revenue estimates for that year are almost C\$3 billion but projected to rise quickly to C\$6 billion by 2023/24 (Parliamentary Budget Officer, 2019). The tax revenues received are to be paid back to the provinces or territories in which they were generated but they could, potentially, be used instead to inject capital into a development bank dedicated to climate lending if there was political will.
 - 14 Some country central banks evolved from private banks and became “public” only gradually after several centuries of mixing private and public objectives. Most, however, were established in the mid-1900s. Out of 176 central banks existing today, 159 were founded from 1900 onward. Historical exceptions include the creation of the Bank of Sweden in 1668, the Bank of England in 1694, the Bank of France 1800, the National Bank of Belgium 1850, and the Reichsbank 1876. The United States Federal Reserve was created in 1913.
 - 15 The list of activities that central banks are supposed to engage in tends to include the following: issuing and unifying the country’s payment system; acting as the government’s bank; acting as the commercial banks’ bank; serving as lender of last resort to the banking system and even the financial system as a whole; conducting monetary policy to stabilize both prices and the exchange rate; and conducting monetary policy to manage the overall level of economic activity. Some writers insist that “lender of last resort” is the true function of central banking (Capie, 1994, 1999), while others are equally adamant that it is the provision of liquidity (Goodhart, 1988, 2011).
 - 16 The European Central Bank (ECB) introduced a Targeted Long-term Refinancing Operation (TLTRO) in 2014, whereby the ECB offers long-term loans to banks, in exchange for collateral, on special terms. There have been a couple of programmes since the eurozone crisis and the interest rate on these loans falls in proportion to the lending undertaken by the banks, to encourage more lending to the actual economy. If banks lend enough, the rate the ECB charges them is negative. The Bank of England launched the Funding for Lending Scheme (FLS) in 2012 and the Bank of Japan introduced a Lending Support Plan (LSP), to help improve monetary policy transmission from the financial sector to the real economy.
 - 17 In Japan, the United Kingdom and the United States, the institutional structure meant that the specific form taken by loose monetary policies required consultation between the central bank, the Treasury or finance ministry and the Financial Services Authority.
 - 18 In the last quarter of 2018 alone, the Monetary Policy Analysis Group of the People’s Bank noted a slew of monetary and financial activities designed to support government policy goals. These included offering financial support for structural reforms in industry, agriculture and poverty reduction as well as a series of policies to create credit and to direct it, at preferential rates, where it was considered to be lacking (MPAG, 2019: 2).
 - 19 Established in July 2018, the Network brings together 16 central banks including some of the world’s largest, as well as five multilateral financial institutions as observers.
 - 20 Many developing countries are already doing this. China dominates, accounting for 70 per cent of the green bonds issued by emerging and developing countries but others include Brazil (six issues over the years 2012–2018), India (eight), Indonesia (one), Poland (two), the Republic of Korea (four); Climate Bonds Initiative, 2018: 14.
 - 21 These are not voluntary savings, but mandated through legislation. FAT (Workers’ Assistance Fund) and PIS/PASEP (Social Integration Programme / Civil Servants’ Savings Programme) of Brazil, mentioned later, are such examples where funds originating from firms’ contributions aimed at supporting workers’ welfare and socioeconomic integration and development.
 - 22 See: <https://www.kfw.de/KfW-Group/Newsroom/Press-Material/Themen-kompakt/Marshallplan/> (accessed 19 July 2019).
 - 23 See: <https://www.dbj.jp/en/co/info/history/index.html> (accessed 19 July 2019) and Stiglitz and Uy, 1996.
 - 24 Based on data from banks’ 2017 annual/financial reports.
 - 25 See BDEAC, 2017; BOAD, 2017; EADB, 2015; and TDB, 2017.
 - 26 In 2017, TDB’s total equity was \$1.02 billion (against \$857 million the year before). In the same year, equity reached \$261.4 million for EADB (against \$251.2 million in 2016), \$1,315 million for BOAD, and \$191.3 million for BDEAC (end of period values).
 - 27 EADB, created in 1967, is a key institution of the

East African Community (EAC). BOAD, created in 1973, but becoming operational in 1976, has its origins in the West African Monetary Union (WAMU). BDEAC, created in 1975, and entering into operation in 1977, serves the countries of the Central African Economic and Monetary Community (CEMAC). Finally, TDB, established later, in 1985, has its origins in the Common Market for the Eastern and Southern African States (COMESA). Membership has then expanded to include countries from across EAC and the Southern African Development Community

(SADC).

- 28 The one exception to that time was when the African Development Bank was downgraded to AA+ during the years 1995–2003, due to a sovereign debt problem in some countries in Africa.
- 29 Some (like Standard & Poor's) use a methodology that is more quantitative and mechanical compared with the other big agencies and is therefore more transparent, but even this has been criticized for being overly conservative in ways that impact on MDB lending patterns.

References

- ADB (2017). *The Asian Bond Markets Initiative: Policy Maker Achievements and Challenges*. Asian Development Bank. Manila.
- AfDB (2018). African Development Bank, Mariner Investment Group, and Africa50 price landmark \$1 billion impact securitization. Press release. African Development Bank. 18 September. Available at <https://www.afdb.org/en/news-and-events/african-development-bank-mariner-investment-group-and-africa50-price-landmark-1-billion-impact-securitization-18494/> (accessed 17 July 2019).
- Allen K (2018). African Development Bank turns to hedge fund to offset risk. *Financial Times*. 18 September. Available at <https://www.ft.com/content/6eba4d10-ba43-11e8-94b2-17176fbf93f5> (accessed 17 July 2019).
- Amsden AH (2001). *The Rise of "The Rest": Challenges to the West from Late-Industrializing Economies*. Oxford University Press. Oxford.
- Anderson V (2015). Green money: Reclaiming quantitative easing – Money creation for the common good. Green/EFA Group in the European Parliament. Available at http://mollymep.org.uk/wp-content/uploads/Green-Money_ReclaimingQE_V.Anderson_June-2015.pdf (accessed 17 July 2019).
- Andersson B and Claussen CA (2017). Alternatives to inflation targeting. *Sveriges Riksbank Economic Review*. 2017(1):51–82.
- Arezki R, Bolton P, Peters S, Samama F and Stiglitz J (2016). From global savings glut to financing infrastructure: The advent of investment platforms. Working Paper No. WP/16/18. International Monetary Fund. Available at <https://www.imf.org/external/pubs/ft/wp/2016/wp1618.pdf> (accessed 17 July 2019).
- Barrowclough D and Gottschalk R (2018). Solidarity and the South: Supporting the new landscape of long-term development finance. UNCTAD Research Paper No. 24. UNCTAD/SER.RP/2018/6. New York and Geneva.
- Barrowclough D and Kozul-Wright R (2018). The institutional geometry of industrial policy in sustainable development. In: Yülek MA, ed. *Industrial Policy and Sustainable Growth*. Springer. New York, NY: 85–108.
- Bezemer D, Ryan-Collins J, van Lerven F and Zhang L (2018). Credit where it's due: A historical, theoretical and empirical review of credit guidance policies in the 20th century. Working Paper No. IIPP WP 2018-11. UCL Institute for Innovation and Public Purpose.
- BIS (2009). *Issues in the Governance of Central Banks*. Bank for International Settlement. Basel. Available at <https://www.bis.org/publ/othp04.htm> (accessed 18 July 2019).
- Blanchard O, Dell'Ariccia G and Mauro P (2013). Rethinking macroeconomic policy: Getting granular. *Voxeu*. 9 May. Available at <https://voxeu.org/article/rethinking-macroeconomic-policy-getting-granular> (accessed 18 July 2019).
- Bloomfield AI (1957). Some problems of central banking in underdeveloped countries. *The Journal of Finance*. 12(2):190–204.
- BOAD (2017). *Rapport Annuel*. Banque Ouest Africaine de Développement (BOAD). Lomé. Available at <https://www.boad.org/en/portfolio-item/6336/> (accessed 18 July 2019).
- Brautigam D (2009). *The Dragon's Gift: The Real Story of China in Africa*. Oxford University Press. Oxford.
- Brown E (2019). The secret to funding a Green New Deal. *Truthout News Analysis*. 25 March. Available at <https://truthout.org/articles/the-secret-to-funding-a-green-new-deal/> (accessed 23 July 2019).
- Campiglio E, Dafermos Y, Monnin P, Ryan-Collins J, Schotten G and Tanaka M (2018). Climate change challenges for central banks and financial regulators. *Nature Climate Change*. 8(6):462–468.
- Campiglio E, Godin A, Kemp-Benedict E and Matikainen S (2017). The tightening links between financial systems and the low-carbon transition. In: Arestis P and Sawyer M, eds. *Economic Policies Since the Global Financial Crisis*. Palgrave Macmillan. Basingstoke: 313–356.
- Capie F (1994). The development of central banking. In: Capie F, Goodhart C, Fischer S and Schnadt N, eds.

- The Future of Central Banking: The Tercentenary Symposium of the Bank of England*. Cambridge University Press. Cambridge: 1–261.
- Capie F (1999). Banking in Europe in the nineteenth century: The role of the central bank. In: Sylla R, Tilly R and Tortella G, eds. *The State, the Financial System, and Economic Modernization*. Cambridge University Press. Cambridge: 118–133.
- Carney M (2015). Breaking the tragedy of the horizon – climate change and financial stability. Speech by the Governor of the Bank of England and Chairman of the Financial Stability Board. London. 29 September. Available at <https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability> (accessed 19 July 2019).
- Carney M (2018). True finance - ten years after the financial crisis. Speech by the Governor of the Bank of England and Chairman of the Financial Stability Board. New York. 18 October. Available at <https://www.bankofengland.co.uk/-/media/boe/files/speech/2018/true-finance-ten-years-after-the-financial-crisis-speech-by-mark-carney> (accessed 23 July 2019).
- CDB (2017). *Annual Report*. China Development Bank. Beijing. Available at http://www.cdb.com.cn/English/gykh_512/ndbg_jx/2017_jx/ (accessed 24 July 2019).
- Chandrasekhar CP (2016). National development banks in a comparative perspective. In: Calcagno A, Dullien S, Márquez-Velázquez A, Maystre N and Prieue J, eds. *Rethinking Development Strategies After the Financial Crisis*. Volume II: Country Studies and International Comparisons. (United Nations publication. New York and Geneva: 21–30). Available at https://unctad.org/en/PublicationsLibrary/gdsmdp20152_en.pdf (accessed 18 July 2019).
- Chandrasekhar CP and Ghosh J (2019). The skewed structure of India’s bond market. *Hindu Business Line*. 11 February. Available at <https://www.thehindubusinessline.com/opinion/columns/c-p-chandrasekhar/the-skewed-structure-of-indias-bond-market/article26240627.ece> (accessed 23 July 2019).
- China Exim Bank (2017). *The Export and Import Bank of China Annual Report 2017*. Beijing.
- Cho YJ and Kim JK (1995). Credit policies and the industrialization of Korea. Discussion Papers No. 286. World Bank.
- Climate Bonds Initiative (2018). Green bonds: The state of the market. Available at <https://www.climatebonds.net/resources/reports/green-bonds-state-market-2018> (accessed 18 July 2019).
- de Luna-Martínez J and Vicente CL (2012). Global survey of development banks. Policy Research Working Paper No. 5969. World Bank. Available at <http://documents.worldbank.org/curated/en/313731468154461012/pdf/WPS5969.pdf> (accessed 18 July 2019).
- Derviş K (2012). Should central banks target employment? *Brookings Op-Ed*. 19 December. Available at <https://www.brookings.edu/opinions/should-central-banks-target-employment/> (accessed 18 July 2019).
- DiEM25 (2019). Democracy in Europe website. Available at <https://diem25.org/diem25-unveils-its-european-new-deal-an-economic-agenda-for-european-recovery/> (accessed 23 July 2019).
- EADB (2015). *Annual Report*. East African Development Bank. Kampala. Available at <https://eadb.org/download/eadb-annual-report-2015/> (accessed 18 July 2019).
- ECB (European Central Bank) (2017). *Report on Financial Structures*. Frankfurt-am-Main. Available at <https://www.ecb.europa.eu/pub/pdf/other/reportonfinancialstructures201710.en.pdf> (accessed 18 July 2019).
- Epstein G (2006). Central banks as agents of economic development. Research Paper No. 2006/54. United Nations University -World Institute for Development Economics Research (UNU-WIDER).
- Epstein G (2015). Development central banking: A review of issues and experiences. Employment Working Paper No. 182. International Labour Organization.
- Epstein G and Yeldan E (2008). Inflation targeting, employment creation and economic development: Assessing the impacts and policy alternatives. *International Review of Applied Economics*. 22(2):131–144.
- Eurodad (2017). Public development banks: Towards a better model. Discussion paper. European Network on Debt and Development. Available at <https://eurodad.org/files/pdf/1546743-public-development-banks-towards-a-better-model.pdf> (accessed 18 July 2019).
- European Commission (2017). Reinforcing integrated supervision to strengthen capital markets union and financial integration in a changing environment.
- European Commission (2018). Financing a sustainable European economy: Final Report. European Union High-Level Expert Group on Sustainable Finance. Available at https://ec.europa.eu/info/sites/info/files/180131-sustainable-finance-final-report_en.pdf (accessed 18 July 2019).
- FSB (Financial Stability Board) (2017). Safer, simpler, fairer. 3 July. Available at <https://www.fsb.org/multimedia/safersimplerfairer/> (accessed 18 July 2019).
- G20, OECD and World Bank (2018). G20/OECD/WB Stocktake of tools and instruments related to infrastructure as an asset class: Progress report. G20, Organisation for Economic Co-operation and Development and World Bank. Available at www.oecd.org/g20/G20_OECD_WB%20Stocktake%20-%20Progress%20Report.pdf (accessed 18 July 2019).
- Gallagher K (2017). China’s development finance institutions in context. In: Barrowclough D and Gottschalk R, eds. *Solidarity and the South: New Directions in Long-Term Development Finance*. United Nations Conference on Trade

- and Development (UNCTAD). (United Nations publication. New York and Geneva: 69–79).
- Gallagher KP, Sklar S and Thrasher R (2019). Quantifying the policy space for regulating capital flows in trade and investment treaties. G-24 Working Paper. Intergovernmental Group of Twenty Four. Available at https://www.g24.org/wp-content/uploads/2019/03/Gallagher_Capital_Flows_and_Treaties.pdf (accessed 2 July 2019).
- Garriga AC (2016). Central bank independence in the world: A new dataset. *International Interactions*. 42(5):849–868.
- Goodhart CAE (1988). *The evolution of central banks*. MIT Press. Cambridge, MA.
- Goodhart CAE (2011). The changing role of central banks. *Financial History Review*. 18(2):135–154.
- Grabel I (2017). *When Things Don't Fall Apart: Global Financial Governance and Development Finance in an Age of Productive Incoherence*. MIT Press. Cambridge, MA.
- Griffith-Jones S and Ocampo JA, eds. (2018). *The Future of National Development Banks*. Oxford University Press. Oxford.
- Griffith-Jones S, Martínez Sola ML and Petersen Muga J (2018). The role of CORFO in Chile's development: Achievements and challenges. In: Griffiths-Jones S and Ocampo JA, eds. *The Future of National Development Banks*. Oxford University Press. Oxford: 136–166.
- Hay J (2018). AfDB securitization opens new route for MDBs to leverage capital. *Global Capital*. 10 October. Available at <https://www.globalcapital.com/article/b1bb5t9q1htrwf/afdb-securitization-opens-new-route-for-mdb-to-leverage-capital> (accessed 18 July 2019).
- Humphrey C (2018a). The role of credit rating agencies in shaping multilateral finance recent developments and policy options. Intergovernmental Group of 24. Available at <https://www.g24.org/wp-content/uploads/2018/04/The-Role-of-Credit-Rating-Agencies-in-Shaping-Multilateral-Finance.pdf> (accessed 23 July 2019).
- Humphrey C (2018b). African Development Bank's landmark deal opens door to scaling up multilateral lending. ODI Insight. 5 October. Available at <https://www.odi.org/comment/10694-african-development-banks-landmark-deal-opens-door-scaling-multilateral-lending> (accessed 18 July 2019).
- Jordà Ò, Schularick M and Taylor AM (2017). Macroeconomic history and the new business cycle facts. In: Eichenbaum M and Parker JA (eds). *NBER Macroeconomics Annual 2016, Volume 31*. University of Chicago Press. Chicago, IL: 213–263.
- Kozul-Wright R, Poon D (2018). Asian development after the *Asian Drama*. Working Paper No. 2018/135. United Nations University-World Institute for Development Economics Research (UNU-WIDER). Available at <https://www.wider.unu.edu/sites/default/files/Publications/Working-paper/PDF/wp2018-135.pdf> (accessed 23 July 2019).
- Lee K (2017). Financing industrial development in Korea and implications for Africa. In: African Development Bank (AfDB). *Industrialize Africa: Strategies, Policies, Institutions, and Financing*. Africa Development Bank Group. Abidjan: 197–213.
- Levine P and Lima D (2015). Policy mandates for macroprudential and monetary policy in a new Keynesian framework. Working Paper No. 1784. European Central Bank (ECB). Available at <http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1784.en.pdf> (accessed 18 July 2019).
- Lim MH and Lim J (2012). Asian initiatives at monetary and financial integration: A critical review? Background Paper No. 4. United Nations Conference on Trade and Development (UNCTAD). Geneva. Available at https://unctad.org/en/PublicationsLibrary/ecidc2012_bp4.pdf (accessed 18 July 2019).
- Macfarlane L and Mazzucato M (2018). State investment banks and patient finance: An international comparison. IIPP Working Paper No. 2018-01. UCL Institute for Innovation and Public Purpose. Available at https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/iipp_wp_2018-01.pdf (accessed 18 July 2019).
- Marois T (2019). Public banking on the future we want. In: Steinfort L and Kishimoto S, eds. *Public Finance for the Future We Want*. Transnational Institute. Amsterdam: 150–164.
- Mazzucato M (2011). *The Entrepreneurial State*. Demos. London.
- Mésonnier JS, O'Donnell C and Toutain O (2017). The interests of being eligible. Working Paper No. 636. Banque de France. Available at <https://publications.banque-france.fr/en/interest-being-eligible> (accessed 18 July 2019).
- Ministry of the Environment (2014). Climate finance loan schemes: Existing and planned loan schemes in Lebanon. Climate Change Coordination Unit, Ministry of the Environment. Lebanon. Available at <http://climatechange.moe.gov.lb/viewfile.aspx?id=216> (accessed 18 July 2019).
- Moody's (2018). East African Development Bank – Baa3 Stable. Annual Credit Analysis. Issuer In-Depth. Moody's Investors Service. 2 July. Available at <https://www.moody's.com/credit-ratings/East-African-Development-Bank-credit-rating-823238385> (accessed 23 July 2019).
- MPAG (Monetary Policy Analysis Group of the People's Bank of China) (2019). China monetary policy report quarter four, 2018. 21 February. Available at <http://en.pkulaw.cn/inc/ueditor/net/upload/2019-03-29/ae91601e-fb4c-49ec-952d-950220d07c67.pdf> (accessed 18 July 2019).
- Münchau W (2017). Opinion: Central bank independence is losing its lustre. *Financial Times*. 19 February. Available at <https://www.ft.com/>

- content/6ed32b02-f526-11e6-95ec-f14e55513608 (accessed 23 July 2019).
- Munir W and Gallagher K (2018). Scaling up lending at the multi-lateral development banks: Benefits and costs of expanding and optimizing MDB balance sheets. Working Paper No. 013. Global Economic Governance Initiative (GEGI). Available at http://www.bu.edu/gdp/files/2018/04/Munir_Gallagher_2018-1.pdf (accessed 18 July 2019).
- NEF (2017). Green central banking in emerging market and developing country economies. New Economics Foundation (NEF). London. Available at <https://neweconomics.org/uploads/files/Green-Central-Banking.pdf> (accessed 23 July 2019).
- NGFS (2019). A call for action: Climate change as a source of financial risk – first comprehensive report. Network for Greening the Financial System (NGFS). Available at <https://www.preventionweb.net/publications/view/64961> (accessed 18 July 2019).
- Nyborg KG (2017). *Collateral Frameworks: The Open Secret of Central Banks*. Cambridge University Press. Cambridge.
- OECD (2010). Bank profitability: financial statements of banks 2010. Banking Statistics 2000–2009. Organisation for Economic Co-operation and Development. Available at <https://www.oecd.org/sdd/fin-stats/bankprofitabilityfinancialstatementsofbanks2010.htm> (accessed 23 July 2019).
- OECD (2018). Roadmap to infrastructure as an asset class. Organisation for Economic Co-operation and Development. Available at https://g20.argentina.gob.ar/sites/default/files/documentos_producidos/roadmap_to_infrastructure_as_an_asset_class_argentina_presidency_1.pdf (accessed 18 July 2019).
- Park YC and Bae KH (2002). Financial liberalization and economic integration in East Asia. PECC Finance Forum Conference on Issues and Prospects for Regional Cooperation for Financial Stability and Development. Honolulu. 11–13 August. Available at <https://www.pecc.org/resources/finance-1/433-financial-liberalization-and-economic-integration-in-east-asia> (accessed 18 July 2019).
- Parliamentary Budget Officer (2019). Fiscal and distributional analysis of the federal carbon pricing system. Government of Canada. Ottawa. Available at https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/2019/Federal%20Carbon/Federal_carbon_pricing_EN.pdf (accessed 23 July 2019).
- People’s Bank of China (various years) Annual and quarterly reports. Available at <http://www.pbc.gov.cn/english/130727/index.html> (accessed 23 July 2019).
- Rogoff K (2019). The case for a world carbon bank. *Project Syndicate*. 8 July. Available at <https://www.project-syndicate.org/commentary/world-carbon-bank-for-developing-countries-by-kenneth-rogoff-2019-07> (accessed 23 July 2019).
- Rosengren ES (2013). Should full employment be a mandate for central banks? Federal Reserve Bank of Boston. 12 April. Available at <https://www.bostonfed.org/news-and-events/speeches/should-full-employment-be-a-mandate-for-central-banks.aspx> (accessed 18 July 2019).
- Rossi A (2018). Existe uma “caixa-preta” do BNDES, como diz Bolsonaro? *BBC News Brazil*. 27 November. Available at <https://www.bbc.com/portuguese/brasil-46267698> (accessed 2 July 2019).
- Rudebusch G (2019). Climate change and the Federal Reserve. Economic Letter. Federal Reserve Bank of San Francisco. 25 March. Available at <https://www.frbsf.org/economic-research/publications/economic-letter/2019/march/climate-change-and-federal-reserve/> (accessed 18 July 2019).
- S&P Global Ratings (2017). Key considerations for supranationals’ lending capacity and their current capital endowment. 18 May. Available at https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/10098975 (accessed 18 July 2019).
- Sanderson H and Forsythe M (2013). *China’s Superbank: Debt, Oil and Influence – How China Development Bank Is Rewriting the Rules of Finance*. Wiley. Singapore.
- Scott M, van Huizen J and Jung C (2017). The Bank of England’s response to climate change. *Quarterly Bulletin*. Q2:98–109. Available at <https://www.bankofengland.co.uk/quarterly-bulletin/2017/q2/the-banks-response-to-climate-change> (accessed 18 July 2019).
- Secretary of the Treasury (1959). Final report on the Reconstruction Finance Corporation. Office of the Secretary. Government of the United States. Washington, D.C. Available at https://fraser.stlouisfed.org/files/docs/publications/rcf/rfc_19590506_final-report.pdf (accessed 23 July 2019).
- Settimo R (2017). Towards a more efficient use of multilateral development banks’ capital. Occasional Paper Series No. 393. Bank of Italy.
- Sovereign Wealth Fund Institute (2019). Top 81 largest sovereign wealth fund rankings by total assets. July. Available at: <https://www.swfinstitute.org/fund-rankings/sovereign-wealth-fund> (accessed 24 July 2019).
- Steinfort L (2019). State of power 2019: The power of public finance for the future we want. Transnational Institute. Available at <http://longreads.tni.org/state-of-power-2019/future-we-want/> (accessed 23 July 2019).
- Stiglitz JE and Uy M (1996). Financial markets, public policy, and the East Asian miracle. *World Bank Research Observer*. 11(2):249–276.
- Studart R and Gallagher KP (2016). Infrastructure for sustainable development: The role of national development banks. GEGI Policy Brief No. 007. Global Economic Governance Initiative. Available at https://www.bu.edu/pardeeschool/files/2016/08/Infrastructure.Sustainable.Final_.pdf (accessed 18 July 2019).
- Taylor M and Neslen A (2019). Yanis Varoufakis: Green

- New Deal can unite Europe's progressives. *The Guardian*. 22 May. Available at <https://www.theguardian.com/world/2019/may/22/yanis-varoufakis-green-new-deal-can-unite-europes-progressives> (accessed 19 July 2019).
- TDB (2017). *Annual Report 2017*. Trade and Development Bank (TDB) Bujumbura. Available at <https://www.tdbgroup.org/investor-information/annual-reports/> (accessed 18 July 2019).
- Thomä J and Hilke A (2018). The green supporting factor: Quantifying the impact on European banks and green finance. 2 Degrees Investing Initiative. Available at <https://2degrees-investing.org/the-green-supporting-factor-quantifying-the-impact-on-european-banks-and-green-finance/> (accessed 18 July 2019).
- Tobin D and Volz U (2018). The development and transformation of the financial system in the People's Republic of China. Working Paper Series No. 825. Asian Development Bank Institute (ADBI) Available at: <https://www.adb.org/sites/default/files/publication/411136/adbi-wp825.pdf> (accessed 23 July 2019).
- Tooze A (2019). Why central banks need to step up on global warming. *Foreign Policy*. 20 July. Available at <https://foreignpolicy.com/2019/07/20/why-central-banks-need-to-step-up-on-global-warming/> (accessed 23 July 2019).
- UNCTAD (2016). *The Role of Development Banks in Promoting Growth and Sustainable Development in the South*. (United Nations publication. New York and Geneva). Available at https://unctad.org/en/PublicationsLibrary/gdsecidc2016d1_en.pdf (accessed 18 July 2019).
- UNCTAD (2018a). *Solidarity and the South: New Directions in Long-term Development Finance*. (United Nations publication. New York and Geneva). Available at https://unctad.org/en/PublicationsLibrary/gdsmdp2017d2_en.pdf (accessed 18 July 2019).
- UNCTAD (2018b). *Scaling up Finance for the Sustainable Development Goals: Experimenting with Models of Multilateral Development Banking*. (United Nations publication. New York and Geneva). Available at https://unctad.org/en/PublicationsLibrary/gdsecidc2017d4_en.pdf (accessed 18 July 2019).
- UNCTAD (TDR 2015). *Trade and Development Report, 2015: Making the International Financial Architecture Work for Development*. (United Nations publication. Sales No. E.15.II.D.4. New York and Geneva).
- UNCTAD (TDR 2018). *Trade and Development Report, 2018: Power, Platforms and the Free Trade Delusion*. (United Nations publication. Sales No. E.18.II.D.7. New York and Geneva).
- van Lerven F (2017). Green central banking in emerging market and developing country economies. New Economics Foundation. Available at <https://neweconomics.org/2017/10/green-central-banking-emerging-market-developing-country-economies> (accessed 18 July 2019).
- Vermeulen R, Schets E, Lohuis M, Kölbl B, Jansen DJ and Heeringa W (2018). An energy transition risk stress test for the financial system of the Netherlands. Occasional Studies volume 16-7. De Nederlandsche Bank NV. Available at https://www.dnb.nl/binaries/OS_Transition%20risk%20stress%20test%20versie_web_tcm46-379397.pdf (accessed 18 July 2019).
- WBG (2017a). Maximizing finance for development: Leveraging the private sector for growth and sustainable development. World Bank Group (WBG) Available at http://siteresources.worldbank.org/DEVCOMMINT/Documentation/23758671/DC2017-0009_Maximizing_8-19.pdf (accessed 18 July 2019).
- WBG (2017b). Forward look: A vision for the World Bank Group in 2030 – progress and challenges. World Bank Group (WBG). Available at <http://siteresources.worldbank.org/DEVCOMMINT/Documentation/23745169/DC2017-0002.pdf> (accessed 18 July 2019).
- Xu J, Ren X and Wu X (2019). Mapping development finance institutions worldwide: Definitions, rationales and varieties. Research Report No. 1. Institute of New Structural Economics. Peking University.