Effects of Social Security Eligibility Timing on Retirement Decisions

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This study utilizes the "SIPP Gold Standard File" – a data set from the U.S. Census Bureau linking the Survey of Income and Program Participation (SIPP) with administrative records – and exogenous variation in Social Security eligibility to investigate short-run effects of Social Security eligibility on retirement timing. Starting with the 1938 birth cohort, full retirement age has gradually been increasing, affecting when individuals can receive full retirement benefits as well as the proportion of their benefits they are entitled to if claiming early. The data enable a month-by-month analysis of labor force participation and retirement benefits take-up across birth cohorts. Results indicate increasingly steeper declines in labor force participation from the early eligibility age (EEA) until Full Retirement Age (FRA). Significant evidence of differential labor force exit effects due to a later FRA is mostly limited to the 1942 birth cohort – the group with the latest FRA in the sample. Spikes in benefits take-up generally occur at the FRA regardless of numeric age. This work is indicative of the value of combining survey data with administrative records and provides further insight into the effects of Social Security on retirement decisions.

*Any opinions and conclusions expressed herein are those of the author and do not necessarily represent the views of the Census Bureau or other organizations. Data from the SIPP Gold Standard File are confidential. All results have been reviewed to ensure that no confidential information is disclosed (Disclosure Review Board Decision #CBDRB-FY18-439). All statistics have been rounded in accordance with disclosure review standards. All comparative statements in this paper have undergone statistical testing, and, unless otherwise noted, all comparisons are statistically significant at the 90% significance level. Author contact information: jordan.c.stanley@census.gov

Introduction

The relationship between Social Security benefits and labor force decisions has long been of interest to researchers and policy makers alike. The retirement decision has multiple interpretations – it could be in the economic sense of leaving the labor force, the administrative sense of claiming Social Security retirement benefits, or both. Such decisions have an array of economic ramifications that have come into greater focus in recent years. As the "Baby Boomer" generation has reached retirement age, concerns exist over this large population segment exiting the labor force. Additionally, this expected large increase in retirement benefits take-up and decrease in workers contributing to the fund have raised questions regarding the sustainability of the Social Security fund. The anticipated spike in benefits take-up led to several key policy changes near the turn of the century. Such policies strived to incentivize individuals to delay retirement (or at least benefits take-up). Examples of these policies include the delayed retirement credit, the removal of the earnings test for individuals aged between their full retirement age (FRA) and age 69, and the gradual increase of the FRA to age 67.

Social Security eligibility is the focus of the present analysis. Traditionally, individuals are eligible to claim Social Security retirement benefits no earlier than age 62.[1] Claiming before reaching FRA reduces the benefits amount based on how early one is claiming; if one waits until the FRA to claim, benefits are paid in full (Social Security Administration (a)). Age 65 was the FRA until the 1983 Amendments to the Social Security Act established a gradual increase in the FRA scheduled to start with the 1938 birth cohort. Individuals born in 1937 or earlier kept the original FRA, but each affected cohort saw an increase in FRA of 2 months from the previous

[1] For most individuals, the official age one can begin to claim benefits is 62 years and 1 month; however, people born on the 1st or 2nd of the month are able to claim one month earlier at age 62.

cohort's FRA. The earliest affected cohort – individuals born in 1938 – reached age 62 in 2000, and their FRA was age 65 and 2 months. The FRA then became age 65 and 4 months for the 1939 cohort, age 65 and 6 months for the 1940 cohort, and so on. The FRA has remained age 66 for the 1943 through 1954 birth cohorts. Beginning with the 1955 birth cohort, the FRA will again begin to increase in 2-month per year increments before settling at age 67 for individuals born 1960 and later. The earliest eligible age (EEA) has remained the same for all cohorts; however, based on the extended FRA, the reduction in benefits for those claiming early is increasingly steeper for post-1937 cohorts (Social Security Administration (a)). So, the potential economic incentives for post-1937 cohorts to delay retirement benefits take-up include both receiving the full benefits by waiting until the later FRA and avoiding a relatively higher penalty for early take-up.

The relationship between Social Security benefits and labor supply is an intriguing and heavily researched question in the field of economics. The literature includes structural models (see Rust and Phelan (1997); Bound, Stinebrickner, and Waidman (2004 Working); and Gustman and Steinmeier (2015), among others), option value models (e.g. Coile and Gruber (2007)), and reduced-form models (e.g. Krueger and Pischke (1992)). The present analysis falls into a portion of this literature that utilizes reduced-form models and relies on discontinuities in eligibility. Social Security rules and policy changes have created numerous discontinuities directly or indirectly related to marginal benefits (Liebman, Luttmer, and Seif (2009)). The more recent changes in FRA implicitly affect benefits through increasing eligibility thresholds. This shift has been analyzed in studies such as Pingle (2006), Mastrobuoni (2009), Song and Machester (2008), Song and Manchester (2009), Behagdel and Blau (2012), Coe, Kahn, and Rutledge (2013

Working), Blau and Goodstein (2010), and Henriques (2012).[2] Typically, analysis of the short-term effects of eligibility has emphasized spikes in take-up or labor force exit right at the EEA or FRA (e.g. Kopczuk and Song (2008), Blau and Goodstein (2010), and Behagdel and Blau (2012)) or changes in retirement age (e.g. Mastrobuoni (2009)).

The general findings from the literature are that the FRA increases have effects at both eligibility margins, particularly in shifting the spike in retirement and benefits take-up to the respective new FRA for each cohort. However, there is also evidence that the post-1937 cohorts are not changing behavior in a purely mechanical manner. Mastrobuoni (2009) estimates that the retirement age for post-1937 cohorts rises by about half the increase in the FRA. Individuals may simply be continuing pre-FRA trends as the pre-FRA period is extending, or some individuals may remain focused on age 65 rather than their own FRA. For example, Coe et, al. (2013 Working) finds evidence that some individuals (e.g. those without health insurance) may still view age 65 as an important threshold.

The present analysis strives to provide additional evidence regarding past findings while taking a deeper look at month-to-month changes in behavior. This study looks at the EEA and FRA margins as well as the periods before and after both of these eligibility thresholds. Evaluating how eligibility variation between and within birth cohorts can provide insight into how eligibility thresholds affect short-run retirement decisions. I exploit the FRA shifts and eligibility differences stemming from traditional Social Security rules as sources of exogenous variation. The use of the Gold Standard File (GSF), a data product from the U.S. Census Bureau, offers some advantages over previous work in this field. The GSF links the Survey of Income & Program Participation (SIPP) to administrative records from the Social Security Administration

[2] My focus is on studies of the United States, but additional research has been performed regarding retirement benefits eligibility and labor supply in other nations (see Baker and Benjamin (1999), among others).

(SSA). The SIPP provides monthly observations and detailed demographic information. Administrative information on birthdate allows for more-refined identification of eligibility dates so that one can see how an individual behaves in and around the months in which they become eligible to claim early and to claim in full.

The regression analysis finds that LFP decreases more steeply with age during the EEA period, but the decline becomes flatter upon reaching FRA. The effect of FRA on benefits take-up is statistically significant across cohorts. For the baseline cohorts, the effect of reaching the FRA on benefits claiming is roughly 18 percentage points for men (about 16 percentage points when excluding disabled individuals) and 5 percentage points for women (about 1 percentage point in the non-disabled sample). With regard to birth cohorts with delayed FRAs, the evidence regarding differential effects of eligibility by cohort is mixed. The eligibility effects on labor force participation are, for the most part, statistically insignificant. The results do indicate statistically significant positive effects on LFP (flatter decline) at the FRA margin for non-disabled males in the 1942 cohort, at the EEA margin for the full sample of women from the 1938 birth cohorts, and at both eligibility margins for women in the 1941 and 1942 birth cohorts. In terms of claiming retirement benefits, individuals seem to place value on reaching the FRA regardless of when it occurs. Beyond the mechanical effect of higher age at FRA, there is little evidence of differential effects of FRA eligibility for later-FRA cohorts except for a positive, statistically significant effect for women in the 1942 birth cohort.

The paper proceeds with descriptions of the data and methodology followed by the presentation and discussion of the results.

Data

Previous research on this topic has relied on survey data, SSA records, or a combination of the two. Administrative records provide official information on birthday, take-up dates, and benefit amounts, while survey data provide labor force and personal history information. Combining these two source types provides advantages over using either separately.

The primary data source for the present analysis is the GSF from the U.S. Census Bureau.[3] The GSF takes extracts of variables from the SIPP and merges them with individual earnings and benefits records from the SSA and Internal Revenue Service (IRS). These records include the Detailed Earnings Record (DER), Summary Earnings Record (SER), Master Beneficiary Record (MBR), and Supplemental Security Record (SSR). The SIPP variables come from the 1984, 1990, 1991, 1992, 1996, 2001, 2004, and 2008 panels. The MBR is from the Social Security Administration. It contains information on claims to Old Age, Survivor, and Disability Insurance (OASDI). The present analysis uses the MBR as well as all SIPP panels excluding 1984.[4] I exclude the 1984 panel because the birth cohorts needed in the present analysis are not within the proper age range during any year of that panel.

The SIPP is a nationally representative survey sponsored by the U.S. Census with panels dating back to 1984. The primary focus is on program participation and income of households and individuals; topics of interest include employment, earnings, health insurance, education, fertility, marital history, demographics, and income assistance. Each panel ranges from 2.5 to 4 years with interviews conducted in "waves" representing 4-month recall periods. The basis for the survey is a set of "core" questions relating to income, labor force, and program participation;

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[3] For more information on the SIPP GSF, the SIPP Synthetic Beta (SSB), and the process of developing these data products, please see Gary Benedetto, Martha H. Stinson, and John M. Abowd (2013) "The Creation and Use of the SIPP Synthetic B" at http://www.census.gov/content/dam/Census/programs-surveys/sipp/methodology/SSBdescribe_nontechnical.pdf.

[4] The data are subject to error arising from a variety of sources. For information on sampling and nonsampling error see https://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements.html

however, "topical modules" with questions on more detailed topics such as disability and education are also included in particular interview waves.[5]

From the GSF, four completed data files are created through multiple imputation to address missing values in the data.[6] Original SIPP imputations are maintained while additional imputations cover missing values due to households missing a survey wave or individuals missing administrative data. The data user then performs analysis on each data file, or "implicate", separately. For proper statistical inference, any statistic of interest (e.g. regression coefficients or summary statistics) can be calculated by averaging the results across implicates. For example, the average for variable x is determined by averaging x in each implicate, then calculating the average across the four implicates.

For the present analysis, the observations are individuals by month. As in past research on the FRA shift, I focus on those born near the birth cohort split. The 1938 birth cohort was the first with an FRA beyond age 65 and 0 months; therefore, I limit the analysis to individuals born between 1933 and 1942. The age range is also constrained such that only individuals near the Social Security retirement benefits eligibility age thresholds are included. I limit the sample to observations where the individual is no younger than 60 and no older than 67. Since the SIPP only covers at most four years in an individual's life, no individual will have labor force participation data for each month in the sample age range. Further, individuals start the SIPP at assorted ages; thus, some respondents will only appear in one segment of eligibility (e.g. an individual beginning the survey at age 66 will only have observations in the FRA range).

[5] More information on the SIPP can be found at http://www.census.gov/sipp/.
[6] This study uses version 6.0 of the completed files.

I construct two eligibility variables – one for EEA (eligible to claim retirement benefits) and one for FRA (eligible for full retirement benefits). The precise monthly indicators for eligibility are determined based on the full birthdate of each individual. The EEA variable is a "1" for an individual at or past the EEA (typically 62 years and 1 month) who has not yet reached her FRA.[7] The FRA of course varies based on birth year. For individuals born before 1938, the FRA variable is a "1" if age is greater than or equal to 780 months (65 years). For those born after 1938, the FRA variable is a "1" if age is greater than or equal to the respective month of FRA attainment – 782 for the 1938 cohort, 784 for the 1939 cohort, 786 for the 1940 cohort, 788 for the 1941 cohort, and 790 for the 1942 cohort. For individuals born on the 1st of the month, the respective starting EEA or FRA month is 1 month earlier. Note that the Medicare eligibility age for non-disabled individuals is constant at 65 years old across birth cohorts.[8]

A critical variable for determining precise eligibility is the birthdate variable included in the GSF. An individual's day, month, and year of birth can be used to determine the precise month of eligibility. This improves on past work limited by less certainty or precision in age indicators. Surveys like the CPS may only provide age of the respondent and the date of the survey, and assigning birth dates (and thus eligibility) from this information carries the risk of misclassification (Mastrobuoni (2009)). Detailed age information allows for an analysis of short-term effects with regard to labor force participation and take-up behavior around eligibility margins. Month-to-month changes may occur that would be overlooked when only considering age in years or with wider time ranges between observations. For example, individuals within a few months of full retirement could more steeply decrease labor force participation since they

[7] I also run specifications where the EEA indicator extends past the FRA. For example, an individual at age 66 would have EEA = 1 and FRA = 1.
[8] https://www.ssa.gov/benefits/medicare/

can soon claim full benefits, or they may delay retirement since their FRA is so close. With FRA increases in two-month increments, monthly behavior is a relevant dimension to investigate.

I analyze two main outcomes – labor force participation and Social Security retirement benefits take-up. The labor force participation (LFP) variable is binary and based on the "number of weeks that the respondent held a job in month M" variable from the SIPP. A value of "0" for this SIPP variable is treated as the individual being out of the labor force while positive weeks means the LFP variable is assigned a "1". The GSF lacks more-detailed labor force measures, so this variable serves to represent LFP (and, by extension, approximate retirement) in my sample of elderly individuals. Observations with missing values for "number of weeks holding a job" are excluded from the analysis.

Social Security take-up is based on MBR information on retirements benefits claim start dates. One should note here that in the present analysis, "take-up" refers to claiming of one's own retirement benefits, not spousal benefits or disability insurance. The take-up variable is also binary with a "1" assigned if the given individual began claiming own retirement benefits before or in the month of observation. In terms of individual-level control variables, relevant demographic information from the SIPP includes sex, race, educational attainment, disability status, and present marital status.[9] I also include indicators for state of residence (at time of SIPP interview) and monthly unemployment rates by state. The unemployment data are from the Bureau of Labor Statistics.[10] Means for the individual-level variables are included in Tables 1a

[9] I also ran specifications including an indicator for whether or not an individual had a private pension (defined benefit or defined contribution). Excluding individuals with missing values reduced the samples by roughly half.
[10] These data were retrieved from the St. Louis Federal Reserve website: https://fred.stlouisfed.org/categories/27281

and 1b.[11] These averages are calculated through the implicate-averaging process described earlier.

Given differences in labor-related trends for men and women, I perform analysis and estimate effects separately by sex. Many past studies in this literature have performed analysis on one sex only (e.g. Blau and Goodman (2010)) or each sex separately (e.g. Mastrobuoni (2009)). Due to the potential roles of personal health as well as Social Security Disability Insurance (SSDI), I also look at samples excluding individuals who indicate a work-limiting disability in the SIPP panel. Health and capacity for work can be important determinants of labor supply; such factors are particularly relevant for older adults (see Cutler, Meara, and Richards-Shubik (2013), among others). SSDI could be a substitute for retirement benefits in the EEA range. Prior literature has found that SSDI applications increased for cohorts with later FRAs (see Duggan, Singleton, and Song (2007)). Further, individuals on SSDI are automatically switched to receiving retirement benefits upon reaching FRA (Social Security Administration (b)). Comparing the full samples to the non-disabled subsamples can provide additional insight into potential mechanisms. Table 1a shows the means split by birth cohort ranges and sex for the full sample while Table 1b shows the statistics for the non-disabled sample.

Figures 1 through 4 show raw data trends in labor force participation and retirement benefits take-up across ages by birth cohort group. For visual clarity, I include trend graphs comparing those born before 1938 to those born 1938 and later. Figures 1 through 4 depict the trends for the four primary subsamples. For all samples, LFP unsurprisingly declines with age while retirement benefits take-up increases. The take-up trends feature large discontinuities

[11] The data sample I use for this analysis is not representative of the U.S. population.

when eligibility changes while the trends in LFP are smoother. The relevant age thresholds occur when the individual becomes eligible to claim retirement benefits (generally age 62 years and 1 month, or 745 months) and when the individual reaches the FRA for their birth cohort. Of particular interest is the age 65 threshold (780 months) where the older cohorts reach FRA and the younger do not.

Empirical Strategy

The regression analysis seeks to evaluate any effects of eligibility (and variation in eligibility age) on retirement decisions. There is single month variation in eligibility within a birth cohort due to an individual's birthday, but the bigger source of variation comes from the policy change. Among comparably aged individuals, the FRA shift led to changes in incentives regarding both workforce participation and Social Security take-up. The endogenous relationship between Social Security benefits (which are based on lifetime earnings) is well-documented (see Coile et. al (2002), Mastrobuoni (2009), and many others). I opt to simply focus on eligibility in the binary sense. Individuals choose when to retire, but they have no control over their birthdate-dependent eligibility. The FRA affects when an individual can claim full benefits as well as how much of a penalty one absorbs by claiming early.

This supposition and the idea that the FRA change was a late shock to individuals stem from the notion that many people are unaware or unsure of government program details. For instance, in the 2007 Retirement Confidence Survey of the Employee Benefit Research Institute, only 18 percent of workers could correctly identify their official FRA (Mastrobuoni (2009)). So, the FRA change may have been relatively unanticipated or not fully understood for many individuals until they approached or perhaps even reached retirement age. With regard to FRA variation, retirees may be locked into a particular date regardless, or something like the FRA shift could influence labor force participation and benefits take-up decisions. The primary question for this analysis is then whether there are later-in-life adjustments in retirement behavior due to the eligibility changes. The comparison group are those individuals for whom the FRA remained 65. Controlling for personal characteristics, such individuals present a counterfactual for how post-1937 cohorts may have behaved under the traditional FRA.

A linear probability model is used for all specifications. The labor force participation analysis examines individuals aged 60 to 67, covering the pre/post months of both eligibility margins. Eligibility is split into three segments – pre-eligibility (the baseline), eligible to claim Social Security benefits, and full retirement age. Dummy variables are created to indicate whether an individual is age-eligible to claim retirement benefits as well as whether the individual is at or beyond the FRA for her given cohort. A continuous age (in months) variable is included and interacted with the eligibility dummy variables. The key variables are interactions of eligibility (and the eligibility-age interactions) with a "cohort" dummy indicating each cohort of individuals affected by an FRA shift (e.g. if the individual was born in 1938). Additionally, age (in years) dummy variables are included and interacted with the cohort variables.

The baseline regression equation is structured as follows:

$$\begin{aligned} LFP_{im} = {} & \alpha_0 + \beta_1 Age_{im} + \beta_2 EEA_{im} + \beta_3 (EEA\times Age)_{im} + \beta_4 FRA_{im} + \beta_5 (FRA\times Age)_{im} + \\ & \beta_6 AffectedCohort_{im} + \beta_7 (AffectedCohort\times Age)_{im} + \beta_8 (AffectedCohort\times EEA)_{im} + \\ & \beta_9 (AffectedCohort\times EEA\times Age)_{im} + \beta_{10} (AffectedCohort\times FRA)_{im} + \\ & \beta_{11} (AffectedCohort\times FRA\times Age)_{im} + \lambda W_{im} + \gamma V_{im} + \rho X_{im} + \varepsilon_{im} \end{aligned}$$

The “Age” variable is a continuous measure of age in months; the binary “EEA” variable is “1” if individual i is at or beyond her EEA but has not reached FRA in month m; the binary “FRA” variable is “1” if individual I is at or beyond his FRA in month m; and “AffectedCohort” is a vector of the binary cohort variables for each cohort 1938 and later. “W” represents a vector of age (in years) dummy variables; “V” represents a vector of the “AffectedCohort” variables interacted with the age dummies in vector “W”; and “X” is a vector containing dummy variables for personal characteristics. These personal characteristics are race, educational attainment, current marital status, and state of residence. To address potential economic factors that could affect retirement decisions, I include a variable for unemployment rate by state and month.[12] In the full samples, I also include a binary variable for whether an individual indicated a work-limiting disability at any point during her SIPP panel.

The take-up analysis follows the same framework except the pre-EEA period is removed so all included individuals are eligible to claim in a given month. Thus, that model is simply the previous equation with the “EEA” variables removed and the binary indicator for Social Security retirement benefits take-up as the outcome:

$$\begin{aligned}\text{Benefits}_{m} = {} & \alpha_1 + \delta_1\text{Age}_{im} + \delta_2\text{FRA}_{im} + \delta_3(\text{FRA}\times\text{Age})_{im} + \delta_4\text{AffectedCohort}_{im} + \\ & \delta_5(\text{AffectedCohort}\times\text{Age})_{im} + \delta_6(\text{AffectedCohort}\times\text{EEA})_{im} + \\ & \delta_7(\text{AffectedCohort}\times\text{EEA}\times\text{Age})_{im} + \delta_8(\text{AffectedCohort}\times\text{FRA})_{im} + \\ & \delta_9(\text{AffectedCohort}\times\text{FRA}\times\text{Age})_{im} + \lambda W_{im} + \gamma V_{im} + \rho X_{im} + \mu_{im}\end{aligned}$$

[12] Note that variables for year of survey are excluded due to limited age and eligibility overlap between treatment and comparison groups within a given year.

The "Benefits" variable is a binary indicator for whether or not own retirement benefits were claimed by individual i in month m. For these regressions, the focus is on the FRA margin with the EEA range as the baseline.

Regression Results

All regressions follow the general framework outlined in the previous section. Standard errors are clustered by individual. Recall that the data set is an unbalanced panel with observations at the person-month level. The samples all feature individuals born between 1933 and 1942. I split the analysis by sex and run models using samples that both include and exclude individuals who indicate a work-limiting disability. All regressions include appropriate demographic controls as well as dummy variables for age in years and age in years interacted with cohort. The two outcomes of interest are LFP and retirement benefits take-up. Both of these are binary variables. The LFP analysis includes individuals from age 60 through age 67, while the benefits take-up analysis only covers EEA through age 67. Tables are split to represent the four primary subsamples – male, female, male with no work-limiting disability, and female with no work-limiting disability.[13]

The main estimates for the LFP analysis are in tables 2 through 5. Across samples, there is a statistically significant effect of reaching the EEA compared to the pre-eligibility baseline. Using 62 years and 1 month as the precise margin, one can enter age in months (here, 745) and combine the estimated EEA effect with the estimated EEA×Age effect to determine the change

[13] The tables show coefficient estimates and standard errors for binary variables and their interactions with age (in months). In estimating overall effects of, say, reaching FRA, I have calculated the values by adding the coefficient for the binary variable (e.g. "FRA") to the product of age in months (e.g. 784) and the age-interaction coefficient for that binary variable (e.g. "FRA×Age"). In accordance with disclosure review rules, I use the coefficient estimates rounded to four significant digits.

in LFP upon reaching EEA. For the full sample of women, this effect is around -0.15 percentage points (see Table 2); for the full sample of men (see Table 3), the effect is roughly 1.5 percentage points. In the non-disabled samples, the estimated effect is around -0.3 percentage points for women (see Table 4) and 0.15 percentage points for men (see Table 5). Because the sign on EEA×Age is negative, the decline in LFP becomes steeper over time leading up to the FRA threshold. The estimated effect is stronger in statistical significance for women. In all samples, the baseline effect of reaching the FRA is statistically insignificant. This implies that, controlling for age itself, the monthly decline in LFP upon reaching the FRA is not statistically different than that in the pre-EEA period. The baseline effect of age in months is higher in statistical significance for men than it is for women.

Looking at differential cohort effects of eligibility on LFP, there is mixed evidence. Many of the estimated effects are statistically insignificant. For cohort effects, the 1941 and 1942 cohorts in the full sample of females have differential LFP compared to the traditional FRA cohorts; however, such effects are statistically insignificant when excluding disabled individuals. Statistically significant estimates for differential effects of eligibility on LFP are mostly found in the younger cohorts, i.e. those with the latest FRAs. In the full sample of women, the 1938, 1941, and 1942 cohorts exhibit flatter declines from EEA to FRA than their peers in the traditional FRA cohorts (see Table 2). In the non-disabled sample of women, only the EEA effects for the 1942 cohorts remain statistically significant (see Table 4). Statistically significant estimates of a differential LFP effect by cohort upon reaching FRA are found for the 1941 and 1942 female cohorts, though statistical significance is higher in the full sample than the non-disabled sample. The 1942 cohort of non-disabled men also show a flatter decline upon reaching the FRA compared to traditional FRA counterparts. In sum, LFP in general declines unsurprisingly with age with the steepest declines occurring after EEA until FRA. Flatter declines in LFP are seen in multiple cohorts with delayed FRAs at both eligibility margins for women, while the only statistically significant effects on LFP for such cohorts is at the FRA margin for the 1942 cohort of non-disabled men.

The main estimates for benefits are included in Tables 6 through 9. Unsurprisingly, the effect of age on take-up is positive and strongly statistically significant across samples. The effect of reaching the FRA statistically significant across samples and varies by age. For individuals with the traditional FRA (780 months), the effect of reaching the FRA threshold is 5.2 percentage points in the full sample of women (see Table 6) and 17.7 percentage points in the full sample of men (see Table 7). The same estimated effects in the non-disabled samples (see Tables 8 and 9) are 1.2 percentage points and 15.6 percentage points for women and men respectively. As the sign on the coefficient for the interaction term is negative, the effect declines with age.

For differential cohort effects in benefits take-up, many of the estimated effects are statistically insignificant. So, since FRA effects decline with age, the peaks at the FRA margin are relatively smaller (or, among non-disabled women, non-existent) for nearly all of the delayed-FRA cohorts across samples. One exception is the 1942 cohort effect in the full sample of men – this cohort is generally claiming retirement benefits less than traditional FRA cohorts (see Table 7). For women, the estimated effect of reaching FRA is statistically significant for the 1942 cohort in both the full and non-disabled samples. For this cohort, the baseline FRA effect at the margin (790 months) is around 2.2 percentage points in the full sample and roughly -3.1 percentage points in the non-disabled sample (see Table 6). The cohort-FRA interaction effects are roughly 19.2 percentage points in the full sample and 19.6 percentage points in the non-disabled sample (see Table 8).

To sum, the results of this analysis imply that Social Security eligibility can affect short-term retirement decisions, though some effects vary by sex and birth cohort. General effects are found in steeper LFP declines during the EEA period as well as relative spikes in benefits take-up at FRA. As the FRA×Age effect is negative, a mechanical effect is seen in smaller spikes in benefits take-up at the FRA margin for delayed-FRA cohorts. The evidence is mixed regarding differential effects on labor force participation and benefits take-up for delayed-FRA birth cohorts compared to those with the traditional FRA. Several delayed-FRA cohorts exhibit flatter declines than those for the baseline cohorts with such effects mostly found in the youngest cohorts (those with the latest FRAs). These effects are not limited to the eligibility margins; rather, they are seen throughout the EEA range and, in some instances, continue after the FRA has been passed.

Aside from the 1942 cohort, delayed-FRA cohorts show no differential effects of eligibility on benefits take-up. For both female subsamples, the 1942 birth cohort shows a positive effect on take-up during FRA years compared to the baseline group (see tables 8 and 9). The result in the non-disabled sample implies that automatic enrollment of SSDI recipients is not solely driving the spike in take-up. The LFP analysis produced evidence that this cohort was delaying labor force exit. The 1942 cohort has the latest FRA (nearly a year later than that for the baseline cohorts), so claiming early carries the stiffest penalty in the sample. If retirement benefits are needed or strongly desired, individuals may accept the penalty and claim early; however, the findings of this analysis support the notion that these women are indeed working longer compared to traditional FRA women and could thus likely afford to delay benefits take-up. For pre-1942 cohorts with delayed FRAs, the results imply that there is not a differentially large bunching effect in benefits take-up at the FRA compared to the traditional FRA cohorts. These cohorts also show little to no statistically significant evidence of delayed labor force exit relative to traditional FRA individuals.

Discussion

The analysis presented in this paper indicates several effects of eligibility as well as variation in these effects with age. Past studies have also found benefits take-up spikes varying by birth cohort at the respective FRAs (see Song and Manchester (2008), among others). Other intuitively similar findings to those in the present analysis are longer retirement delays for those with later FRAs (Mastrobuoni (2009)) and larger effects of reaching the FRA margin on benefits claiming than on labor-related outcomes (Behagdel and Blau (2012)). For a more detailed comparison of my results to past work, I will focus on Behagdel and Blau (2012) since that study also uses monthly observations and examines both labor force and benefits-related outcomes.

Behagdel and Blau (2012) uses Health and Retirement Survey (HRS) data linked to SSA records to analyze effects of eligibility on retirement behavior (both labor force outcomes and benefits take-up) for a pooled sample of men and women. The authors estimate that reaching FRA accounts for a 0.9 percentage point increase in the hazard of retirement and a 14 percentage point increase in benefits claiming. My measure of LFP is different from the retirement and labor force exit measures employed in Behagdel and Blau (2012); however, neither set of estimates implies a large effect of eligibility on labor force outcomes. In the present analysis of take-up trends, results for the effect of the traditional cohorts reaching the FRA for men are quite comparable (18 percentage points for the full sample, 16 percentage points for non-disabled subsample) to the estimates in Behagdel and Blau (2012). I find much smaller effects for the female sample. Once again, there are differences in variable definitions between studies. My study uses administrative data for own retirement benefits take-up dates, while Behagdel and Blau (2012) utilizes self-reported information in the HRS on year and month of first receipt of any Social Security benefit.

The present analysis improves on some limitations in past work and executes a different empirical design to provide additional insight into the effect of eligibility on retirement outcomes. One contribution of the present work is estimating trends in retirement behavior by month across the eligibility spectrum. I exploit exogenous variation in Social Security eligibility within and across birth cohorts to assess the general effect of eligibility on retirement outcomes as well as the impact of increases in FRA. This study analyzes multiple retirement outcomes and has the advantage of working with linked survey and administrative data. Monthly observations allow for more-refined analysis of trends over time, at precise eligibility margins, and at various points across the eligibility spectrum.

Several limitations exist given the data and nature of this study. As noted previously, I only have up to four years of observations for a given individual in the SIPP. Earnings data in the administrative records extend back further; however, these data are annual and some of the information found in the SIPP may not apply to past or future years of data. The SIPP employment data allow for monthly measurement but do not capture a direct indicator for labor force exit nor self-described “retirement”. The labor force participation variable used here is simply an indicator for having a job in a given month. Individuals without a job could still be in the labor force (i.e. not retired). A similar logic would apply in developing a similar indicator using other SIPP indicators such as monthly earnings or hours worked.

Other Social Security rules could hypothetically be contributing to the effects seen in the analysis. Such policy measures in place during this period include the delayed retirement credit (DRC) and the removal of the earnings test for individuals past FRA. The literature produces mixed evidence regarding effects of such policy changes on labor supply. For example, Gruber and Orszag (2003) finds no effect of the earnings test on male LFP but some evidence of an effect on female LFP, while Haider and Loughran (2008) estimates large responses to the earnings test – particular among younger men. On the intensive margin, Friedberg (2000) evaluates previous earnings test changes and finds that bunching occurs just below the earnings thresholds. Past work has found that the DRC raises employment for workers above age 65 (see Pingle (2006), Blau and Goodstein (2010), among others).

With regard to the DRC and the present analysis, later cohorts receive a greater credit for delaying retirement, but all birth cohorts in my sample received some level of DRC. The DRC varies by birth cohort, ranging from a 5.5 percent credit (yearly rate) for the 1932-1933 cohorts to an 8 percent credit (yearly rate) for the 1943 cohort and later (Social Security Administration (c)). In the present study, the difference in DRCs is quite small in terms of monthly benefits, and the cohort dummies should absorb any differential effects of such variation in DRC for the years analyzed.

Separating out any effect of the earnings test removal is more difficult in the present setting. The earnings test pertains to an established dollar limit above which claimed benefits are partially withheld. Previously there were earnings tests for both EEA and FRA ranges; the removal of the earnings test for those above FRA was initiated in 2000. Most of the cohorts included in the present analysis reach full retirement age during or after the year 2000. All of the cohorts affected by an increased FRA reach retirement age after the removal of the FRA earnings test. All birth cohorts in my sample are subject to the EEA earnings test, but only three birth years (1933, 1934, and part of 1935) were old enough before the 2000 change to be subject to the FRA earnings test. These groups could hypothetically rejoin the labor force after the earnings test removal, whether in response to the change or for other reasons. The later cohorts all reach full retirement age after the 2000 earnings test removal, and a cohort affected by the FRA change first reaches that threshold in 2003.

Previous studies on the FRA change include a pre/post 2000 control variable (e.g. Mastrobuoni (2009)) or omit an indicator for the earnings test removal while acknowledging the policy's existence (e.g. Blau and Goodstein (2010)). I opt for the latter strategy given the structure of my data set, the split in cohorts affected by the FRA change, and an empirical strategy focused on monthly age effects. For example, in attempting to control for the timing of the earnings test removal, the overlap between individuals of a given age and eligibility would be quite small with all the affected cohorts reaching eligibility thresholds in or after 2000 (the year of the earnings test removal). The EEA earnings test is present for all cohorts, and within the nontraditional FRA cohorts, there is no variation in FRA earnings test presence.

Conclusion

In sum, the results of this analysis suggest that individuals indeed consider Social Security benefits eligibility when making retirement decisions; however, the evidence is mixed regarding the effects of delayed Full Retirement Ages. Across sex and birth cohorts, labor force participation decreases more sharply starting after the EEA margin but less sharply after the FRA threshold. Spikes at the FRA are also statistically significant across birth cohorts and regardless of sex. Most of the estimated eligibility effects of a delayed FRA on retirement decisions are statistically insignificant; however, the results for the youngest cohort of women (i.e. those with the latest FRAs) imply labor force exit and benefits take-up delays compared to traditional FRA cohorts.

Eligibility thresholds have a direct effect on if and to what extent an individual can claim retirement benefits, which can in turn have labor market ramifications. Based on the findings presented here, it is also important to consider differences between sexes as well as the role of disability. Social Security benefits and eligibility have become an increasingly important concern for both policy makers and households. With the FRA gradually increasing, it is useful to consider the potential role of Social Security eligibility could have in retirement decisions. Statistical analysis utilizing data sets like the SIPP Gold Standard File is beneficial in advancing our understanding of factors that influence such decisions.

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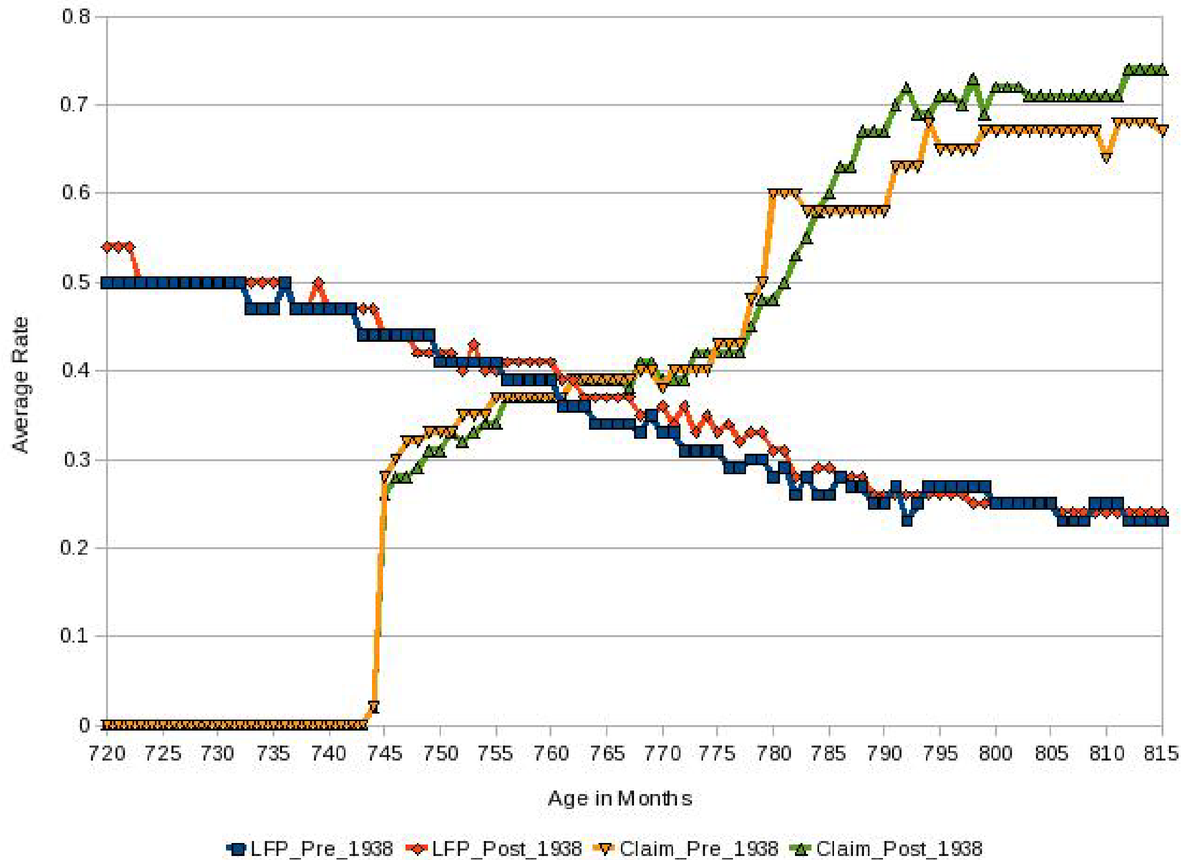
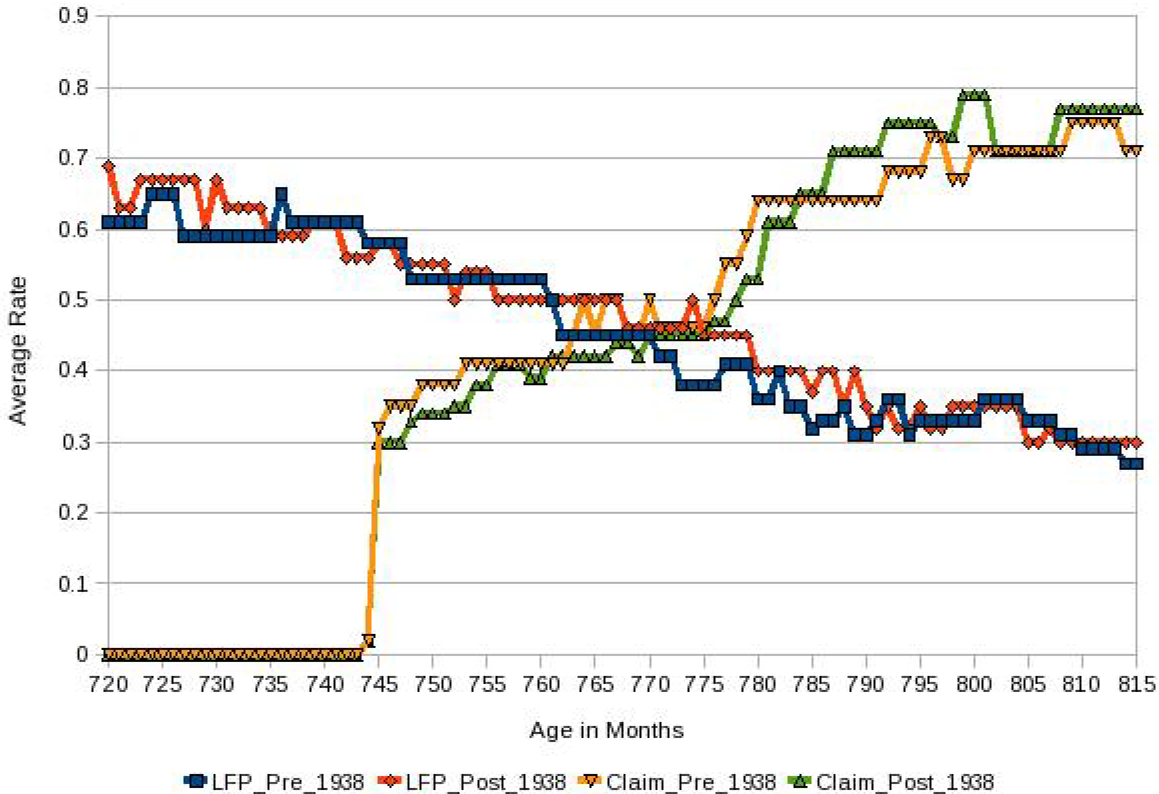
Figures and Tables

Figure 1. Labor Force Participation and Retirement Benefits Take-Up: Females



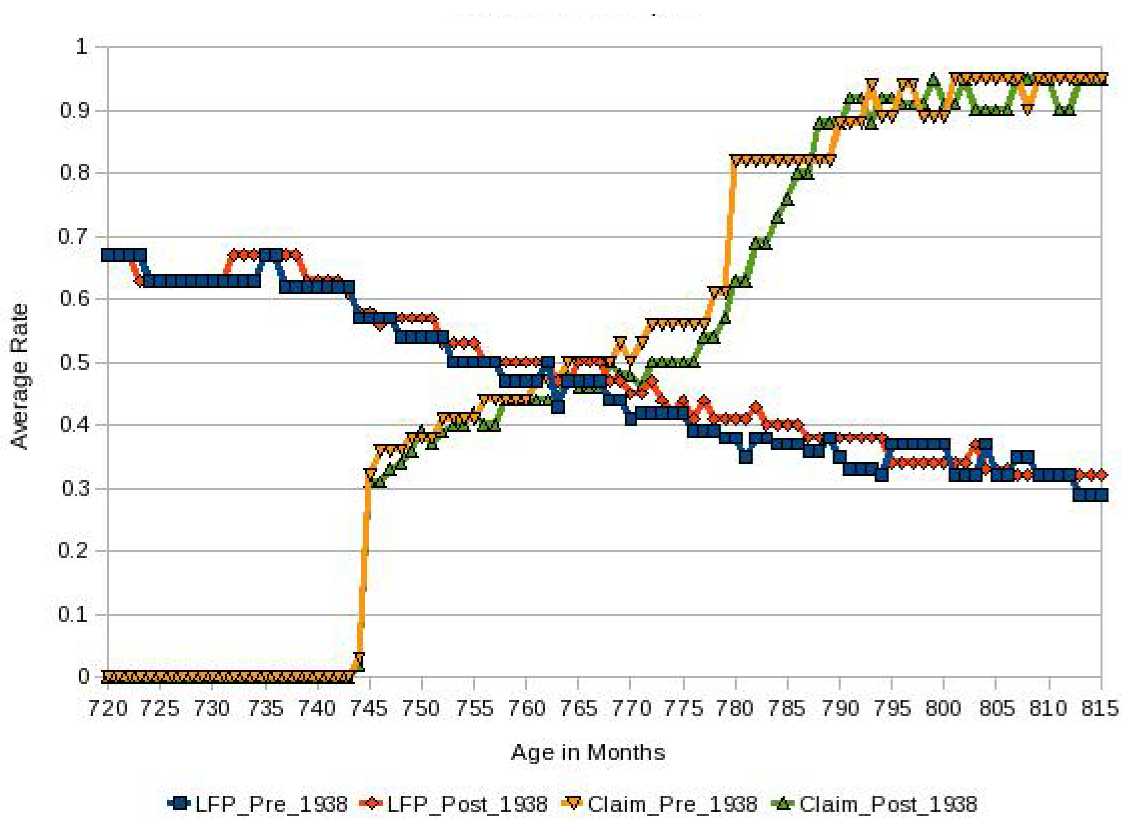
Notes: This graph shows labor force participation (LFP) and Social Security claiming trends for females. The sample is individuals in the SIPP Gold Standard File with appropriate data who are aged 60 through 67. The pre-1938 cohort consists of individuals born between 1933 and 1937, while the post-1937 cohort is those born between 1938 and 1942. The X axis is “Age in Months” and the Y axis is the respective average of the given outcome. Outcomes are averaged by age in months for each birth cohort grouping. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Figure 2. Labor Force Participation and Retirement Benefits Take-Up: Non-Disabled Females



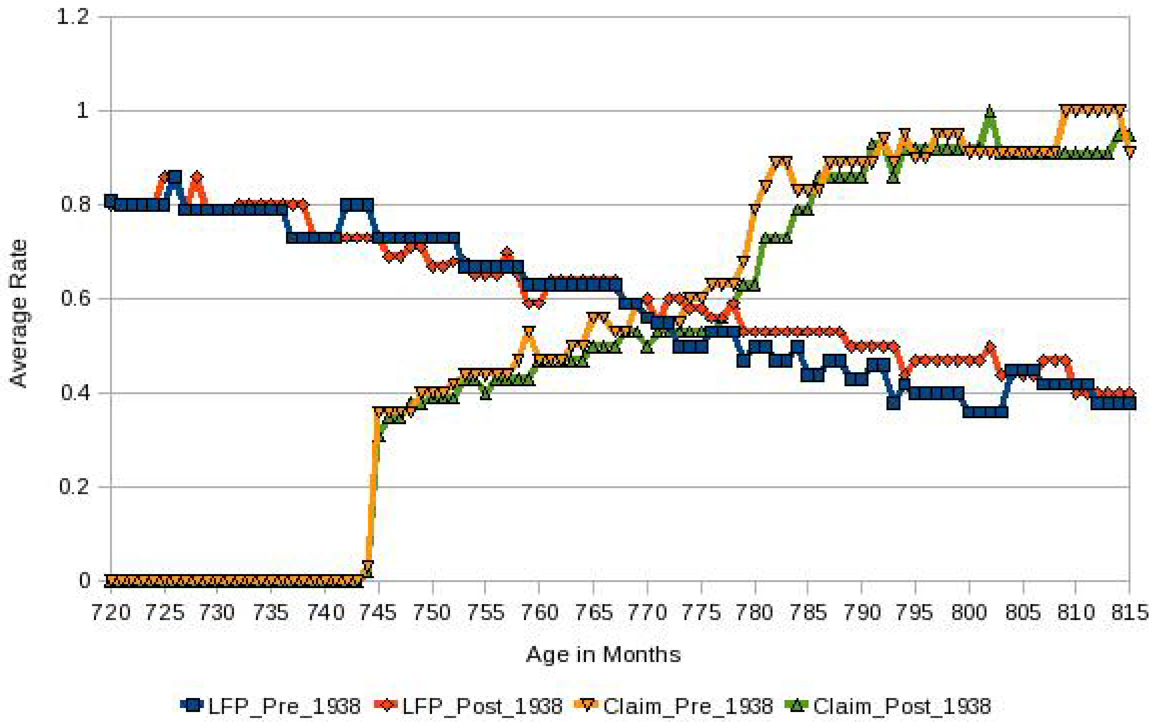
Notes: This graph shows labor force participation (LFP) and Social Security claiming trends for non-disabled females. The sample is individuals in the SIPP Gold Standard File with appropriate data who are aged 60 through 67 and never indicated having a work-limiting disability throughout the survey. The pre-1938 cohort consists of individuals born between 1933 and 1937, while the post-1937 cohort is those born between 1938 and 1942. The X axis is "Age in Months" and the Y axis is the respective average of the given outcome. Outcomes are averaged by age in months for each birth cohort grouping. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Figure 3. Labor Force Participation and Retirement Benefits Take-Up: Males



Notes: This graph shows labor force participation (LFP) and Social Security claiming trends for males. The sample is individuals in the SIPP Gold Standard File with appropriate data who are aged 60 through 67. The pre-1938 cohort consists of individuals born between 1933 and 1937, while the post-1937 cohort is those born between 1938 and 1942. The X axis is "Age in Months" and the Y axis is the respective average of the given outcome. Outcomes are averaged by age in months for each birth cohort grouping. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Figure 4. Labor Force Participation and Retirement Benefits Take-Up: Non-Disabled Males



Notes: This graph shows labor force participation (LFP) and Social Security claiming trends for non-disabled males. The sample is individuals in the SIPP Gold Standard File with appropriate data who are aged 60 through 67 and never indicated having a work-limiting disability in the survey. The pre-1938 cohort consists of individuals born between 1933 and 1937, while the post-1937 cohort is those born between 1938 and 1942. The X axis is "Age in Months" and the Y axis is the respective average of the given outcome. Outcomes are averaged by age in months for each birth cohort grouping. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 1a: Variable Means for Full Sample

	Men		Women	
	Pre-1938	**Post-1938**	**Pre-1938**	**Post-1938**
Panel Characteristics				
LFP	0.4685	0.4724	0.3567	0.3567
Benefits Claiming	0.4972	0.5203	0.3621	0.4217
Age (in years)	63.45	63.70	63.39	63.74
Married	0.7557	0.7000	0.5714	0.5422
Individual Characteristics				
Black	0.1111	0.1121	0.1290	0.1250
Other Race	0.0370	0.0517	0.0403	0.0515
Less than HS	0.2222	0.1638	0.2419	0.1618
HS degree	0.3333	0.3103	0.3871	0.3676
Some College	0.2222	0.2759	0.2419	0.2941
College Degree	0.1296	0.1379	0.0887	0.1103
Advanced Degree	0.0926	0.1121	0.0484	0.0735
Observation Counts				
LFP observations	127,000	145,000	150,000	171,000
Panel observations	176,000	212,000	203,000	249,000
Individual observations	5,400	5,800	6,200	6,800

Notes: Data are from the SIPP Gold Standard File and observations are person-month. The sample consists of individuals born between 1933 and 1942 and aged 60 through 67. All variables are binary except for "Age". "LFP" is "Labor Force Participation" – an indicator for whether the respondent held a job during a given month. "Benefits Claiming" pertains to the respondent claiming own Social Security retirement benefits in the given month. "Other Race" is a dummy variable with "1" meaning the respondent identifies as neither white nor black in the survey. "Married" indicates if the respondent is currently married at the time of survey. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 1b: Variable Means for Non-Disabled Sample

	Non-Disabled Men		Non-Disabled Women	
	Pre-1938	**Post-1938**	**Pre-1938**	**Post-1938**
Panel Characteristics				
LFP	0.6028	0.6061	0.4643	0.4694
Benefits Claiming	0.4902	0.5203	0.3833	0.4479
Age (in years)	63.29	63.60	63.27	63.69
Married	0.8186	0.7602	0.6375	0.6215
Individual Characteristics				
Black	0.0938	0.0909	0.0946	0.0897
Other Race	0.0469	0.0455	0.0405	0.0385
Less than HS	0.1563	0.1061	0.1486	0.0897
HS degree	0.3125	0.2879	0.4054	0.3846
Some College	0.2344	0.2879	0.2568	0.3077
College Degree	0.1719	0.1818	0.1216	0.1410
Advanced Degree	0.1250	0.1515	0.0676	0.0897
Observation Counts				
LFP observations	70,500	82,500	84,000	98,000
Panel observations	102,000	123,000	120,000	144,000
Individual observations	3,200	3,300	3,700	3,900

Notes: The above statistics pertain to individuals in the sample who do not indicate a work-limiting disability in the SIPP. See notes for Table 1a.

Table 2: **Coefficient Estimates of Labor Force Participation Effects: Women**

	1938	**1939**	**1940**	**1941**	**1942**
Age (in months)	-0.0008	-0.0008	-0.0008	-0.0008	-0.0008
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
EEA	2.606***	2.606***	2.606***	2.606***	2.606***
	(0.6957)	(0.6957)	(0.6957)	(0.6957)	(0.6957)
EEA×Age	-0.0035***	-0.0035***	-0.0035***	-0.0035***	-0.0035***
	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
FRA	0.9250	0.9250	0.9250	0.9250	0.9250
	(0.7300)	(0.7300)	(0.7300)	(0.7300)	(0.7300)
FRA×Age	-0.0013	-0.0013	-0.0013	-0.0013	-0.0013
	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
Cohort	0.3875	1.124	0.6772	2.553*	4.240**
	(1.180)	(3.249)	(1.930)	(1.507)	(2.053)
Cohort×Age	-0.0005	-0.0015	-0.0009	-0.0035*	-0.0058**
	(0.0016)	(0.0044)	(0.0026)	(0.0021)	(0.0028)
Cohort×EEA	-3.796**	-2.027	-0.8479	-3.525**	-5.038**
	(1.796)	(3.297)	(2.023)	(1.661)	(2.153)
Cohort×EEA×Age	0.0050**	0.0027	0.0011	0.0048**	0.0068**
	(0.0024)	(0.0044)	(0.0027)	(0.0022)	(0.0029)
Cohort×FRA	-0.3134	-1.386	-2.808	-4.898**	-4.941**
	(1.503)	(3.489)	(2.878)	(2.115)	(2.466)
Cohort×FRA×Age	0.0005	0.0019	0.0036	0.0066**	0.0066**
	(0.0020)	(0.0046)	(0.0038)	(0.0027)	(0.0033)
Observations			321,000		

Notes: This table shows coefficient estimates of labor force participation effects for the full sample of female respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 3: Coefficient Estimates of Labor Force Participation Effects: Men

	1938	**1939**	**1940**	**1941**	**1942**
Age (in months)	-0.0026***	-0.0026***	-0.0026***	-0.0026***	-0.0026***
	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
EEA	1.654*	1.654*	1.654*	1.654*	1.654*
	(0.9384)	(0.9384)	(0.9384)	(0.9384)	(0.9384)
EEA×Age	-0.0022*	-0.0022*	-0.0022*	-0.0022*	-0.0022*
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)
FRA	-0.2884	-0.2884	-0.2884	-0.2884	-0.2884
	(0.8738)	(0.8738)	(0.8738)	(0.8738)	(0.8738)
FRA×Age	0.0003	0.0003	0.0003	0.0003	0.0003
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Cohort	0.7829	5.916	-0.5263	-1.774	2.439
	(1.235)	(5.147)	(1.896)	(1.597)	(2.067)
Cohort×Age	-0.0011	-0.0079	0.0007	0.0025	-0.0034
	(0.0017)	(0.0069)	(0.0026)	(0.0022)	(0.0029)
Cohort×EEA	-0.7112	-8.315	0.3253	0.5288	-3.652
	(1.812)	(5.668)	(2.611)	(1.794)	(2.396)
Cohort×EEA×Age	0.0009	0.0112	-0.0004	-0.0007	0.0049
	(0.0024)	(0.0076)	(0.0035)	(0.0024)	(0.0032)
Cohort×FRA	-0.8470	-6.451	-2.384	1.305	-3.292
	(1.581)	(5.645)	(3.813)	(2.752)	(2.359)
Cohort×FRA×Age	0.0011	0.0088	0.0030	-0.0017	0.0044
	(0.0021)	(0.0075)	(0.0049)	(0.0036)	(0.0031)
Observations			271,000		

Notes: This table shows coefficient estimates of labor force participation effects for the full sample of male respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 4: Coefficient Estimates of Labor Force Participation Effects: Non-Disabled Women

	1938	1939	1940	1941	1942
Age (in months)	-0.0017*	-0.0017*	-0.0017*	-0.0017*	-0.0017*
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)
EEA	2.530**	2.530**	2.530**	2.530**	2.530**
	(1.009)	(1.009)	(1.009)	(1.009)	(1.009)
EEA×Age	-0.0034**	-0.0034**	-0.0034**	-0.0034**	-0.0034**
	(0.0014)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
FRA	1.251	1.251	1.251	1.251	1.251
	(1.002)	(1.002)	(1.002)	(1.002)	(1.002)
FRA×Age	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)
Cohort	-0.2741	1.234	-0.8841	2.026	3.776
	(1.571)	(5.297)	(1.974)	(1.833)	(2.461)
Cohort×Age	0.0004	-0.0016	0.0012	-0.0028	-0.0051
	(0.0022)	(0.0072)	(0.0027)	(0.0025)	(0.0034)
Cohort×EEA	-2.909	-1.843	1.222	-3.170	-5.490**
	(2.411)	(5.188)	(2.363)	(2.107)	(2.681)
Cohort×EEA×Age	0.0038	0.0025	-0.0016	0.0044	0.0074**
	(0.0032)	(0.0070)	(0.0032)	(0.0028)	(0.0036)
Cohort×FRA	-0.5040	-2.403	-4.524	-4.617	-5.552*
	(1.998)	(5.335)	(3.610)	(2.911)	(2.986)
Cohort×FRA×Age	0.0007	0.0032	0.0057	0.0062*	0.0074*
	(0.0027)	(0.0072)	(0.0046)	(0.0037)	(0.0040)
Observations			182,000		

Notes: This table shows coefficient estimates of labor force participation effects for the sample of non-disabled female respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 5: Coefficient Estimates of Labor Force Participation Effects: Non-Disabled Men

	1938	**1939**	**1940**	**1941**	**1942**
Age (in months)	-0.0033***	-0.0033***	-0.0033***	-0.0033***	-0.0033***
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)
EEA	1.864*	1.864*	1.864*	1.864*	1.864*
	(1.068)	(1.068)	(1.068)	(1.068)	(1.068)
EEA×Age	-0.0025*	-0.0025*	-0.0025*	-0.0025*	-0.0025*
	(0.0014)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
FRA	-0.4837	-0.4837	-0.4837	-0.4837	-0.4837
	(1.110)	(1.110)	(1.110)	(1.110)	(1.110)
FRA×Age	0.0005	0.0005	0.0005	0.0005	0.0005
	(0.0014)	(0.0014)	(0.0014)	(0.0014)	(0.0014)
Cohort	-0.0597	-1.575	-2.438	-2.936	2.368
	(1.454)	(6.165)	(2.389)	(2.020)	(2.564)
Cohort×Age	0.0001	0.0019	0.0033	0.0041	-0.0033
	(0.0020)	(0.0083)	(0.0033)	(0.0028)	(0.0036)
Cohort×EEA	-2.211	-2.142	2.974	1.313	-3.868
	(2.335)	(6.515)	(3.329)	(2.348)	(2.985)
Cohort×EEA×Age	0.0029	0.0033	-0.0040	-0.0016	0.0052
	(0.0031)	(0.0088)	(0.0045)	(0.0032)	(0.0040)
Cohort×FRA	-0.5170	1.377	1.905	-3.173	-5.590*
	(2.000)	(6.889)	(6.636)	(3.614)	(2.981)
Cohort×FRA×Age	0.0008	-0.0016	-0.0026	0.0040	0.0073*
	(0.0026)	(0.0092)	(0.0085)	(0.0047)	(0.0040)
Observations			153,000		

Notes: This table shows coefficient estimates of labor force participation effects for the sample of non-disabled male respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 6. Coefficient Estimates of Retirement Benefits Take-Up Effects: Women

	1938	1939	1940	1941	1942
Age (in months)	0.0054***	0.0054***	0.0054***	0.0054***	0.0054***
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
FRA	2.392***	2.392***	2.392***	2.392***	2.392***
	(0.6064)	(0.6064)	(0.6064)	(0.6064)	(0.6064)
FRA×Age	-0.0030***	-0.0030***	-0.0030***	-0.0030***	-0.0030***
	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
Cohort	-0.2115	-0.5124	0.4625	0.1872	-0.9228
	(0.7773)	(0.7735)	(0.8581)	(0.9193)	(0.6427)
Cohort×Age	0.0002	0.0006	-0.0006	-0.0003	0.0012
	(0.0010)	(0.0010)	(0.0011)	(0.0012)	(0.0009)
Cohort×FRA	0.3966	1.324	-0.0301	0.8261	3.036***
	(1.277)	(0.9462)	(1.304)	(0.1689)	(1.120)
Cohort×FRA×Age	-0.0004	-0.0016	0.0002	-0.0009	-0.0036**
	(0.0016)	(0.0012)	(0.0017)	(0.0022)	(0.0014)
Observations			347,000		

Notes: This table shows coefficient estimates of effects on Social Security retirement benefits claiming for the full sample of female respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 7. Coefficient Estimates of Retirement Benefits Take-Up Effects: Men

	1938	1939	1940	1941	1942
Age (in months)	0.0085***	0.0085***	0.0085***	0.0085***	0.0085***
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
FRA	4.935***	4.935***	4.935***	4.935***	4.935***
	(0.5355)	(0.5355)	(0.5355)	(0.5355)	(0.5355)
FRA×Age	-0.0061***	-0.0061***	-0.0061***	-0.0061***	-0.0061***
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Cohort	0.5438	0.7469	0.9239	0.9581	1.530**
	(0.8599)	(0.9116)	(0.8904)	(0.8892)	(0.6324)
Cohort×Age	-0.0007	-0.0010	-0.0012	-0.0013	-0.0021**
	(0.0011)	(0.0012)	(0.0012)	(0.0012)	(0.0008)
Cohort×FRA	-1.306	-0.0312	0.8657	0.2740	-0.7164
	(1.133)	(1.046)	(1.165)	(1.456)	(0.9759)
Cohort×FRA×Age	0.0017	0.0001	-0.0010	-0.0002	0.0011
	(0.0014)	(0.0014)	(0.0015)	(0.0019)	(0.0012)
Observations			295,000		

Notes: This table shows coefficient estimates of effects on Social Security retirement benefits claiming for the full sample of male respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 8: Coefficient Estimates of Retirement Benefits Take-Up Effects: Non-Disabled Women

	1938	1939	1940	1941	1942
Age (in months)	0.0066***	0.0066***	0.0066***	0.0066***	0.0066***
	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
FRA	3.366***	3.366***	3.366***	3.366***	3.366***
	(0.8672)	(0.8672)	(0.8672)	(0.8672)	(0.8672)
FRA×Age	-0.0043***	-0.0043***	-0.0043***	-0.0043***	-0.0043***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)
Cohort	0.2373	-0.6478	-0.2285	-0.1971	-0.8993
	(0.9737)	(1.380)	(1.084)	(1.237)	(0.8792)
Cohort×Age	-0.0004	0.0008	0.0002	0.0002	0.0011
	(0.0015)	(0.0018)	(0.0014)	(0.0016)	(0.0012)
Cohort×FRA	-0.8662	1.440	0.5251	1.003	3.119**
	(1.728)	(1.577)	(1.774)	(2.168)	(1.316)
Cohort×FRA×Age	0.0012	-0.0017	-0.0005	-0.0011	-0.0037**
	(0.0022)	(0.0020)	(0.0022)	(0.0028)	(0.0017)
Observations			198,000		

Notes: This table shows coefficient estimates of effects on Social Security retirement benefits claiming for the sample of non-disabled female respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.

Table 9: Coefficient Estimates of Retirement Benefits Take-Up Effects: Non-Disabled Men

	1938	1939	1940	1941	1942
Age (in months)	0.0088***	0.0088***	0.0088***	0.0088***	0.0088***
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
FRA	5.148***	5.148***	5.148***	5.148***	5.148***
	(0.7712)	(0.7712)	(0.7712)	(0.7712)	(0.7712)
FRA×Age	-0.0064***	-0.0064***	-0.0064***	-0.0064***	-0.0064***
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0010)
Cohort	0.4745	0.1323	0.0955	-0.4325	1.128
	(1.207)	(1.123)	(0.1312)	(1.198)	(0.8078)
Cohort×Age	-0.0006	0.0002	-0.0002	0.0005	-0.0016
	(0.0016)	(0.0015)	(0.0017)	(0.0016)	(0.0011)
Cohort×FRA	-1.088	0.8196	1.708	2.648	-0.4604
	(1.526)	(1.334)	(1.600)	(1.884)	(1.403)
Cohort×FRA×Age	0.0014	-0.0010	-0.0021	-0.0032	0.0008
	(0.0019)	(0.0017)	(0.0020)	(0.0024)	(0.0018)
Observations			166,000		

Notes: This table shows coefficient estimates of effects on Social Security retirement benefits claiming for the sample of non-disabled male respondents. Observations are individual-level by month. The columns indicate the estimated effects for each birth cohort that has a delayed FRA. Standard errors are included in parentheses. All specifications include demographic controls, age-in-years dummy variables and cohort interaction terms, residential state indicators, and state-month unemployment rates. *** indicates statistical significance at the 1% level, ** for the 5% level, and * for the 10% level. Data source: SIPP Gold Standard File, Completed Snapshot v6.0.