Older women: pushed into retirement in the 1970s and 1980s by the baby boomers?

Because baby boomers crowded the labor market and competed with older women for part-time and part-year jobs, the labor force participation of older women declined slightly from 1970 to 1985; in more recent decades, women's retirement age rose as "bridge jobs" became more available

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The labor force participation of older women in the United States, like that of younger women, has changed dramatically over the past 40 years, but the patterns for the two groups have differed markedly. While the participation of women ages 25–34—particularly married women—increased dramatically in the 1970s and early 1980s before beginning to level off, the participation of women ages 55–69 actually declined marginally between 1970 and 1985, and only then began a pronounced and steady increase which has not yet abated. This article looks at why these patterns have diverged so markedly. Another time of divergence was the immediate post-World War II period, when the labor force participation of older women increased while that of young women declined.

Although changes in age at retirement affect the trends in labor force participation among older workers, the concept of retirement is notoriously difficult to define. In the Current Population Survey (CPS), the only available retirement information comes from a question asking why a woman was out of work in the previous year. But she might report herself as unemployed, or simply not in the labor force, in a period in which retirement might be defined retrospectively as having begun. As a result, this paper will use a number of variables to examine the phenomenon, including not only self-reported retirement, but also annual hours worked, the propensity to be not in the labor force, and the receipt of Social Security benefits.

Literature review

Despite a voluminous literature on older men's patterns of labor force participation and retirement, there appear to be only a few reports that look specifically at older women and a few more that look at both men and women. A frequent topic discussed in this literature is the effect of Social Security earnings tests on labor force participation. This has been addressed in articles by Jonathan Gruber and Peter Orszag, Cordelia Reimers and Marjorie Honig, and Stephen Rubb.[1]

Workers have historically had their Social Security benefits reduced by current earnings. Although these workers are later compensated for this reduction through higher Social Security benefits, the reduction is usually viewed by workers as a tax on earnings and therefore is hypothesized to affect labor force participation among people ages 65 and older. The threshold above which earnings result in a reduction in Social Security benefits was removed in 2000 for those ages

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65–69. In addition, legislation that was passed in 1983 caused the delayed retirement credit to increase between 1990 and 2008, allowing benefits to increase up to age 70 for every additional year benefits are delayed.

The evidence regarding women's response to these economic incentives varies. Cordelia Reimers and Marjorie Honig found that men, but not women, are highly responsive to the earnings test; their model indicates that older women's labor force participation is increased by the delayed retirement credit, but not reduced by the earnings test.[2] Stephen Rubb similarly found little earnings-test effect on women's labor supply.[3] Jonathan Gruber and Peter Orszag, however, found opposite results, with little or no significant effect of the earnings test among men, but some evidence of an effect for women.[4] And Marjorie Honig, specifically analyzing effects on married women, found them responsive to their own pension wealth and, to a lesser extent, to Social Security benefits.[5] Responsiveness to the Social Security delayed retirement credit, taken together with the increased and then eliminated earnings-test threshold, might to some extent be expected to have contributed to the patterns observed in chart 1.

Another topic, which has been addressed in the literature primarily with respect to older men, is the focus of this study: the increasing prevalence of "bridge" employment among older workers. This is the tendency to exit career full-time jobs not directly into retirement, but rather into various forms of part-time work. Although the bulk of the literature looks at this issue in terms of men's retirement patterns, Franco Peracchi and Finis Welch looked at transitions for men and women and found an increasing trend toward moves from full-time to part-time work for women as well as men.[6] Following on work done by Marjorie Honig and Giora Hanoch for men,[7] Honig found that "partial retirement" in the form of bridge jobs constitutes a significant factor in women's employment patterns.[8] And Elizabeth Hill found the tendency toward part-time work increases with age among older women.[9] Thus the concept of bridge jobs, and reentry into part-time jobs, might be hypothesized to apply to women as well as men. As a result, the following is a brief review of the findings in the literature on male labor force transitions.

Christopher Ruhm was perhaps the first to identify (and name) this phenomenon. He found that fewer than 40 percent of household heads retire directly from career jobs, and more than half partially retire at some point in their lives. He also stressed that this postcareer work is frequently in jobs outside the industry and occupation of the career position.[10] This may have changed, to some extent, in more recent years, however: Michael Giandrea, Kevin Cahill, and Joseph Quinn suggest that transition within occupations may be more frequent—in particular in moving to self-employment.[11] And the same authors, in a subsequent paper, found that younger cohorts seem to be following the same patterns as older cohorts.[12] Franco Peracchi and Finis Welch found that the prevalence of reduced labor force participation was greatest among low-wage workers and that the patterns of decreased participation among older workers paralleled those of younger workers during the 1970s and 1980s.[13] This suggests some common underlying factor or factors affecting both older and younger workers—at least among those in low-wage jobs.

Stephen Ruhm, in a later study, used data from the Retirement History Survey to study men in 1969 and from the HARRIS survey (commissioned by the Commonwealth Fund) to study men in 1989. He found that 62 percent of those in the earlier cohort who had left career jobs at age 54 or 55 were employed again at the later survey date, compared with 41 percent of those in the later cohort. He also found that early departures from career jobs—at ages 58 to 63—correlate with high reemployment probabilities.[14] Joseph Quinn[15] and a more recent study by Kevin Cahill, Michael Giandrea, and Joseph Quinn[16] referred to this phenomenon as a "do-it-yourself" form of retirement. Using the Health and Retirement Study, these authors found that two-thirds of younger retirees transition to part-time work from career jobs.

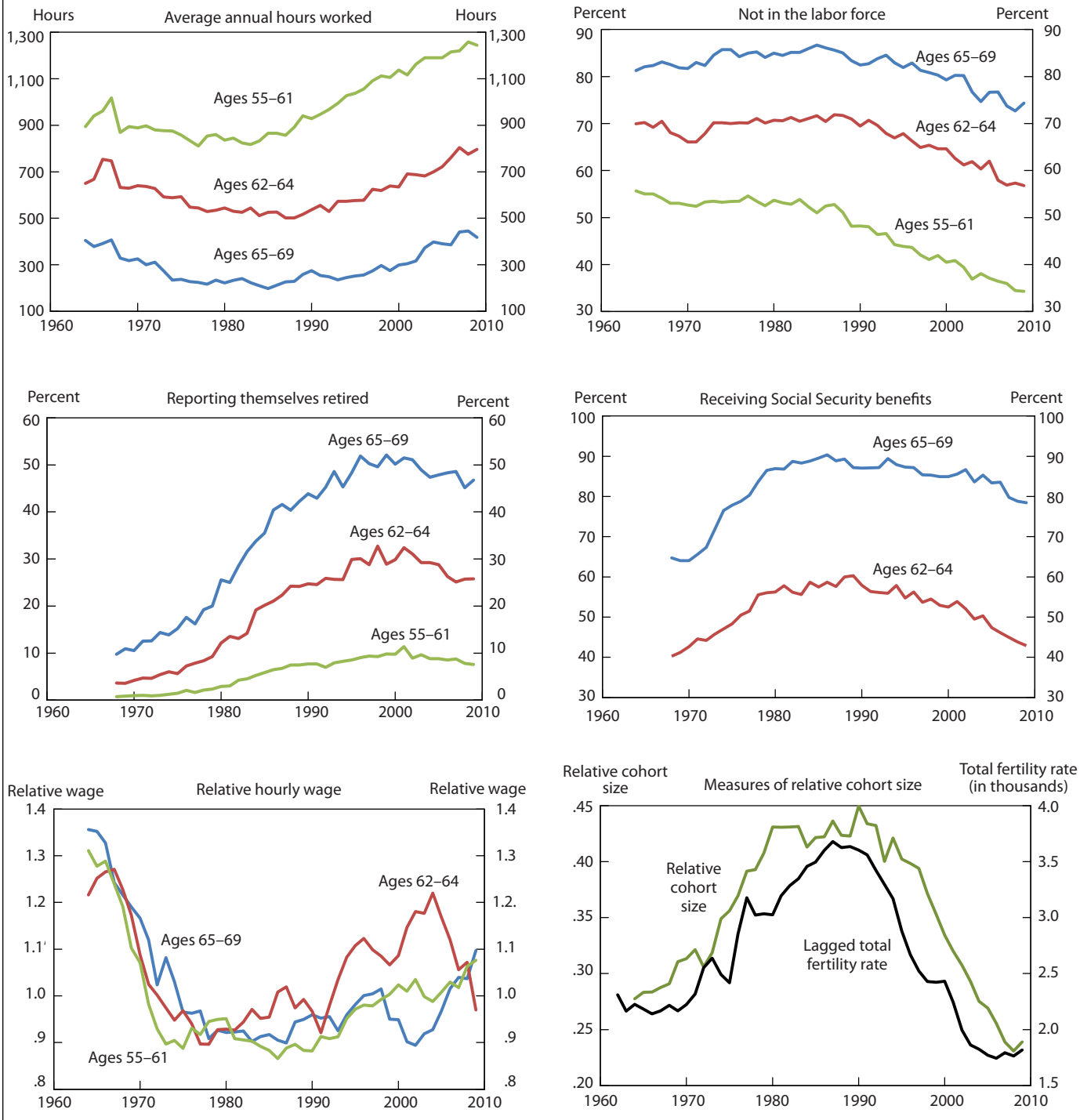
The data

Chart 1 presents data describing the labor force participation and retirement patterns of women ages 55–69. The average annual hours worked (including zeros) for women ages 55–61 decreased from 889 in 1970 to 866 in 1985 and then increased to 1,243 in 2009, while those for the 62–64 age group declined from 640 in 1970 to 526 in 1985 and then increased to 796. For women ages 65–69, annual hours were 325, 198, and 419.

The chart also indicates retirement patterns by the percentage reporting themselves as retired when questioned about why they hadn't worked in the previous year[17] and the percentage claiming Social Security benefits. For the two older age groups, the latter is nearly the inverse of hours worked, increasing dramatically in the early period and then declining very markedly after 1980–1985 for those ages 62–64. The percentage of women ages 62–69 reporting themselves as retired increased until the mid-1990s and then began to decline.

The bottom left panel within chart 1 presents the relative

Chart 1. Labor force and retirement characteristics of women ages 55–69



NOTES: The relative wage is defined here as the average wage of part-year, part-time workers relative to the average full-time wage of the previous 5-year age group. That is, the assumption is that a worker, in deciding whether to take a bridge job at ages 65–69, will compare the wage that she could earn in that bridge job relative to the wage she has been earning in a full-time career job at age 60–64. Relative cohort size is defined as the number of women ages 25–34 working part-time relative to the number of women ages 55–69. "Reporting themselves as retired" is a self-reported variable and is derivative in the CPS. That is, the CPS is not designed specifically to elicit statistics on retirement; rather, retirement is a reason that can be given for not having worked in the previous year.

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

hourly wage of older women. The relative wage for each age group is defined here as the average wage of part-year, part-time workers relative to the average full-time wage of the same group of women during the previous 5-year period. That is, the assumption is that a worker, in deciding whether to take a bridge job at, say, ages 55–59, will compare the wage that she could earn in that bridge job relative to the wage she has been earning in a full-time career job at ages 50–54. In all three cases, we see a sharp decline in this measure prior to 1980, with some increase—dramatic in the case of the middle age group—in the period after 1980.

The purpose of this paper is to examine these trends from 1968 to 2009 and to attempt to find some explanation for the distinctive patterns displayed in the chart.

Approach

The approach in the current study builds on the concept of "bridge jobs," especially the following findings:

- The majority of these bridge jobs are not in the same industry or occupation as the career job,[18] leading one to surmise that there is little transfer of skill or human capital from the career job to the bridge job.
- The characteristics most highly correlated with the transition to bridge jobs are those associated with low-wage workers, which again suggests lower levels of skill or human capital.[19]
- The proportion of workers transitioning to bridge jobs declined substantially between 1969 and 1989—a period when retirement rates were rising and labor force participation rates were falling—suggesting that access to bridge jobs may have declined during this period.
- The patterns of transitions among older workers paralleled that of younger workers in the 1970s and 1980s.[20]

These findings lead to the hypothesis that there may be a high level of competition and substitutability between older and younger workers for the types of part-time jobs typical of bridge jobs, and that some common factor affected both older and younger workers to an increasing degree during the 1970s and 1980s, and then attenuated in the 1990s and 2000s.

The "culprit" identified in this study—the common factor affecting both younger and older workers—is the post-World War II baby boom. As demonstrated in my 1999 and 2002 studies about young men, baby boomer overcrowding caused by their large relative cohort size, typified in a lagged total fertility rate (TFR), affected relative wages, unemployment, and the proportion of younger workers in part-time and/or part-year jobs.[21] The relative cohort size measure used here for older women is consequently the ratio of 25-to-34-year-old women working part time and/or part year to the number of women ages 55–69, and it is instrumented (given the possibility of endogeneity in the contemporaneous relative cohort size variable) using a 30-year lag of the total fertility rate.

The rationale behind these measures is that older women are using part-time and part-year jobs as bridge jobs prior to retirement, and because there is little transfer of human capital from career jobs, these women are at least to some extent competing with younger women for these jobs. As some older women encounter difficulty finding such jobs, they are more likely to skip the bridge jobs and move directly into full retirement—or, alternatively, they are less likely to re-enter the labor force after retirement.

The lower right panel in chart 1 illustrates the pattern of this relative cohort size variable for older women, with its sharp rise prior to 1980 and equally sharp decline after 1995. Superimposed on this pattern is a 30-year lag of the total fertility rate: the earlier pattern of births that produced the large cohort with its overcrowding and high proportions working part year and/or part time resembles the movements in the relative cohort size.

Data and methodology

The data used in these analyses has been drawn exclusively from the Current Population Survey (CPS) Annual Social and Economic Supplement for 1968–2009, as prepared in uniform files in *CPS Utilities* by Unicon. Data covered women ages 25–34 and women ages 55–69, with the ages 25–34 group used for the numerator of a relative cohort size variable and the age 55–69 group used for the remainder of the analyses.[22]

The methodology employed is that of a typical labor supply model but with relative cohort size variables added. The relative cohort size variable used was calculated as the number of 25-to-34-year-old women working part year and/or part time relative to the number of women ages 65–69 in each year and state.[23] Age-specific unemployment rates were calculated for each of the three age groups—55–61, 62–64 and 65–69—calculated at the Metropolitan Statistical Area (MSA) level,[24] and regressions were run using individual-level microdata with these state- and MSA-level variables attached to

each record. In addition, each age-group's model was also tested with a 30-year lag of the total fertility rate as an instrument for the relative cohort size measure. Summary statistics describing the data are presented in appendix tables A-1 through A-3.

Four models were estimated for four labor supply indicators; this was done separately for each of the three age groups. (See box.)

The control variables included single-year age dummies, 4 education dummies (with 16 years as reference group), 3 race dummies (with non-Hispanic Whites as reference group), 20 state dummies,[25] a time trend, and 3 indicators of MSA status (principal city, balance of MSA, and non-MSA).

In addition, each of models (1)–(4) was estimated for each age group, substituting a 30-year lag of the total fertility rate for the relative cohort size variable. And finally, the models for those ages 65–69 were tested with controls for the major changes in Social Security which occurred during the study period: a dummy was included for the years after 1990, the period in which the delayed retirement credit was increased, and another for the period after 2000, when the Senior Citizens' Freedom to Work Act was passed.

The methodology comprised three steps. In the first, hourly wages were calculated—in 2008 dollars using the Consumer Price Index—as total annual wages and salary in the previous year divided by annual hours worked, with the latter calculated as weeks worked times the usual number of hours worked per week in the previous year.[26] The annual wages and salary were first multiplied by a factor of 1.45 if topcoded, as in work by Francine Blau and Lawrence Kahn.[27] The hourly wage was imputed for those with no reported wage, the self-employed, and those whose calculated wage fell outside the range of $2.50–$250 in 2008 dollars. The imputation process was based on separate regressions of the natural logarithm of wages (logwage) for those with fewer than 20 weeks worked and those with 20 or more weeks worked, separately for each age group. That is, it was assumed, as in, for example, Francine Blau and Lawrence Kahn's article, that wages should be imputed on the basis of the reported wage of those in groups with similar numbers of weeks worked.

The imputation regressions were run separately in each of 14 3-year groupings. Three-year groupings were used to achieve larger sample sizes for the imputation process, and the March CPS Supplement weights were normalized

Equations for labor supply models

$$H = \beta_0 + \beta_1 \ln W + \beta_2 I_e + \beta_3 I_o + \beta_4 RCS_{State} + \beta_5 U_{MSA} + \beta_6 M + \mathrm{B}' X + u \quad (1)$$

$$NLF = \gamma_0 + \gamma_1 \ln W + \gamma_2 I_e + \gamma_3 I_o + \gamma_4 RCS_{State} + \gamma_5 U_{MSA} + \gamma_6 M + \Gamma' X + u \quad (2)$$

$$R = \alpha_0 + \alpha_1 \ln W + \alpha_2 I_e + \alpha_3 I_o + \alpha_4 RCS_{State} + \alpha_5 U_{MSA} + \alpha_6 M + \mathrm{A}' X + u \quad (3)$$

$$R_{SS} = \delta_0 + \delta_1 \ln W + \delta_2 I_e + \delta_3 I_o + \delta_4 RCS_{State} + \delta_5 U_{MSA} + \delta_6 M + \Delta' X + u \quad (4)$$

where

H represents annual hours worked in the previous year (including those with zeros);

NLF represents a binary variable set to 1 for those not in the labor force;

R represents a binary variable set to 1 for those identifying themselves as retired;[28]

R_{SS} represents a binary variable set to 1 for those receiving Social Security benefits;

W represents the man's own (instrumented) hourly wage, in constant 2008 dollars;

I_e represents the earnings of others in the family, defined as total family earnings minus own earnings, in constant 2008 dollars;

I_o represents other income, which comprises interest, dividends, and rent, in 2008 dollars;

RCS_{State} represents the year- and state-specific relative cohort size;

U_{MSA} represents the age- and MSA-specific unemployment rate, in the year prior to the survey;

M represents a binary variable set to 1 for those who are married with spouse present; and

X is a vector of control variables.

to sum to 1 in each year, so that each year carried equal weight in the regressions. The regressions each included 4 age dummies, 2 year dummies, 4 education dummies, 3 race dummies, 20 state dummies, and 3 indicators of MSA status.

In the second step, which treated own wages as endogenous, wages were instrumented—again separately for each age group and time period—by regressing logwage on 4 age dummies, 4 education dummies, 3 race dummies, 20 state dummies, and 3 indicators of MSA status. In addition, following on the work by Francine Blau and Lawrence Kahn , a series of dummy variables representing wage deciles was included, which served as excluded instruments in the final hours, participation, and retirement equations. As indicated in their article, use of the deciles "corrects to some degree for measurement error in the wage."[28]

The third step involved estimating each of the equations in (1)–(4) separately for each age group over the entire 42-year period. Equation (1) was treated as a weighted IV linear model, while equations (2), (3), and (4) were weighted IV binary probit models.

Results

The results of this procedure are presented in tables 1–4 for each of the three age groups: 55–61, 62–64, and 65–69. The top half of each table presents results using the lagged total fertility rate (TFR), and the bottom half presents results using the state-level relative cohort size variable (RCS). Table 1 presents results for annual hours worked, table 2 for the propensity to be not in the labor force, and table 4 for the propensity to claim Social Security benefits. Table 3 presents results of the probit regressions for the binary variable "retired." As previously stated in an endnote, this is a self-reported variable and is derivative in the CPS. That is, the CPS is not designed specifically to elicit statistics on retirement; rather, retirement is a reason that can be given for not having worked in the previous year. As such, it is possible that the number given for "retired" is an undercount, because some who ultimately find themselves retired might report themselves in the shorter term as simply not in the labor force or even unemployed, rather than retired.

In all cases, the coefficients on the relative cohort size and total fertility rate variables display the expected signs, and all are highly significant. The variables have a strong negative effect on hours worked and have positive effects on the proportions not in the labor force, retired, and claiming Social Security benefits. This is consistent with the hypothesis that overcrowding in the market for part-year and part-time jobs induces older women to reduce their labor force participation: the competition for part-year and/or part-time jobs leads women to skip bridge jobs and move directly out of the labor force from career jobs.

The strength of the estimated effects varies across age groups and across the four variables. The estimated elasticities are strongest for the likelihood of reporting oneself as retired: .9-1.0 for TFR and .3-.4 for RCS. For the 65–69 age group, next strongest is the effect on hours worked, with elasticities of −.4(RCS) and −.6(TFR) before Social Security controls, and −.2 and −.5 after adding controls. For women ages 62–64, the next strongest elasticity is for the likelihood of claiming Social Security benefits, with values of .2 to .4. The weakest estimated elasticities for women generally were for labor force participation.

Adding controls for the changes in Social Security in the 65–69 age group reduces the estimated effect of the relative cohort size variable, but the coefficients remain highly statistically significant. In the case of claiming Social Security benefits, the estimated effect of the total fertility rate is actually increased when these controls are added.

When combined with the total fertility rate, the estimated effect of the delayed retirement benefit on the 65–69 age group is statistically significant only in the case of the two retirement variables, and even then the results are mixed, with a positive estimated effect on the propensity to call oneself retired. When combined with the relative cohort size variable, however, the effect of the delayed retirement benefit is significant, with the expected signs—positive on hours worked, and negative on the other three variables—but, except for the propensity to claim Social Security benefits, its statistical significance is small. The estimated negative effect on the propensity to claim Social Security benefits is very strong, however. This accords with the findings of Cordelia Reimers and Marjorie Honig.[29]

The Freedom to Work Act has had a more mixed effect. The act has a significant positive effect on hours worked and a negative effect on being not in the labor force or thinking of oneself as retired (although when combined with the total fertility rate, its effect was not statistically significant for "not in the labor force"). But its effect in terms of claiming Social Security benefits is mixed: barely significant and positive when combined with the TFR, but significant and negative in combination with the RCS.

In terms of own-wage elasticities, the results in tables 1–4 show a marked difference across age groups, similar to the differences estimated for older women. For proportions not in the labor force and proportions reporting themselves retired, the coefficient on the logwage is either not statistically significant for the 62–64 age group or just

Table 1. Instrumental variable regression results for annual hours worked (including zeros)

Value	Women ages 55–61	Women ages 62–64	Women ages 65–69	
			Without legislative controls	With legislative controls
Lagged total fertility rate (thousands)	–66.2	–74.6	–65.0	–52.8
	(–17.4)	(–13.5)	(–19.3)	(–9.1)
Logwage[1]	341.4	65.9	–58.5	–59.0
	(59.6)	(9.0)	(–14.4)	(–14.5)
Others' earnings (thousands)[2]	–.4	1.0	1.4	1.4
	(–7.3)	(11.3)	(17.2)	(17.2)
Other income (thousands)[3]	–3.1	–2.1	–1.1	–1.1
	(–20.2)	(–10.8)	(–10.3)	(–10.3)
Married?	–310.5	–283.6	–165.1	–165.1
	(–59.5)	(–39.3)	(–40.6)	(–40.7)
Time trend	.7	–1.5	.4	.1
	(3.3)	(–4.6)	(2.1)	(.2)
Delayed retirement benefit?	—	—	—	–11.4
	—	—	—	(–1.2)
Freedom to Work Act?	—	—	—	40.6
	—	—	—	(3.4)
Adjusted R–square	.1144	.0751	.0604	.0607
TFR elasticity	–.185	–.339	–.636	–.516
Relative cohort size (state–year–specific)	–262.1	–319.4	–325.8	–161.5
	(–10.9)	(–9.0)	(–14.7)	(–6.3)
Logwage[1]	341.3	64.7	–53.7	–58.0
	(59.5)	(8.9)	(–13.4)	(–14.3)
Others' earnings (thousands)[2]	–.3	1.0	1.4	1.4
	(–7.0)	(11.6)	(17.5)	(17.3)
Other income (thousands)[3]	–3.2	–2.4	–1.3	–1.2
	(–21.1)	(–11.5)	(–11.6)	(–10.6)
Married?	–311.9	–284.5	–165.6	–165.3
	(–59.7)	(–39.3)	(–40.7)	(–40.7)
Time trend	1.5	–.7	1.3	–1.8
	(7.0)	(–2.1)	(6.5)	(–4.5)
Delayed retirement benefit?	—	—	—	27.4
	—	—	—	(3.7)
Freedom to Work Act?	—	—	—	95.6
	—	—	—	(11.2)
Adjusted R–square	.1136	.0737	.0589	.0602
Number of observations	227,907	85,173	130,084	130,084
RCS elasticity	–.095	–.189	–.414	–.215

[1] Logwage is imputed for those reporting no wage, and instrumented for all.

[2] Defined as total family earnings minus own earnings.

[3] Comprising interest, dividends and rent.

NOTES: Reporting hours worked are for years 1967–2008. All t–statistics are in parentheses. All regressions included 20 dummies for state groupings, age dummies, 4 education dummies, 3 race dummies, an MSA-specific unemployment rate, and 3 indicators of MSA residency status. Dash indicates not applicable.

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

barely significant. But the coefficient on the logwage differs in sign between the other two age groups. For hours worked, the effect is positive for those ages 55–61 but is negative for those ages 65–69: the income effect dominates in the older age group. Correspondingly, for being not in the labor force or retired, the effect is negative for those ages 55–61 and positive for those ages 65–69. In terms of claiming Social Security benefits, however, the

Table 2. Instrumental variable binary probit results for not in the labor force

Value	Women ages 55–61	Women ages 62–64	Women ages 65–69	
			Without legislative controls	With legislative controls
Lagged total fertility rate (thousands)	0.024	0.033	0.029	0.027
	(11.4)	(10.7)	(14.6)	(7.7)
Logwage[1]	–.143	–.003	.042	.042
	(–45.9)	(–0.8)	(17.4)	(17.5)
Others' earnings (thousands)[2]	.0001	–.0006	–.0007	–.0007
	(4.1)	(–13.7)	(–19.7)	(–19.8)
Other income (thousands)[3]	.001	.001	.0006	.0006
	(16.8)	(8.8)	(7.3)	(7.3)
Married?	.145	.148	.097	.097
	(52.2)	(37.8)	(40.2)	(40.2)
Time trend	–.001	–.001	–.001	–.001
	(–8.5)	(–2.1)	(–8.2)	(–3.0)
Delayed retirement benefit?	—	—	—	.003
	—	—	—	(0.5)
Freedom to Work Act?	—	—	—	–.007
	—	—	—	(–1.0)
Pseudo R-square	.0712	.0507	.054	.054
TFR elasticity	.139	.134	.096	.090
Relative cohort size (state-year-specific)	.084	.109	.140	.073
	(6.5)	(5.5)	(10.4)	(4.7)
Logwage[1]	–.143	–.003	.040	.042
	(–45.9)	(–0.8)	(16.7)	(17.2)
Others' earnings (thousands)[2]	.0001	–.0006	–.0007	–.0007
	(3.9)	(–13.9)	(–20.0)	(–19.9)
Other income (thousands)[3]	.002	.001	.0006	.0006
	(17.3)	(9.3)	(8.1)	(7.5)
Married?	.145	.149	.097	.097
	(52.4)	(37.9)	(40.2)	(40.2)
Time trend	–.001	–.001	–.001	.0001
	(–11.3)	(–5.0)	(–12.4)	(0.4)
Delayed retirement benefit?	—	—	—	–.018
	—	—	—	(–3.8)
Freedom to Work Act?	—	—	—	–.037
	—	—	—	(–7.3)
Pseudo R-square	.0709	.0497	.0529	.0535
Number of observations	227,907	85,173	130,084	130,084
RCS elasticity	.063	.058	.060	.031

[1] Logwage is imputed for those reporting no wage, and instrumented for all.

[2] Defined as total family earnings minus own earnings.

[3] Comprising interest, dividends and rent.

NOTES: Reporting labor force status is for years 1968–2009. All t–statistics are in parentheses. All regressions included 20 dummies for state groupings, age dummies, 4 education dummies, 3 race dummies, an MSA-specific unemployment rate, and 3 indicators of MSA residency status. Dash indicates not applicable.

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

effect of the logwage is strongly negative for both of the older age groups, much the same as for men.

The estimated effect of marriage on older women is negative on hours worked and positive on being not in the labor force or thinking of oneself as retired. But in terms of claiming Social Security benefits, the estimated effect of marriage is negative for both of the older age groups. However, in terms of "others' earnings" (presum-

Table 3. Instrumental variable binary probit results for proportion retired (as self-reported)

Value	Women ages 55–61	Women ages 62–64	Women ages 65–69	
			Without legislative controls	With legislative controls
Lagged total fertility rate (thousands)	0.025 –22.2	0.083 –24.4	0.117 –30.9	0.100 –14.7
Logwage[1]	–.018 (–17.2)	–.004 (–1.2)	.017 –5.3	.018 –5.4
Others' earnings (thousands)[2]	–.0004 (–19.5)	–.001 (–18.5)	–.002 (–20.9)	–.002 (–21.0)
Other income (thousands)[3]	.001 –22.1	.001 –11.0	.001 –8.5	.001 –8.5
Married?	.018 –15.8	.031 –9.3	–.021 (–6.3)	–.021 (–6.3)
Time trend	.003 –31.9	.008 –30.1	.012 –43.6	.013 –24.2
Delayed retirement benefit?	— —	— —	— —	.022 –3.0
Freedom to Work Act?	— —	— —	— —	–.030 (–2.9)
Pseudo R-square	.125	.122	.135	.135
TFR elasticity	.975	1.03	.819	.700
Relative cohort size (state-year-specific)	.079 –15.8	.252 –14.8	.341 –17.1	.104 –4.7
Logwage[1]	–.019 (–18.0)	–.001 (–.4)	.012 –3.5	.018 –5.5
Others' earnings (thousands)[2]	–.0004 (–19.7)	–.001 (–19.0)	–.002 (–21.3)	–.002 (–21.1)
Other income (thousands)[3]	.001 –23.2	.001 –12	.001 –10.5	.001 –9.1
Married?	.018 –16.1	.033 –9.6	–.019 (–5.9)	–.02 (–6.2)
Time trend	.003 –35.1	.009 –36.5	.014 –53.1	.018 –50.8
Delayed retirement benefit?	— —	— —	— —	–.013 (–1.9)
Freedom to Work Act?	— —	— —	— —	–.136 (–21.7)
Pseudo R-square	.121	.117	.129	.133
Number of observations	227,907	85,173	130,084	130,084
RCS elasticity	.401	.407	.310	.095

[1] Logwage is imputed for those reporting no wage, and instrumented for all.

[2] Defined as total family earnings minus own earnings.

[3] Comprising interest, dividends and rent.

NOTES: Reporting hours worked are for years 1967–2008. All t–statistics are in parentheses. All regressions included 20 dummies for state groupings, age dummies, 4 education dummies, 3 race dummies, an MSA-specific unemployment rate, and 3 indicators of MSA residency status. Dash indicates not applicable.

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

ably in most cases the husband's), the effect is positive on hours worked and negative on the other three variables except for women ages 55–61, for whom the effect of others' earnings is negative on hours worked and positive on the likelihood of being not in the labor force.

Other income—interest, rent, and dividends—has a significant negative effect for women on hours worked and a significant positive effect on the other three variables.

Table 4. Instrumental variable binary probit results for receiving Social Security

Value	Women ages 62–64	Women ages 65–69	
		Without legislative controls	With legislative controls
Lagged total fertility rate (thousands)	0.081 –24.1	0.08 –39.7	0.082 –22.7
Logwage[1]	–.072 (–16.0)	–.027 (–11.8)	–.027 (–11.8)
Others' earnings (thousands)[2]	–.002 (–26.0)	–.001 (–27.5)	–.001 (–27.5)
Other income (thousands)[3]	.001 –7.2	.001 –8.9	.001 –8.8
Married?	–.042 (–9.8)	–.035 (–15.2)	–.035 (–15.3)
Time trend	.005 –23.2	.005 –49.7	.006 –18.5
Delayed retirement benefit?	— —	— —	–.015 (–2.4)
Freedom to Work Act?	— —	— —	.013 –1.9
Pseudo R-square	.085	.088	.088
TFR elasticity	.425	.265	.271
Relative cohort size (state-year-specific)	.340 –15.8	.392 –27.7	.221 –13.4
Logwage[1]	–.07 (–15.6)	–.034 (–14.3)	–.029 (–12.3)
Others' earnings (thousands)[2]	–.002 (–26.5)	–.001 (–28.3)	–.001 (–28.1)
Other income (thousands)[3]	.001 –8.5	.001 –10.3	.001 –9.3
Married?	–.041 (–9.6)	–.035 (–15.1)	–.035 (–15.1)
Time trend	.004 –19.0	.005 –41.5	.009 –36.6
Delayed retirement benefit?	— —	— —	–.082 (–16.5)
Freedom to Work Act?	— —	— —	–.084 (–15.0)
Pseudo R-square	.082	.080	.084
Number of observations	85,173	130,084	130,084
RCS elasticity	.232	.169	.095

[1] Logwage is imputed for those reporting no wage, and instrumented for all.

[2] Defined as total family earnings minus own earnings.

[3] Comprising interest, dividends and rent.

NOTES: Reporting hours worked are for years 1967–2008. All t–statistics are in parentheses. All regressions included 20 dummies for state groupings, age dummies, 4 education dummies, 3 race dummies, an MSA-specific unemployment rate, and 3 indicators of MSA residency status. Dash indicates not applicable.

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

The effect of the time trend is negative on hours worked only for women ages 62–64 and is negative for all three age groups in terms of being not in the labor force, but is positive in terms of the two retirement variables.

Table 5 is an attempt to estimate the significance of the relative cohort size variables in terms of the percentage of observed change that might be attributed to those variables. The table provides estimates of the maximum change from the mean which might be generated in the dependent variable given the estimated elasticity and the

Table 5. Potential explanatory power of relative cohort size variables

Value	Women ages 55–61	Women ages 62–64	Women ages 65–69
Average annual hours worked			
Maximum percentage change from mean	26.1	30.1	51.8
Maximum percentage explained by change in RCS	12.7	22.0	14.5
Maximum percentage explained by change in TFR	25.3	38.7	34.3
Proportion not in the labor force			
Maximum percentage change from mean	25.4	14.4	10.0
Maximum percentage explained by change in RCS	8.9	14.1	11.0
Maximum percentage explained by change in TFR	18.8	32.0	31.0
Proportion reporting themselves as retired			
Maximum percentage change from mean	87.1	80.9	70.8
Maximum percentage explained by change in RCS	16.1	17.6	4.7
Maximum percentage explained by change in TFR	38.5	44.0	34.0
Proportion claiming Social Security benefits			
Maximum percentage change from mean	—	17.9	21.8
Maximum percentage explained by change in RCS	—	45.4	15.3
Maximum percentage explained by change in TFR	—	81.7	42.8

NOTES: Numbers in parentheses are the percentage of the total change that is explained by the regression. Dash indicates not applicable.

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

maximum observed percentage change in the independent variable. In each case, the estimated change in the dependent variable is then calculated as a percentage of the maximum change from the mean that was observed in the dependent variable. On this basis, it can be said, in general terms, that the lagged total fertility rate would have generated an average of about 30 percent of the observed change in the dependent variables—the probability of being not in the labor force, retired, and/or claiming Social Security benefits, and hours worked—and the relative cohort size would have generated about 15 percent of the change. For women ages 62–64, however, the effects are much stronger in terms of the propensity to claim Social Security benefits: the lagged total fertility rate would have generated about 80 percent of the change, and the relative cohort size would have generated about 45 percent.

THIS STUDY HAS SHOWN that members of the post-WWII baby boom began entering the labor market in the late 1960s, and their numbers swelled through the 1970s and into the 1980s. Their large size relative to the size of the cohort of prime-age workers forced a whole host of dislocations for the baby boomers: high unemployment, low relative wages, and increasing proportions forced into part-time and part-year work, as found in my previous studies.[30] The peak of the baby boom had entered the labor force by 1985, but the dislocations did not end there, as the bottleneck created by those in the peak continued to block subsequent generations. Members of the baby boom did not escape the effects of their cohort's large size even in their thirties, and members of the relatively smaller cohorts following the peak of the boom continued to find themselves pushed into part-time and part-year work. However, as relative cohort size eased in the 1990s, many of these effects began to ease as well. In particular, the share of women ages 20–29 working part year and/or part time fell from 44 percent in 1980 to 34 percent in 2008—comparable to its level before the entry of the baby boom into the job market. For women ages 30–39, that share fell from its high of 36 percent in 1982 to 26 percent in 2008, lower than its level before the baby boom entered the market.

At the same time that this was happening, the retirement rate rose fairly dramatically in the 1970s and 1980s among women ages 55 and older, and their labor force participation rates fell accordingly. The shares claiming Social Security benefits rose from 1968 levels of 40 percent and 65 percent for those ages 62–64 and 65–69, respectively, to highs of 60 percent and 90 percent in the late 1980s, but then declined to 43 percent and 78 percent, respectively, in 2009.

Evidence suggests that the correspondence between the phenomena of retirement and the availability of bridge jobs—with strong increases in the retirement rate of wom-

en in the period before 1985 and declines after 1995—is not coincidental. It has been demonstrated in a number of studies that, to a great extent, older workers do not retire directly from their career jobs. Instead, they tend to move through part-time and/or part-year bridge jobs, especially lower wage jobs, before retiring. And very often these bridge jobs do not occur in the same industry or even the same occupation as the career job, suggesting a fairly low level of transference of skills and human capital. Thus, to some extent, these older workers may have been competing for the same part-time, part-year jobs that the baby boomers were crowded into. Older women's relative wages in these jobs—defined as the wage they could earn in a part-time and/or part-year job relative to the wage they were earning in a full-time, full-year job—fell from about 1.30 in the mid-1960s to only about 0.95 in the mid-1980s. For those ages 62–69, it then rose to more than 1.20 during 2000–2010 as baby boomers moved on and the job market for part-time, part-year jobs eased (as shown in chart 1).

As a result, this study has made use of a measure of relative cohort size: the number of 25-to-34-year-old women working part-year and/or part-time relative to the number of women ages 55–69. For purposes of analysis, the measure was calculated, using Current Population Survey (CPS) Annual Social and Economic Supplement data, for each woman at the level of her state. This relative cohort size measure might be thought of as a direct function of a 30-year lag of the total fertility rate, a measure often used to illustrate the effects of the post-WWII baby boom, as shown in the bottom right panel of chart 1.

More importantly, this measure has been shown here to have highly significant effect—both statistically and substantively—on older women's annual hours worked, labor force participation, and propensity to retire and claim Social Security benefits.

However, a significant portion of the sharp 1970s decline in annual hours worked for women ages 62–69 and increases in retirement among older women in general remains unexplained, indicating the considerable role played by the other important factors that have been identified as affecting older women's decision to retire: (1) access to health insurance and (2) changes in Social Security and pensions.

We have begun to experience the entry of the "echo boom" into the labor market, and one might initially expect that this would once again tend to motivate older workers to retire at higher rates as the echo boom moves into its twenties and thirties. However, the ratio of these young workers to older workers will remain low because the older workers will themselves be members of the large baby boom cohort—so it remains to be seen whether it is the absolute or the relative size of the younger cohort which is significant in affecting patterns in the older cohort or whether the large size of the retiring cohort itself may affect its labor force participation patterns. Any attempt to tease out the effects of the echo boom's entry into the labor market will have to differentiate them from the effects of the recent recession and diminution of 401(k)s. □

Notes

[1] Jonathan Gruber and Peter Orszag, "Does the Social Security earnings test affect labor supply and benefits receipt?" *National Tax Journal*, December 2003, pp. 755–773; Marjorie Honig, "Married women's retirement expectations: do pensions and Social Security matter?" *American Economic Review*, May 1998, pp. 202–206; Cordelia Reimers and Marjorie Honig, "Responses to Social Security by men and women: myopic and far-sighted behavior," *Journal of Human Resources*, Spring 1996, pp. 359–382; and Stephen Rubb, "U.S. Social Security rules in the 1990s: a natural experiment in myopic and far-sighted behavior," *Applied Economics Letters*, issue 10, 2002, pp. 637–640.

[2] Reimers and Honig, "Responses to Social Security by men and women."

[3] Rubb, "U.S. Social Security rules in the 1990s."

[4] Gruber and Orszag, "Does the Social Security earnings test affect labor supply and benefits receipt?"

[5] Honig, "Married women's retirement expectations."

[6] Franco Peracchi and Finis Welch, "Trends in labor force transitions of older men and women," *Journal of Labor Economics*, University of Chicago Press, April 1994, pp. 210–242.

[7] Marjorie Honig and Giora Hanoch, "Partial retirement as a separate mode of retirement behavior," *Journal of Human Resources,* Winter 1985, pp. 21–46.

[8] Honig, "Married women's retirement expectations."

[9] Elizabeth T. Hill, "The labor force participation of older women: Retired? Working? Both?" *Monthly Labor Review*, September 2002, pp. 39–48.

[10] Christopher J. Ruhm, "Bridge jobs and partial retirement," *Journal of Labor Economics*, University of Chicago Press, October 1990, pp. 482–501.

[11] Michael D. Giandrea, Kevin E. Cahill, and Joseph F. Quinn, *Self-employment transitions among older American workers with career jobs*, Boston College Working Papers in Economics, no. 684, 2008.

[12] Michael D. Giandrea, Kevin E. Cahill, and Joseph F. Quinn, *Bridge jobs: a comparison across cohorts*, Boston College Working Papers in Economics, no. 670, 2008.

[13] Peracchi and Welch, "Trends in labor force transitions."

[14] Christopher J. Ruhm, "Secular changes in the work and retirement patterns of older men," *The Journal of Human Resources*, issue 2, 1995, pp. 362–385.

[15] Joseph F. Quinn, *New paths to retirement*, Boston College Working Papers in Economics, no. 406, 1998, and *Has the early retirement trend reversed?* Boston College Working Papers in Economics, no. 424, 1999.

[16] Kevin E. Cahill, Michael D. Giandrea, and Joseph F. Quinn, *A micro-level analysis of recent trends in labor force participation among older workers*, Working Paper 2008–08, Center for Retirement Research at Boston College, 2008.

[17] This is a self-reported variable and is derivative in the CPS. That is, the CPS is not designed specifically to elicit statistics on retirement; rather, retirement is a reason that can be given for not having worked in the previous year. As such, it is possible that the retirement count is an underestimate, since some who ultimately find themselves retired might report themselves in the shorter term as simply not in the labor force, or even unemployed, rather than retired.

[18] Ruhm, "Bridge jobs and partial retirement."

[19] Peracchi and Welch, "Trends in labor force transitions."

[20] Ibid.

[21] Diane J. Macunovich, "The fortunes of one's birth: relative cohort size and the youth labor market in the U.S." *Journal of Population Economics,* June 1999, pp. 215–272, and *Birth quake: the baby boom and its aftershocks* (Chicago: University of Chicago Press: 2002).

[22] Any active duty military personnel who happened to be included in the CPS sample (because they are deployed within the United States) have been excluded from this analysis.

[23] There were 51 separate jurisdictions (50 states and the District of Columbia) identified from 1977 to 2009, 22 from 1973 to 1976, and 30 from 1968 to 1972.

[24] MSA was not available prior to 1977, so state-level variables were used, specific to each age group, for those years. After 2004, BLS changed from MSAs to Consolidated Statistical Areas (CSAs). The resulting number of levels used in each year was 21 for 1969–76, 45 for 1977–85, 248 for 1986–2004, 281 for 2005, and 265 for 2006–2009. For those not living in an MSA, the state-level variable was used.

[25] There were 21 state groupings consistently available during all 42 years.

[26] Because the variable "hours worked per week in the previous year" was not available prior to 1976 and weeks worked in the previous year was available only in groupings, an imputation algorithm developed by Finis Welch in 1979 was used to allocate hours and weeks worked for these years. Details are available from the author upon request.

[27] Francine D. Blau and Lawrence M. Kahn, "Changes in the labor supply behavior of married women, 1980–2000," *Journal of Labor Economics*, University of Chicago Press, July 2007, pp. 393–438.

[28] Ibid, p. 406.

[29] Reimers and Honig, "Responses to Social Security by men and women."

[30] Macunovich, "The fortunes of one's birth" and *Birth quake.*

APPENDIX: Supplementary tables

Table A–1. Summary statistics for women ages 55–61

Value	1969–1971	1974–1976	1979–1981	1984–1986	1989–1991	1994–1996	1999–2001	2007–2009	1968–2009
Average annual hours worked[1]	893.2	855.6	846.7	854.6	935.1	1,037.4	1,114.0	1,232.8	977.3
Proportion not in the labor force[2]	.527	.534	.531	.519	.484	.442	.414	.353	.473
Proportion retired[3]	.009	.016	.028	.059	.077	.116	.134	.111	.070
Relative cohort size[4]	.315	.358	.423	.419	.436	.407	.336	.236	.355
Lagged total fertility rate (thousands)	2.236	2.588	3.085	3.519	3.600	2.906	2.366	1.791	2.731
Unemployment rate	2.9	5.0	3.6	4.6	3.3	3.7	2.9	4.0	3.6
Logwage	2.332	2.404	2.502	2.524	2.524	2.579	2.639	2.826	2.560
Others' earnings (dollars)[5]	34,286	34,887	36,853	35,361	34,516	33,394	39,818	41,346	36,927
Other income[6]	—	—	4,862	6,864	6,630	5,529	6,242	5,288	4,658
Proportion married[7]	.695	.700	.703	.700	.679	.674	.648	.644	.680
Fewer than 12 years of school	.519	.440	.346	.314	.272	.195	.151	.093	.284
12 years of school	.326	.393	.445	.457	.444	.426	.394	.331	.398
13–15 years of school	.084	.095	.124	.124	.147	.219	.246	.282	.171
16 years of school	.048	.047	.052	.064	.079	.101	.124	.178	.090
More than 16 years of school	.023	.025	.033	.041	.058	.059	.085	.116	.057
Black	.029	.086	.091	.099	.107	.108	.104	.088	.092
Hispanic	.007	.030	.033	.053	.062	.074	.082	.075	.054
Other	.002	.009	.015	.025	.028	.035	.040	.042	.028

[1] Includes those with zero hours. Hours were imputed for years before 1976 using the algorithm from Finis Welch , "Effects of Cohort Size on Earnings: The Baby Boom Babies' "Financial Bust," *Journal of Political Economy*, October 1979.

[2] Defined as zero weeks worked in previous year.

[3] As self-reported: reason given for not working.

[4] Number of women ages 25–34 working part time and/or part year divided by number of women ages 55–69.

[5] Total family earnings minus own earnings.

[6] Interest, dividends and rent. Data not available in first two periods.

[7] Proportion married with spouse present

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

Table A–2. Summary statistics for women ages 62–64

Value	1969–1971	1974–1976	1979–1981	1984–1986	1989–1991	1994–1996	1999–2001	2007–2009	1968–2009
Average annual hours worked[1]	635.3	576.3	536.6	521.6	534.6	567.9	641.8	780.9	600.1
Proportion not in the labor force[2]	.665	.701	.705	.711	.704	.674	.644	.575	.672
Proportion retired[3]	.042	.063	.117	.201	.246	.352	.373	.323	.220
Proportion claiming Social Security benefits	.428	.486	.567	.583	.582	.563	.533	.441	.521
Relative cohort size[4]	.315	.358	.423	.419	.436	.407	.336	.236	.355
Lagged total fertility rate (thousands)	2.236	2.588	3.085	3.519	3.600	2.906	2.366	1.791	2.731
Unemployment rate	2.4	3.9	3.4	4.0	3.0	4.4	2.3	3.3	3.4
Logwage	2.339	2.394	2.452	2.560	2.493	2.534	2.754	2.734	2.542
Others' earnings (dollars)[5]	23,966	22,085	21,679	20,800	22,385	21,040	25,453	30,658	23,654
Other income[6]	—	—	5,961	8,106	8,215	5,823	7,555	6,294	5,429
Proportion married[7]	.605	.633	.637	.635	.643	.644	.630	.616	.629
Fewer than 12 years of school	.575	.501	.423	.350	.309	.248	.195	.115	.333
12 years of school	.255	.333	.395	.442	.446	.423	.421	.351	.387
13–15 years of school	.090	.090	.100	.114	.137	.195	.210	.266	.153
16 years of school	.053	.047	.049	.055	.060	.084	.108	.159	.078
More than 16 years of school	.027	.029	.033	.039	.048	.050	.066	.109	.049
Black	.026	.088	.088	.092	.098	.102	.109	.102	.089
Hispanic	.007	.026	.030	.041	.056	.072	.077	.080	.049
Other	.002	.007	.011	.017	.026	.029	.036	.054	.024

[1] Includes those with zero hours. Hours were imputed for years before 1976 using the algorithm from Finis Welch, "Effects of Cohort Size on Earnings: The Baby Boom Babies' " Financial Bust," *Journal of Political Economy*, October 1979.

[2] Defined as zero weeks worked in previous year.

[3] As self-reported: reason given for not working.

[4] Number of women ages 25–34 working part time and/or part year, divided by number of women ages 55–69.

[5] Total family earnings minus own earnings.

[6] Interest, dividends and rent. Data not available in first two periods.

[7] Proportion married with spouse present

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.

Table A–3. Summary statistics for women ages 65–69

Value	1969–1971	1974–1976	1979–1981	1984–1986	1989–1991	1994–1996	1999–2001	2007–2009	1968–2009
Average annual hours worked[1]	314.7	233.4	230.5	206.9	260.0	249.6	284.5	423.7	279.2
Proportion not in the labor force[2]	.822	.852	.845	.862	.829	.827	.805	.741	.823
Proportion retired[3]	.114	.155	.235	.366	.431	.581	.612	.568	.390
Proportion claiming Social Security benefits	.645	.777	.867	.896	.871	.874	.852	.791	.825
Relative cohort size[4]	.315	.358	.423	.419	.436	.407	.336	.236	.355
Lagged total fertility rate (thousands)	2.236	2.588	3.085	3.519	3.600	2.906	2.366	1.791	2.731
Unemployment rate	3.4	5.5	5.3	4.6	3.5	3.4	4.0	2.9	3.7
Logwage	2.370	2.299	2.483	2.401	2.387	2.550	2.788	2.860	2.509
Others' earnings (dollars)[5]	13,393	11,656	10,594	10,726	12,606	12,194	15,298	17,511	12,807
Other income[6]	—	—	6,254	9,138	9,241	6,909	8,521	6,469	5,904
Proportion married[7]	.497	.516	.526	.541	.570	.559	.572	.557	.545
Fewer than12 years of school	.646	.566	.508	.425	.338	.280	.235	.159	.388
12 years of school	.215	.269	.324	.388	.435	.423	.431	.401	.366
13–15 years of school	.076	.089	.087	.104	.126	.183	.189	.238	.139
16 years of school	.043	.049	.050	.054	.058	.077	.092	.122	.068
More than 16 years of school	.020	.027	.031	.029	.043	.037	.053	.080	.039
Black	.024	.092	.096	.090	.095	.096	.098	.098	.087
Hispanic	.007	.023	.025	.033	.043	.057	.073	.086	.044
Other	.002	.008	.010	.016	.024	.024	.040	.056	.023

[1] Includes those with zero hours. Hours were imputed for years before 1976 using the algorithm from Finis Welch, "Effects of Cohort Size on Earnings: The Baby Boom Babies' " Financial Bust," *Journal of Political Economy*, October 1979.

[2] Defined as zero weeks worked in previous year.

[3] As self-reported: reason given for not working.

[4] Number of women ages 25–34 working part time and/or part year, divided by number of women ages 55–69.

[5] Total family earnings minus own earnings.

[6] Interest, dividends and rent. Data not available in first two periods.

[7] Proportion married with spouse present.

SOURCES: Current Population Survey Annual Social and Economic Supplement and author's calculations.