Peer Effects and Retirement Decisions: Evidence from Pension Reform in Germany

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Studying Retirement Behavior is Important

- Solvency of Social Security Programs is at risk
- We know a lot about individual retirement incentives
- But not so much about the impact of peer retirements on individual retirement behavior
- They could operate through, for example, information sharing and coordinated retirement decisions

Peers, Social Multiplier in Retirement?

- Changes in the retirement incentives facing one's peers may spillover and amplify the magnitude of individual responses to changes in individual retirement incentives.
- Important implications for social security fund balances in the future

Prior Studies Find Positive Effects

- Brown and Laschever (2012): teachers in LA school district
- Chalmers, Johnson and Reuter (2008): non-federal public sector workers in Oregon

But: Very specific sectors and broadly defined peer group

We Produce The First Estimates Of Peer Effects

- Generalizable to a wide range of industries and occupations
- From a census of all West German establishments
- Using peer group definitions based on occupations that has not been feasible in previous studies.

We estimate the peer effect via an IV approach (similar to 2SLS) stratified by gender using changes in pensionable ages as instruments for peer retirements

We Find Economically Important Peer Effects

The reduction of one peer retirement causes an approximately 37 (men) and 34 percentage point (women) decrease in the individual retirement hazard rate.

This translates into extensions of working life:

- 58 year-olds: 1.4 and 1.1 years for men and women
- 65 year-olds: 0.7 years for men and 0.4 years for women

Identification of Peer Effects Is Not Trivial

- Simultaneity: the individual worker's retirement decision is influenced by their coworkers behavior, and vice versa
- Correlated unobservables: shared expectations of future changes in the workplace are a few of many possible correlated unobservables
- Endogenous group membership: where you work, the kind of work you perform and the people you work with are at least partially self determined.

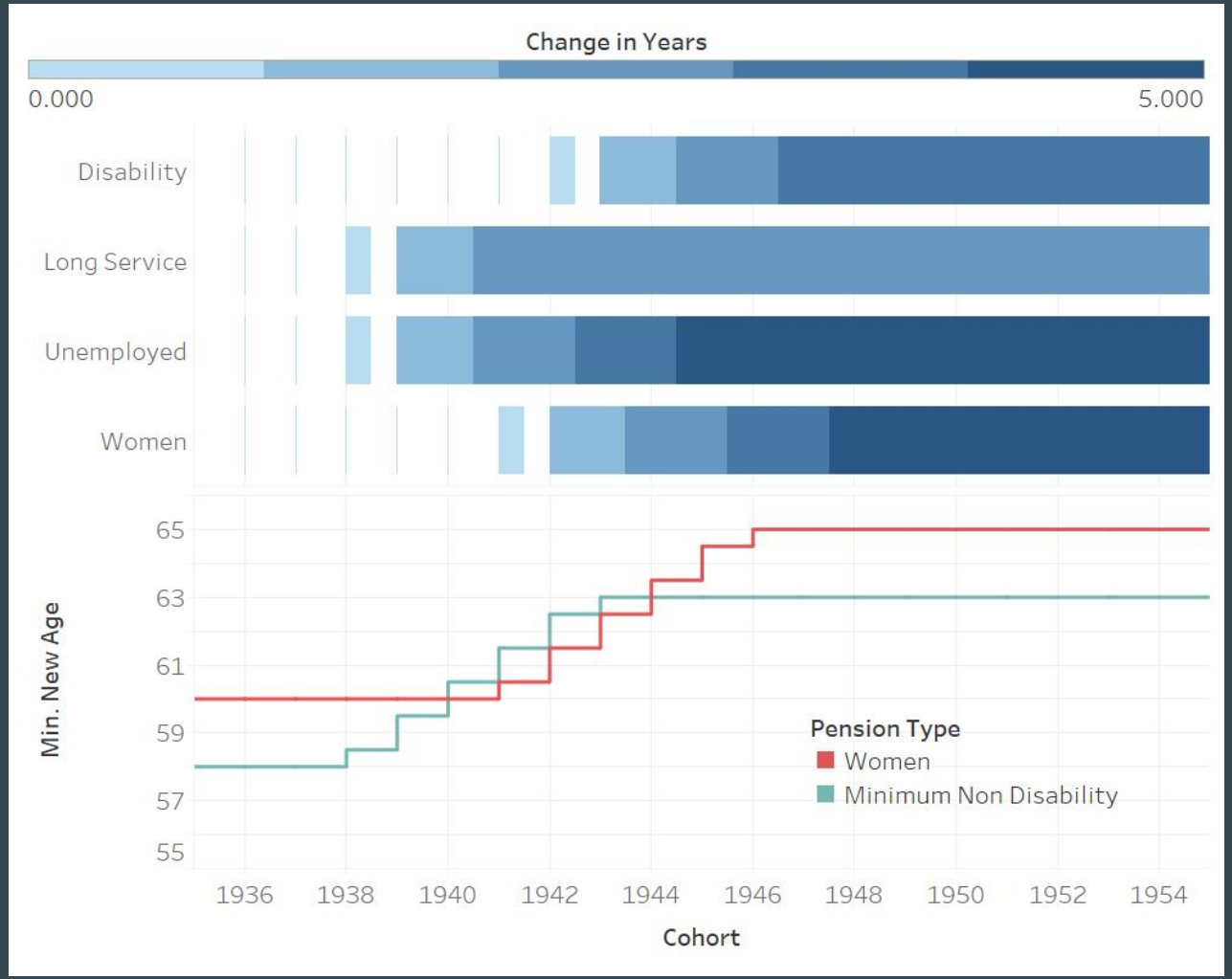
Differential Population Intervention (DPI)

- Exogenous policy intervention that affects members of peer groups differently (Brown and Laschever (2012))
- Standard IV criteria must be met (relevance and exogeneity)
- Must affect peer-group members differentially
- And exhibit between-peer-group variation

Ours is a countrywide change in pensionable ages in Germany

Our DPI: The 1992 Pension Reform

- Gradual increases in pensionable ages from 60 to 65 depending on each pathway
- Adjacent single-year birth cohorts and persons of different sexes born in the same year had pensionable ages six or more months apart.
- The policy changes did not directly alter incentives for workers born before 1938.


Change in Years
0.000
5.000
Disability
Long Service
Unemployed
Women
Min. New Age
65
63
61
59
57
55
1936
1938
1940
1942
1944
1946
1948
1950
1952
1954
Cohort
Pension Type
Women
Minimum Non Disability

Every Individual Is A Different Individual's Peer

- First-stage regression of the group behavior on the instruments is identical to a reduced-form regression of the individual behavior on the instrument
- Thus, the instrument appears in both the first- and second-stage equations

Link between individuals and their peers must be broken

- Responses of unaffected workers to their affected peers

Unique Linked Employer-Employee Data (IAB)

- Census of West German establishments with 100 or more employees 1990-2010
  - 11,342 to 12,525 establishment per year
- Complete employment biographies for all workers in these establishments born 1925 to 1950 with at least one day of employment in a sampled establishment
  - 4.2 million workers, 35 million person-year spells
- Plus characteristics of younger workers

Peer Group Definition

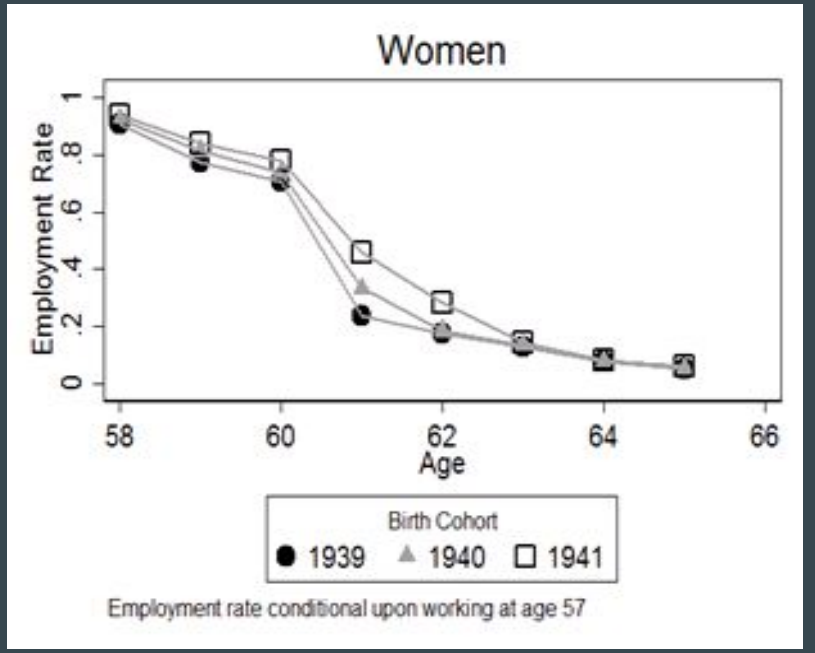
- Every worker from age 50 to 65 who works in the same establishment in the same occupation
- Grouped to 12 occupation categories (Blossfeld):
  - Agricultural jobs, simple manual jobs, simple services, simple sales jobs, medium-skilled manual jobs, medium-skilled services, technicians, medium-skilled sales jobs, engineers, semi professionals, professionals, and managers
- 1,109,586 peer groups, with an average size of approx. 25

Group Level Regression (First Step)

$$\overrightarrow{1938+}\ \tilde{y}_{g,t} = \delta_0 + \delta_1 P_{g,t} + \delta_2 ind_{g,t} + \phi_g + \phi_t + \eta_{g,t}$$

- Count of peer retirements for workers born in 1938 and after who belong to peer group g in year t
- DPI: average increase in the age of eligibility (months) for full pension benefits via any stream for peer group g in year t
- Industry dummies, group fe, year fe, error term

How does the reform affect work/retirement behavior of affected workers?



First Stage: Economically & Statistically Significant

	Peer Group Level		
	coef		std. err.
Ave Change Peer Pensionable Age (months)	-0.013	***	0.000
N	987,673		

* p<.1; ** p<.05; *** p<.01

1. Additional covariates include individual controls (age, experience, wage, nationality, education), group controls (share of females, share of high- and low qualified, share of foreigners, median in and interquartile age, mean wage paid in occupation), establishment controls (share of females, share of high- and low qualified, share of foreigners, share of different occupations), year fixed effects and peer group fixed effects.

Individual Level Regression (Second Stage)

$$\overset{<1938}{\tilde{\tilde{y}}}_{i,g,t} = \beta_0 + \beta_1 \tilde{y}_{g,t} + X'_{i,t}\beta_2 + Z'_{g,t}\beta_3 + \phi_g + \phi_t + u_{i,g,t}.$$

- 0 when individual born before 1938 who belong to peer group *g* in year *t* is working, 1 when they retire, and missing thereafter
- Predicted value for the dependent variable from first stage
- Individual i's characteristics at year t, time-varying and time-invariant characteristics of the peer group, year-specific effects, variables that affect our outcome and are not held constant

Second Stage

	Men			Women		
	coef		std. err.	coef		std. err.
Ave Change Peers	0.374	***	0.079	0.338	***	0.131
Change Individual	omitted			omitted		
N	310,921			85,295		

* p<.1; ** p<.05; *** p<.01

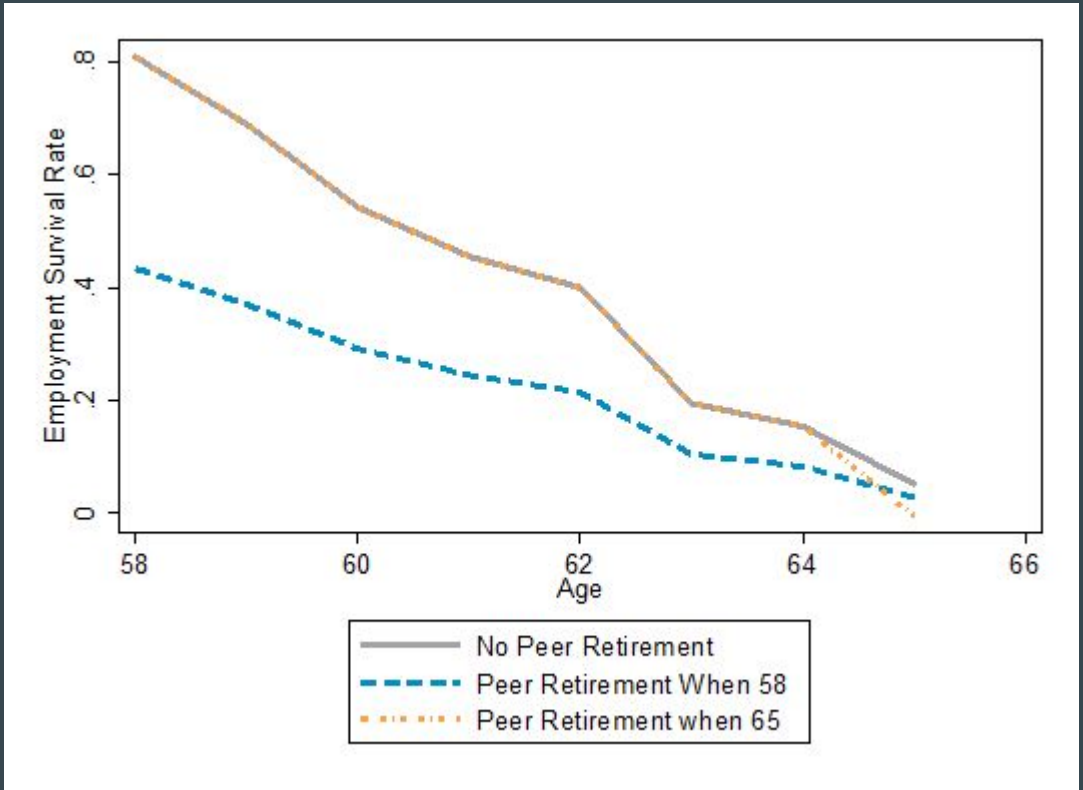
1. Additional covariates include individual controls (age, experience, wage, nationality, education), group controls (share of females, share of high- and low qualified, share of foreigners, median in and interquartile age, mean wage paid in occupation), establishment controls (share of females, share of high- and low qualified, share of foreigners, share of different occupations), year fixed effects and peer group fixed effects.

2. Standard errors are clustered on the establishment level

What do these effects tell us? Are they economically important?

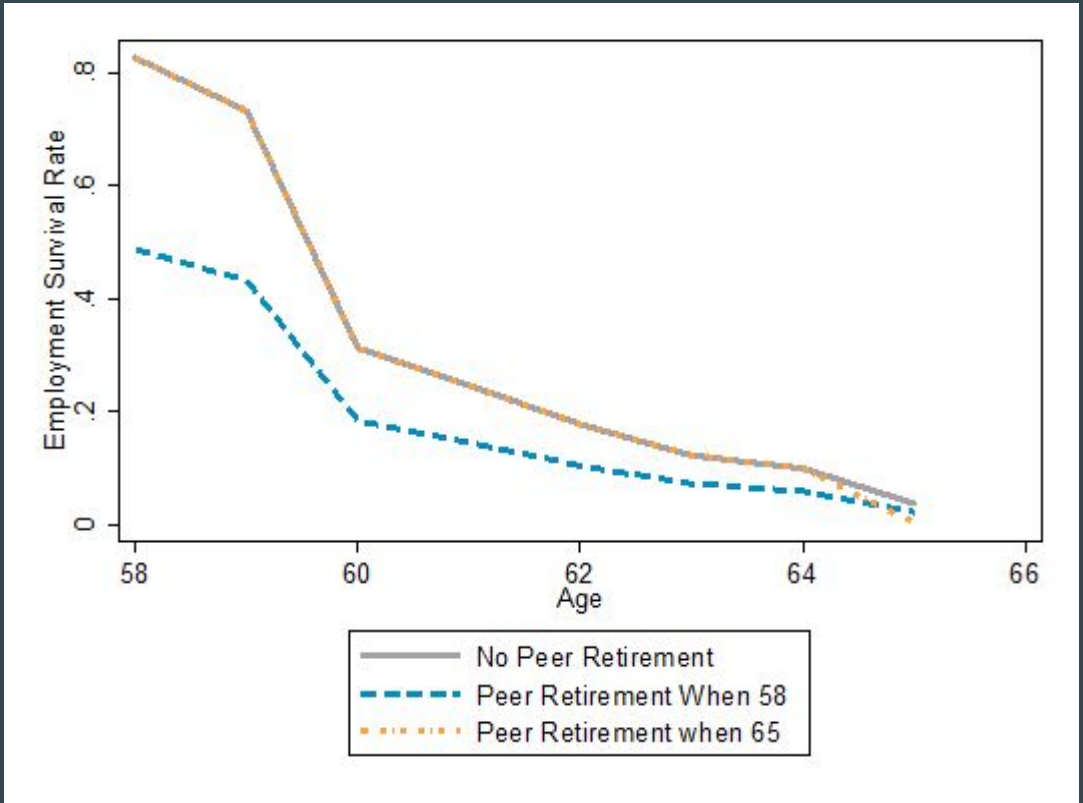
- The estimates indicate an additional peer retirement roughly doubles one's own retirement hazard rate
- But retirement hazard rates vary by age, thus the impact on employment survival and duration of the same size peer effect on employment varies considerably by age

Peer Retires At 58 Vs. Peer Retires at 65: Men



The estimated reduction in employment duration is 1.5 years if a peer retires when age 58 but is only 0.7 months if a peer retires when age 65

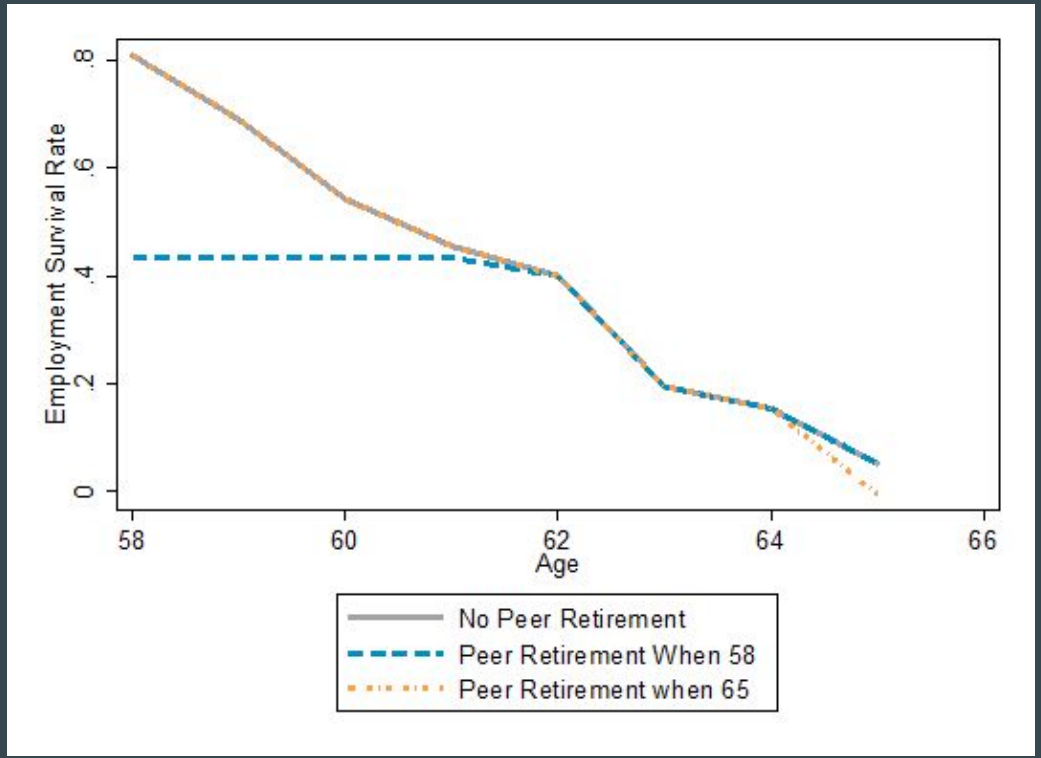
Peer Retires At 58 Vs. Peer Retires at 65: Women



The estimated reduction in employment duration is 1.0 years if a peer retires when age 58 but is only 0.4 months if a peer retires when age 65

If Retirements Become Less Likely In The Years Following A Peer Retirement (Men)

The estimated change in employment duration falls from 1.5 years to 0.8 years.



Take Home Key Points

- Workplace peers have an important impact on retirement timing
- Policies that encourage later retirements spillover to adjacent cohorts
- Our results suggest that peer effects may increase the duration of working life by an additional six percent beyond the direct effect
- These effects will occur in the early years as the policy begins to bind

Back Up

The German Pension System in a Nutshell

- Pay-as-you-go pension system (public)
- Covers about 80% of the population
- Many “pathways" to claiming old-age pension benefits
- Very few people work until full retirement age
- Early retirement is possible (old-age pension benefits are adjusted on actuarial basis)
- Private savings in Germany is minimal, making social security the primary source of retirement income

Prior To The Reform

- Women were eligible for full benefits at age 60
- Men were eligible for full benefits at age 60 conditional on receiving unemployment or disability benefits
- Lenient rules created perverse incentives
- Employers subsidized early retirements through dismissal contracts (i.e. buy-outs)
- Workers combined buyouts and unemployment/disability benefits until age 60
- Modal age at retirement was 58