The Effects of Increasing the Early Retirement Age on Employment of Older Workers

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I. Introduction

In many countries, there has been increasing pressure for social security reform due to demographic transitions and the generosity of government-provided retirement benefits. With this increasing pressure for reform, researchers and policy-makers are seeking to understand how potential changes to social security systems are likely to affect individuals' retirement decisions. In this paper, we present empirical evidence on the effects of one of the most widely discussed policy options. Specifically, we provide empirical evidence on the effects of increasing the Early Retirement Age on individuals' retirement decisions.

Many social security systems are framed around two age thresholds: the Early Retirement Age (ERA) and the Normal Retirement Age (NRA). The ERA is the youngest age at which individuals can become eligible to claim government provided retirement pensions. The NRA is the age around which legislation is framed and benefits are computed; retirements at ages prior to the NRA are deemed "early" retirements and there may be bonuses (increased benefits) for late retirements or penalties (reduced benefits) for early retirements. While increasing the NRA can alleviate fiscal pressures primarily through reducing benefit levels, increasing the ERA can alleviate fiscal pressures by mechanically increasing the age at which individuals can start receiving benefits so individuals would receive benefits for a shorter time span.

To study the effects of increasing the ERA, we exploit policy variation from social security reforms in Austria. In the years 2000 and 2004, there were two pension reforms that increased the ERAs for men and women in Austria. The 2000 pension reform increased the ERAs by 1.5 years using incremental two-month increases for each quarterly birth cohort beginning with men born in the last quarter of 1940 and women born in the last quarter of 1945. The 2004 pension reform increased the ERAs first using the same incremental two-month increases for each quarterly birth cohort and then using incremental one-month increases for each quarterly birth cohort. These reforms allow us to compare outcomes across quarterly birth cohorts to identify the effects of increasing the ERAs on individuals' retirement decisions.

The empirical analysis is based on administrative data from the Austrian Social Security Database. This database provides social security record data on all private sector employees in Austria. Furthermore, the administrative data allows us to distinguish between two retirement-related outcomes: pension claims and job exits. This distinction is important for measuring labor supply responses to changes in the ERA; pension claims mechanically adjust to changes in the ERA and individuals' labor supply may not change if they are able to substitute to other social insurance programs. Economic models generally focus on individuals' labor supply decisions, so researchers have generally sought to measure individuals' work. However, because of data limitations, researchers have had to use a variety of different outcomes to measure retirement in practice. For example, studies have used self-reported retirement, time at work, reported job transitions, changes in wages or benefit claiming. By focusing on actual job exits, we are able to accurately measure retirement decisions relating to labor supply.

The empirical analysis documents that following the increases in the ERAs, both claiming and exiting ages appear to have increased in lock step for both men and women, The results show increases in both average claiming and exiting ages, as well as increases in the 25^{th}, 50^{th} and 75^{th} percentiles; these percentile results highlight that essentially the entire distribution of claiming and exiting ages appear to have increased due to the increases in the ERAs. We also document that there were significant but slightly smaller increases in the exiting ages for unhealthy and low-income individuals. While responses to financial incentives may offer a competing hypothesis, the timing of the increases in job exiting ages and the lack of transparency about any changes in financial incentives suggests that individuals responded to increases in the ERA. Additionally, the magnitudes of the increases in job exiting ages and claiming ages suggest little scope for substitution to unemployment insurance or disability insurance in response to the increased ERAs.

This paper is organized as follows. In the next section, we discuss the institutional background and data. In Sections 3 and 4, we present the main empirical analysis of the effects of the pension reforms on pension claims and job exits. Section 5 discusses the conclusions.

II. Institutional Background & Data

A. Retirement in Austria

Austria has a public pension system that automatically enrolls every person employed in the private sector. Fixed pension contributions are withheld from each individual's wage and annuitized benefits during retirement are then based on prior contributions (earnings histories). Replacement rates from the annual payments are roughly 75% of pre-retirement earnings.[1] While there are some actuarial adjustments to benefits for delaying retirement to a later age, the system is actuarially unfair on average. Pension benefits are entirely withdrawn if an individual earns more than roughly 300 Euros per month; therefore very few individuals are observed returning to the labor force once they claim a pension.[2]

Individuals can claim Disability pensions, Early Retirement pensions and Old Age pensions. Eligibility for each of these pensions depends on an individual's age and gender, as well as having a sufficient number of insurance years or contribution years. Insurance years are determined based on time spent in employment, unemployment, sick leave, maternity leave and secondary education; contribution years are determined based on time spent in employment, including sick leave and maternity leave. In regard to Disability pensions, private sector male and female employees can claim Disability pensions beginning at age 55. For these pensions, disability is based on reduced working capacity of 50% relative to someone of a similar educational background.[3] To claim a Disability pension, an individual must have at least 10

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[1] Given the generosity of the public pension system, private pensions are virtually non-existent in Austria. The monetary value of an individual's social security benefit is computed as a product of two factors: (1) the assessment basis, which is an earnings history measure similar to the average indexed monthly earnings (AIME) in the U.S. and (2) the pension coefficient, which is a percentage that is applied to the assessment basis. The pension coefficient is increasing in the individual's retirement age and his insurance years (years of labor market experience) up to a maximum of 80%. The assessment basis is an inflation-adjusted average of the individual's annual earnings over the last 15 years. Prior to 2001, old-age, early retirement and disability pensions were computed identically; in 2001 and after, a reduction was applied to the pension coefficient for disability pensions.

[2] It is possible to claim a partial pension and receive partial benefits while continuing to work. Very few individuals claim these pensions so we exclude them from our analysis.

[3] It is also possible to receive disability pensions prior to age 55; these benefits are based on permanent disability status.

insurance years in the last 20 years or 15 contribution years in total. In regard to Early Retirement pensions, men and women become eligible for Early Retirement pensions at the Early Retirement Ages (ERA) which were 60 and 55 for men and women respectively. As we discuss in more detail below, these ERAs were increased in the 2000 and 2004 pension reforms. To claim an Early Retirement pension, an individual must have at least 35 insurance years. Lastly, in regard to Old Age pensions, men and women become eligible for Old Age pensions at the Normal Retirement Ages (NRA) which are age 65 and 60 respectively. To claim an Old Age pension, an individual must have at least 15 insurance years in the last 30 years, 15 contribution years in total or 20 insurance years in total.

Unemployment benefits can also affect individuals' job exiting decisions. Prior to claiming pensions, individuals can receive unemployment benefits that are roughly 55% of their net wage. Individuals are eligible to receive 20, 30, 39 or 52 weeks of benefits if they have respectively completed 1 year of employment in the last 2 years, 3 years of employment in the last 5 years, 7 years of employment in the last 10 years, or 9 years of employment in the last 15. Individuals who enter unemployment through voluntary quits face a four-week waiting period to be able to receive their benefits; individuals entering unemployment through an involuntary separation do not face this waiting period.

B. Pension Reforms

Pension reforms in 2000 and 2004 increased the Early Retirement Ages (ERAs) for men and women. These increases in the ERAs are illustrated in Figure 1. The 2000 pension reform increased the ERAs by 1.5 years from 60 and 55 to 61.5 and 56.5 for men and women respectively. The reform was announced in July of 2000, and the increases in the ERAs were phased in between October of 2000 to October of 2002. Specifically, men born in the fourth quarter of 1940 faced an ERA of 60 and 2 months, and each subsequent quarterly birth cohort faced an ERA that was 2 months higher than the previous cohort. For women, the 2-month increases for each quarterly birth cohort started with women born in the fourth quarter of 1945. Men and women with 45 and 40 insurance years were exempt from the increases in the ERAs and hence could continue to claim pensions at 60 and 55.

The 2004 pension reform continued to increase the ERAs for men and women. This reform was announced in June of 2003 and took effect on January 1, 2004. The ERAs were increased by two months for each quarter of birth for men born in the first two quarters of 2003 and women born in the first two quarters of 1948. Following these increases, the ERAs were increased by one month for each quarter of birth for men born in the third quarter of 1943 and later and for women born in the third quarter of 1948 and later. As with the 2000 pension reform, men and women with 45 and 40 insurance years were exempt from the increases in the ERAs under the 2004 pension reform. Furthermore, the 2004 pension reform also created special corridor pensions for men born in the last quarter of 1943 and later. The minimum entry age for these corridor pensions was 62, thereby making the ERA beyond age 62 non-binding in many cases.[4]

In addition to affecting the ERAs, the pension reforms in 2000 and 2004 also affected individuals' financial incentives for claiming pensions at different ages. Figure 2 illustrates some of the changes in financial incentives for pension claiming due to the pension reforms. First, panel A illustrates the pension coefficients for men and women retiring at the ERA with various insurance year levels. Importantly, the age of retirement varies across the different years since the plot illustrates pension coefficients for individuals retiring at their birth cohort-specific ERAs. The plot demonstrates that, independent of the level of insurance years, there is only a slight decline in pension coefficients for men claiming pensions at the ERAs. Specifically, for men with higher (44) and lower (37) insurance years, there is only a slight decline in the pension coefficients across the years. For women claiming at the ERAs, the pension coefficients are also relatively stable. The plot shows that for women claiming at the ERAs with 37 insurance years, there is only a slight increase in the pension coefficient. Overall, the pension coefficients for individuals retiring at the ERAs only decrease slightly for men and are relatively stable for women.

[4] Corridor pensions could be claimed by men who (1) were born in the fourth quarter of 1943 or later, (2) reached age 62 with at least 37.5 insurance years and (3) were employed or receiving UI benefits. With the corridor pensions, a small reduction on benefit amounts was imposed as a penalty for early claiming.

While panel A of Figure 2 focuses more on the financial incentives for claiming pensions at the ERAs, panel B of Figure 2 focuses more on the financial incentives to accumulate the full insurance year level. This plot illustrates the difference in pension coefficients for men claiming pensions at age 60 with 44 versus 45 insurance years and women claiming pensions at age 55 with 39 versus 40 insurance years. Unlike panel A in which the claiming age varies across the calendar years, the claiming ages are fixed at ages 60 and 55 in panel B. The plot illustrates that the 2000 pension reform increases financial incentives for women to accumulate full insurance years (40 insurance years). Similarly, the 2000 pension reform slightly increased the high insurance year premium for men. The more dramatic increase in the high insurance year premium for men was phased in for more recent birth cohorts following the 2004 pension reform.

C. Data & Sample Restrictions

Our empirical analysis is based on administrative, matched employer-employee data from the Austrian Social Security Database (ASSD, see Zweimüller et al 2009). This data is collected with the principle aim of verifying individual pension claims and computing individuals' pension benefits. The data provide longitudinal information for the universe of private sector workers in Austria throughout their working lives. Specifically, information is collected on employment and earnings as well as other labor market states relevant for computing insurance years such as military service, unemployment, maternity leave and sick leave. In each calendar year, individuals' work histories are summarized in spells that have a maximum length of 365 (or 366) days. Total earnings are reported for each employment spell. Additionally, information is recorded on the lengths of spells with receipt of benefits from unemployment, disability and pensions.

The data is collected from 1972 onwards, though some information prior to 1972 is available. In particular, detailed electronic records with employer identifiers are recorded from January 1, 1972 onwards.[5] The combination of the employer identifiers and individual employment spells

[5] Because there are no rules specifying distinctions between firms and plants, the employer identifier does not distinguish between firms and plants.

allows for construction of firm-level variables such as firm size, hires and exits. Additional information on industry and region is also recorded for each employer. For the years prior to 1972, retrospective information on states relevant for computing insurance years is available for all individuals who have retired by the end of the observation period. Combining the administrative data from 1972 onwards and the retrospective data prior to 1972 yields information on complete earnings and employment careers of retirees. In the empirical analysis, we use information through 2009.

We use the administrative data to analyze the effects of increasing the ERAs on labor supply decisions of older workers and labor demand decisions of employers. We construct the sample for the labor supply analysis by starting with all men born between 1930 and 1947 and women born between 1935 and 1952. We exclude the following sets of individuals: individuals who are not Austrian citizens, individuals who die before age 65, individuals who are last employed prior to age 53, individuals who have 1 or more years of self-employment, and individuals in government-dominated industries at older ages.[6] The sample restrictions are summarized in Table A1 in the Appendix. After imposing the sample restrictions, our sample consists of 299,789 men and 290,412 women. In our analysis of labor supply decisions, we impose further sample restrictions to focus on particular age ranges; we discuss these further restrictions in the empirical analysis section below.

III. Graphical Analysis

A. Individuals with Low Insurance Years

This section presents a graphical analysis of the effects of increasing the ERAs on pension claims and job exits. To illustrate the effects of the policy changes, we present plots of survival curves by age across multiple pre- and post-reform birth cohorts for each gender. The survival

[6] We exclude self-employed individuals from the analysis because pensions for self-employed individuals are determined under separate rules from those of private sector employees. Examples of government-dominated are education, railways, and public administration. We exclude these individuals since pensions for civil servants are also determined under separate rules from those of private sector employees.

curve at a given age captures the fraction of the specified cohort that has not yet claimed a pension or exited their jobs.

Figure 3A presents the survival curves for men with low insurance years.[7] We focus first on individuals with low insurance years since these individuals were directly affected by the reforms; individuals with high insurance years were exempt from the increases in the ERAs. The vertical lines mark age 60 and the new ERA for the specified post-reform birth cohorts. We highlight multiple conclusions from these plots. First, as the ERA increases, employment amongst men with low insurance years appears to increase as well. Based on the pre-reform birth cohorts' job exit survival curves, it appears that roughly 20% of men with low insurance years are employed just prior to age 60. As the ERA increases, it appears that even at older ERAs, the fraction of men still employed just prior to the new ERAs remains at roughly 20%. Thus, the low fraction of men employed just prior to the ERA consistently shifts as the ERAs increase. Second, the pre-reform birth cohorts illustrate sharp drops in the survival curves at age 60, whereas the post-reform birth cohorts do not show any significant drops as age 60. Thus, as the ERA increases to older ages, the initial ERA no longer continues to be relevant. Furthermore, the job exits appear to be gradual so that there is no as sharp a drop in the survival curve at the new, older ERAs. This relates to arguments by Hurd (1990) and others (see Gruber and Wise 1999) that emphasize there would not be spikes in the frequencies of retirement at specific ages if the specific ages were not ERAs. Third, the fraction employed at age 60 increases as the ERA increases. This highlights that prior to age 60, there are fewer entries into disability pensions as the ERA increases. The timing of the increase in the fraction of individuals employed at age 60 appears to closely follow the timing of the increases in the ERA rather than any changes in disability pensions.[8] This suggests that the increases in the fraction employed at age 60 are

[7] We define low insurance years as having less than 38 insurance years by age 53. If an individual is continuously in the labor market (employed or unemployed, for example) from age 15 through age 53, then the individual will accumulate 38 insurance years by age 53. In Austria, the majority of individuals in older cohorts left school upon reaching the end of compulsory schooling at age 14. After finishing schooling, many individuals entered the formal apprenticeship system at age 15. Time spent in the apprenticeship system counts toward insurance years since individuals contribute to the pension system during this time.

[8] Staubli (2011) studies the effects of changes to disability pensions that occurred in Austria during the 1990s.

driven by individuals staying in their jobs longer when the ERA increases. Fourth, the gap between the pension claims and job exits survival curves do not significantly increase as the ERA increases. Thus, there does not appear to be much scope for significant substitution into unemployment insurance or disability pensions as the ERA increases. It appears instead that most men remain employed to older ages as the ERA increases.

Similar survival curve plots for women with low insurance years are shown in Figure 3B. These plots highlight many similar conclusions as the plots for men. Specifically, as the ERA increases from age 55 to older ages, age 55 ceases to be noteworthy and the fraction of women still employed at age 55 increases as there are no sharp drops in pensions claims or job exits at age 55 as the ERA increases. The fraction of women employed at the ERA decreases slightly from roughly 60% in the pre-reform cohorts to just above 50% in the post-reform cohorts. Unlike the plots for men, the plots for women also illustrate some switching between the ERA and the NRA. Specifically, as the ERA increases, there are increases in the pension claims and job exits survival curves up to the NRA and then sharper drops at the NRA. This indicates that, in the more recent cohorts, there are more women remaining employed up to age 60 and then retiring at age 60. The increases in the ERA thus appear to generate switching from retiring at the ERA to retiring at the NRA.

B. Individuals with High Insurance Years

Next, we examine the survival curves for men and women with high insurance years. These individuals were not directly affected by the increases in the ERA and thus it may be natural to think of them as control groups relative to the individuals with low insurance years who were directly affected by the legislated increases in the ERAs. Nonetheless, the plots in Figure 3C and 3D for men and women with high insurance years respectively illustrate changes in the retirement patterns of individuals with high insurance years as well. First the fraction of high insurance year men who are employed at age 60 increases from just below 40% in the pre-reform cohorts to just below 60% in the post-reform cohorts. Furthermore, the plots show that as the ERA for low insurance year men increases, some men with high insurance years shift to retiring at the increased ERA even though it does not apply to them. One concern is that this may be

driven by measurement error in high insurance year status. To address this, we verify that this pattern is robust to multiple insurance year cutoffs when specifying high insurance year status. Nonetheless, even though there is some increased retirement at older ages for the these exempt individuals, there is still significant retirement at the age 60 ERA as the plots show significant drops in the survival curves at age 60. Similar to the patterns for men with high insurance years, the plots for women with high insurance years also illustrate increases in employment rates at the age 55 ERA. In the pre-reform cohorts, the job exits survival curve illustrates an employment rate at age 55 below 80%, and this number increases to well above 80% in the post-reform cohorts. Thus, both men and women with high insurance years also appear to respond to the increases in the ERAs that applied directly to men and women with low insurance years.

IV. Empirical Analysis

A. Quantifying the Effects of the Policy Changes

While the previous section emphasizes qualitative conclusions based on graphical analyses, this section focuses on a quantitative analysis of the effects of increasing the ERAs on pension claims and job exits. To quantify the effects of the policy changes, we estimate regressions of the following form,

$$y_i = \sum_k \beta_k 1(cohort_i = k) + \gamma X_i + \varepsilon_i.$$

where y_i denotes individual i's pension claiming age or job exiting age, $1(cohort_i=k)$ denotes an indicator equal to one if individual i is in birth cohort k, X_i denotes covariates and ε_i denotes the error term.[9] The coefficients of interest, β_k, capture the average claiming or exiting age for cohort k. The changes in these estimated coefficients allow us to estimate the effectiveness of increases in the ERA at affecting claiming and exiting ages. Furthermore, to determine the aggregate

[9] The covariates included are the following: dummies for quintiles of contribution years by age 53, dummies for deciles of average earnings between 50 and 53, a dummy for censored earnings, and a dummy for continuous employment from ages 50 to 53.

degree of substitution to alternative pathways to retirement, we estimate the ratio of changes in job exiting ages to changes in pension claiming ages

$$\delta = \frac{\Delta(claim - exit)}{\Delta claim}.$$

Intuitively, when the ERA increases for individuals with low insurance years, the average claiming age for the cohort will increase mechanically since some fraction of the cohort must now claim their pension benefits at an older age. However, individuals may continue to exit their jobs at the same age, and then proceed to live off of savings or substitute to unemployment insurance benefits. In this case, the job exiting ages would not change, so the parameter δ would be close to 1. However, if individuals continue to work up until the new ERA, then job exiting ages will increase correspondingly with pension claiming ages, so the parameter δ will be close to 0. Thus, the parameter δ allows us to quantify the scope for substitution to alternative pathways into retirement.

B. Results

Tables 3A-D and Figures 4A-D present the results from the regression analysis. The plots in Figure 4 illustrate the estimated coefficients on the cohort dummies (with the constant term added back in). The plot in Figure 4AI shows that, prior to the pension reforms, the average claiming and exiting ages for men with low insurance years are stable. Once the ERA begins to increase, both the average claiming and exiting ages increase in parallel. While Figure 4AI focuses on the averages, we also characterize changes in the distributions of claiming and exiting ages. Specifically, we estimate the above regression specification using quantile regression and then plot the estimated coefficients on the cohort dummies. These coefficients illustrate how a given percentile in the claiming or exiting age distribution changes by birth cohort. The plots for the 25th, 50th and 75th percentiles are shown in Figure 4AII-IV. These plots demonstrate that the full distributions of claiming and exiting ages for men with low insurance years increase following the increases in the ERA. In particular, the series for claiming and exiting ages for the

different percentile each increase by roughly 2 years, and the gaps between the claiming and exiting age series also appear to be roughly stable for each of the percentiles.

Similar to the plots for men with low insurance years, the plots in Figure 4B illustrate the estimated regression coefficients for women with low insurance years. While the ERA for women with low insurance years also increased by roughly 2 years as it did for men, the plots show that claiming and exiting ages for women appear to increase by less than 2 years. The relatively low increase in claiming and exiting ages highlights that, for many women, the ERA is non-binding since they are not eligible for pensions if they have low insurance years.

While Figures 4A and B focus on men and women with low insurance years, Figures 4C and D focus on the full populations of men and women since the graphical analysis indicates that some men and women with high insurance years also appear to have changed their behaviors following the pension reforms. Since a large fraction of men and women have low insurance years, it is not surprising that the plots for the full populations are similar to the plots for individuals with low insurance years. For men, the plots in Figure 4C illustrate larger increases in the 25^{th} and 50^{th} percentiles of exiting ages relative to the claiming ages, whereas the average and 75^{th} percentiles show parallel increases.

Next we turn to the specific quantitative results in Tables 3A-D. These tables present the estimated coefficients on the cohort dummies when using claiming age, exiting age and the difference between claiming and exiting age as the dependent variables in separate regressions. We estimate the regression coefficients for subsamples of unhealthy and below-median income groups in addition to the main samples. At the bottom of each table, we also present the estimated difference between the last cohort and the cohort just prior to the pension reform.

Starting with Table 3A for men with low insurance years, the results indicate that between the 1939 and 1947 cohorts, the average claiming age increased by roughly 2 years, and the average exiting age increased by roughly 1.84 years. This leaves a gap of roughly 0.17 years, so substitution to disability or unemployment insurance can account for roughly 8.5% (=0.17/2.009) of the response, or equivalently, the increase in exiting ages accounts for roughly 91.5% of the

increase in claiming ages. For the subsamples of men with low insurance years who are unhealthy or below-median income, the results indicate similar increases in claiming ages at roughly 1.9 years, but the exiting ages increase less so that the gaps between claiming and exiting ages are larger at roughly 0.4 years. Nonetheless, even for the unhealthy and low-income subsamples, the increase in employment accounts for almost 80% (≈0.4/1.9) of the increase in claiming ages. Thus, we conclude that there is little scope for substitution to unemployment insurance or disability insurance so that the large majority of the response to the increased ERAs is increased employment time. Table 3B presents the estimated results for the full sample of men, and these results further emphasize this conclusion.

Tables 3C and D present the estimated results for women with low insurance years and the full sample of women respectively. Similar to the results for men, these results indicate that the majority of the increase in claiming ages can be accounted for by increases in exiting ages, so there is little scope for substitution to unemployment insurance or disability insurance. Focusing on the results for women with low insurance years, between the 1950 and 1944 cohort, the claiming age appeared to increase by roughly 1.45 years, and the increase in exiting ages accounts for nearly 90% (≈1.29/1.45) of this. Similar to the results for men, the exiting ages for unhealthy and low-income women do not increase as much, so there is slightly more scope for substitution into unemployment insurance or disability pensions for these subsamples, but still the large majority of the increase in claiming ages is accounted for by the increases in employment time. The full sample results for women in Table 3D are similar to the results for women with low insurance years.

V. Conclusion

In this paper we have presented empirical evidence on the labor supply responses to increases in the Early Retirement Age in Austria. Using administrative, matched employer-employee data, the main analysis characterizes labor supply behavior at retirement in terms of job exits and pension claims. We show that this distinction adds important information about retirement decisions; on average individuals exit their jobs roughly 6 months to 1 year before claiming

pension benefits. The Austrian pension reforms in 2000 and 2004 increased the Early Retirement Ages (ERAs) in several steps for men and women. The graphical analysis shows clear response patterns to the ERA changes: affected cohorts delay their exits from jobs and pension claims exactly in step with the ERA reforms. The shifts in job exits and pension claims across affected cohorts lead to slightly longer gaps between the exiting and claiming ages, but we do not find evidence for substantial substitution with alternative insurance programs such as disability pensions or unemployment insurance. Based on the observed labor supply responses, we conclude that increasing the ERA can be a valuable tool for affecting employed individuals' retirement decisions.

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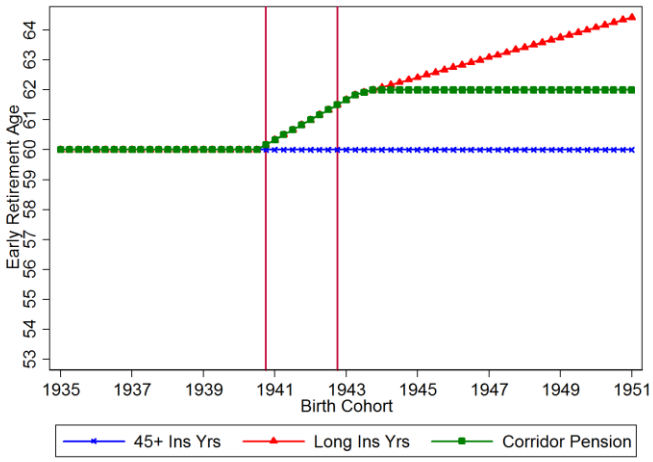
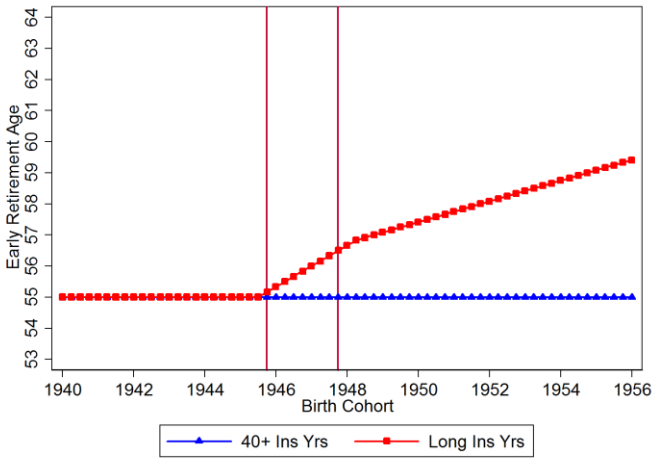
Figure 1: Early Retirement Age by Birth Cohort

A. Men



B. Women

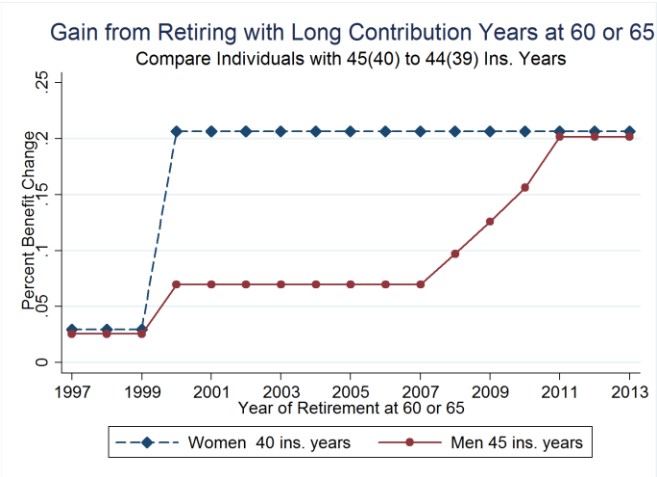


Notes: These figures plot the Early Retirement Age (ERA) for cohorts born in 1935-1951 for men and 1940-1956 for women. The pension reforms of 2000 and 2004 increased the ERA for men born in the fourth quarter of 1940 and women born in the fourth quarter of 1945, and each subsequent quarterly birth cohort.

Figure 2: Pension Reforms & Financial Incentives

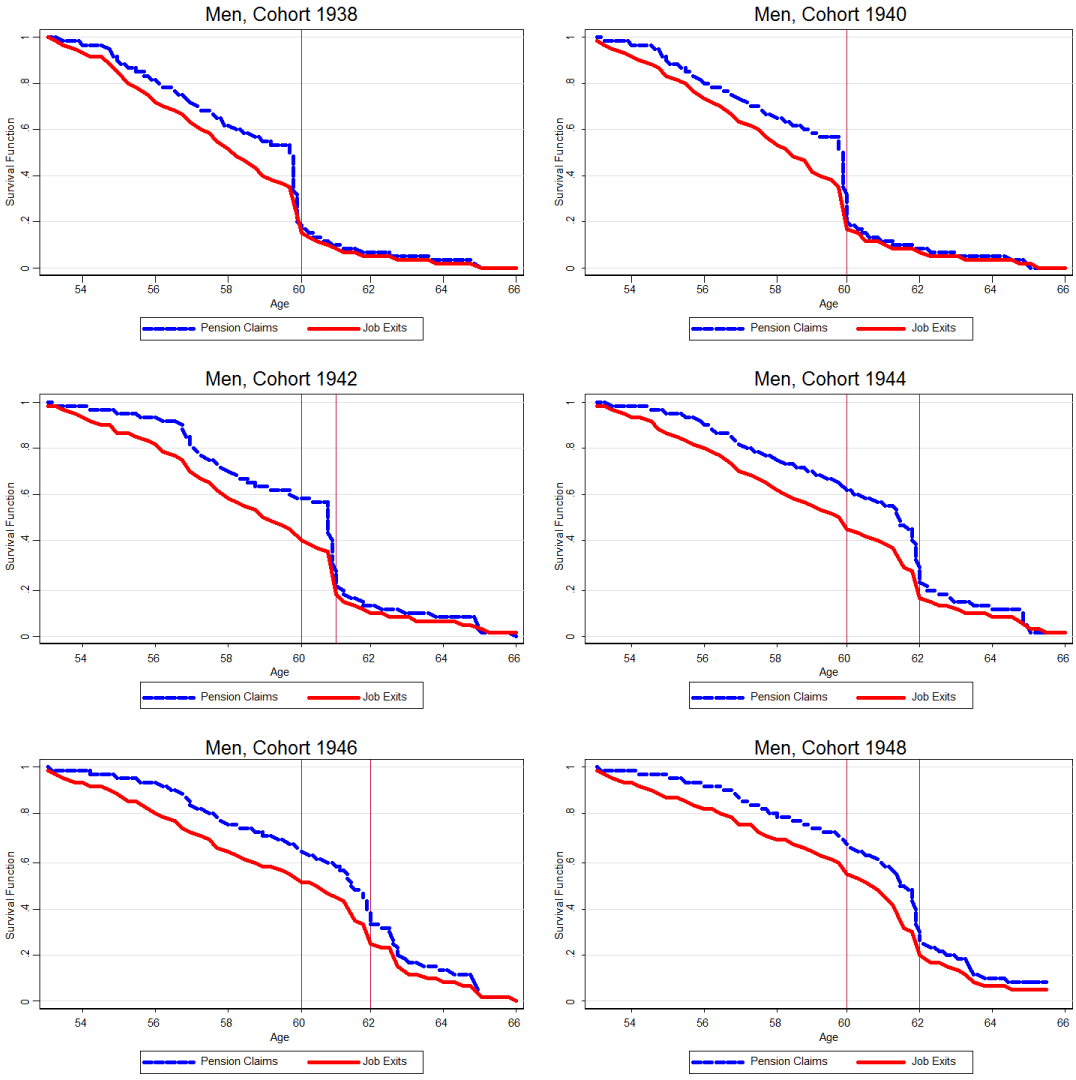
A. Pension Coefficient

B. High Insurance Year Premium



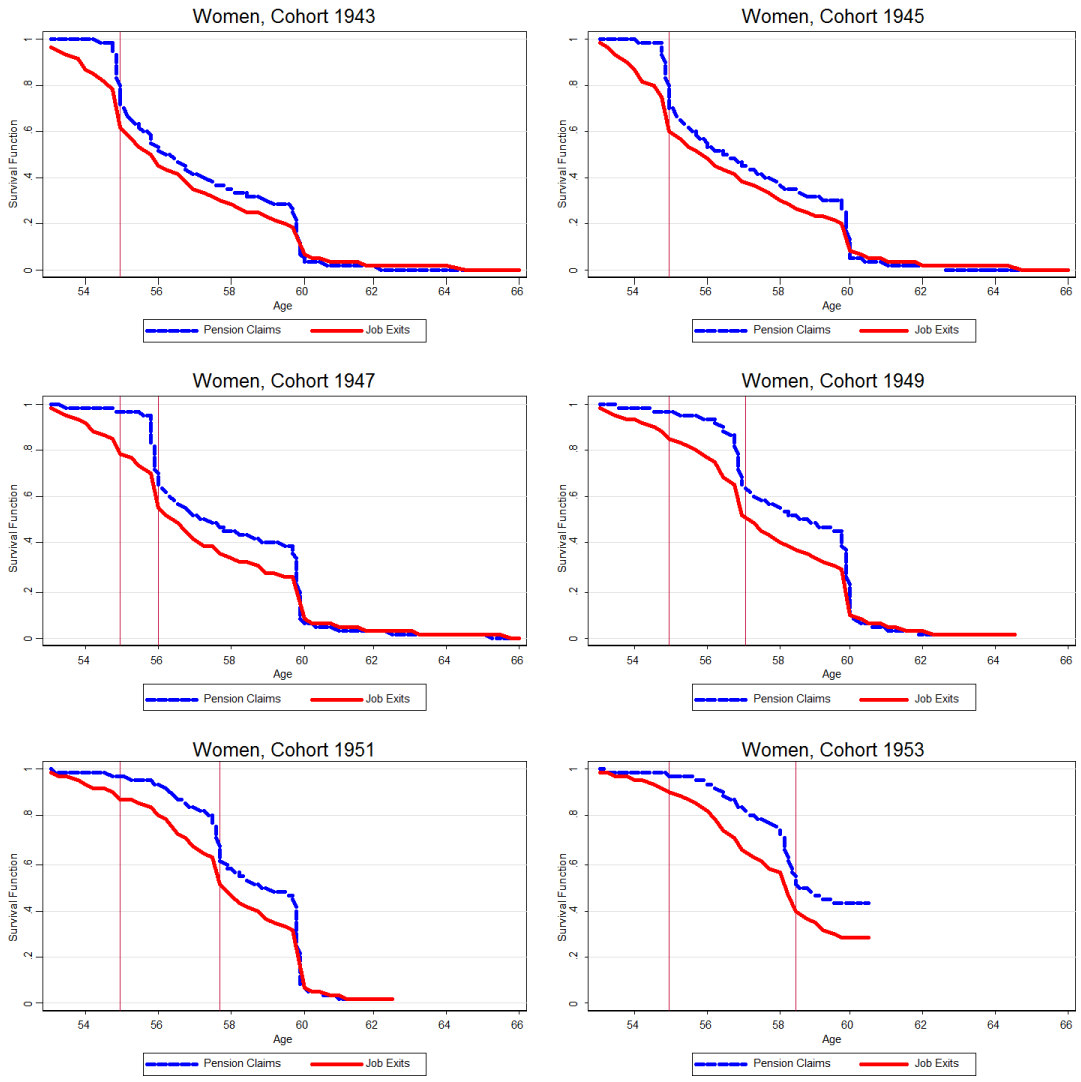
Notes: These figures plot the changes in the financial incentives for pension claiming due to the pension reforms. Panel A plots the pension coefficients for men and women, with various insurance years, retiring at their birth cohort-specific ERAs. Panel B plots the difference in pension coefficients for men claiming pensions at age 60 with 44 versus 45 insurance years and women claiming pension at age 55 with 39 versus 40 insurance years.

Figure 3: Survival Functions by Birth Cohort
A. Men with Low Insurance Years



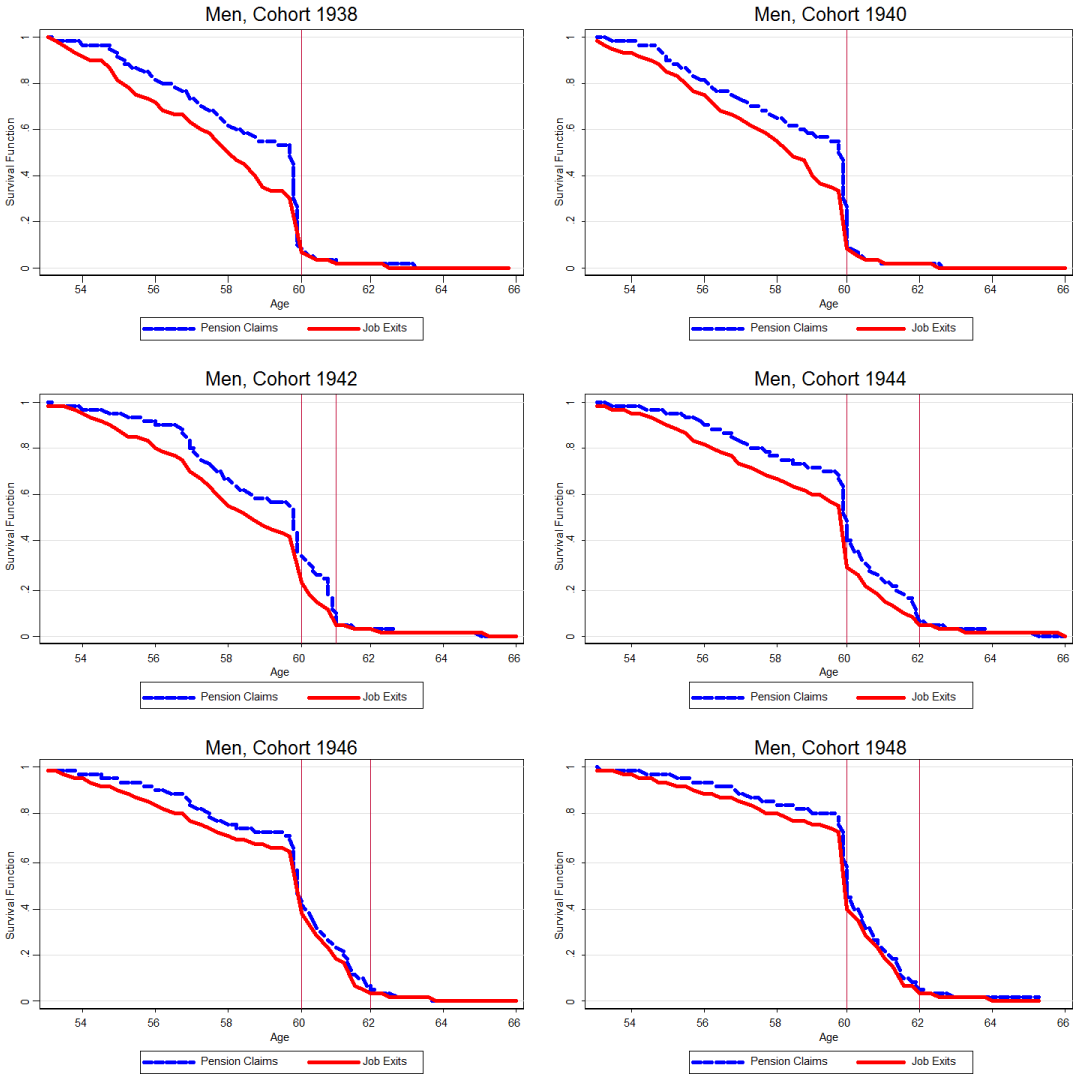
Notes: These figures plot the survival curves for men with low insurance years, by ages across multiple pre- and post-reform birth cohorts. The vertical lines mark age 60 and the new ERA for the specified post-reform birth cohort. Low insurance years are defined as having less than 38 insurance years by age 53. If an individual is continuously in the labor market (employed or unemployed, for example) from age 15 through age 53, then the individual will accumulate 38 insurance years by age 53.

Figure 3: Survival Functions by Birth Cohort
B. Women with Low Insurance Years



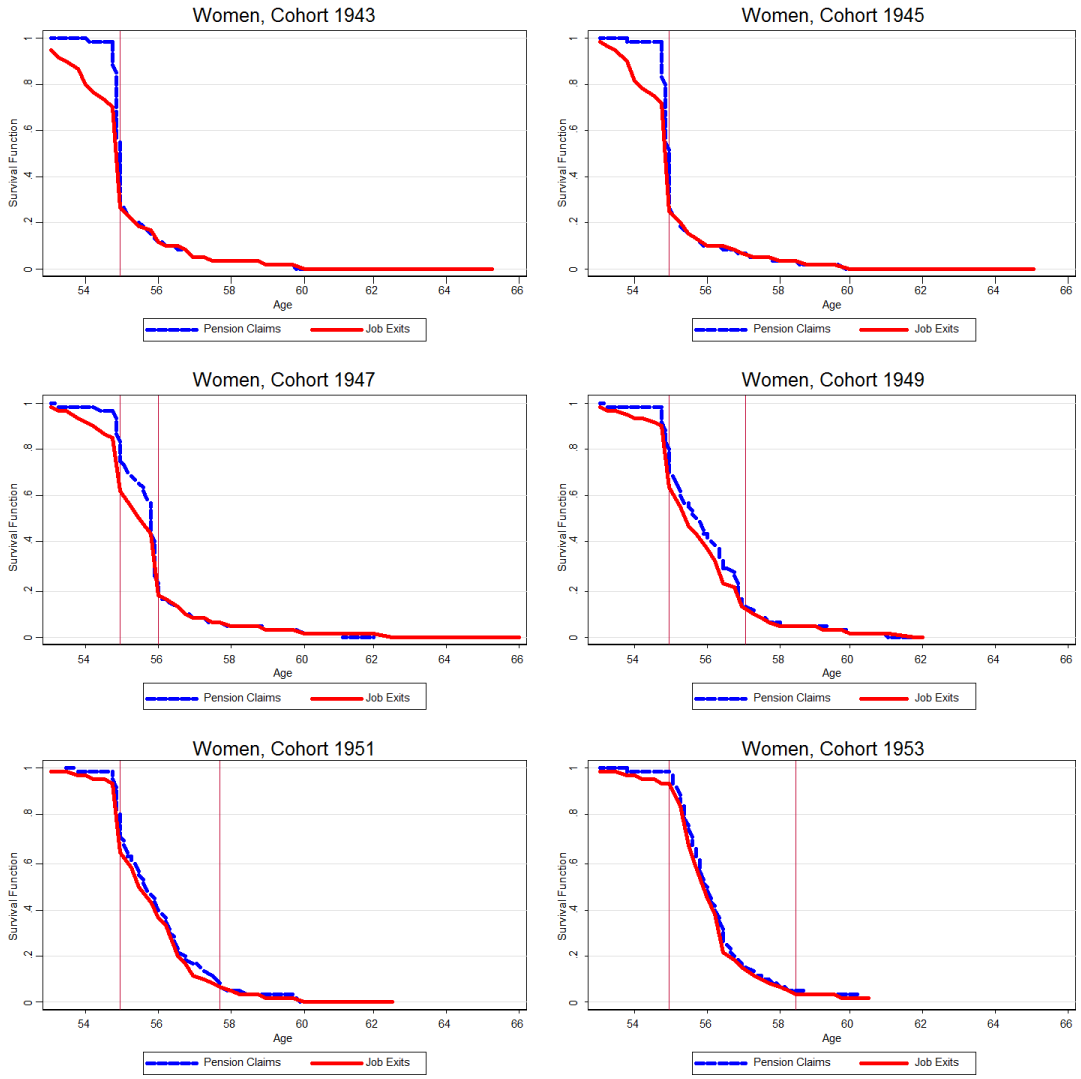
Notes: These figures plot the survival curves for women with low insurance years, by ages across multiple pre- and post-reform birth cohorts. The vertical lines mark age 60 and the new ERA for the specified post-reform birth cohort. Low insurance years are defined as having less than 38 insurance years by age 53. If an individual is continuously in the labor market (employed or unemployed, for example) from age 15 through age 53, then the individual will accumulate 38 insurance years by age 53.

Figure 3: Survival Functions by Birth Cohort, C. Men with High Insurance Years



Notes: These figures plot the survival curves for men with high insurance years, by ages across multiple pre- and post-reform birth cohorts. The vertical lines mark age 60 and the new ERA for the specified post-reform birth cohort. High insurance years are defined as having more than 38 insurance years.

Figure 3: Survival Functions by Birth Cohort, D. Women with High Insurance Years



Notes: These figures plot the survival curves for women with high insurance years, by ages across multiple pre- and post-reform birth cohorts. The vertical lines mark age 60 and the new ERA for the specified post-reform birth cohort. High insurance years are defined as having more than 38 insurance years.

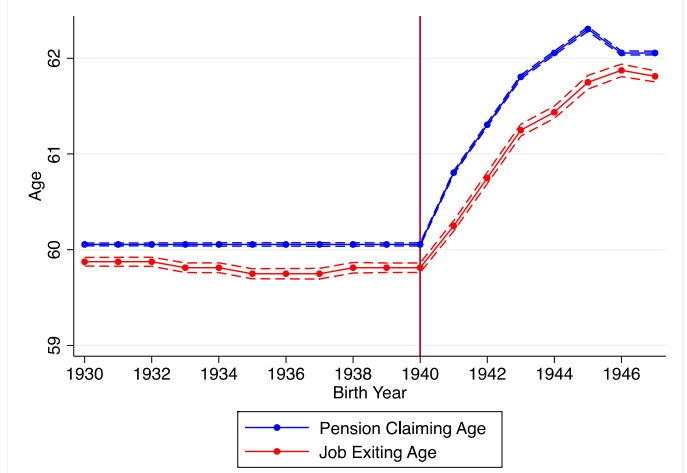
Figure 4: Pension Claiming Ages & Job Exiting Ages
A. Men with Low Insurance Years

I. Average

II. 25th Percentile

III. 50th Percentile

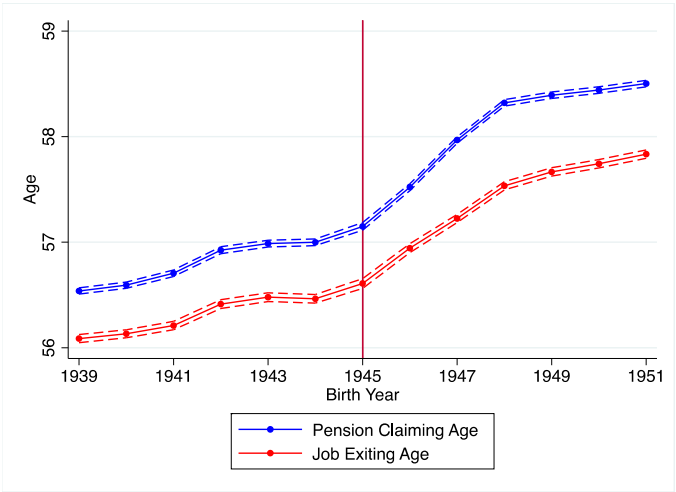
IV. 75th Percentile



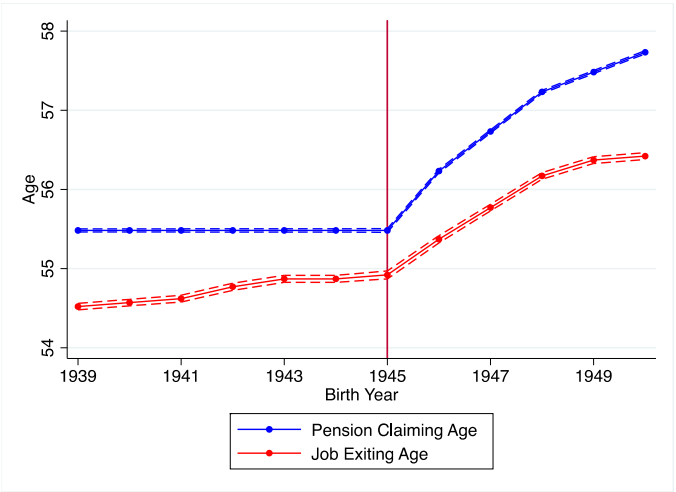
Notes: These figures plot the average pension claiming and job exiting age (vertical axis) for different birth cohorts (horizontal axis), estimated using the regression analysis for men with low insurance years. Figure 4AI shows the average claiming and exiting age across birth cohorts and Figures 4AII-IV show the same for 25th, 50th and 75th percentiles, respectively. The estimated coefficients plotted in Figure 4AII-IV are obtained using a quantile regression analysis. Low insurance years are defined as having less than 38 insurance years by age 53. If an individual is continuously in the labor market (employed or unemployed, for example) from age 15 through age 53, then the individual will accumulate 38 insurance years by age 53.

Figure 4: Pension Claiming Ages & Job Exiting Ages
B. Women with Low Insurance Years

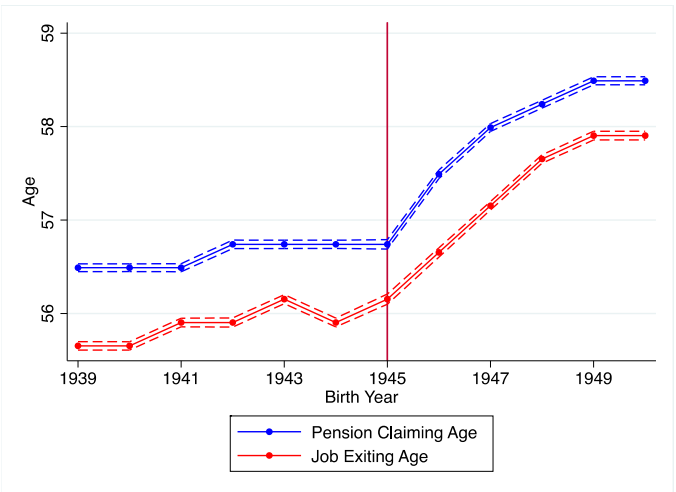
I. Average



II. 25th Percentile



III. 50th Percentile

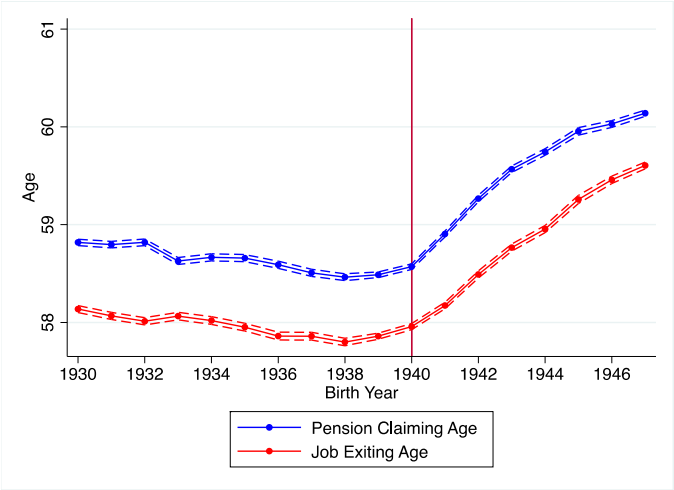


IV. 75th Percentile

Notes: These figures plot the average pension claiming and job exiting age (vertical axis) for different birth cohorts (horizontal axis), estimated using the regression analysis for women with low insurance years. Figure 4BI shows the average claiming and exiting age across birth cohorts and Figures 4BII-IV show the same for 25th, 50th and 75th percentiles, respectively. The estimated coefficients plotted in Figure 4BII-IV are obtained using a quantile regression analysis. Low insurance years are defined as having less than 38 insurance years by age 53. If an individual is continuously in the labor market (employed or unemployed, for example) from age 15 through age 53, then the individual will accumulate 38 insurance years by age 53.

Figure 4: Pension Claiming Ages & Job Exiting Ages
C. Men, Full Sample

I. Average



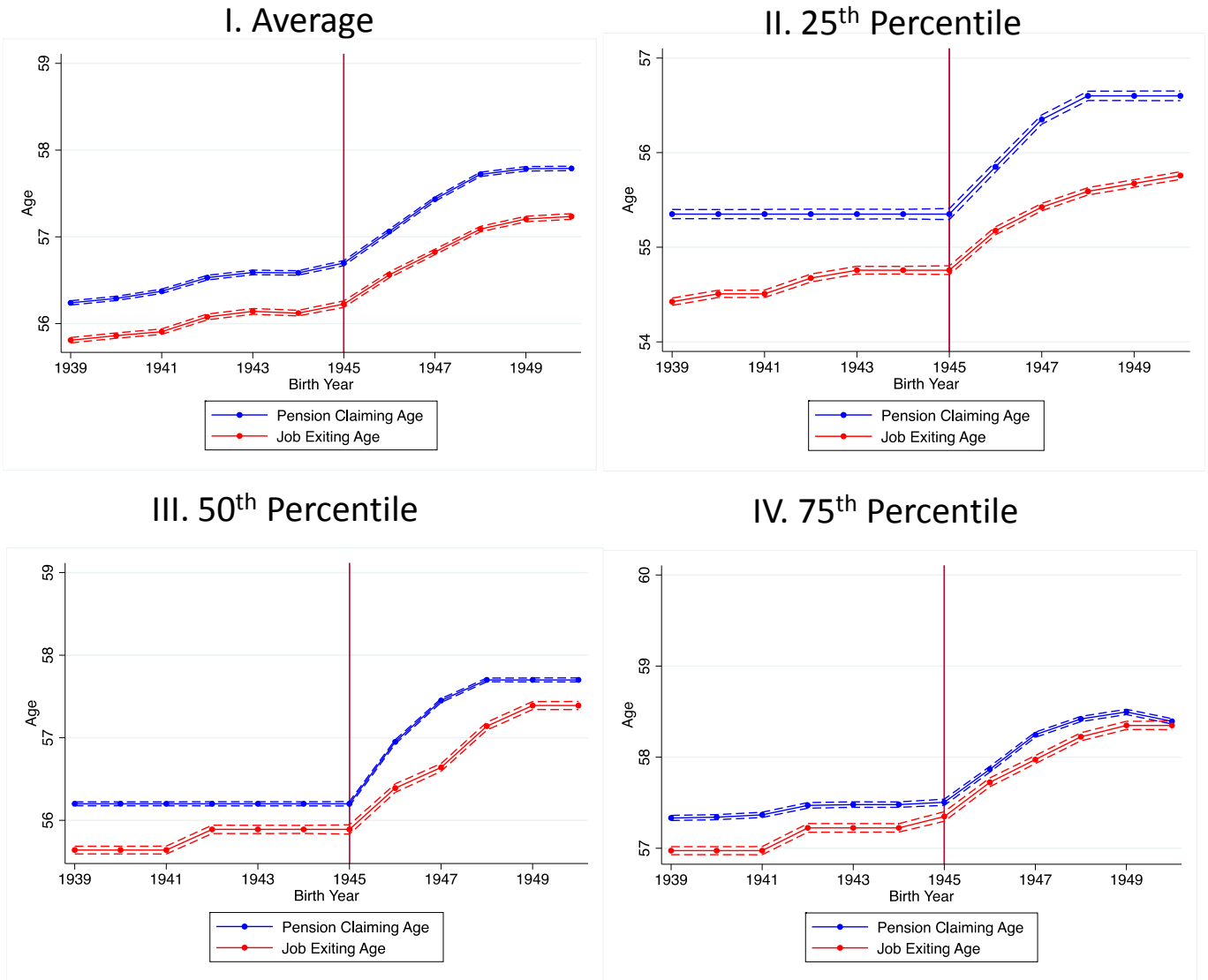
II. 25th Percentile

III. 50th Percentile

IV. 75th Percentile

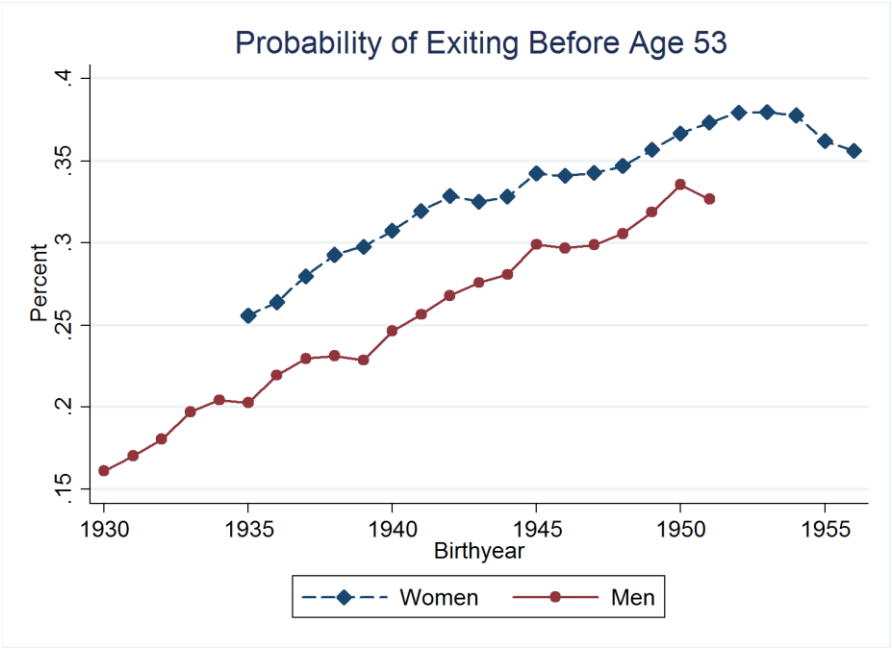
Notes: These figures plot the average pension claiming and job exiting age (vertical axis) for different birth cohorts (horizontal axis), estimated using the regression analysis for the full population of men. Figure 4CI shows the average claiming and exiting age across birth cohorts and Figures 4CII-IV show the same for 25th, 50th and 75th percentiles, respectively. The estimated coefficients plotted in Figure 4CII-IV are obtained using a quantile regression analysis.

Figure 4: Pension Claiming Ages & Job Exiting Ages
D. Women, Full Sample



Notes: These figures plot the average pension claiming and job exiting age (vertical axis) for different birth cohorts (horizontal axis), estimated using the regression analysis for the full population of women. Figure 4CI shows the average claiming and exiting age across birth cohorts and Figures 4CII-IV show the same for 25th, 50th and 75th percentiles, respectively. The estimated coefficients plotted in Figure 4CII-IV are obtained using a quantile regression analysis.

Appendix Figure 1: Early Retirement Age by Birth Cohort



Appendix Figure 2: Fraction of Cohort with High Insurance Years

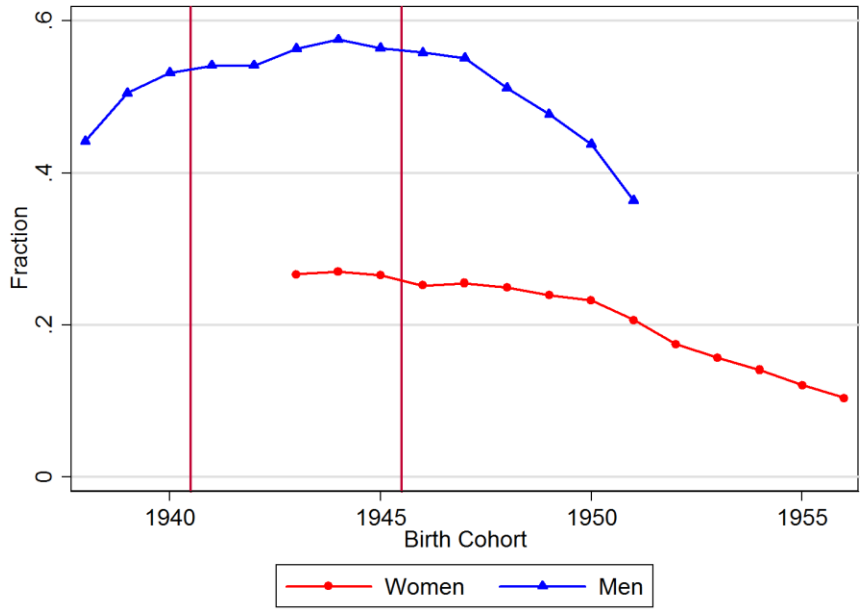


Table 1. Sample Restrictions

	# of Men	# of Women
Initial Sample	613,491	587,985
1. After excluding non-Austrian citizens	554,756	551,067
2. After excluding individuals dying before age 65	495,986	525,125
3. After excluding individuals exiting before age 53	374,521	349,626
4. After Excluding Individuals with 1 or more years of self-employment	324,761	317,206
5. After Excluding Individuals in publicly-owned industries at ages 50 or older	299,789	290,412
Claims through December 31, 2008	282,556	241,286
Exits through December 31, 2008	291,149	253,944

Notes: In restriction (3), 2 individuals are also dropped for missing exit dates. The initial sample is based on cohorts 1930 through 1947 for men and cohorts 1935 through 1952 for women.

Table 2
Summary Statistics

Panel A. Men

Age at Job Exit	N	Earnings at Age 54			Censorearnings at 54	Contribution Years at 54			Positive Sick Leave, Ages 50-54	Positive Unemployment, Ages 50-54
		Mean	Median	Std. Dev.		Mean	Median	Std. Dev.		
53	11,839	2,419	0	5,591	0.033	12.562	0.000	17.173	0.571	0.649
54	16,705	14,642	13,236	10,961	0.095	33.500	37.803	10.081	0.577	0.473
55	28,203	21,334	20,626	10,000	0.125	35.216	38.427	8.174	0.366	0.236
56	24,460	22,358	21,864	9,716	0.141	35.132	38.277	8.022	0.284	0.259
57	29,965	23,552	23,172	9,384	0.149	35.710	38.553	7.303	0.240	0.230
58	30,684	23,197	23,068	8,997	0.185	35.699	38.441	7.089	0.198	0.213
59	31,551	22,893	22,496	9,036	0.201	35.388	38.268	7.380	0.165	0.213
60	82,350	27,294	26,860	9,461	0.299	37.018	39.263	5.673	0.094	0.107
61	19,563	30,357	30,627	11,500	0.386	35.221	38.173	8.017	0.108	0.162
62	11,564	30,244	30,522	14,157	0.411	32.570	36.247	9.616	0.105	0.197
63	4,785	30,097	30,522	14,883	0.500	30.148	34.932	11.127	0.076	0.145
64	2,305	27,941	28,691	14,685	0.496	28.114	32.778	12.029	0.070	0.150
65	4,317	27,101	28,081	14,318	0.508	27.512	31.025	11.505	0.054	0.114
66	640	27,143	28,691	15,276	0.527	27.048	31.867	12.701	0.041	0.117
67	332	23,683	26,860	14,344	0.488	25.059	30.640	14.191	0.042	0.120
68	189	23,229	26,250	14,508	0.508	23.943	30.611	14.955	0.032	0.037
69	135	21,984	26,250	13,507	0.489	24.822	31.759	14.515	0.052	0.141
70	202	21,374	25,029	12,673	0.510	25.422	32.358	14.148	0.109	0.069

Panel B. Women

Age at Job Exit	N	Earnings at Age 54			Censorearnings at 54	Contribution Years at 54			Positive Sick Leave, Ages 50-54	Positive Unemployment, Ages 50-54
		Mean	Median	Std. Dev.		Mean	Median	Std. Dev.		
53	23,972	1,942	0	4,590	0.025	10.924	0.000	15.800	0.392	0.775
54	34,261	12,124	10,174	9,458	0.070	31.564	33.978	8.889	0.326	0.623
55	78,012	20,942	19,245	11,218	0.088	35.043	38.226	7.498	0.156	0.127
56	38,125	21,573	19,684	12,575	0.087	32.834	36.167	8.919	0.140	0.168
57	35,847	20,089	17,956	12,239	0.086	30.183	32.986	9.355	0.122	0.185
58	22,675	19,098	16,897	12,009	0.087	28.032	30.384	9.676	0.117	0.173
59	15,490	17,153	14,894	11,872	0.054	25.387	27.338	10.096	0.124	0.205
60	31,735	17,107	14,954	11,081	0.051	25.246	26.375	8.793	0.118	0.144
61	3,915	18,233	16,008	12,890	0.075	22.833	24.247	11.275	0.100	0.138
62	2,264	16,872	14,657	13,004	0.082	21.355	22.542	11.889	0.098	0.146
63	1,393	15,925	13,302	13,615	0.078	20.130	21.838	12.547	0.097	0.133
64	833	15,339	13,124	12,665	0.070	19.298	20.995	12.471	0.085	0.112
65	767	16,372	13,391	13,427	0.104	20.587	22.726	12.294	0.087	0.087
66	361	14,930	12,810	12,712	0.075	19.696	21.556	13.690	0.122	0.119
67	255	16,525	14,517	12,811	0.071	22.413	24.225	12.985	0.098	0.086
68	165	11,776	8,241	12,138	0.073	17.831	19.299	14.675	0.109	0.133
69	142	12,246	8,749	11,852	0.106	18.286	19.075	14.711	0.162	0.049
70	200	12,729	11,368	10,625	0.100	21.499	23.205	13.315	0.155	0.060

Notes: See Table 1 for sample restrictions. Exit ages are computed at an annual frequency. Statistics are means unless otherwise noted.

Table 3A: Regression Result, Men with Low Insurance Years

	All			Unhealthy			Below Median Income		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap
Cohort Dummy 1931	-0.043	-0.080	0.037	-0.111	-0.157	0.046	-0.081	-0.089	0.008
	(0.029)	(0.031)	(0.020)	(0.074)	(0.072)	(0.047)	(0.049)	(0.050)	(0.031)
Cohort Dummy 1932	-0.001	-0.100	0.099	-0.059	-0.243	0.184	-0.010	-0.084	0.074
	(0.029)	(0.032)	(0.021)	(0.075)	(0.074)	(0.048)	(0.049)	(0.051)	(0.032)
Cohort Dummy 1933	-0.198	-0.095	-0.104	-0.266	-0.204	-0.062	-0.079	-0.063	-0.017
	(0.030)	(0.033)	(0.021)	(0.077)	(0.075)	(0.049)	(0.051)	(0.053)	(0.033)
Cohort Dummy 1934	-0.153	-0.113	-0.040	-0.120	-0.140	0.020	-0.097	-0.140	0.043
	(0.031)	(0.033)	(0.022)	(0.078)	(0.076)	(0.050)	(0.052)	(0.053)	(0.033)
Cohort Dummy 1935	-0.171	-0.184	0.013	-0.159	-0.230	0.071	-0.102	-0.182	0.079
	(0.031)	(0.034)	(0.022)	(0.079)	(0.077)	(0.050)	(0.053)	(0.055)	(0.034)
Cohort Dummy 1936	-0.303	-0.327	0.024	-0.371	-0.422	0.052	-0.238	-0.344	0.106
	(0.031)	(0.034)	(0.022)	(0.080)	(0.078)	(0.051)	(0.054)	(0.056)	(0.035)
Cohort Dummy 1937	-0.443	-0.409	-0.034	-0.545	-0.558	0.013	-0.442	-0.476	0.034
	(0.032)	(0.035)	(0.023)	(0.082)	(0.080)	(0.052)	(0.056)	(0.058)	(0.036)
Cohort Dummy 1938	-0.498	-0.470	-0.028	-0.637	-0.624	-0.013	-0.513	-0.508	-0.005
	(0.032)	(0.035)	(0.023)	(0.081)	(0.080)	(0.052)	(0.058)	(0.060)	(0.037)
Cohort Dummy 1939	-0.432	-0.402	-0.030	-0.509	-0.555	0.046	-0.416	-0.467	0.051
	(0.030)	(0.032)	(0.021)	(0.078)	(0.076)	(0.050)	(0.056)	(0.057)	(0.036)
Cohort Dummy 1940	-0.323	-0.318	-0.004	-0.513	-0.593	0.079	-0.360	-0.463	0.103
	(0.030)	(0.033)	(0.021)	(0.078)	(0.076)	(0.050)	(0.056)	(0.058)	(0.036)
	0.100	-0.042	0.143	0.214	-0.140	0.354	0.136	-0.174	0.310
	(0.031)	(0.034)	(0.022)	(0.082)	(0.080)	(0.053)	(0.059)	(0.061)	(0.038)
Cohort Dummy 1942	0.552	0.282	0.270	0.602	0.111	0.490	0.601	0.171	0.430
	(0.033)	(0.036)	(0.024)	(0.086)	(0.084)	(0.055)	(0.060)	(0.062)	(0.039)
Cohort Dummy 1943	0.887	0.585	0.302	0.788	0.265	0.523	0.847	0.379	0.468
	(0.034)	(0.037)	(0.024)	(0.088)	(0.085)	(0.056)	(0.060)	(0.062)	(0.038)
Cohort Dummy 1944	1.080	0.744	0.336	1.048	0.481	0.567	1.163	0.622	0.542
	(0.035)	(0.038)	(0.025)	(0.088)	(0.086)	(0.056)	(0.060)	(0.062)	(0.038)
Cohort Dummy 1945	1.394	1.126	0.268	1.455	0.784	0.671	1.388	0.890	0.498
	(0.038)	(0.041)	(0.027)	(0.097)	(0.095)	(0.062)	(0.063)	(0.065)	(0.041)
Cohort Dummy 1946	1.474	1.333	0.141	1.455	0.952	0.503	1.411	1.093	0.318
	(0.035)	(0.038)	(0.025)	(0.088)	(0.086)	(0.056)	(0.057)	(0.059)	(0.036)
Cohort Dummy 1947	1.577	1.438	0.139	1.477	0.994	0.483	1.498	1.078	0.420
	(0.033)	(0.036)	(0.023)	(0.081)	(0.079)	(0.052)	(0.053)	(0.055)	(0.034)
Observations	143,584	143,584	143,584	29,416	29,416	29,416	56,016	56,016	56,016
Cohort 1947 - Cohort 1939	2.009	1.840	0.170	1.986	1.549	0.437	1.915	1.545	0.369
	(0.034)	(0.037)	(0.024)	(0.086)	(0.084)	(0.055)	(0.060)	(0.061)	(0.038)
Cohort 1947 - Cohort 1940	1.900	1.756	0.144	1.990	1.586	0.404	1.858	1.541	0.317
	(0.035)	(0.038)	(0.024)	(0.086)	(0.084)	(0.055)	(0.060)	(0.062)	(0.039)

Notes: Table shows the results for men with low insurance years. Low insurance years are defined as having less than 38 insurance years by age 53. Columns 1-3 include the entire sample, columns 4-6 include the subsample of unhealthy individuals and columns 7-9 include the subsample for below-median income individuals. See Table 1 for other sample restrictions. The dependent variable used are claiming age, exiting age and the difference between claiming and exiting age. All specifications include control dummies for quintiles of contribution years by age 53, deciles of average earnings between 50 and 53, censored earnings, and continuous employment from ages 50 to 53. The last two rows present the estimated difference between the last cohort and the cohort just prior to the pension reform. Standard errors are reported in parentheses.

Table 3B: Regression Result, Men, Full Sample

	All			Unhealthy			Below Median Income		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap
Cohort Dummy 1931	-0.022	-0.070	0.048	-0.059	-0.142	0.083	-0.053	-0.088	0.034
	(0.024)	(0.026)	(0.017)	(0.064)	(0.063)	(0.041)	(0.039)	(0.040)	(0.025)
Cohort Dummy 1932	0.001	-0.125	0.126	-0.053	-0.243	0.190	-0.019	-0.117	0.099
	(0.024)	(0.026)	(0.017)	(0.065)	(0.064)	(0.041)	(0.039)	(0.041)	(0.025)
Cohort Dummy 1933	-0.190	-0.072	-0.119	-0.292	-0.194	-0.099	-0.126	-0.084	-0.041
	(0.024)	(0.027)	(0.018)	(0.066)	(0.065)	(0.042)	(0.040)	(0.042)	(0.026)
Cohort Dummy 1934	-0.153	-0.117	-0.036	-0.208	-0.209	0.001	-0.151	-0.190	0.039
	(0.025)	(0.027)	(0.018)	(0.067)	(0.065)	(0.042)	(0.041)	(0.042)	(0.026)
Cohort Dummy 1935	-0.161	-0.185	0.024	-0.176	-0.229	0.053	-0.120	-0.209	0.090
	(0.025)	(0.027)	(0.018)	(0.067)	(0.066)	(0.042)	(0.041)	(0.043)	(0.027)
Cohort Dummy 1936	-0.229	-0.277	0.048	-0.310	-0.374	0.064	-0.220	-0.326	0.105
	(0.025)	(0.027)	(0.018)	(0.068)	(0.066)	(0.043)	(0.042)	(0.043)	(0.027)
Cohort Dummy 1937	-0.311	-0.278	-0.034	-0.436	-0.427	-0.009	-0.337	-0.361	0.024
	(0.025)	(0.027)	(0.018)	(0.068)	(0.067)	(0.043)	(0.043)	(0.044)	(0.027)
Cohort Dummy 1938	-0.356	-0.337	-0.018	-0.550	-0.527	-0.024	-0.401	-0.396	-0.005
	(0.024)	(0.026)	(0.018)	(0.067)	(0.065)	(0.042)	(0.043)	(0.045)	(0.028)
Cohort Dummy 1939	-0.331	-0.277	-0.054	-0.401	-0.444	0.042	-0.361	-0.376	0.015
	(0.022)	(0.024)	(0.016)	(0.062)	(0.061)	(0.039)	(0.041)	(0.042)	(0.026)
Cohort Dummy 1940	-0.248	-0.180	-0.068	-0.371	-0.427	0.056	-0.327	-0.343	0.016
	(0.022)	(0.024)	(0.016)	(0.062)	(0.060)	(0.039)	(0.040)	(0.042)	(0.026)
	0.087	0.036	0.050	0.125	-0.135	0.261	0.046	-0.122	0.168
	(0.023)	(0.025)	(0.017)	(0.064)	(0.063)	(0.040)	(0.042)	(0.043)	(0.027)
Cohort Dummy 1942	0.449	0.354	0.095	0.514	0.131	0.383	0.408	0.130	0.278
	(0.024)	(0.026)	(0.017)	(0.066)	(0.065)	(0.042)	(0.042)	(0.044)	(0.027)
Cohort Dummy 1943	0.749	0.629	0.120	0.782	0.418	0.364	0.725	0.461	0.263
	(0.024)	(0.026)	(0.017)	(0.067)	(0.065)	(0.042)	(0.042)	(0.043)	(0.027)
Cohort Dummy 1944	0.925	0.818	0.107	0.998	0.632	0.367	0.955	0.690	0.266
	(0.024)	(0.026)	(0.017)	(0.067)	(0.066)	(0.042)	(0.042)	(0.043)	(0.027)
Cohort Dummy 1945	1.136	1.121	0.015	1.224	0.837	0.387	1.151	0.960	0.191
	(0.026)	(0.028)	(0.019)	(0.072)	(0.071)	(0.046)	(0.044)	(0.045)	(0.028)
Cohort Dummy 1946	1.211	1.321	-0.110	1.321	1.077	0.244	1.206	1.133	0.074
	(0.024)	(0.027)	(0.018)	(0.067)	(0.066)	(0.042)	(0.040)	(0.042)	(0.026)
Cohort Dummy 1947	1.321	1.468	-0.147	1.419	1.201	0.218	1.347	1.241	0.106
	(0.023)	(0.025)	(0.017)	(0.064)	(0.062)	(0.040)	(0.038)	(0.040)	(0.025)
Observations	269,053	269,053	269,053	48,763	48,763	48,763	103,086	103,086	103,086
Cohort 1947 - Cohort 1939	1.652	1.746	-0.094	1.820	1.644	0.176	1.709	1.618	0.091
	(0.022)	(0.024)	(0.016)	(0.062)	(0.060)	(0.039)	(0.040)	(0.041)	(0.026)
Cohort 1947 - Cohort 1940	1.569	1.648	-0.080	1.790	1.627	0.163	1.675	1.584	0.090
	(0.022)	(0.024)	(0.016)	(0.061)	(0.060)	(0.039)	(0.040)	(0.041)	(0.025)

Notes: Table shows the results for the full sample of men. Columns 1-3 include the entire sample, columns 4-6 include the subsample of unhealthy individuals and columns 7-9 include the subsample for below-median income individuals. See Table 1 for other sample restrictions. The dependent variable used are claiming age, exiting age and the difference between claiming and exiting age. All specifications include control dummies for quintiles of contribution years by age 53, deciles of average earnings between 50 and 53, censored earnings, and continuous employment from ages 50 to 53. The last two rows present the estimated difference between the last cohort and the cohort just prior to the pension reform. Standard errors are reported in parentheses.

Table 3C: Regression Result, Women with Low Insurance Years

	All			Unhealthy			Below Median Income		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap
cohdum1939	0.055	0.034	0.021	0.050	-0.008	0.057	0.060	0.003	0.057
	(0.024)	(0.031)	(0.019)	(0.057)	(0.068)	(0.046)	(0.037)	(0.047)	(0.032)
cohdum1940	0.113	0.084	0.028	0.093	-0.003	0.096	0.129	0.039	0.090
	(0.024)	(0.031)	(0.019)	(0.057)	(0.069)	(0.046)	(0.037)	(0.048)	(0.032)
cohdum1941	0.225	0.159	0.065	0.184	0.066	0.118	0.209	0.060	0.149
	(0.025)	(0.032)	(0.019)	(0.058)	(0.070)	(0.047)	(0.037)	(0.048)	(0.032)
cohdum1942	0.443	0.368	0.075	0.501	0.248	0.254	0.491	0.295	0.196
	(0.025)	(0.033)	(0.020)	(0.060)	(0.072)	(0.049)	(0.038)	(0.049)	(0.033)
cohdum1943	0.508	0.438	0.070	0.568	0.335	0.232	0.571	0.379	0.192
	(0.025)	(0.032)	(0.020)	(0.061)	(0.073)	(0.049)	(0.038)	(0.048)	(0.033)
cohdum1944	0.518	0.419	0.100	0.559	0.355	0.204	0.573	0.344	0.228
	(0.025)	(0.032)	(0.020)	(0.061)	(0.073)	(0.049)	(0.037)	(0.048)	(0.032)
cohdum1945	0.677	0.572	0.105	0.753	0.527	0.226	0.710	0.475	0.235
	(0.027)	(0.034)	(0.021)	(0.065)	(0.078)	(0.052)	(0.039)	(0.050)	(0.034)
cohdum1946	1.049	0.911	0.139	1.058	0.782	0.276	1.029	0.762	0.267
	(0.026)	(0.033)	(0.020)	(0.062)	(0.074)	(0.050)	(0.037)	(0.048)	(0.032)
cohdum1947	1.497	1.191	0.306	1.665	1.206	0.459	1.508	1.029	0.479
	(0.025)	(0.031)	(0.019)	(0.059)	(0.070)	(0.047)	(0.036)	(0.046)	(0.031)
cohdum1948	1.847	1.497	0.349	2.006	1.451	0.555	1.852	1.285	0.567
	(0.025)	(0.031)	(0.019)	(0.060)	(0.072)	(0.048)	(0.036)	(0.046)	(0.031)
	1.922	1.636	0.286	2.112	1.551	0.561	1.878	1.419	0.460
	(0.025)	(0.032)	(0.019)	(0.062)	(0.074)	(0.050)	(0.036)	(0.046)	(0.031)
cohdum1950	1.964	1.704	0.260	2.112	1.474	0.638	1.959	1.500	0.459
	(0.025)	(0.032)	(0.019)	(0.065)	(0.078)	(0.052)	(0.036)	(0.046)	(0.031)
Observations	134,844	134,844	134,844	23,687	23,687	23,687	67,422	67,422	67,422
Cohort 1950 - Cohort 1944	1.446	1.285	0.161	1.553	1.119	0.434	1.386	1.155	0.230
	(0.023)	(0.029)	(0.018)	(0.064)	(0.077)	(0.051)	(0.033)	(0.042)	(0.028)
Cohort 1950 - Cohort 1945	1.288	1.132	0.156	1.359	0.947	0.412	1.249	1.025	0.224
	(0.025)	(0.032)	(0.019)	(0.068)	(0.081)	(0.054)	(0.035)	(0.045)	(0.030)

Notes: Table shows the results for women with low insurance years. Low insurance years are defined as having less than 38 insurance years by age 53. Columns 1-3 include the entire sample, columns 4-6 include the subsample of unhealthy individuals and columns 7-9 include the subsample for below-median income individuals. See Table 1 for other sample restrictions. The dependent variable used are claiming age, exiting age and the difference between claiming and exiting age. All specifications include control dummies for quintiles of contribution years by age 53, deciles of average earnings between 50 and 53, censored earnings, and continuous employment from ages 50 to 53. The last two rows present the estimated difference between the last cohort and the cohort just prior to the pension reform. Standard errors are reported in parentheses.

Table 3D: Regression Result, Women Full Sample

	All			Unhealthy			Below Median Income		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap	Claiming Age	Exiting Age	Claim-Exit Age Gap
cohdum1939	0.039	0.015	0.023	0.018	-0.031	0.049	0.051	0.009	0.042
	(0.020)	(0.025)	(0.015)	(0.048)	(0.058)	(0.039)	(0.030)	(0.039)	(0.025)
cohdum1940	0.090	0.068	0.022	0.066	-0.019	0.085	0.107	0.034	0.073
	(0.020)	(0.025)	(0.015)	(0.048)	(0.058)	(0.039)	(0.030)	(0.038)	(0.025)
cohdum1941	0.172	0.114	0.059	0.136	0.046	0.090	0.173	0.052	0.120
	(0.020)	(0.025)	(0.015)	(0.049)	(0.059)	(0.039)	(0.031)	(0.039)	(0.025)
cohdum1942	0.329	0.283	0.046	0.365	0.190	0.176	0.408	0.261	0.147
	(0.021)	(0.026)	(0.016)	(0.051)	(0.060)	(0.040)	(0.031)	(0.039)	(0.026)
cohdum1943	0.390	0.347	0.042	0.441	0.278	0.163	0.474	0.336	0.138
	(0.020)	(0.026)	(0.015)	(0.051)	(0.061)	(0.041)	(0.031)	(0.039)	(0.026)
cohdum1944	0.384	0.327	0.056	0.422	0.293	0.130	0.469	0.317	0.151
	(0.020)	(0.026)	(0.015)	(0.051)	(0.061)	(0.041)	(0.030)	(0.039)	(0.025)
cohdum1945	0.497	0.431	0.066	0.565	0.414	0.151	0.584	0.402	0.181
	(0.022)	(0.027)	(0.016)	(0.054)	(0.065)	(0.043)	(0.032)	(0.041)	(0.027)
cohdum1946	0.861	0.769	0.093	0.899	0.703	0.196	0.918	0.724	0.194
	(0.021)	(0.026)	(0.016)	(0.052)	(0.063)	(0.042)	(0.030)	(0.039)	(0.025)
cohdum1947	1.233	1.032	0.201	1.441	1.103	0.337	1.357	0.981	0.375
	(0.020)	(0.025)	(0.015)	(0.050)	(0.060)	(0.040)	(0.029)	(0.037)	(0.024)
cohdum1948	1.520	1.295	0.224	1.764	1.353	0.411	1.688	1.263	0.425
	(0.020)	(0.025)	(0.015)	(0.051)	(0.061)	(0.041)	(0.029)	(0.037)	(0.024)
	1.584	1.411	0.172	1.851	1.446	0.405	1.695	1.343	0.352
	(0.020)	(0.026)	(0.015)	(0.053)	(0.063)	(0.042)	(0.029)	(0.038)	(0.024)
cohdum1950	1.588	1.441	0.147	1.865	1.406	0.459	1.751	1.414	0.338
	(0.020)	(0.026)	(0.015)	(0.055)	(0.066)	(0.044)	(0.030)	(0.038)	(0.025)
Observations	184,121	184,121	184,121	29,621	29,621	29,621	92,062	92,062	92,062
Cohort 1950 - Cohort 1944	1.204	1.114	0.090	1.443	1.114	0.329	1.283	1.096	0.186
	(0.018)	(0.023)	(0.014)	(0.054)	(0.065)	(0.043)	(0.027)	(0.034)	(0.022)
Cohort 1950 - Cohort 1945	1.090	1.010	0.081	1.300	0.993	0.307	1.168	1.011	0.156
	(0.020)	(0.025)	(0.015)	(0.057)	(0.068)	(0.046)	(0.029)	(0.037)	(0.024)

Notes: Table shows the results for the full sample of women. Columns 1-3 include the entire sample, columns 4-6 include the subsample of unhealthy individuals and columns 7-9 include the subsample for below-median income individuals. See Table 1 for other sample restrictions. The dependent variable used are claiming age, exiting age and the difference between claiming and exiting age. All specifications include control dummies for quintiles of contribution years by age 53, deciles of average earnings between 50 and 53, censored earnings, and continuous employment from ages 50 to 53. The last two rows present the estimated difference between the last cohort and the cohort just prior to the pension reform. Standard errors are reported in parentheses.

Appendix Table 1

Number of retirement entries: official statistics and alternative definitions

Retirements with long contribution years, >= 45 CY for men, >=40 CY for women				
Year	Official Statistics	Count only years of employment	Count years of employment, military service, child care	Count years of employment, military service, child care, and unemployment
2000		2,243	6,289	9,095
2001		2,061	5,155	7,147
2002		2,353	6,885	9,346
2003		2,851	8,863	11,739
2004	11,900	2,450	8,718	11,597
2005	13,000	2,434	8,950	12,158
2006	14,000	2,668	9,514	12,783
2007	17,079	3,131	11,273	14,694
2008	19,878	3,477	11,436	14,976
2009	26,268	3,286	11,118	15,499

Notes: Official statistics according to BMASK (2011), military service up to 12 months, child care up to 60 months, unemployment up to 12 months.