

The effect of raising the full retirement age on old workers' labor market outcomes

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Outline

Introduction

- Motivation
- Literature

Data

- Sources
- Descriptive statistics

Empirical analysis

- Identification strategy
- Econometric specification

Results

- Main results
- Robustness checks

Conclusion

Motivation

Aging requires reforms of Pay-As-You-Go (PAYG) pensions schemes to ensure **fiscal sustainability**

Three main **instruments**:

- ▶ **Pension benefits**: Diminishing the replacement rate or changing the indexation scheme
- ▶ **Social Security Contributions (SSC)**: Increasing payroll taxes
- ▶ **Legal retirement age(s)**: Increasing the demographic ratio $\frac{\# \text{ of contributors}}{\# \text{ of retirees}}$

Challenges with (ex post) **evaluations of pension reforms**:

- ▶ Life-cycle analysis: Requires long panels, mechanically takes more time (e.g., lag before eligible cohorts actually retire)
- ▶ Pension systems are not always comparable (even within the OECD)
- ▶ Importance of institutional setting (see, e.g., mixed evidence about anticipation effects of pensions reforms on old workers' labor market state)

Pensions in France

Mandatory PAYG system: Up to $8 \times 48,000$ euros annually (P99.5 of the wage distribution), quite comprehensive

Unfunded, contributory, defined-benefit (DB) scheme

Rules differ depending on the sector, though

- ▶ We focus on the main pension scheme (among the 42 ones) in the private sector (14.4 million workers)

Claiming benefits: Possible from the **Early Retirement Age (ERA)** onward, but potentially at some cost (an actuarial reduction factor or a penalty called the *décote*)

To obtain **full-rate pension benefits**, one of the two following conditions must be fulfilled:

- ▶ Being older than the **Full Retirement Age (FRA)** - the **age criterion**
- ▶ Having the required number of contributory quarters, i.e. having spent enough time on the labor market - the **insurance duration criterion**

The age at which each individual is eligible to full-rate pension benefits is the **Normal Retirement Age (NRA)**.

The 2010 reform

Various aspects, including the rise of the Early Retirement Age (ERA) from 60 to 62

Focus here on **the sole increase of the Full Retirement Age (FRA) from 65 to 67**

Table 1: Pension benefit-claiming: Eligibility rules (private sector)

Cohort	ERA	FRA	Insurance duration	Penalty
1950	60	65	162	−1.625%
1951 (S1)	60	65	163	−1.5%
1951 (S2)	60 1/3	65 1/3	163	−1.5%
1952	60 3/4	65 3/4	164	−1.375%
1953	61 1/6	66 1/6	165	−1.25%

Insurance duration: in quarters. Penalty: per quarter (for claiming ages below the FRA).

Our goal is to quantify both **fiscal** and **redistributive** effects of that part of the reform

Preview of results

Following the increase in the FRA implemented by the 2010 pension reform in France,

- ▶ The spike in claiming age moved in lockstep with the FRA
- ▶ By contrast, retirements tied to welfare benefits exhibit persistent stickiness at 65
- ▶ Policy-induced changes on the labor market between 65 and 66:
 - ▶ ↓ Retirement (-8 pp)
 - ▶ ↑ Employment (+1 pp)
 - ▶ ↑ Unemployment (+3 pp)
 - ▶ ↑ Inactivity (+4 pp)
- ▶ Fiscal effects: About €500 million annually
- ▶ Redistributive effects: Mostly at the expense of the bottom 25%

Literature

Abundant literature about implications of shifting the ERA ([Aubert et al., 2025](#); [Rabaté and Rochut, 2020](#); [Staubli and Zweimüller, 2013](#); [Manoli and Weber, 2016](#))

- ▶ [Rabaté \(2019\)](#) (FR): 2003 reform, exit rates from employment decrease by 6%

Evidence about the FRA is relatively scarce

- ▶ [Behaghel and Blau \(2012\)](#) (US): 1983 reform, shift from 65 to 66 (+2 months per cohort). Retirement age moves in lockstep with FRA, employment rate does not
- ▶ On administrative data, [Deshpande, Fadlon, and Gray \(2024\)](#) (US) further document that while the claiming age quickly adjusts to the new FRA, the retirement age exhibits persistent stickiness at the former FRA, suggesting a role for employer-based explanations

Importance of behavioral explanations (social norms, etc.)

- ▶ [Seibold \(2021\)](#) (DE) find that financial incentives alone fail at accounting for the large observed concentration of job exits at specific ages

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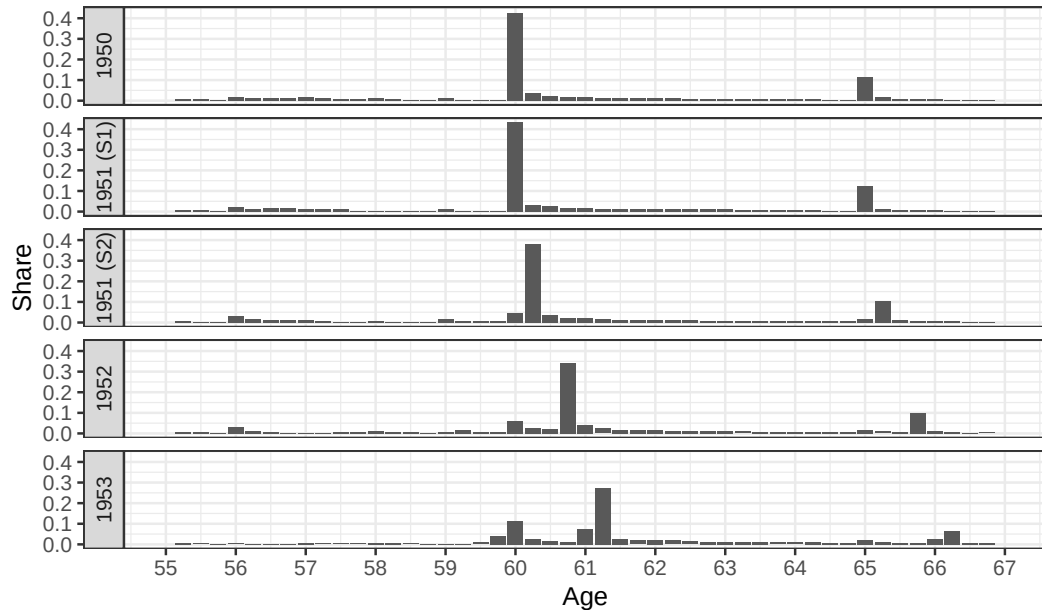
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Sources

1. **Retirement:** *Échantillon Interrégimes de Retraités (EIR 2020)* (representative sample of the population of retirees on December 31st 2020)
 - ▶ Unit of observation: Individual
 - ▶ Information on claiming age, pension benefits, minimum contributory (MICO) and non-contributory old-age benefits (ASPA), part of the social safety net
2. **Employment:** *Panel Tous Actifs (PTA 2020)* (representative sample of employed and self-employed workers after 50)
 - ▶ Unit of observation: Individual $\times$ Year $\times$ Firm
 - ▶ Information on employment spells and wages
3. **Unemployment:** *Fichier des allocataires de France Travail (2020)*
 - ▶ Unit of observation: Individual $\times$ Unemployment spell
 - ▶ Information on unemployment spells and unemployment benefits
4. **Welfare benefits:** *Eniacrams (2020)*
 - ▶ Unit of observation: Individual $\times$ Year
 - ▶ Information on welfare benefits (RSA, AAH, APL), the remaining part of the social safety net

Claiming age (depending on cohort)



Bunching at FRA

Puzzle: (Almost) No change in financial incentives at that age (in particular, no discontinuity in the pension benefit formula around the FRA)

- ▶ Remember the *décote* penalty, an actuarial reduction factor for each missing contributory quarter before the required insurance duration is reached
- ▶ Similarly, the *surcote* premium is a delayed retirement credit for each contributory quarter beyond that duration

Behavioral explanation: Evidence of reference dependence with loss aversion ([Behaghel and Blau, 2012](#)) ?

Other possible explanations:

- ▶ Financial incentives - 1: **Eligibility** rules to **minimum contributory pension benefits (MICO)** include fulfilling requirements for full-rate pension benefits (**claiming age higher than individual Normal Retirement Age (NRA)**)
- ▶ Financial incentives - 2: **Eligibility** rules to **UI** include **being aged less than the NRA**
- ▶ Financial incentives - 3: **Eligibility** rules to **ASPA** include **being aged more than 65**
- ▶ Role played by social norms: **FRA** is a **salient** parameter

Who claims for pension benefits at the FRA?

Benefit-claiming age	FRA	Other
Women	0.645	0.479
Married	0.553	0.625
# of children	1.3	1.0
Age of first contribution	22.6	18.1
Insurance duration (in quarters)	95.1	144.7
Monthly pension benefits (in €)	986	1,613
MICO (minimum contributory pension benefits)	0.61	0.272
ASPA (old-age welfare benefits)	0.124	0.03
# of individuals	10,953	109,490

Mostly women, workers with shorter careers or/and smaller pension benefits, and who are eligible to minimum pension benefits (either contributory or not)

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Identification strategy

Cohort differences-in-differences / event study

- ▶ Age plays the role of *time*

Identifying assumption: Parallel Trend Assumption (PTA)

In the absence of reform, the outcomes (employment, unemployment, ...) would have followed similar trends after 64.5 among cohorts 1950 to 1953

Threats to identification

Possible **confounding factors**:

- ▶ Joint shift of the ERA
 - ▶ Changes in the pension scheme for workers with a long career
 - ▶ Increase in required insurance duration
 - ▶ Decrease in the actuarial reduction factor
 - ▶ Period effects
- } No effect after 62
- } Compare 1951 (S2) with 1951 (S1)
- Including or excluding them does not alter results

Econometric specification

Estimating equation

Let Y_{ica} be the outcome considered (namely, the state on the labor market) for individual i from cohort c at age a :

$$Y_{ica} = \sum_{c'=1950}^{1953} \sum_{a'=62}^{67} \beta_{c',a'} \times \mathbf{1}(c' = c) \times \mathbf{1}(a' = a) + \mathbf{X}_i' \delta + \alpha_c + \gamma_a + \epsilon_{ica}$$

- ▶ β_{ca} corresponds to $(\bar{Y}_{\bullet ca} - \bar{Y}_{\bullet c, a_0}) - (\bar{Y}_{\bullet c_0, a} - \bar{Y}_{\bullet c_0, a_0})$
- ▶ *Baseline*: $c_0 = 1950$, $a_0 = 64.5$
- ▶ $\mathbf{X}_i$ are individual-specific covariates (gender, birthplace, marital status, # of children, age when first employed, wage and # of days worked from 52 to 59)

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- Sources
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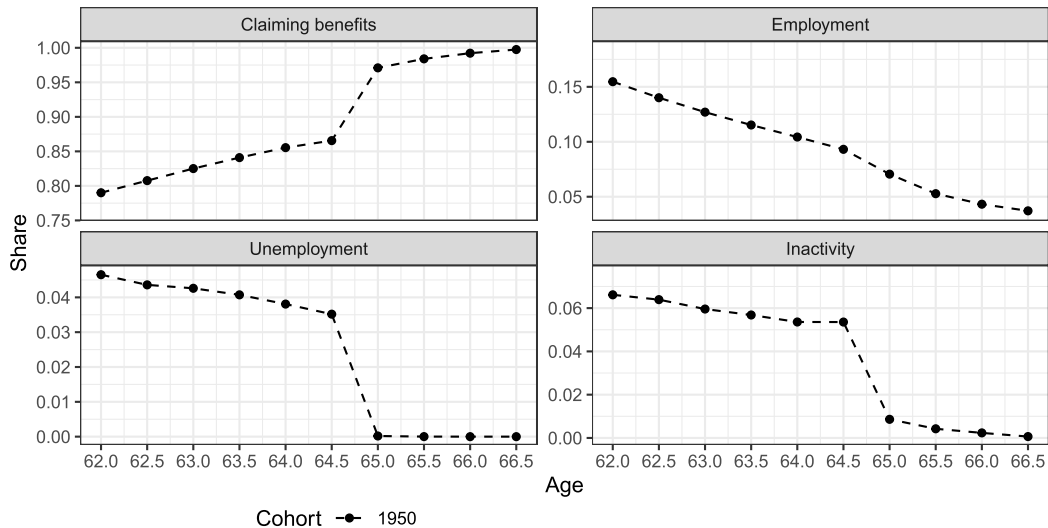
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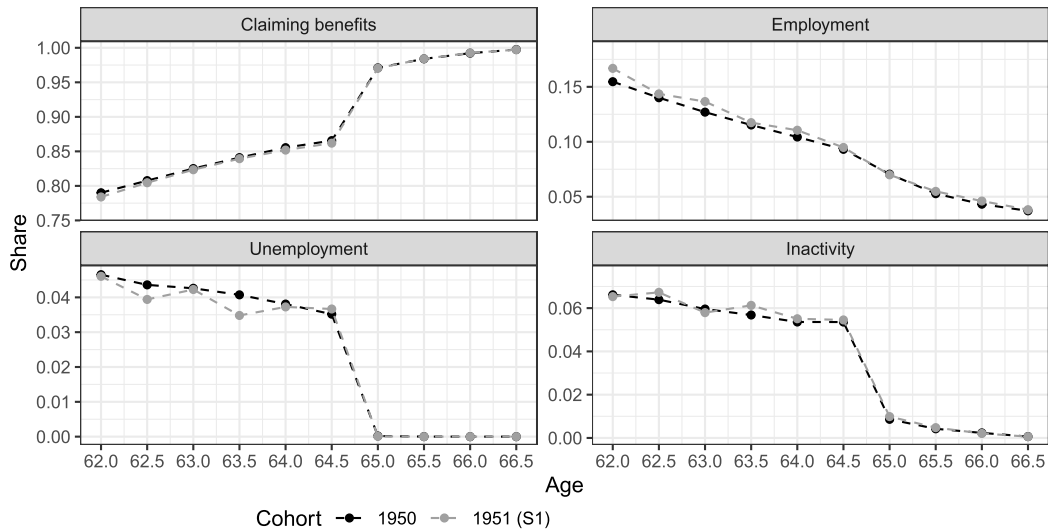
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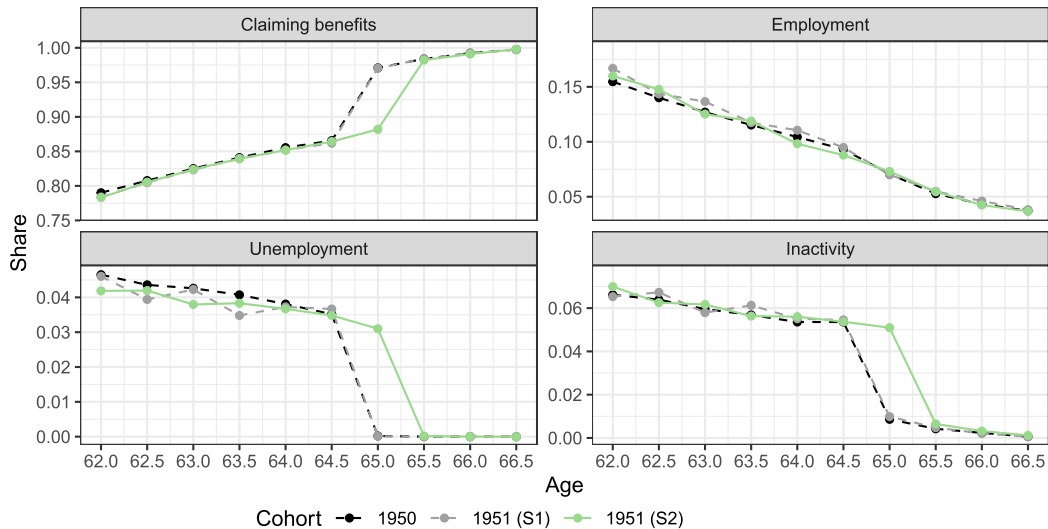
Labor market states



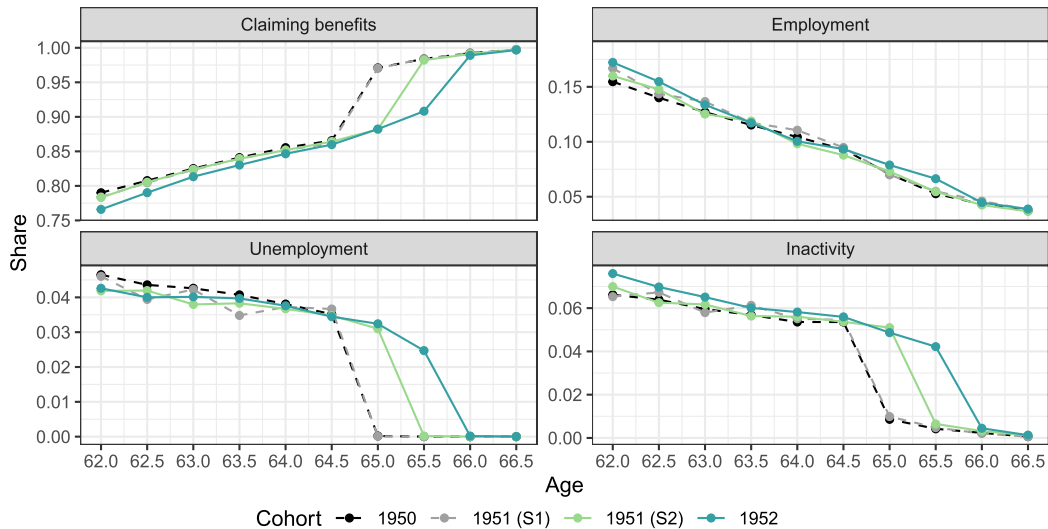
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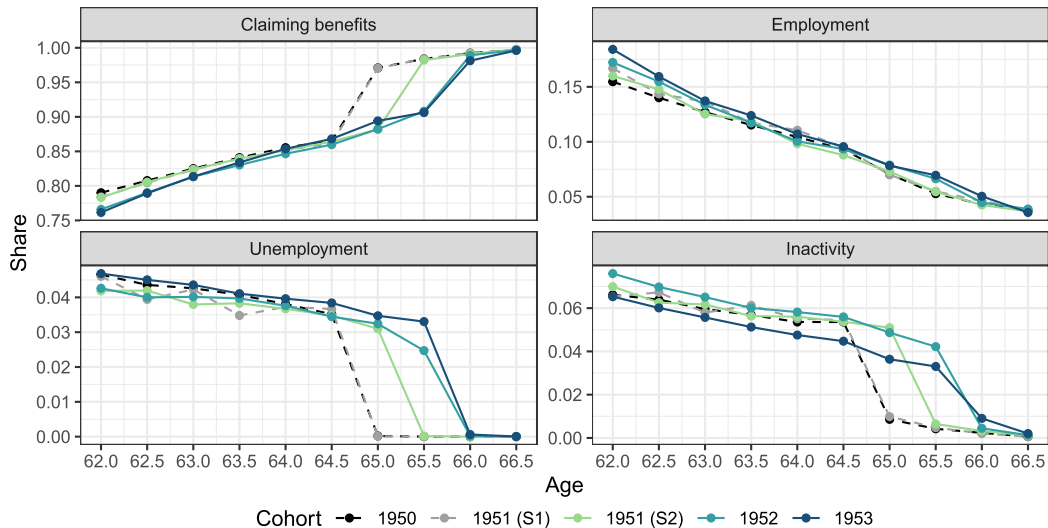
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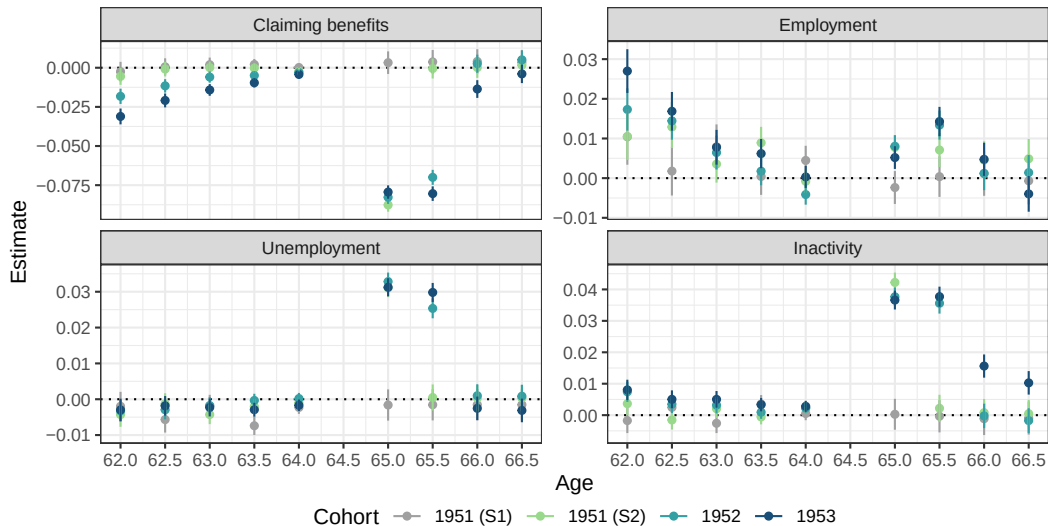
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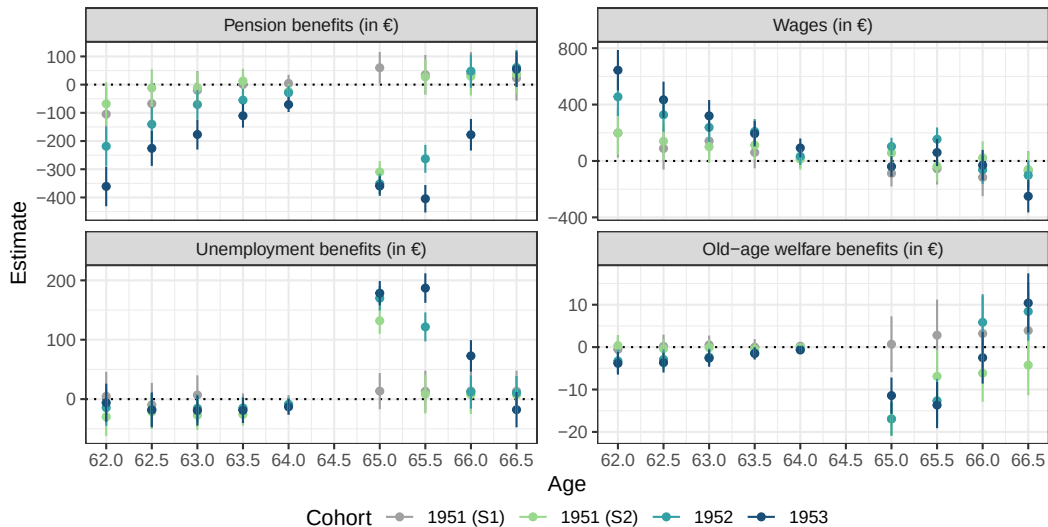
Labor market states



Effect of the reform on labor market states



Effect of the reform on earnings



Mechanisms

- ▶ *Active* vs. *passive* substitution
 - ▶ Outcomes: Transitions across labor market states
 - ▶ Empirical evidence of **passive substitution** ▶ Transitions
- ▶ Financial incentives
 - ▶ Retirees with minimum contributory pension benefits ▶ MICO
 - ▶ Retirees with old-age welfare benefits (ASPA, social safety net) ▶ ASPA
- ▶ Role played by social norms ▶ Non-MICO
- ▶ Heterogeneity
 - ▶ Gender ▶ Gender
 - ▶ Marital status

Fiscal effects

Annual gain for the social insurance: Sum of previous estimates at ages 65-66 for the 1953 cohort (about 555,000 individuals)

- ▶ **Direct effect:** +€967 (Pension benefits, including ASPA)
- ▶ **Substitution effect from retirement to employment:** Negligible impact on labor income, hence on payroll taxes / Social Security contributions (SSC) and on income tax revenues as well
- ▶ **Substitution effect from retirement to unemployment:** -€438 (Unemployment benefits)

That part of the reform thus yields an annual fiscal gain of approximately $+967 - 438 = +529$ euros per individual (**+€294 million**)

Further extrapolating our estimates to ages 66-67, we obtain an annual gain of **€504 million** (about **0.16% of total pension expenditures** and **5.8%** of pension expenditures **for this cohort**, assuming a uniform replacement rate of 0.7)

Redistributive effects - 1

Heterogeneity of effects wrt **reference wage** (the proxy for life-cycle labor earnings used to compute pension benefits)

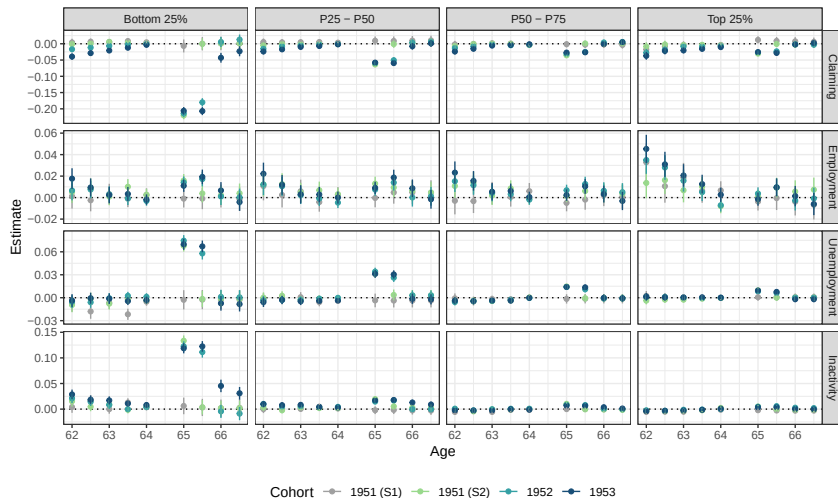


Figure 1: Heterogeneity of effects on labor market states (depending on the reference wage)

Redistributive effects - 2

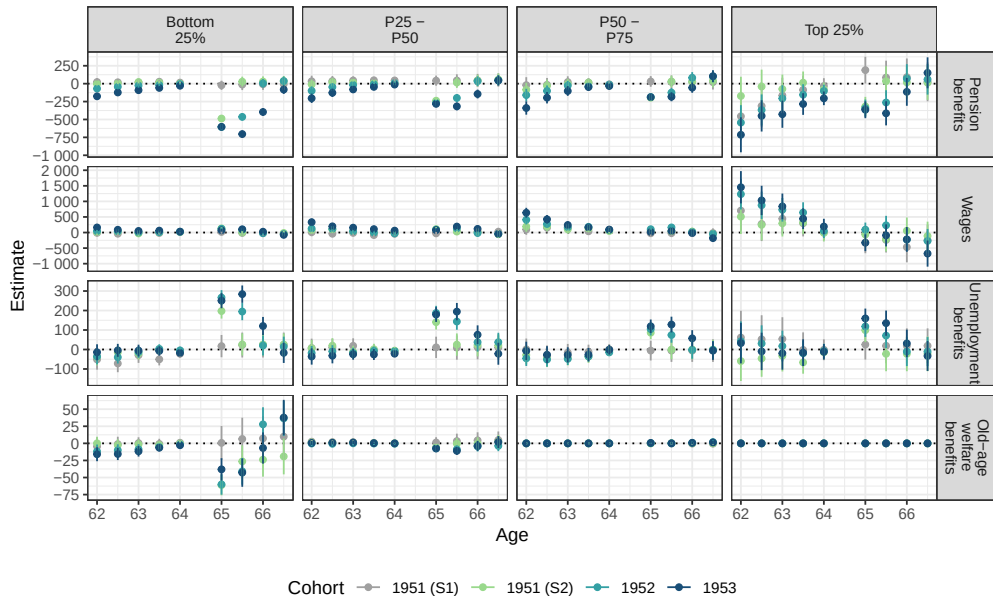


Figure 2: Heterogeneity of effects on earnings (depending on the reference wage)

Redistributive effects - 3

Interpretation

- ▶ Effects are mostly concentrated in the bottom 25% of the reference wage
- ▶ For these workers, retirement rate decreased by 27 pp, inactivity rose by 18 pp, unemployment by 7.5 pp, employment rate hardly varied at all
- ▶ The CATE keeps on decreasing with the location in the distribution of life-cycle labor earnings
- ▶ No substantial impact on the employment rate including for the top 25%

Fiscal gains along the job ladder

- ▶ Bottom 25%: **Direct effect:** +€1,788/yr, **Substitution with UI:** -€655/yr, hence social insurance saved about 10.2% ($+0.161 - 0.059$) of these workers' labor earnings (14.6% of their pension expenditure, still assuming a 0.7 replacement rate)
- ▶ Rest of the distribution: Social insurance saved almost nothing (**Direct effect** being **quite entirely offset** by **substitution effects**)
- ▶ Saved money mostly stems from reduced benefits to the bottom 25%, hence making that part of the reform **regressive**

Robustness check - Period effects

Period effects can play the role of confounding factors

- ▶ When 1953 cohort became 65 in 2018, the business cycle was more favorable than when 1950 cohort reached the same age in 2015
- ▶ This could bias previous results (probably an upward bias on the employment rate and a downward bias on the retirement rate)

We thus include period effects in our estimating equation:

$$Y_{icap} = \sum_{c'=1950}^{1953} \sum_{a'=62}^{67} \beta_{c',a'} \times \mathbf{1}(c' = c) \times \mathbf{1}(a' = a) + \mathbf{X}_i' \delta + \alpha_c + \gamma_a + \zeta_p + \epsilon_{icap},$$

and follow the methodology of [Deaton and Paxson \(1994\)](#) to jointly identify corresponding coefficients

- ▶ Idea: Re-defining and normalizing ζ_p so that they sum to zero while being orthogonal to a time trend

This procedure does not significantly alter our results

Robustness check - Period effects

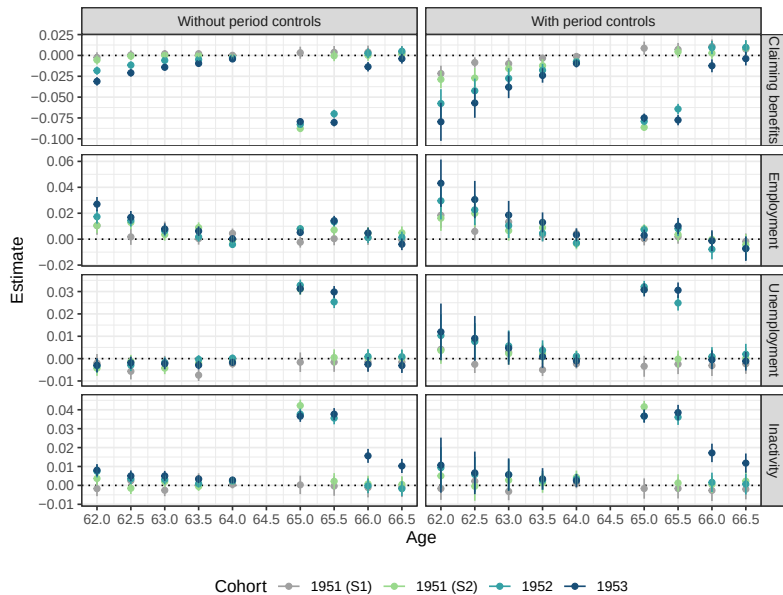


Figure 3: Period effects

Robustness check - Comparing 1951 (S2) with 1951 (S1)

- Pros: No confounding factor, the sole legislative change among these two half-cohorts being the increase in the FRA by 4 months (Pure causal impact of the increase in the FRA)
- Cons: Impossible to learn about possible effects after 65 1/3 (by construction)

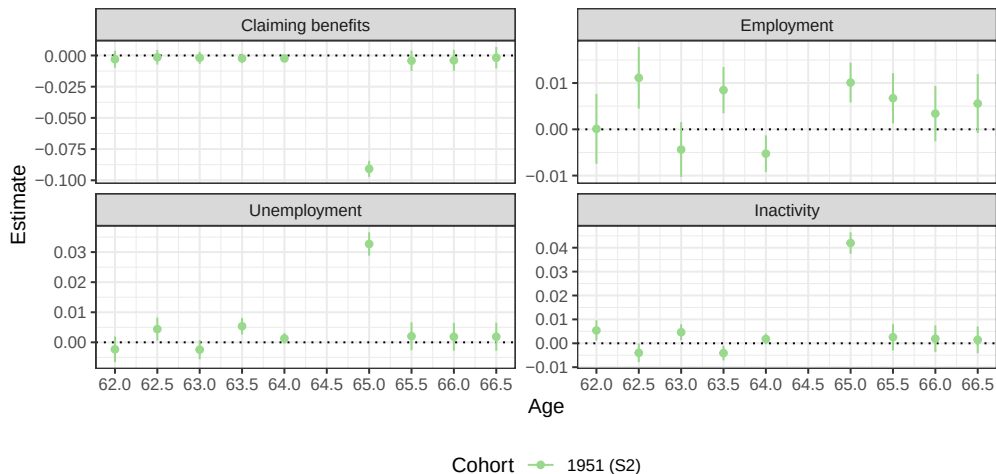


Figure 4: T: 1951 (S2) vs C: 1951 (S1)

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Limits

- ▶ External validity: Extrapolation to public sector, self-employed, other countries?
- ▶ Nonlinearity of effects (wrt age: 65-67 shift might differ, say, from 60-62 or 68-70)

Extension

- ▶ Normative approach to pension reforms: Decrease pension benefits, Increase SSC rates or legal retirement ages (ERA, FRA)? See [Haller \(2023\)](#)

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Appendix

[Dubois and Koubi \(2017\)](#) (FR): 2010 reform increasing the ERA by 2 years. Substantial impacts on the probability of retirement (-27 pp), employment (+17 pp), unemployment (+7 pp) and inactivity (+3 pp) at 60

[Gruber, Kanninen, and Ravaska \(2022\)](#) (FI): Change in the framing / definition of the NRA that did not alter financial incentives but that still influenced retirement behavior

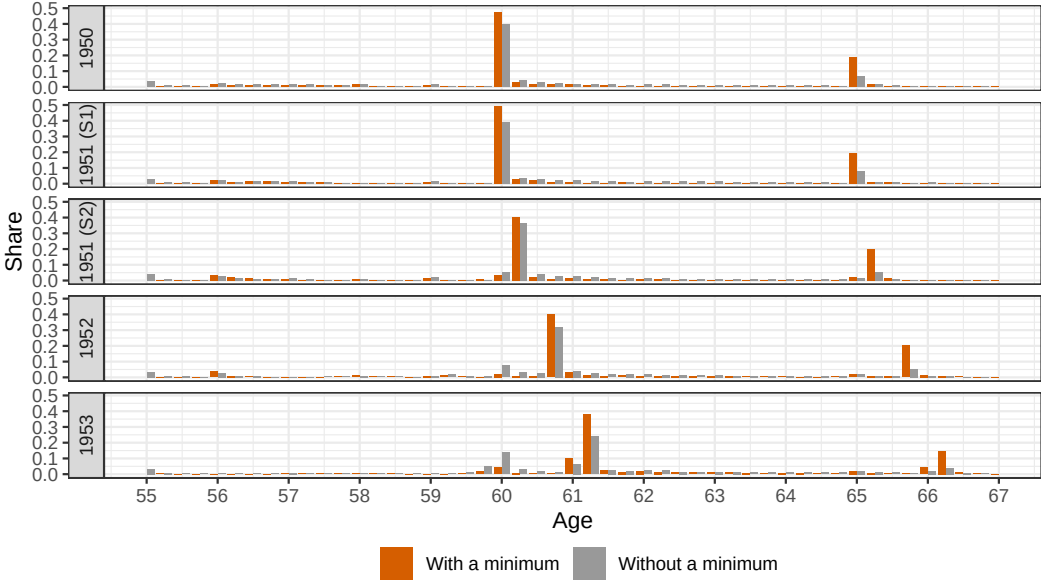
[Dolls and Krolage \(2023\)](#) (DE): 2014 reform that decreased the FRA for workers with a long career, the new FRA being framed as the reference age, which resulted in bunching at the new FRA

[Ardito et al. \(2021\)](#) (IT): Shift of the NRA from 60 to 65. A non-negligible share of individuals retires without any pension benefit, which claims for caution (unintended effects on the labor market, especially for the most fragile)

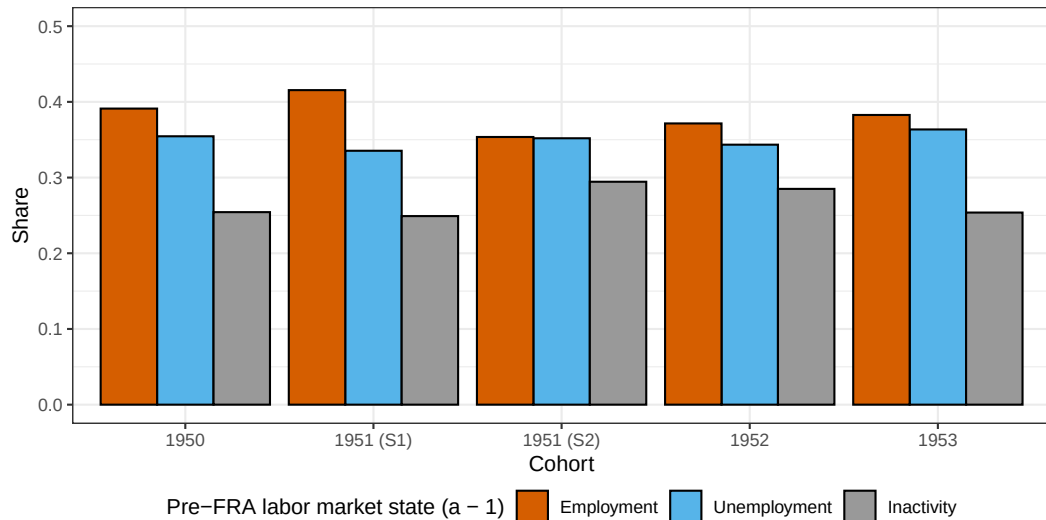
[Duggan, Singleton, and Song \(2007\)](#) (US): 1983 reform of the Social Security that increased the FRA from 65 to 67, and that rose the enrollment rate to disability benefits between 45 and 64 (by 0.6% for men and 0.9% for women)

Bunching at the FRA (with or without minimum contributory pension benefits)

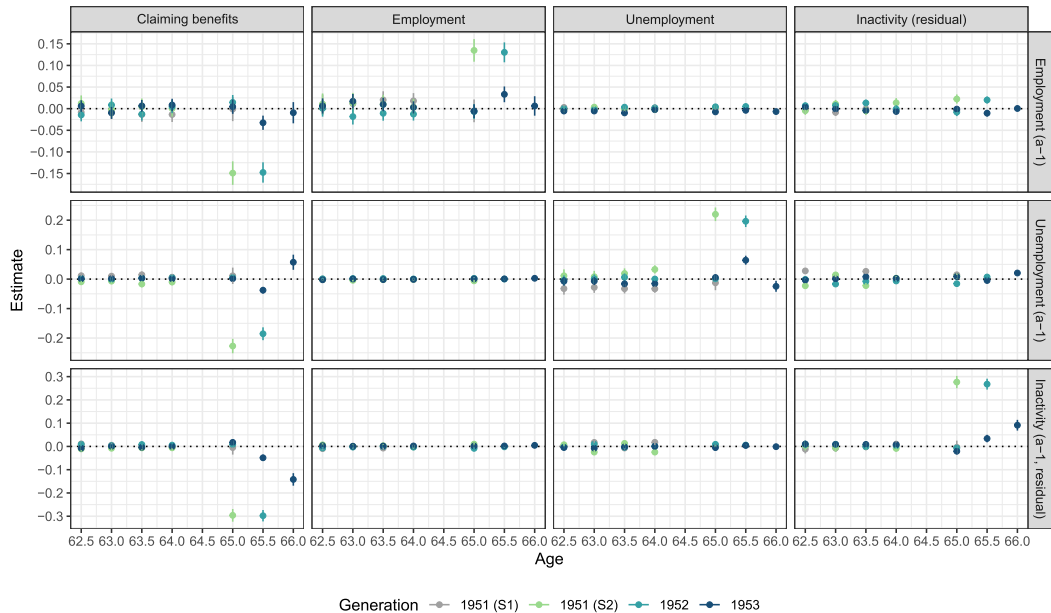
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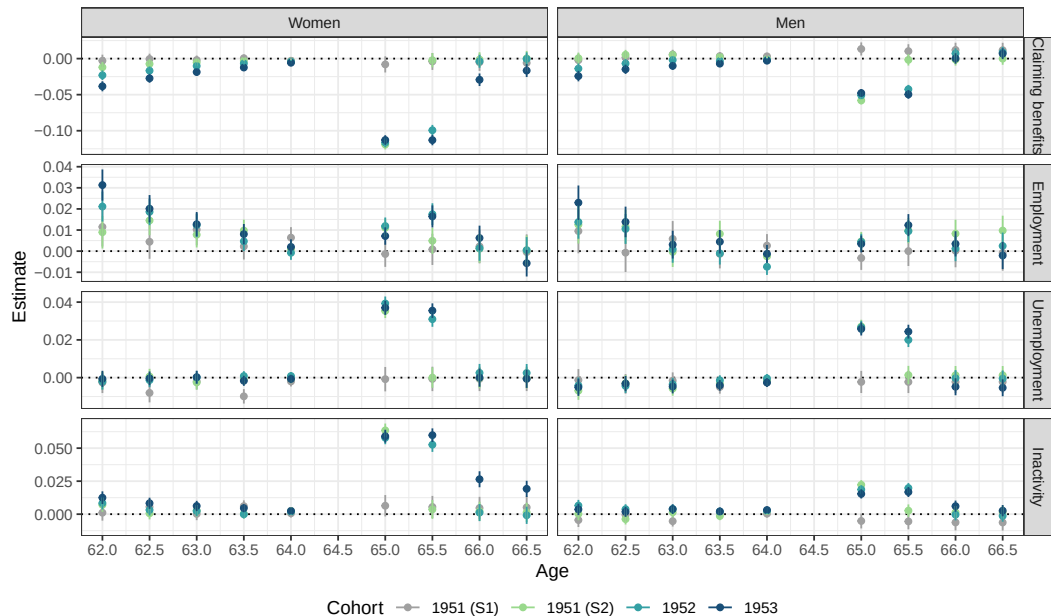
Pre-FRA labor market state [▶ Back](#)



Effect of the reform on labor market transitions

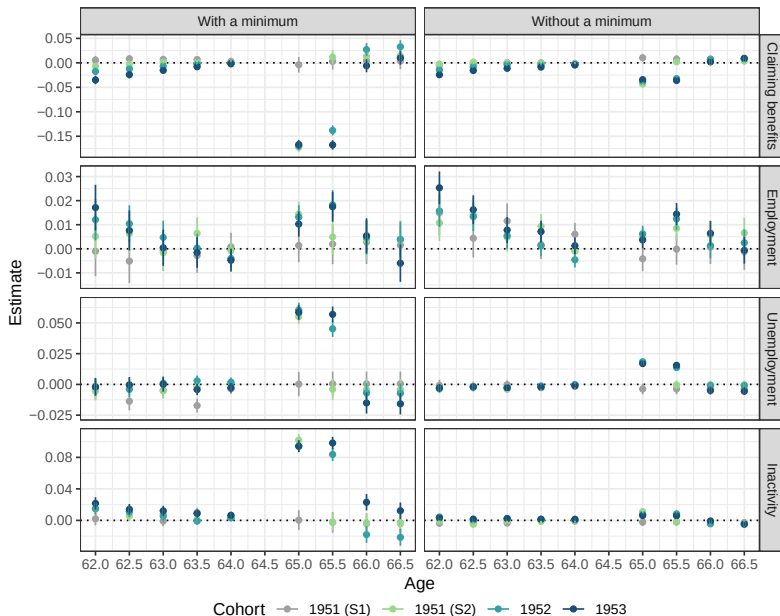
[▶ Back](#)

Heterogeneity of effects (depending on gender)

[▶ Back](#)

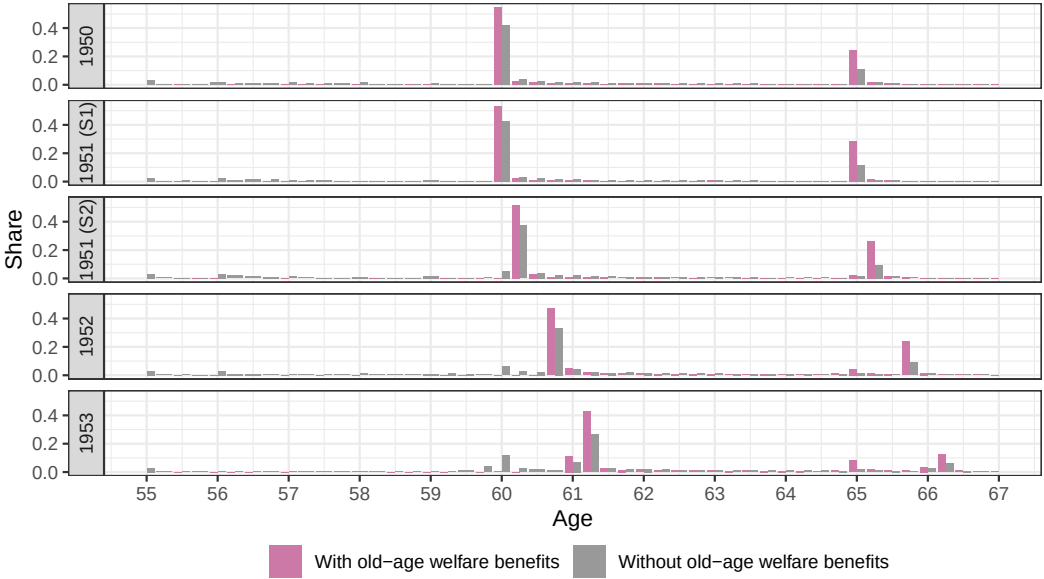
Heterogeneity of effects (depending on minimum contributory pension benefits)

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Heterogeneity of effects (depending on old-age welfare benefits)

[▶ Back](#)



Effects of the reform for those without minimum contributory pension benefits: The role played by social norms?

► Back

