

Employment and the pension system - Evidence from a cohort based reform

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January 28, 2016

Introduction I

- Demographic ageing puts pressure on PAYG pension systems
- Most OECD countries introduced pension reforms to make the pension system sustainable
 - Increase of the normal retirement age (NRA)
 - Increase of the early retirement age (ERA)
 - Actuarial deductions for early retirement
- The effectiveness of these reforms depends on the employment responses of individuals

Introduction II

- Identification of employment effects is difficult as the variation in the social security wealth is in general not exogenous
 - Social security wealth and the related option value are correlated with earnings and employment history
- Previous papers have proposed an identification strategy that exploits cohort-specific pension reforms
 - Mastrobuoni (2009) estimates employment effect of increases in NRA in the US
 - Straubli and Zweimueller (2013) use stepwise introduction of pension reform in Austria to estimate employment effect of ERA
- In this paper we focus on the employment effects of introducing deductions for early retirement for women.

Introduction III

- Most countries have introduced deductions for early retirement
 - Notional accounts have been implemented in e.g. Sweden, Italy and Poland.
- The employment incentives and the distributional effects of deductions fundamentally differ from an increase in the ERA and NRA
 - With deductions individuals still have the choice when to retire
 - Distributional effects might differ if some individuals cannot adjust behavior due to labor market frictions
- Employment effects depend on retirement choice and spillover effects into other programmes

Introduction IV

- In this paper we exploit the Pension reform 1992 and estimate the employment effect for women
 - Before the pension reform women with a sufficiently long employment history could retire at the age of 60 without deductions
 - The pension reform was gradually implemented for cohorts born between January 1940 and December 1944
 - After full implementation of the reform women face a maximum penalty of 18%, i.e. 3.6% per year of early retirement.
- For the estimation we use administrative data from the German pension insurance
- Identification is based on variation between adjacent cohorts which are differently effected by the reform
- We estimate retirement and spillover effects

Early retirement reforms I

- In Germany there exist several pathways to retirement
- We focus on the *old-age pension for women* (Altersrente für Frauen)

Pathways to pensions for observed cohorts

Pension type	Earliest age	Years of contrib.
Standard 65	65	5
Women	60	15 (10 after age 40)
Disability	60	35
Long-term insured	63	35
Unemployed/old-age part-time	60	15 (8 in last 10 years)
Work disability	before 60	5 (3 in last 5 years)

Early retirement reforms II

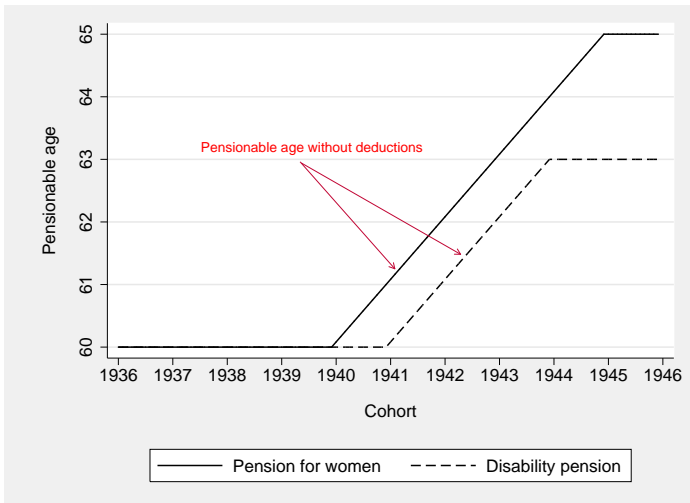
- Germany started in 1992 to reduce incentives for early retirement by introducing actuarial deductions (several reforms followed).
- Deductions for women started with the cohort born in January 1940 and were fully phased for women born in December 1944 or later

Deductions for early retirement programs

Pension type	First cohort affected	Fully phased-in with cohort ...
Standard	-	-
Women	January 1940	December 1944
Disability	January 1941	December 1943
Long-term insured	January 1937	December 1938
Unemployed/old-age part-time	January 1937	December 1941
Work disability	Retirement entry after January 2001	

Early retirement reforms III

Change in pensionable age without deductions and maximum deductions by retirement program and cohort



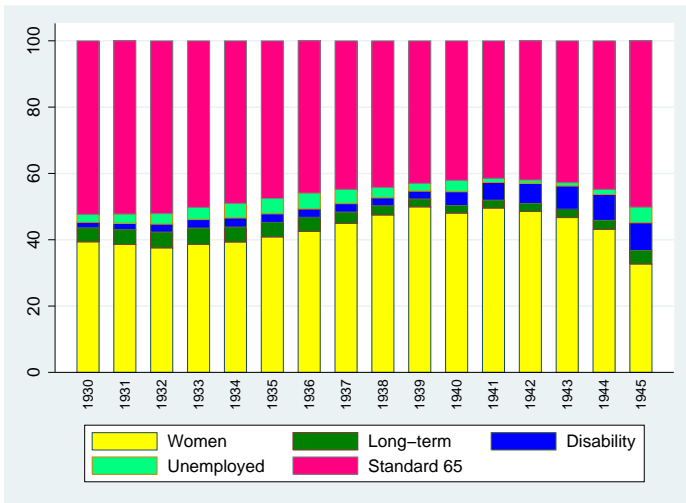
Variation of deductions over cohorts

- Deductions differ by month of birth and retirement age:
 - If you are born in December 1940 and decide to retire with 60 your pension is permanently lowered by $12 \times 0.3\% = 3,6\%$.
 - If you were born in January 1941, your pension would be lower by 3,9% ...

Ret. age	Born in December...					
	1939	1940	1941	1942	1943	1944
60	0	3,6	7,2	10,8	14,4	18
60 + 6 months	0	1,8	5,4	9	12,6	16,2
61	0	0	3,6	7,2	10,8	14,4
62	0	0	0	3,6	7,2	10,8
...						

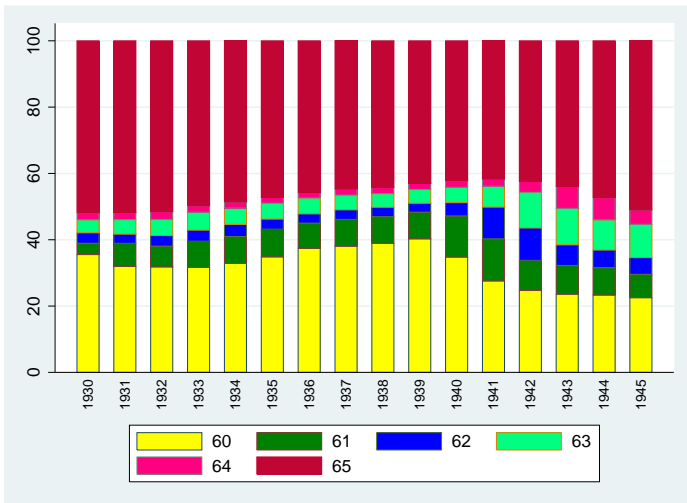
Early retirement patterns I - aggregate data

Old-age pensions: shares of different programs by cohort (women, West Germany)



Early retirement patterns II - aggregate data

Old-age pensions: shares of different retirement ages by cohort (women, West Germany)



Data I

- We use administrative data from the German pension Insurance (VSKT)
- Annual 5% sample of all insured individuals (monthly data); waves 2002 through 2012
- Cohorts 1935 to 1945:
 - 1935 – 1939 pre-treatment
 - 1940 – 1944 treatment cohorts
 - 1945 post treatment

Data II

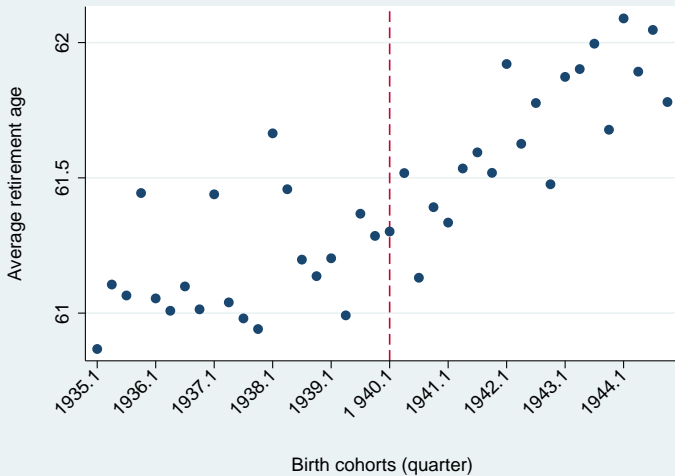
Pension Eligibility Criteria

- Data allow identification of eligibility for early retirement plans
- 15 years waiting period, 10 years of compulsory contributions *after the age of 40*

Number of observations (Age 60 to 65)

Cohort	Monthly obs.	Indiv.
1935	6,306	438
1936	6,529	483
1937	7,998	521
1938	9,084	526
1939	8,626	539
1940	9,499	553
1941	10,510	544
1942	11,446	537
1943	11,813	501
1944	12,700	521
N	94,511	5,163

Descriptive Evidence: Average retirement age, women by cohort



Empirical Strategy I

- For the estimation of the employment effects we exploit the cohort-related variation in the deductions.
- We estimate the following equation:

$$y_{it} = \alpha + \theta_i + \lambda_c + \gamma P_{it} + \beta_x X_{it} + \beta_z Z_t + \epsilon_{it} \quad (1)$$

- y_{it} are different measures of employment, such as employment status
- P_{it} measures the penalty which varies between the different cohorts
- We include age fixed effects (θ_i) cohort fixed effects (λ_c), individual variables (X_{it}) and time specific variables (Z_t)

Empirical Strategy II

- For the estimation of the employment effects we exploit the cohort-related variation in the deductions.
- We estimate the following equation:

$$y_i = \alpha + \lambda_c + \gamma P_i + \beta_x X_i + \beta_z Z_t + \epsilon_i \quad (2)$$

- y_i are different measures of employment, such as average retirement age
- P_i measures the maximal deduction which varies between the different cohorts
- We include cohort fixed effects (λ_c), individual variables (X_i) and time specific variables (Z_t)

Regression results: probability to retire

	(1) retired	(2) retired
Monthly deductions	-0.00759*** (-22.05)	-0.00822*** (-21.17)
Cohort effects	Yes	Yes
Age effects	Yes	Yes
Time indicators	No	Yes
<i>N</i>	94511	94511

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Average retirement age

	(1)	(2)
	retage	retage
Maximum deductions	0.0489*** (10.74)	0.0532*** (11.87)
Children	no	Yes
Employment history	no	Yes
<i>N</i>	5145	5145

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

If deductions increase by 1% retirement age increases by 0.05 years.
 Maximal effect of the reform: 18 % increase of deductions lead to
 $18 \times 0.05 = 0.9$ years

Conclusion

- In this paper we use cohort related variation to estimate the causal effect of pension deductions on employment
- We find a significant effect of pension deductions
 - Negative effect on the probability to enter retirement
 - Positive effect retirement age
- The 1992 pension reform with maximum deductions of 18% increases retirement age by about one year

References I

Unemployment insurance

- Until 31.01.2006: after 64 years of employment subject to ssc eligible for 32 months of unemployment insurance; note that this is exactly the period needed to be eligible for unemployment pensions! 8 years...
- Between 01.02.2006 until 31.12.2007: only 18 months
- Since 01.01.2008 24 months

Share of different pension types by year

Year	Women		Men
	Women's pension	Unemp. pension	Unemp. pension
1995	37.2	4.2	36.7
2000	41.6	3.5	36.5
2005	32.8	2.1	28.8
2010	34.1	2.2	17.5

Example: In 2000 36.5% of all men who entered old-age retirement pensions drew unemployment pensions.