Labor Market Effects of the Early Retirement Age

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Introduction

- Social security programs = largest social insurance programs
- Virtually all SS programs have an Early Retirement Age (ERA)
- How do individuals respond to the Early Retirement Age?
- Evidence from Austrian pension reforms in 2000 and 2004
- Step-wise increase in ERA offers clear design to quantify labor supply responses
- Effects on job exits and pension claims
- Quantify labor supply responses
- Discuss potential mechanisms
  - Substitution with other insurance programs
  - Spill-over effects to unaffected groups
  - Social norms

Pension system in Austria

Government-provided pensions for private sector workers:

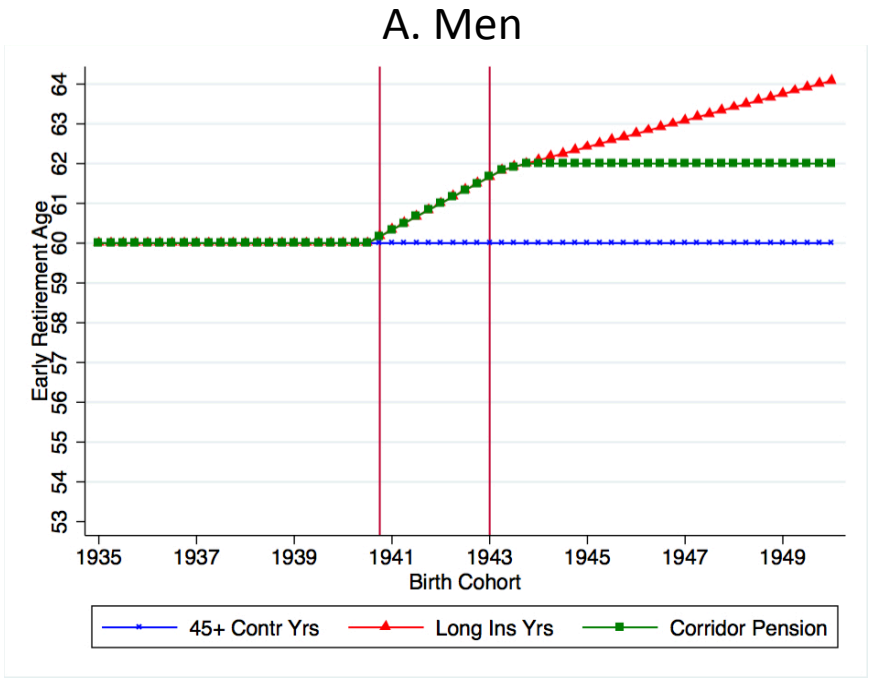
- Normal (statutory) retirement ages: 65 (men) & 60 (women)
- Generous access to early retirement at ages: 60 (men) & 55 (women)
  - Long insurance years
  - Unemployment
  - Disability pensions
- Replacement rates $\approx 75\%$
- Even with bonuses for retirement at older ages, system is actuarially unfair for most individuals

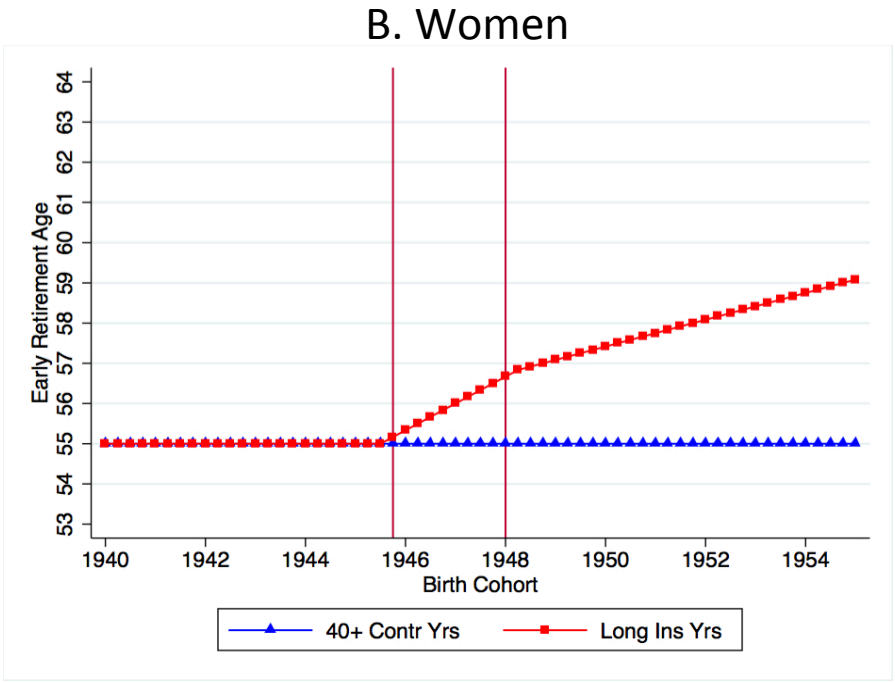
Pension Reforms 2000 and 2004

Most important component stepwise increase in ERA

- increase ERA by birth cohort
- to ages 61.5 and 62 for men
- to ages 56.5 and further for women
- designed to eliminate early retirement option by 2017
- Exception: for individuals with 45+ contribution years (men) or 40+ contribution years (women) ERA stays unchanged at 60 (55). Applies to individuals *continuously employed* starting age 15 interruptions: military service, maternity leave, higher education

Fig. 1. Early Retirement Ages by Pension Type





Notes: The vertical lines mark the beginning of changes implemented under the 2000 and 2004 pension reforms.

Data

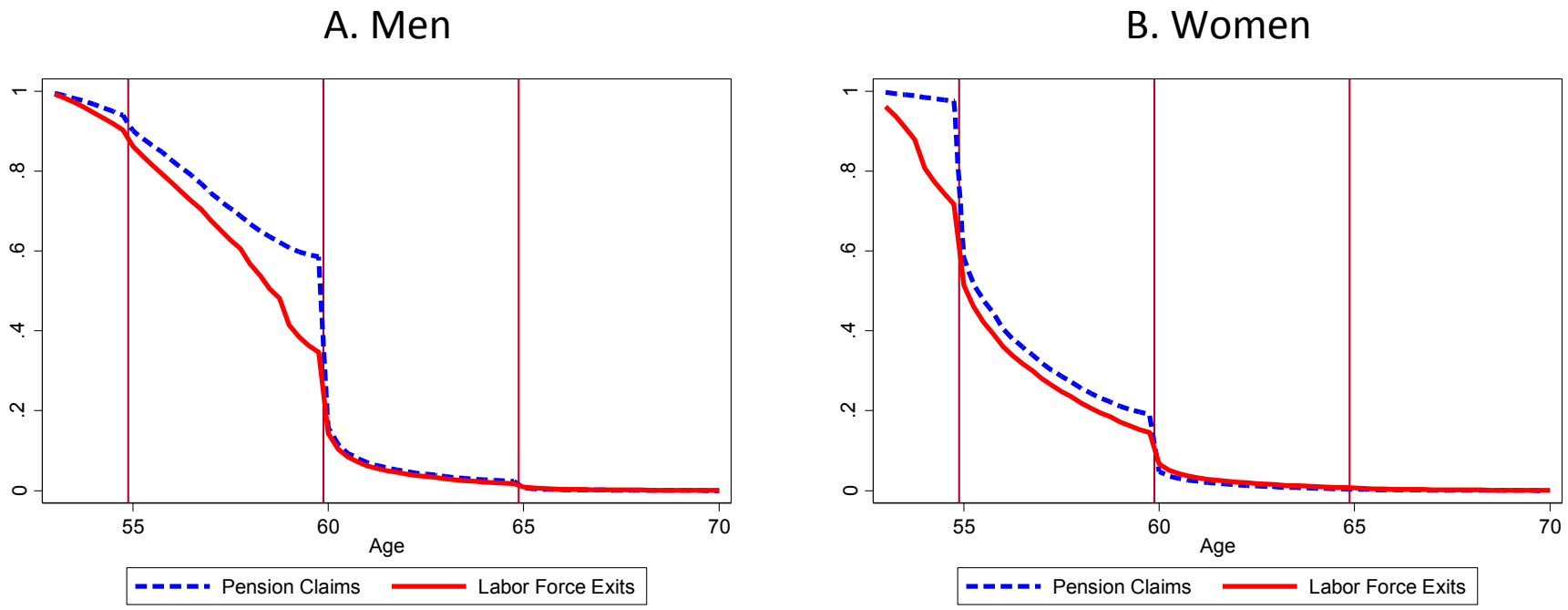
Austrian Social Security Database 1972 - 2009

- matched employer-employee census of private sector
- complete earnings and employment histories
- can identify pension claiming date and exit date from last job
- some demographic information on workers and firms
- sample: cohorts 1930 – 1947 for men, 1935 – 1952 for women
- restriction: individuals still employed at age 53

Empirical Evidence

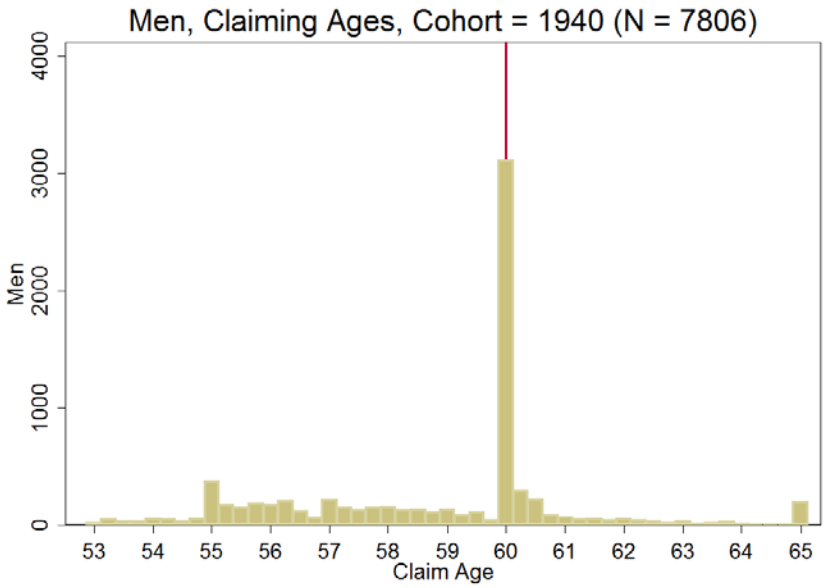
1. Pre-reform: job exits and pension claims by age
   - establish importance of ERA
2. Cohorts affected by the reform: impact on claiming and exiting ages
3. Quantify labor supply responses by relating participation changes to changes in the implicit tax rate
4. Potential mechanisms
   - substitution with other programs
   - spillover effects

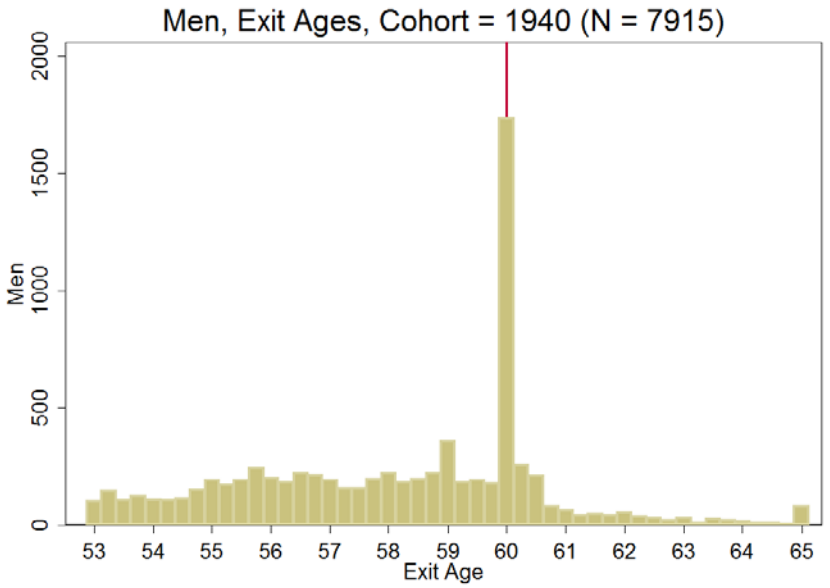
Fig. 2. Pre-Reform Pension Claims & Job Exits



Notes: For computing the survival curves, the sample is restricted to pre-reform birth cohorts (1930 through 1939 for men and 1935 through 1944 for women) and also to individuals for whom a claim is observed prior to age 70. See Table 1 for the full sample restrictions.

Fig. 5A. Men's Claiming Ages & Exit Ages by Cohort





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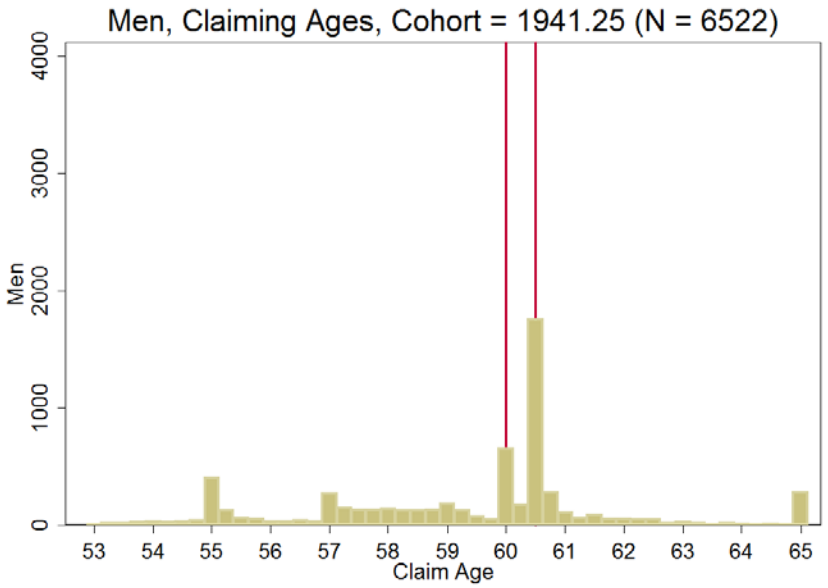

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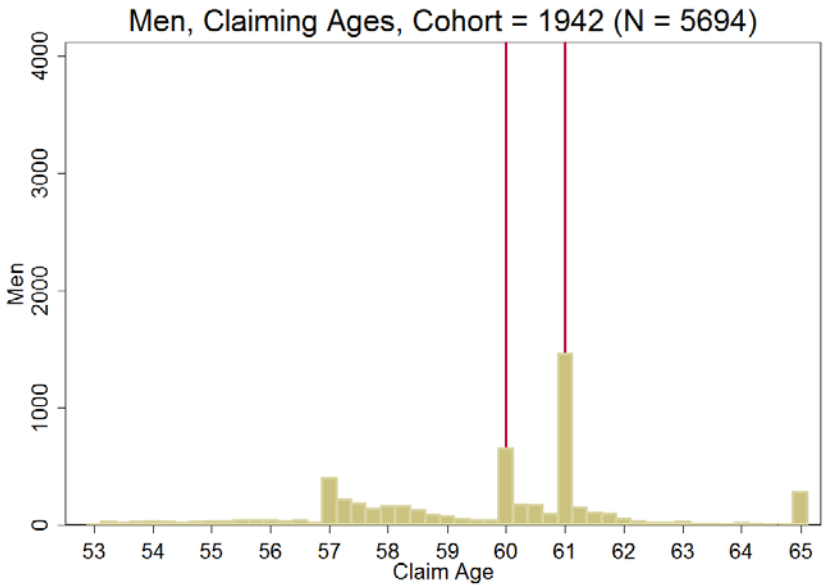

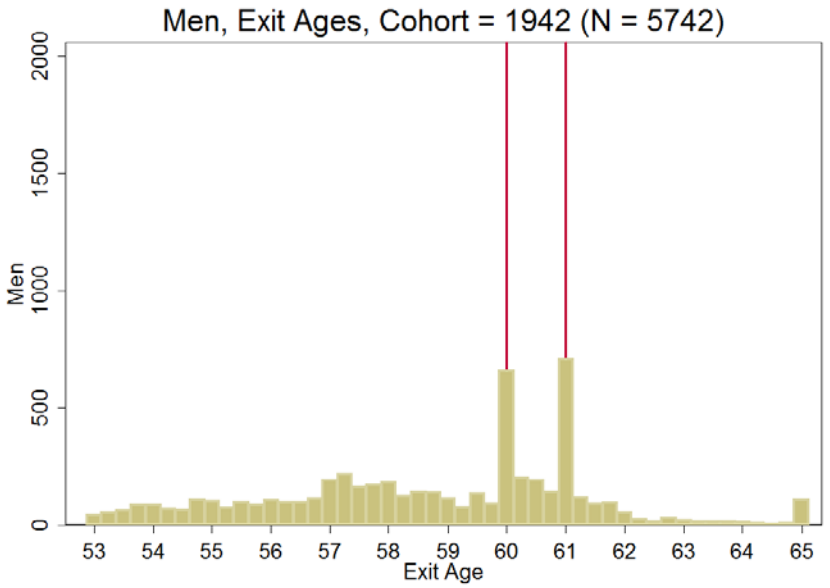

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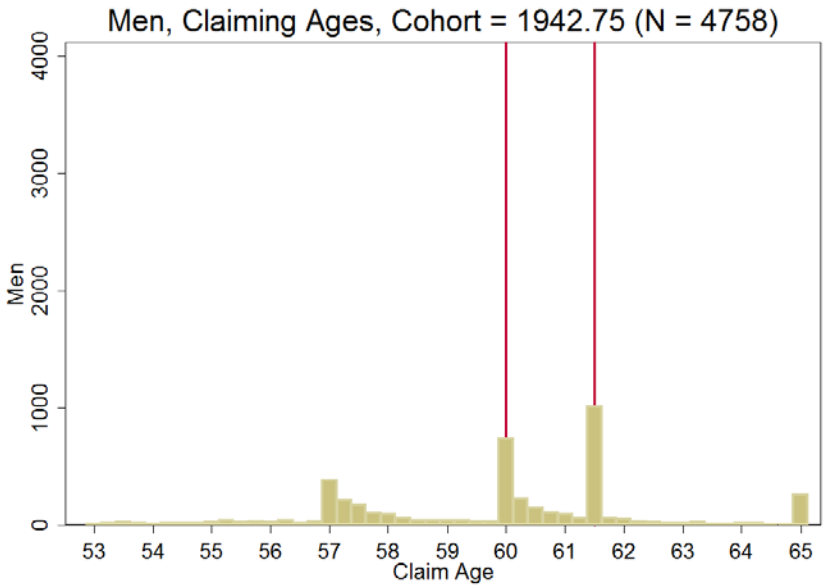

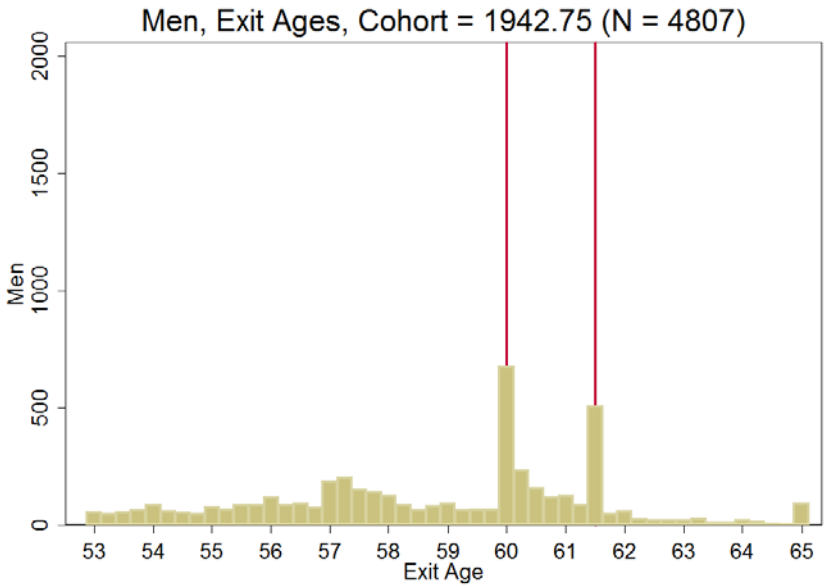

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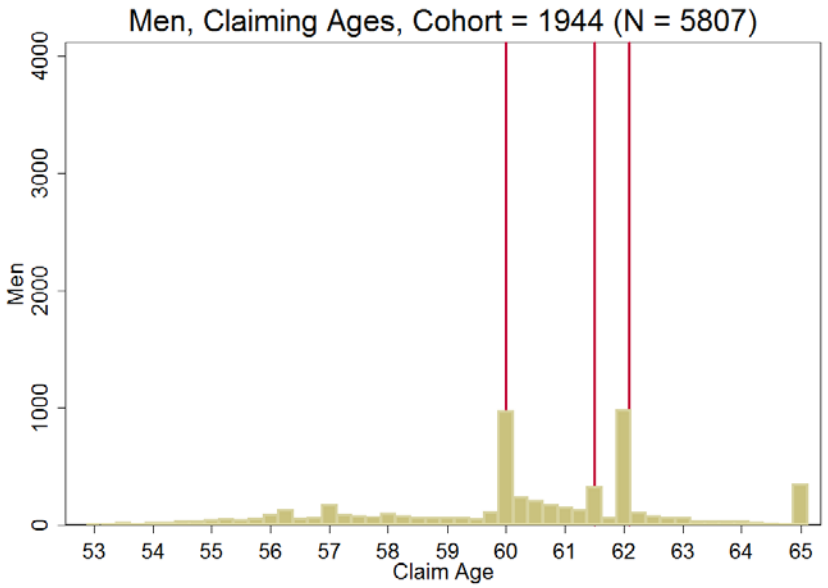

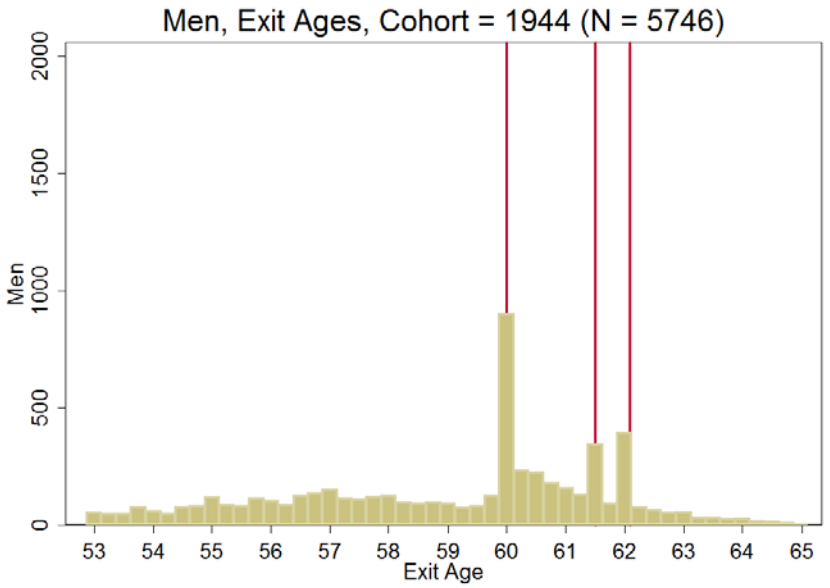

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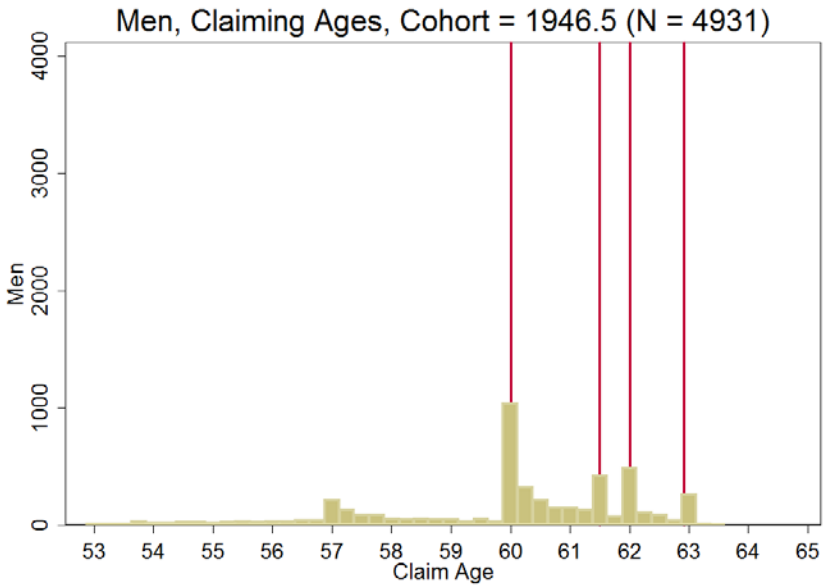
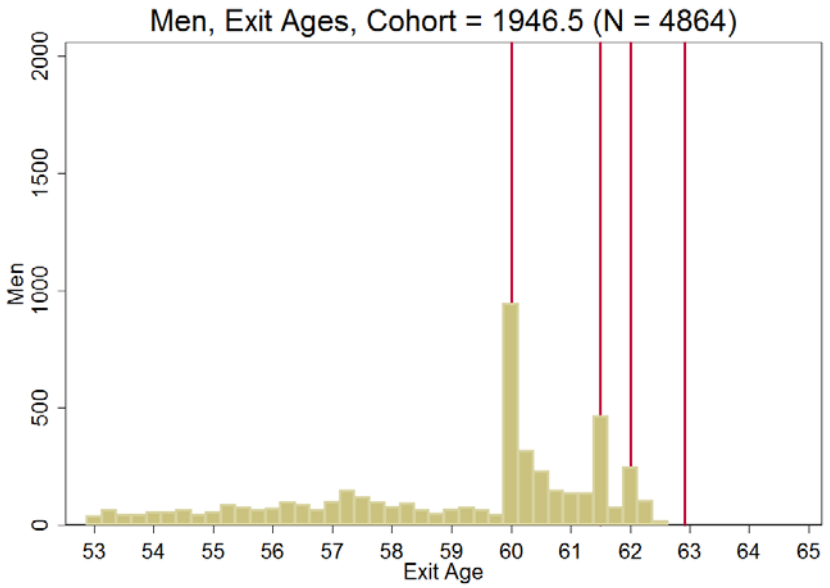




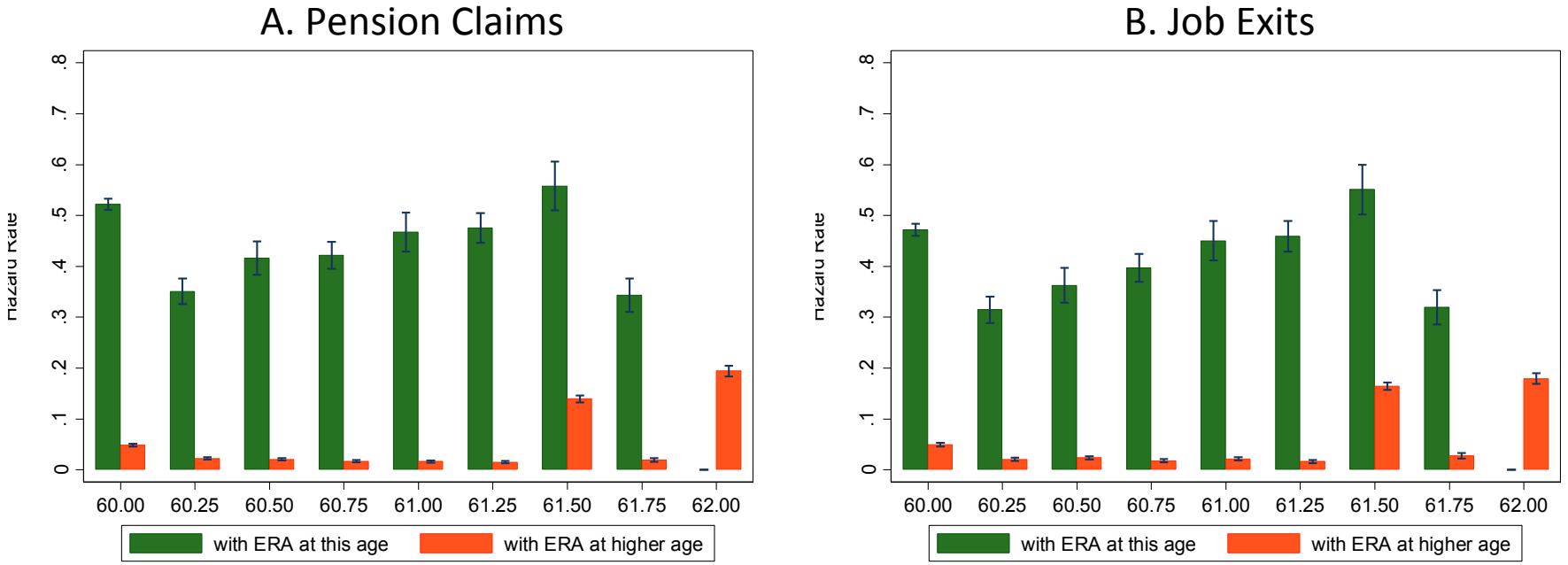
Quantify labor supply responses

- We model exit rates to retirement or out of jobs dependent on age, cohort, and the cohort specific ERA
- Consider exits up to the ERA
- Restrict to individuals directly affected by the reform (less than 45 contribution years)
- setup multiple differences:
  - compare exit rates at fixed ages across cohorts with different ERA's
  - changes in exit rates at the cohort ERA compared to younger ages
- Model:

$$y_{ict} = \theta_t + \delta_{ct} * ERA_{ict} + \gamma_c + \beta' X_{ict} + \varepsilon_{ict}$$

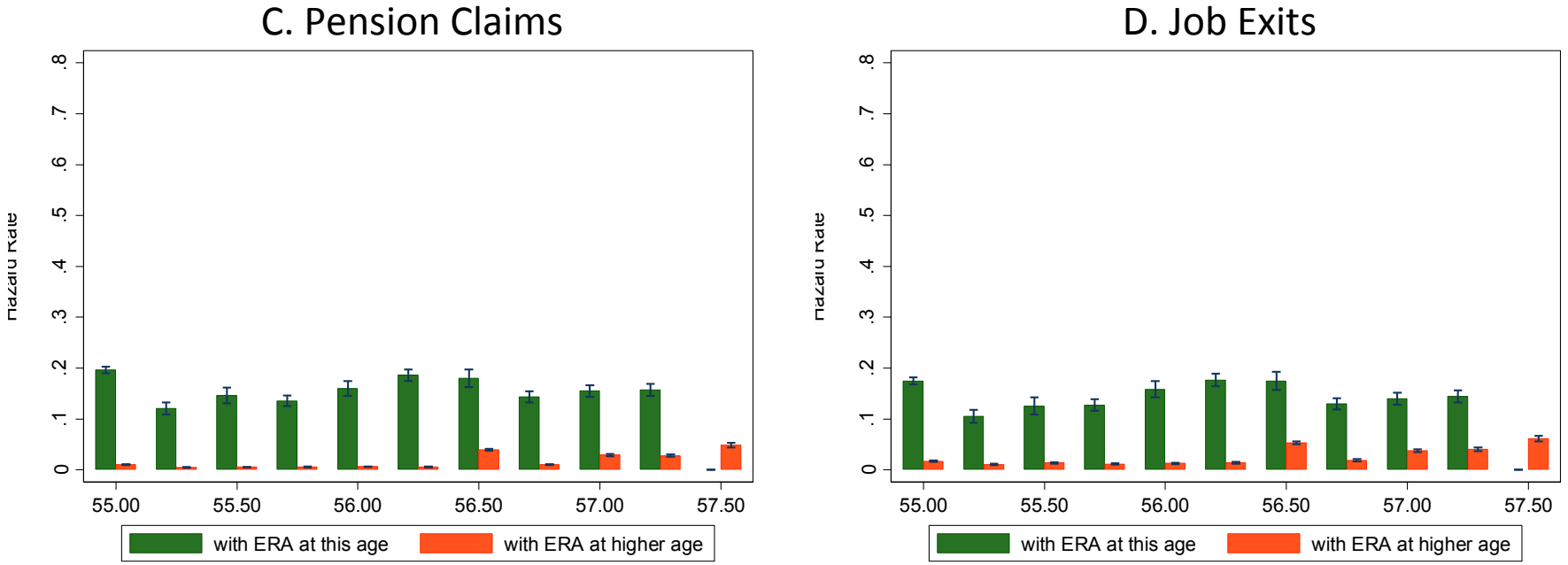
y_{ict} retirement indicator for individual i, cohort c, age t.

Fig. 5. Hazard Rate Models, Men



Notes: These figures illustrate estimated coefficients from regressing a retirement indicator on age dummies, age dummies interacted with an Early Retirement Age indicator and control variables. These regressions are based on panel data with person-age observations and age is computed at a quarterly frequency. As specified in the respective figures, the retirement outcome is defined in terms of claiming or exiting within the specified quarterly age. Regressions for men and women are estimated separately. For men, the regressions include observations from ages 59 through 62 and birth cohorts 1939 through 1947. For women, the regressions include observations from age 54 through age 57.75 and birth cohorts 1944 through 1952. Vertical lines on each bar reflect 95% confidence intervals based on standard errors for the estimated coefficients; the standard errors are clustered at the individual level. The control variables included in the regression are birth cohort dummies (quarterly frequency), dummies for insurance years (for men: <30, 30-35, 35-40, 40-45, ≥45 insurance years; for women: <30, 30-35, 35-40, ≥40 insurance years), dummies for percentiles of average earnings between ages 50 through 54, dummies for firm size at the last job (0-4, 5-9, 10-24, 25-49, 50-99, 100-199, 200-499, 500-999, ≥1000 employees), dummies for total days receiving unemployment insurance through age 54 (0, 1-30, 31-90, 91-180, 181-365, 366-730, ≥731 days), dummies for total days receiving sick leave benefits through age 54 (0, 1-30, 31-90, ≥91 days), dummies for total days receiving sick leave benefits between age 55 through age 59 (0, 1-30, 31-90, ≥91 days), and dummies for weeks of unemployment insurance eligibility (20, 30, 39, 52 weeks).

Fig. 6. Hazard Rate Models, Women



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Financial incentives, elasticity estimate

- Overall financial incentives captured by the implicit tax rate on gross earnings
- Implicit tax rate jumps to higher level once the individual reaches the ERA
- Model:

$$ln(1-\tau_{ict}) = a_t + d_{ct} * ERA_{ict} + g_c + b'X_{ict} + e_{ict}$$

- Relate participation changes to changes in financial incentives

$$e = \frac{d\ln(p)}{d\ln(1-\tau_{ict})} = \frac{\ln(1-\theta_t) - \ln(1-\theta_t-\delta_{ct})}{d_{ct}}.$$

- Probability of working has an upper bound at 1 $\rightarrow$ *lower bound* of the elasticity

Table 5

Participation Elasticities by Gender and Early Retirement Age, Full Sample

	Men (N=92071)				Women (N=143232)		
		controls				controls	
Age	dln(p)	dln(1-t)	e	Age	dln(p)	dln(1-t)	e
60.0000	0.6097	-1.4767	0.4129	55.0000	0.1764	-1.0059	0.1754
	(0.0089)	(0.0047)	(0.0059)		(0.0034)	(0.0035)	(0.0033)
Average	0.5631	-1.3509	0.4171	Average	0.1321	-0.8882	0.1481
	(0.0111)	(0.0083)	(0.0083)		(0.0018)	(0.0020)	(0.0020)

Uncensored Earnings

	Men (N=60012)				Women (N=137898)		
		controls				controls	
Age	dln(p)	dln(1-t)	e	Age	dln(p)	dln(1-t)	e
60.0000	0.7532	-1.5312	0.4919	55.0000	0.1723	-1.0040	0.1716
	(0.0128)	(0.0079)	(0.0081)		(0.0035)	(0.0037)	(0.0034)
Average	0.3471	-1.1655	0.2978	Average	0.1296	-0.8860	0.1456
	(0.0178)	(0.0125)	(0.0146)		(0.0019)	(0.0021)	(0.0021)

Notes: N referes to the number of individuals used in the regressions to estimate changes in the probabilities of work (retirement) and changes in the net-of-tax rates. Bootstrapped standard errors based on 1000 replications are shown in parentheses.

Potential Mechanisms

- Substitution to alternative pathways
  - Do individuals who cannot claim pension benefits flow into other programs such as disability or unemployment?
- Spillover effects
  - Individuals with 45 (40 for women) contribution years are exempt from the ERA increase
  - Can we see changes in claiming and exiting rates at age 60 among the exempt?

Fig. 4A. Substitution to Alternative Pathways: Men Exiting at Age ≥ 60

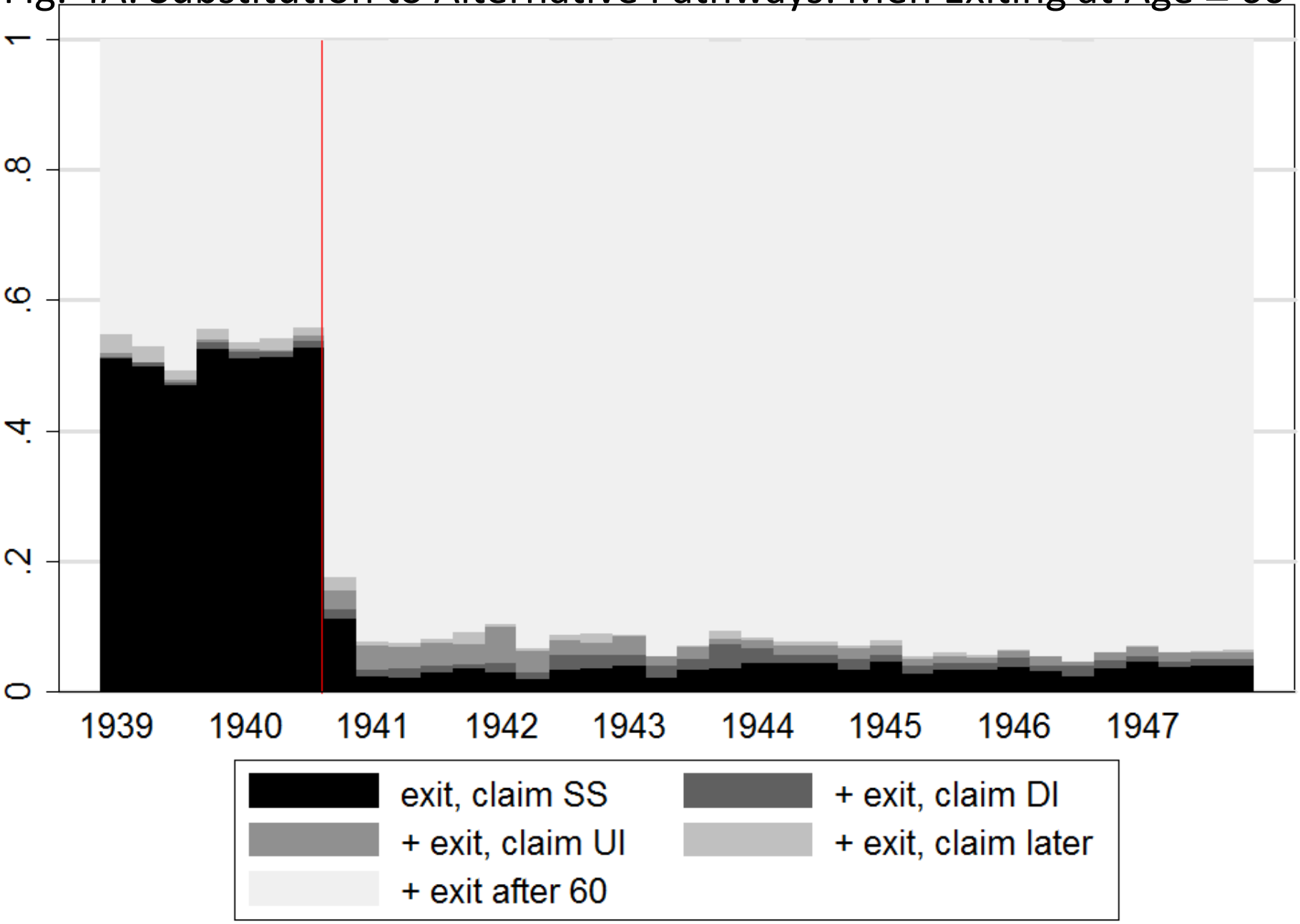


Fig. 4B. Substitution to Alternative Pathways: Men Exiting at Age == 60

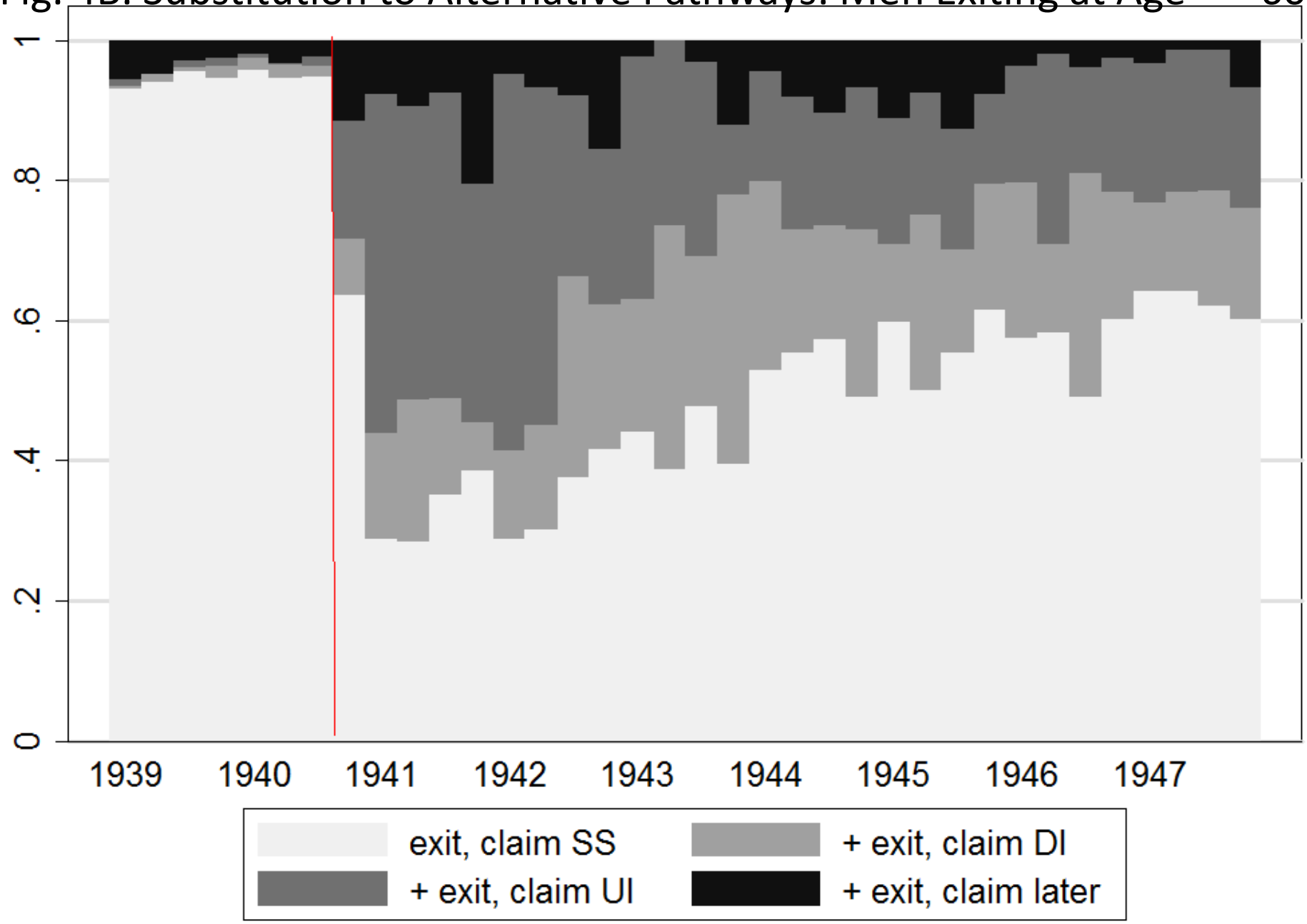
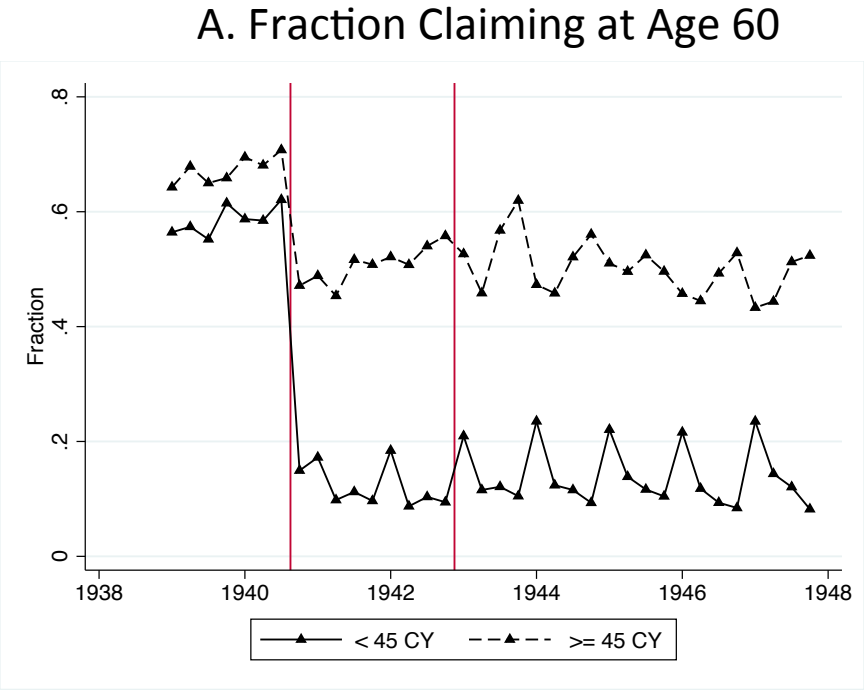
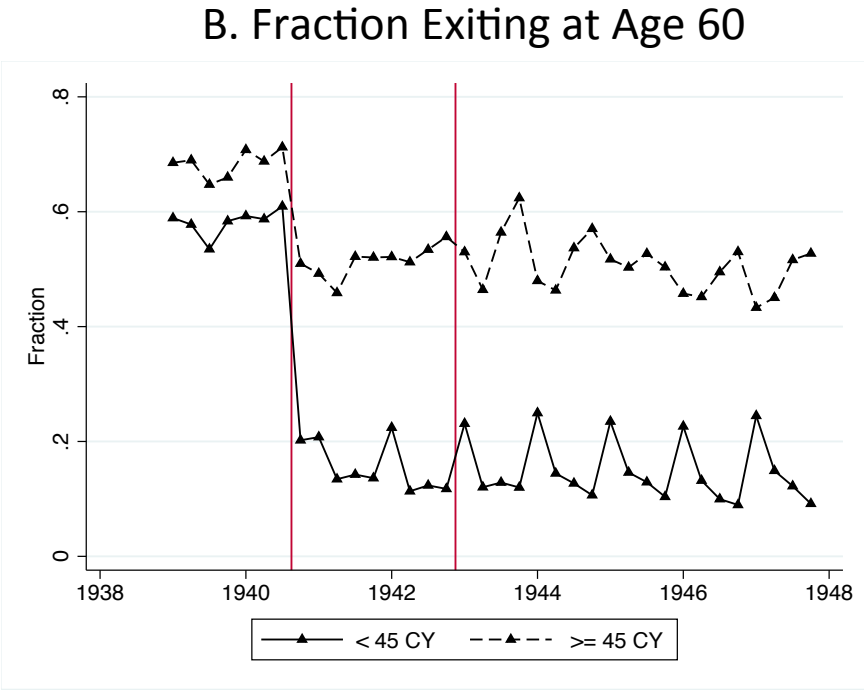


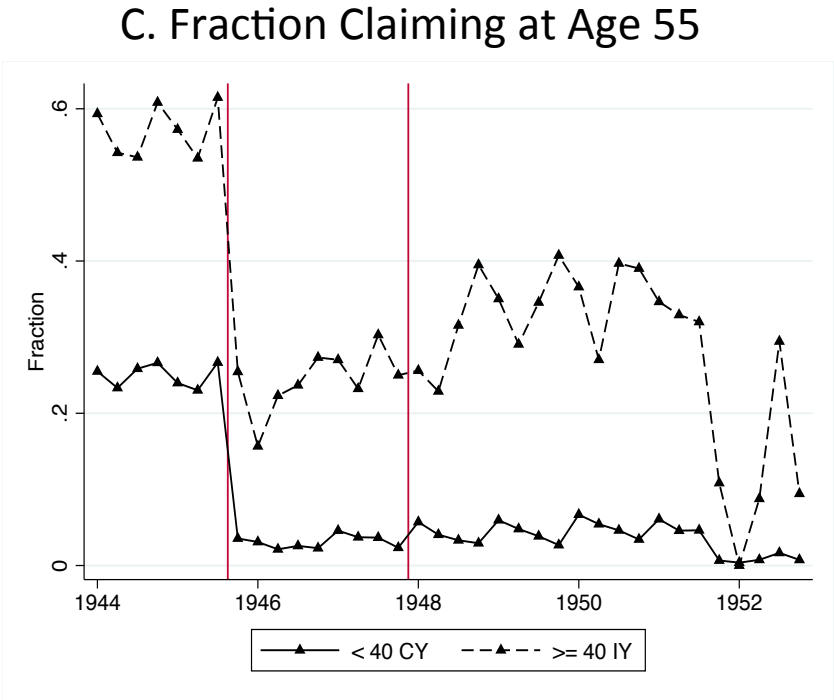
Fig. 9. Claiming & Exiting by Birth Cohort & Contribution Years, Men

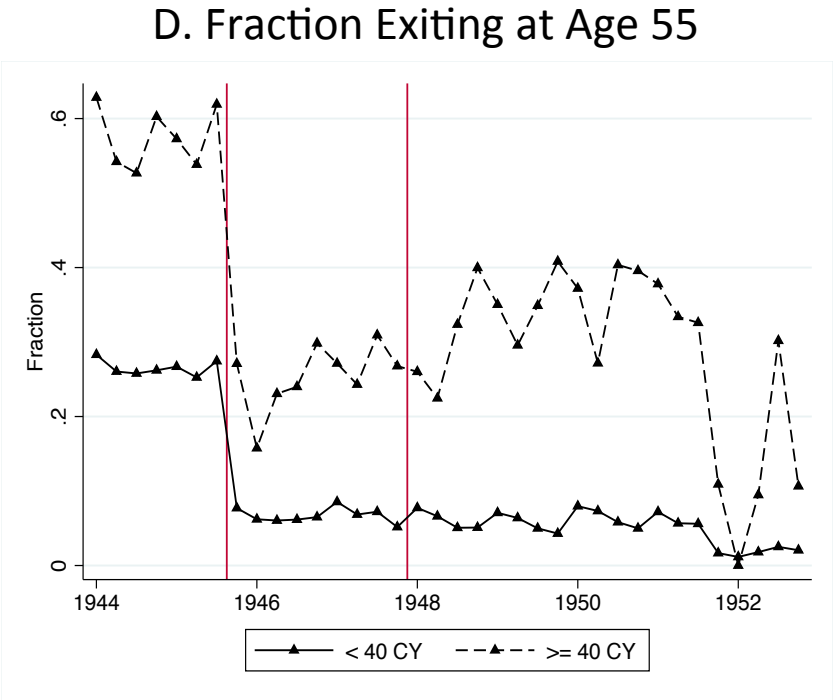




Notes: Each figure plots the fraction individuals still in the labor market who claim pensions or exit jobs by birth cohort. Women with 40 or more contribution years and men with 45 or more contribution years are exempt from the increases in the Early Retirement Ages and can continue to retire at ages 55 and 60 respectively. The sample is restricted to men ages 59 through 62 in birth cohorts 1939 through 1947 and women ages 54 through 57.75 in birth cohorts 1944 through 1952. Observations are censored at the Early Retirement Age specified for each individual.

Fig. 9. Claiming & Exiting by Birth Cohort & Contribution Years, Women





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Summary

How do individuals respond to increases in the Early Retirement Age?

- Exploit policy reform that raises in Austria ERA step-wise over a short time period
- Examine labor supply responses by investigating exits to claims and out of jobs
- Clear evidence of shifts in exit rates
- Lower bound participation elasticities of 0.4 (men), 0.1 (women)
- Litte evidence of substitution into other programs
- Significant spillovers to unaffected groups
- What is the role of firms?