SEÐLABANKI ÍSLANDS

Ryður skyldusparnaður öðrum sparnaði út?

Does Mandatory Saving Crowd Out Voluntary Saving?
Evidence from a Pension Reform

Þær skoðanir sem fram koma í erindi þessu eru á ábyrgð höfundar og þurfa ekki að endurspegla afstöðu Seðlabanka Íslands

Kynning Seðlabanka Íslands

28. september 2022

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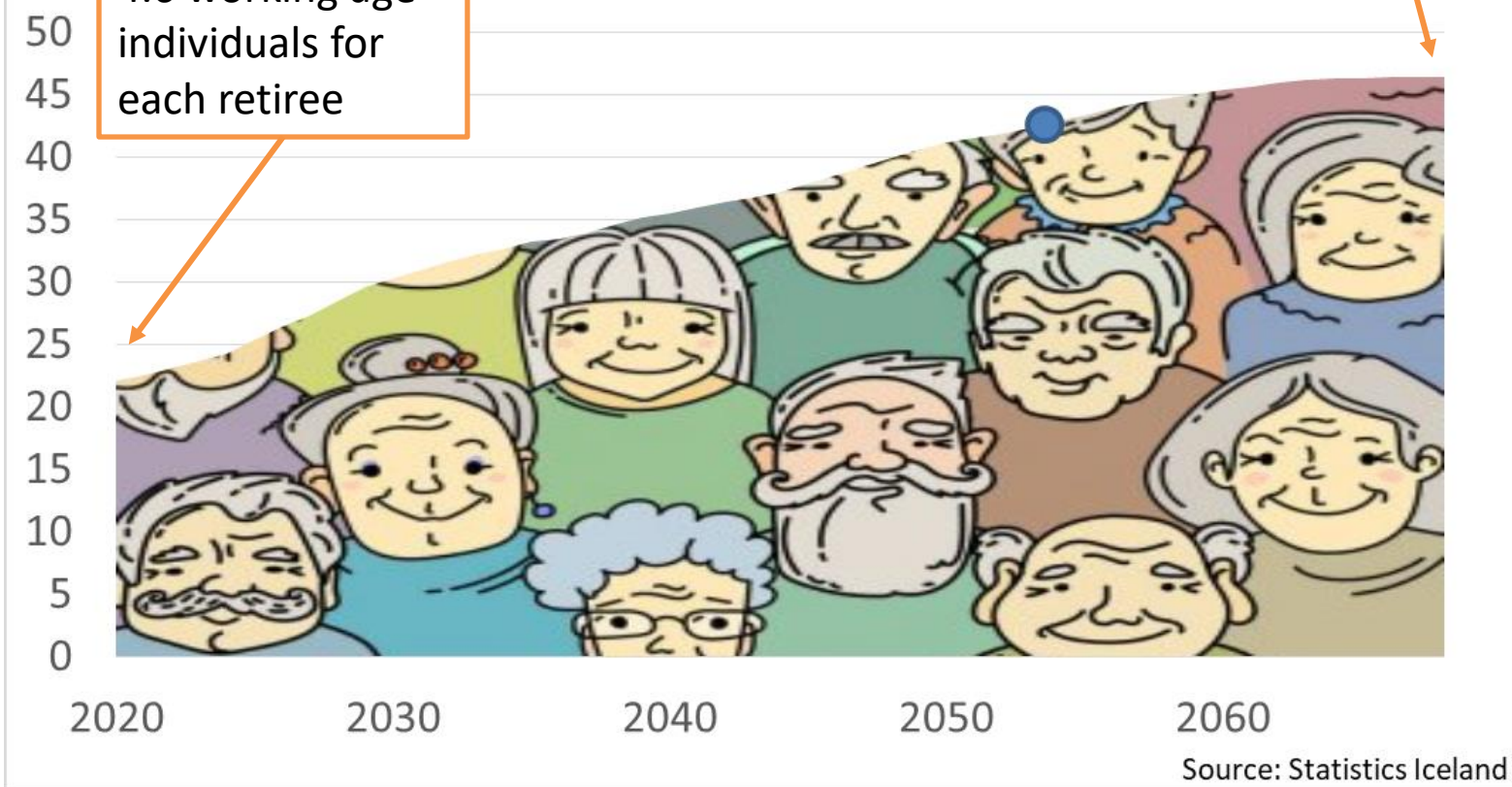
Structure

- Motivation and background

- Model

- Results

- Making sense of the results

- Conclusion

Population projection

2.2 working age individuals for each retiree

4.6 working age individuals for each retiree

Old-age dependency ratio
Projection for Iceland 2020-2068

50				
45				
40				
35				
30				
25				
20				
15				
10				
5				
0				
2020	2030	2040	2050	2060

Source: Statistics Iceland

Old-age dependency ratio = 100*(number of people aged 65 and over)/(number of people aged 15-64)

Years
95,0
92,5
90,0
87,5
85,0
82,5
80,0
77,5
75,0
72,5
70,0

1963 1973 1983 1993 2003 2013 2023 2033 2043 2053 2063 2073 2083 2093 2100

━ Women ━ Total ━ Men

MACROBOND
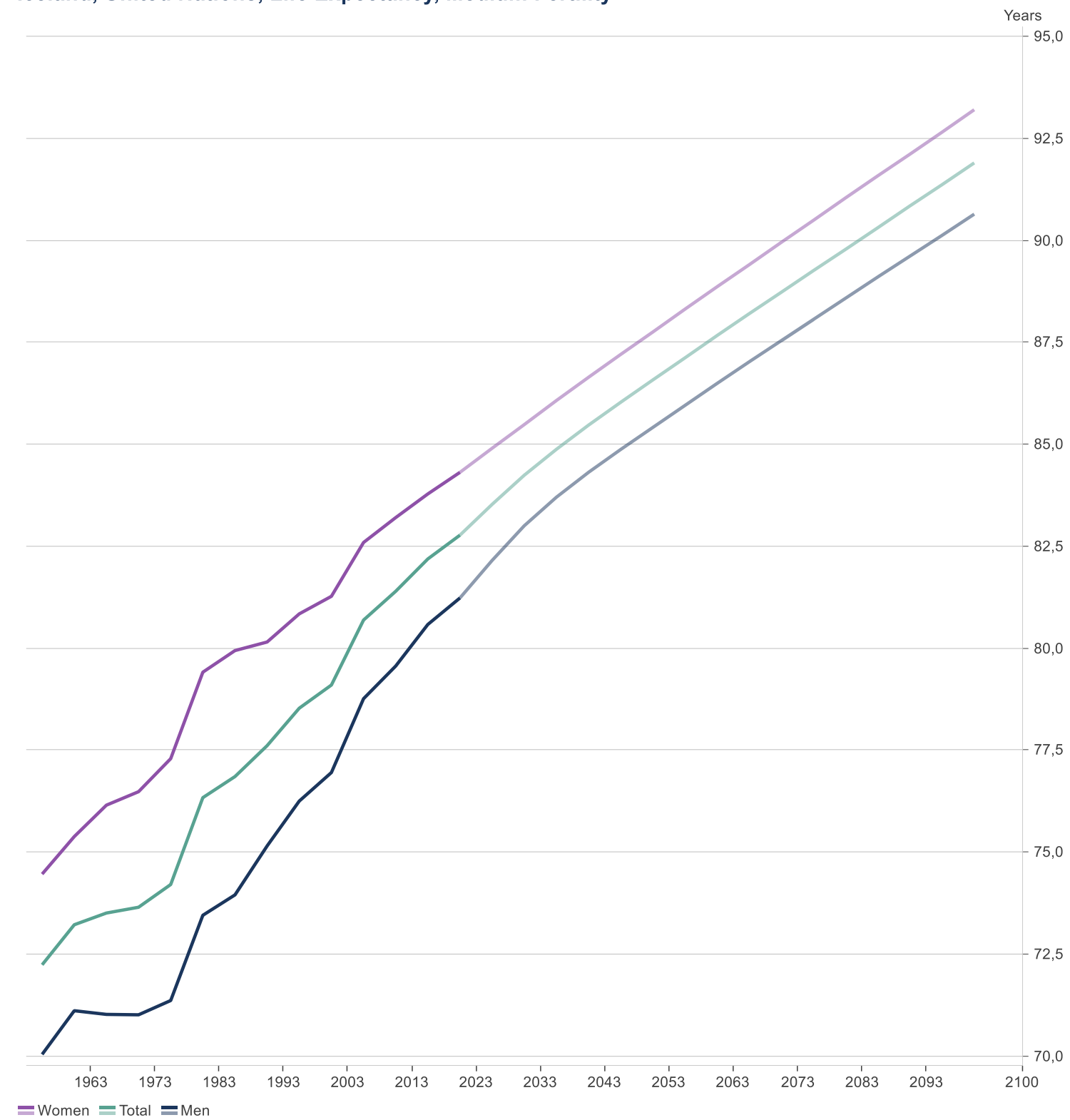
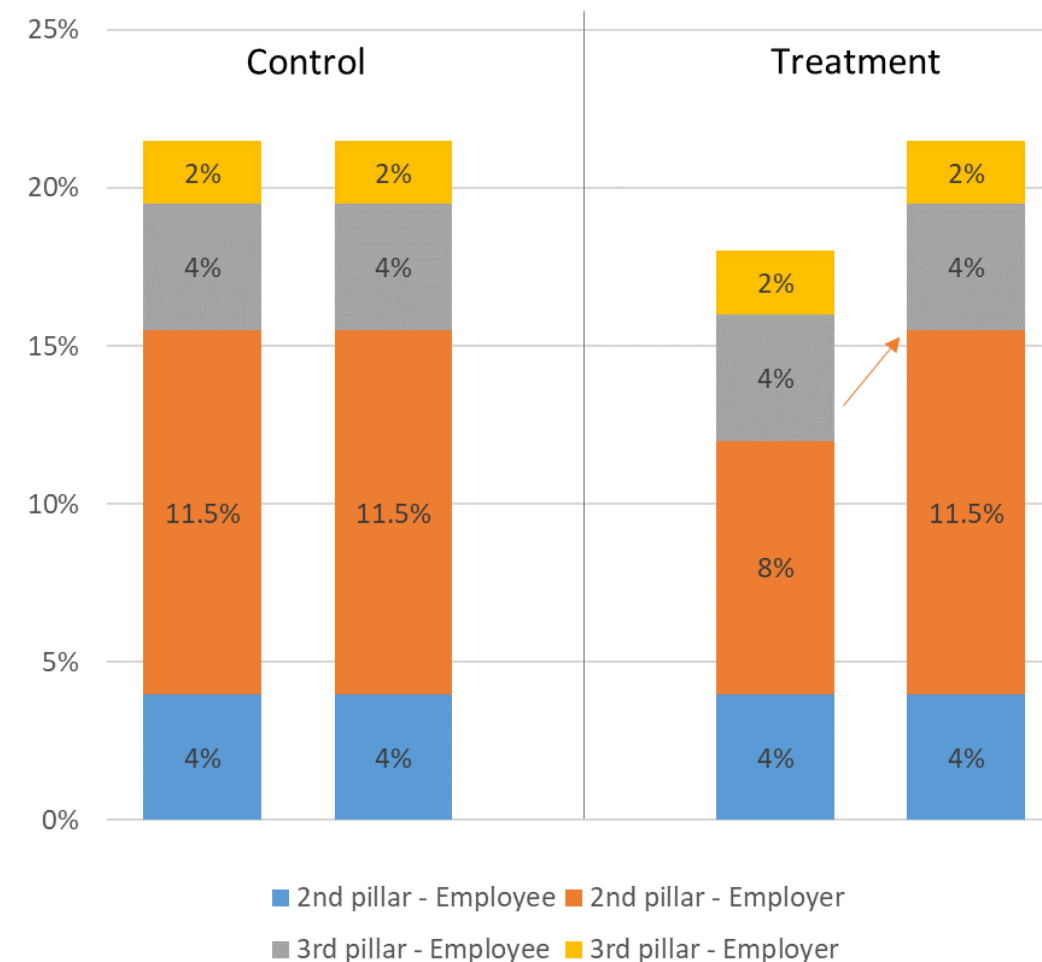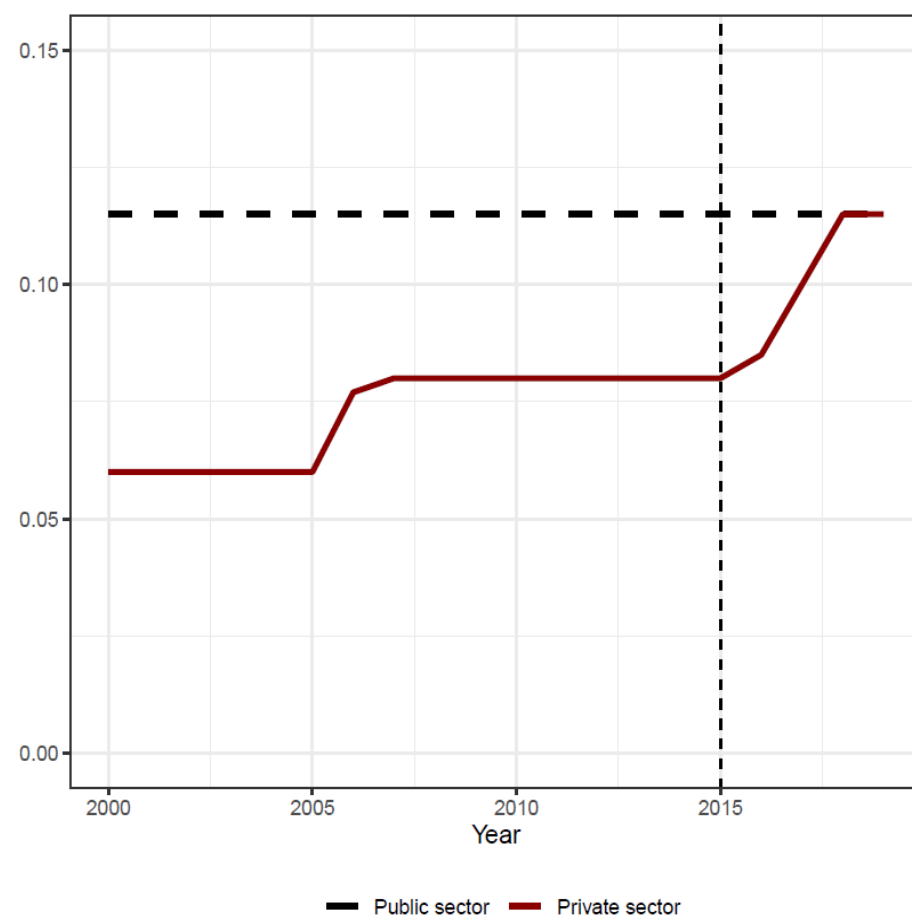# Icelandic pension system and the 2016-18 reform

- 3 pillars of the Icelandic system:
  1. Tax-financed means-tested pension entitlements
  2. Fully funded scheme with mandatory contributions
  3. Private, flexible, voluntary and inheritable
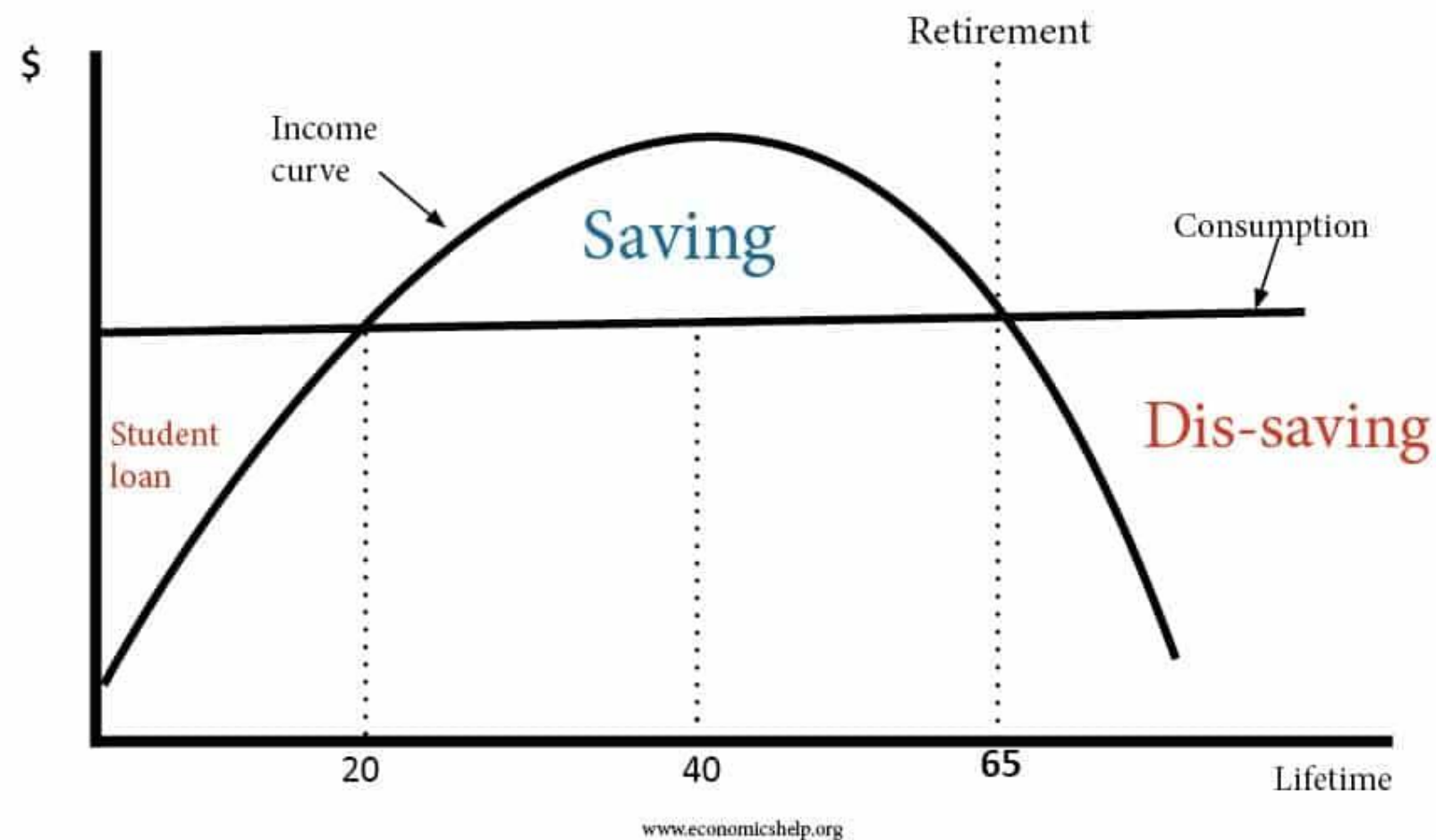
- The 2016-18 reform
  - Employer contribution to 2nd pillar pension savings from 8% to 11.5%

Employer contributions to pillar 2 saving

What would theory predict?

- Permanent income/Life-cycle hypothesis→
- Increase in mandatory saving would be completely offset with a reduction in voluntary saving
  - Total saving unchanged
- Problems with LCH
  - Pension savings are illiquid
    - Not a buffer for future shocks
    - Liq.constrained HH cannot respond
  - Return on pension saving might differ from other saving (long horizon)
  - Financial literacy
    - Perfect information

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1 2 3

Literature

- How much does voluntary saving decrease as mandatory saving increases? (offset effect)
  - Empirical literature on is inconclusive:

	Gale (1998)	Attanasio & Rohwedder (2003)	Attanasio & Brugiavini (2003)	Engelhardt & Kumar (2011)	Li et al. (2016)	Alessie et al. (1997)	Arnberg & Barslund (2014)
"Offset" effect	**39-82%**	**65-75%**	**35-71%**	**53-67%**	**33%**	**no offset**	**0-30%**

  - Rely on surveys which might have shortcomings and span short periods
- Chetty et al. (2014)
  - Mandatory saving rates in Denmark differ across firms and sectors
  - Change in saving rates when they switch jobs
    - Job switching might be endogenous
  - Results: Only 85% of people are passive savers
- This paper:
  - Shock: Large, exogenous *natural experiment*
  - Data: includes debt, net worth and durable consumption (automobiles)
  - Cherry on top: complement our results with a survey to understand both *how* and *why*

Data

- Tax returns of the whole Icelandic population
  - 16+ years old
  - 1981 – 2019
- We look at the age 25-64
- Jointly taxed couples
- Data includes:
  - Income: All source of taxable income except bequests
  - Assets and liabilities: Bank deposits, real estate, mutual funds, mortgage debt, total debt, contribution to pension funds
  - Other factors: Age, gender, education, marital status, number of children, occupation, etc…

- Each króna earned is either spent, $C\uparrow$, or saved, $\Delta W\uparrow$

$$c_{i,t} = \underbrace{(e_{i,t} - \tau_{i,t})}_{Disposable\ income} - \underbrace{\sum_{k}\Delta W_{i,k,t}}_{Change\ in\ net\ wealth} + \underbrace{\sum_{k}\Delta p_{k,t}A_{i,k,t-1}}_{Unrealized\ capital\ gains}$$

- Groups defined by mandatory 2nd pillar saving rate 2015:
  - Treatment < 13.75%
  - Control ≥ 13.75%
  - Omit those still below 13.75% in 2018

Helicopter view

Note: Figure 2 shows the average voluntary (panel a), mandatory (panel b) and total saving rate (panel c) out of household wages for the control group (dotted black line) and the treatment group (solid red line) as measured by fitted values from three regressions where each of the aforementioned variables are regressed on year fixed effects, group fixed effects and the inter-action between the two. The dotted vertical line in 2016 shows when the first stage of the reform was implemented.

Parallel trend

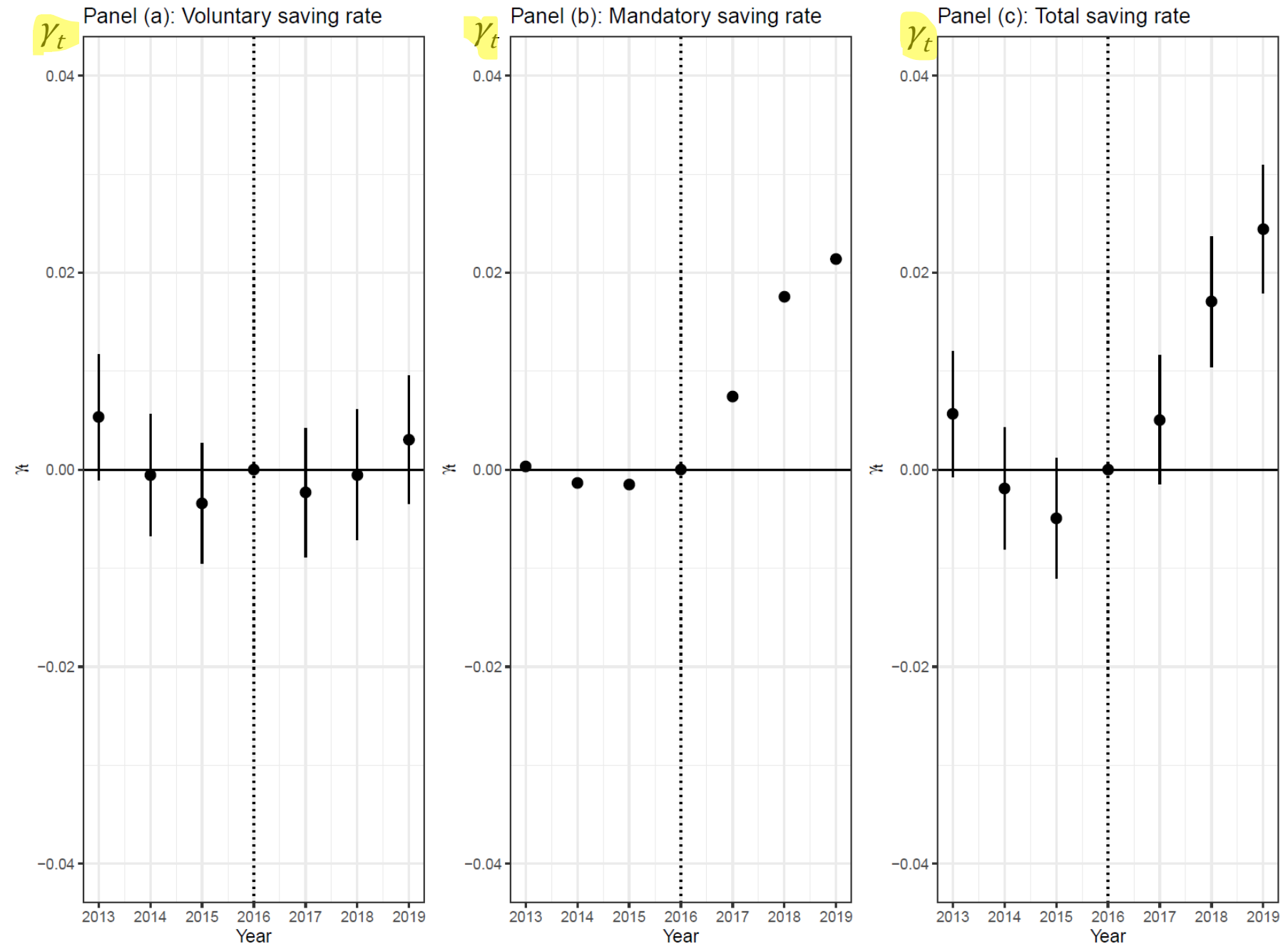$$vs_{it} = \alpha_g + \alpha_t + \gamma_t \alpha_g \times \alpha_t + X_{i2015}\beta + \varepsilon_{it}$$

Group FE

Saving of
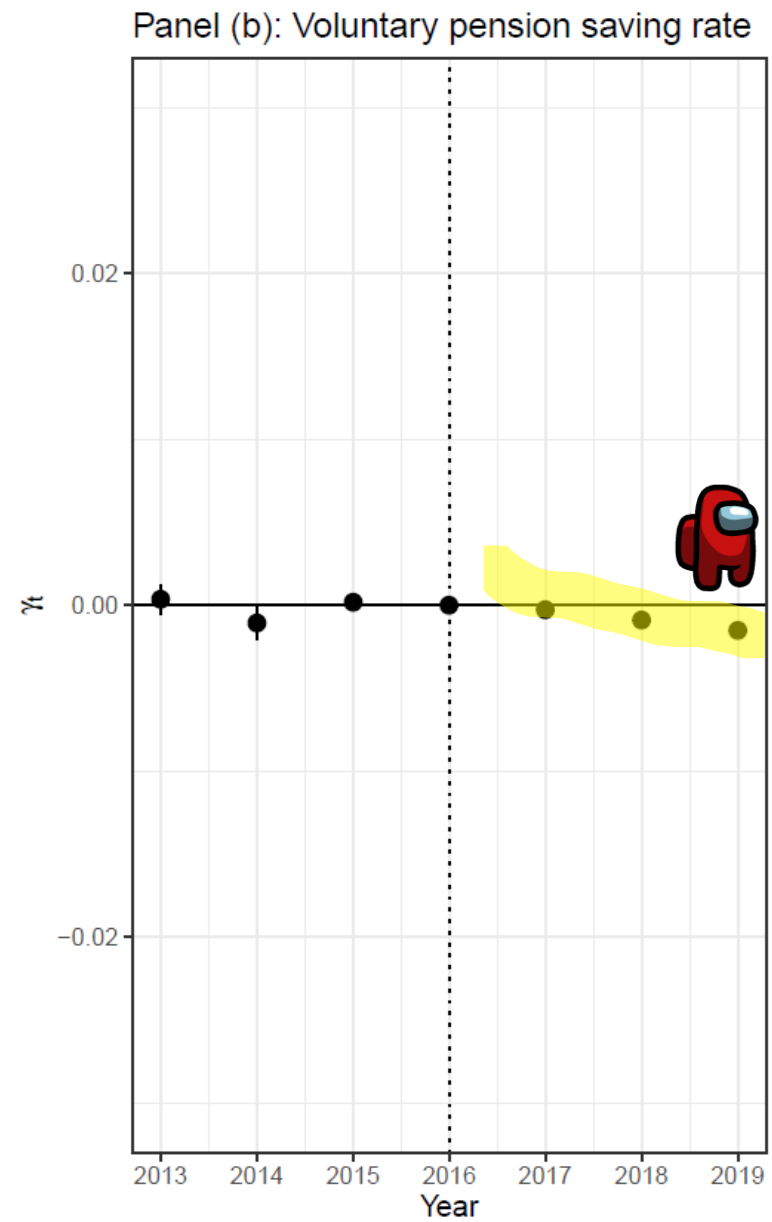individual i
at time t

Time FE

Controls

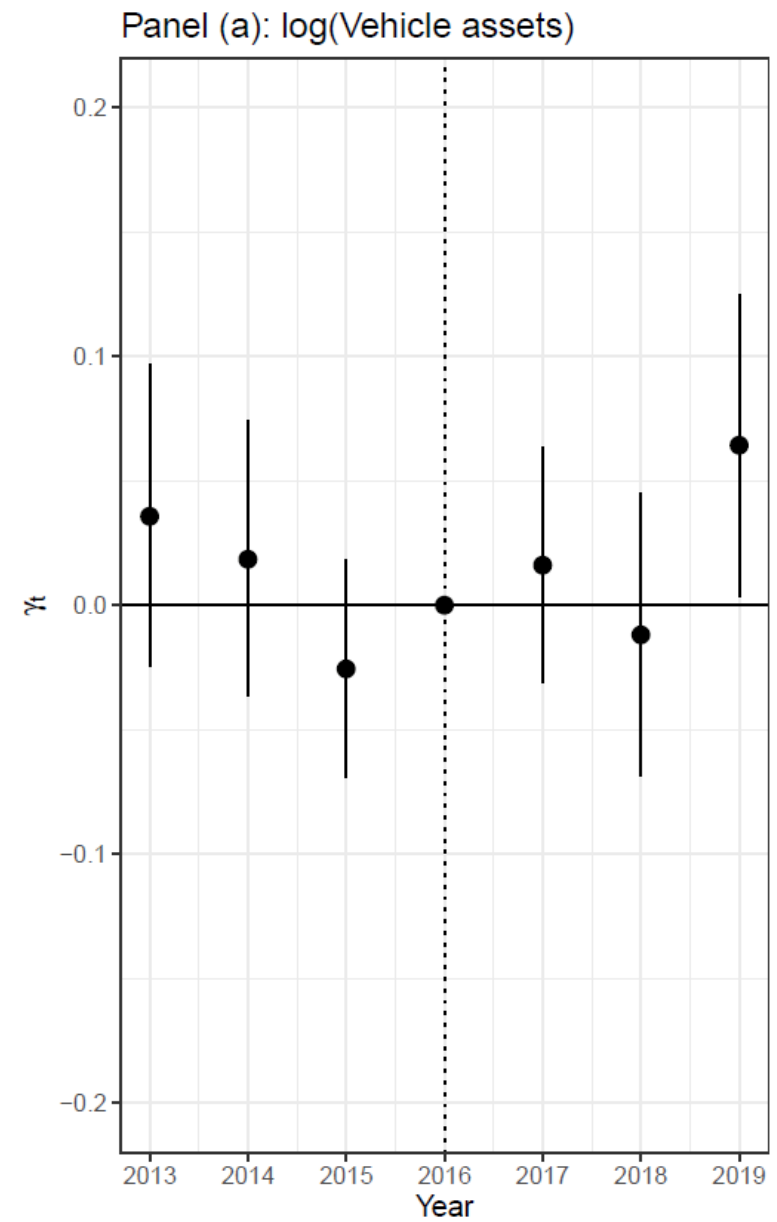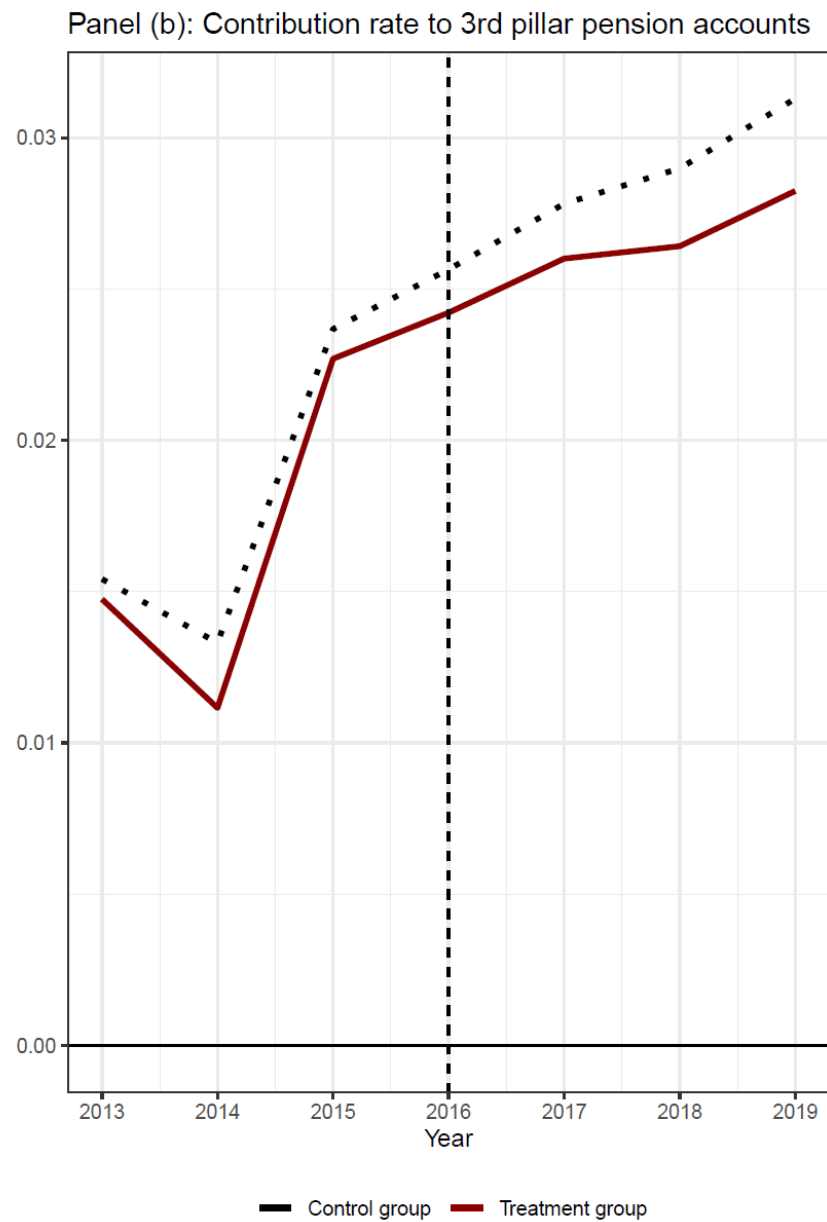- γ_t measures change in *voluntary* saving rate of treatment group over and above the change in saving rate for the control group in a given year

Notes: Panel (a) of Figure A4 plots the estimated γ_t from equation (10). In panels (b) and (c), the dependent variable has been replaced by the mandatory saving rate and the total saving rate, respectively. The dotted vertical line in 2016 shows when the first stage of the reform was implemented. Standard errors, clustered at the individual level, are represented by solid vertical lines.

Beyond voluntary saving

Panel (a): log(Vehicles)

Panel (b): Contribution rate to 3rd pillar pension accounts

Panel (a): log(Vehicle assets)

Panel (b): Voluntary pension saving rate
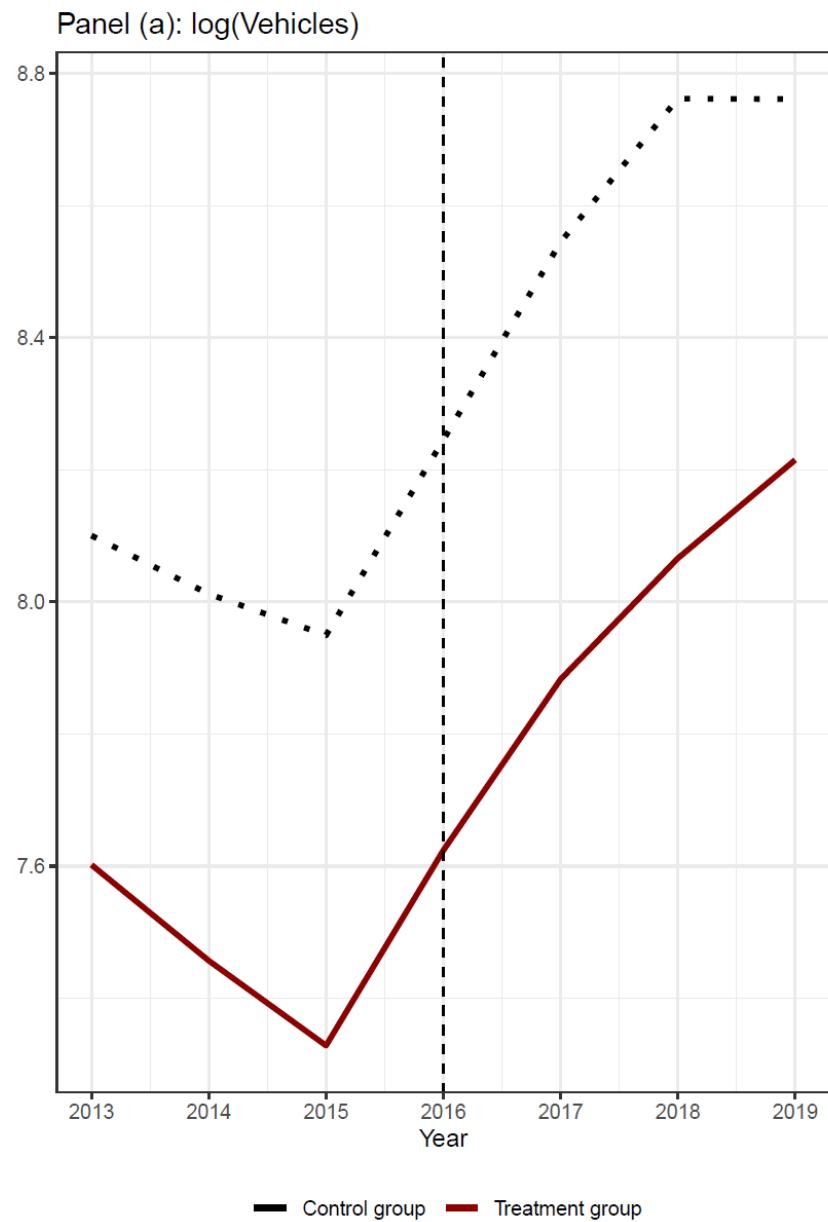
$$vs_{it} = \alpha_g + \alpha_t + \gamma_t \alpha_g \times \alpha_t + X_{i2015}\beta + \varepsilon_{it}$$

Panel regression

- **2SLS**

$$ms_{it} = \mu_{11} post_t + \mu_{12} treated_i + \pi_1 post_t \times treated_i + X_{it}\boldsymbol{\beta} + \epsilon_{1it}$$

$$vs_{it} = \mu_{21} post_t + \mu_{22} treated_i + \rho\widehat{ms}_{it} + X_{it}\boldsymbol{\beta} + \epsilon_{2it}$$

Theory predicts negative sign
Not significant!

- **ρ is the offset parameter**
  - To which extent the increase in mandatory saving was offset by a decrease in **voluntary saving**

Table 3: Crowd-out results.

|	2SLS		Robust 2SLS	
	(1)	(2)	(3)	(4)
$\hat{\rho}$	-0.015	-0.002	-0.109	-0.117
	(0.152)	(0.153)	(0.147)	(0.148)
Controls	No	Yes	No	Yes
R^2	<0.001	0.019	<0.001	0.018
N	476,018	476,018	476,018	476,018

Notes: Table 3 shows the offset coefficient ($\hat{\rho}$) estimated using equation (9). Columns (1) and (2) report the findings from a standard 2SLS estimation. Columns (3) and (4) reports results from robust regression using an M-estimator which is robust to outliers in the outcome variable. The estimates are shown without controls (odd columns) and with controls (even columns). The controls are dummy variables for marital status, gender, age, urbanization, region of residence, number of children in the household, homeownership, income deciles and net wealth deciles. Standard errors, clustered at the individual level, are in parentheses.

Panel regression – beyond voluntary saving

Table 4: Crowd-out results for alternative dependent variables.

	ln(Vehicles)		Third-pillar/wages	
	(1)	(2)	(3)	(4)
$\hat{\rho}$	-1.509***	0.096	-0.087***	-0.051***
	(0.543)	(0.350)	(0.023)	(0.023)
Controls	No	Yes	No	Yes
R^2	-0.22	0.258	0.019	0.052
N	476,018	476,018	476,018	476,018

Panel (b): Contribution rate to 3rd pillar pension accounts
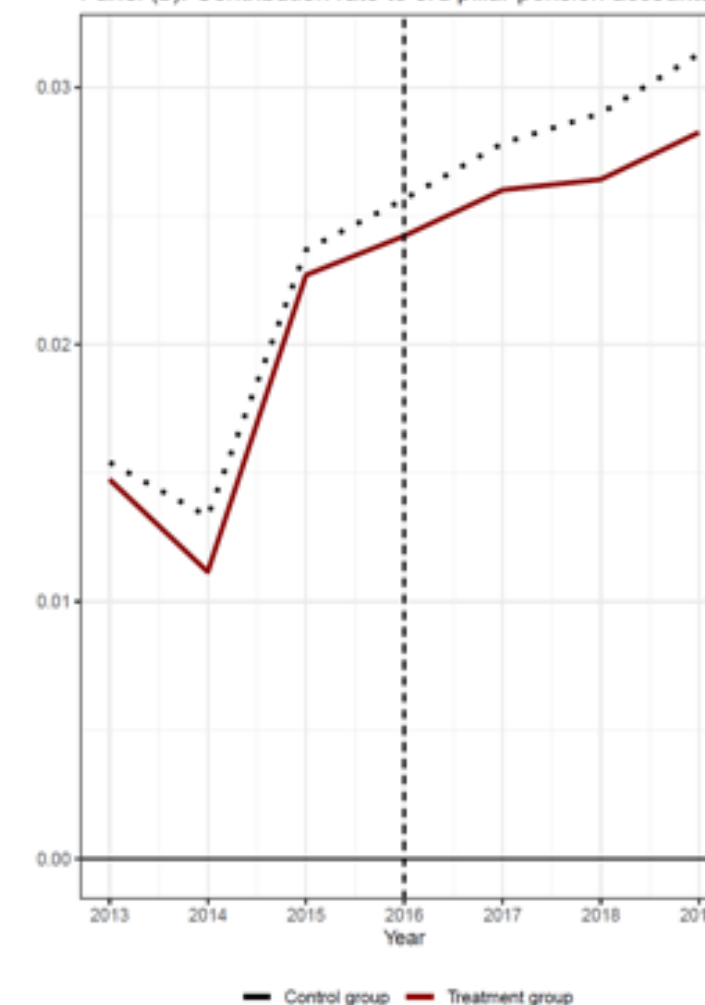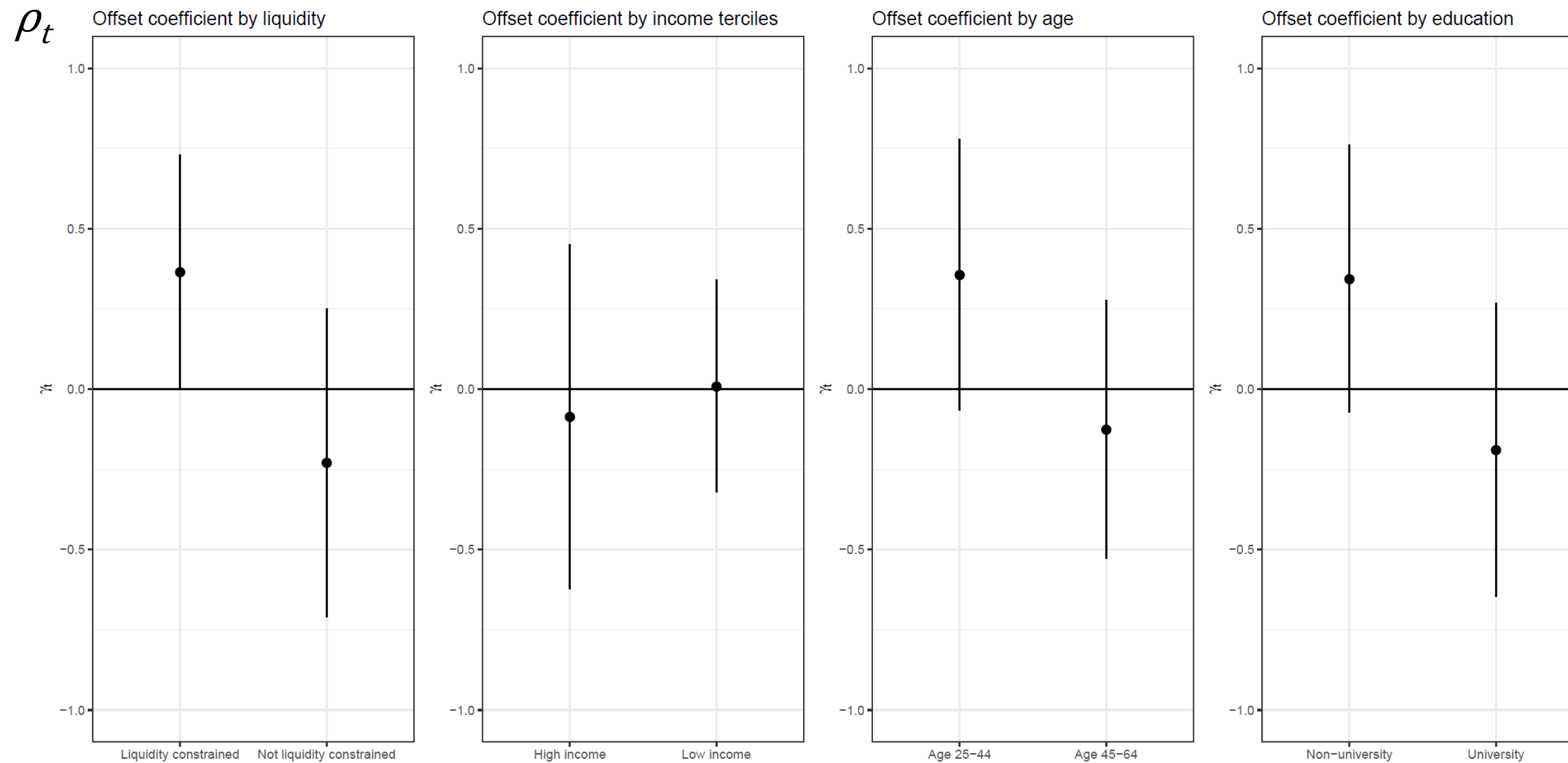
— Control group   — Treatment group

	Gale (1998)	Attanasio & Rohwedder (2003)	Attanasio & Brugiavini (2003)	Engelhardt & Kumar (2011)	Li et al. (2016)	Alessie et al. (1997)	Arnberg & Barslund (2014)
"Offset" effect	**39-82%**	**65-75%**	**35-71%**	**53-67%**	**33%**	**no offset**	**0-30%**

Heterogeneity analysis

- Could the absence of a response in voluntary saving be driven my specific subgroups?
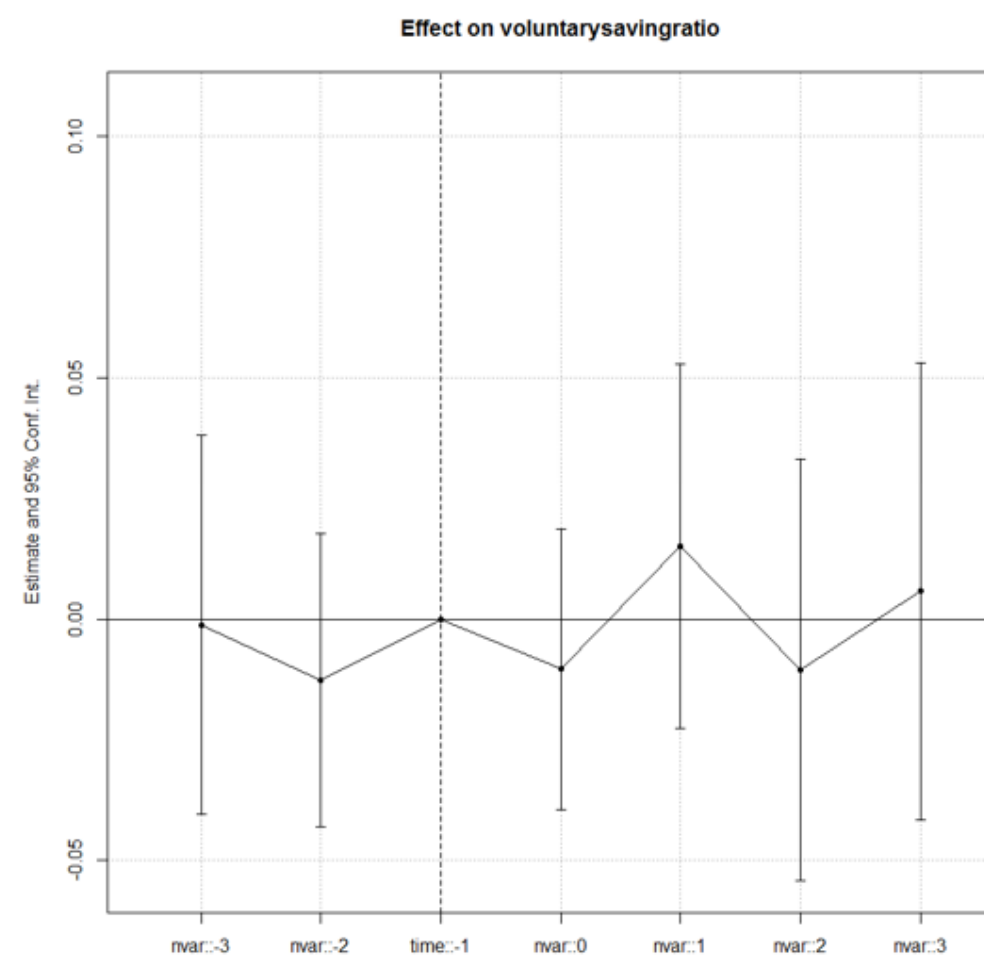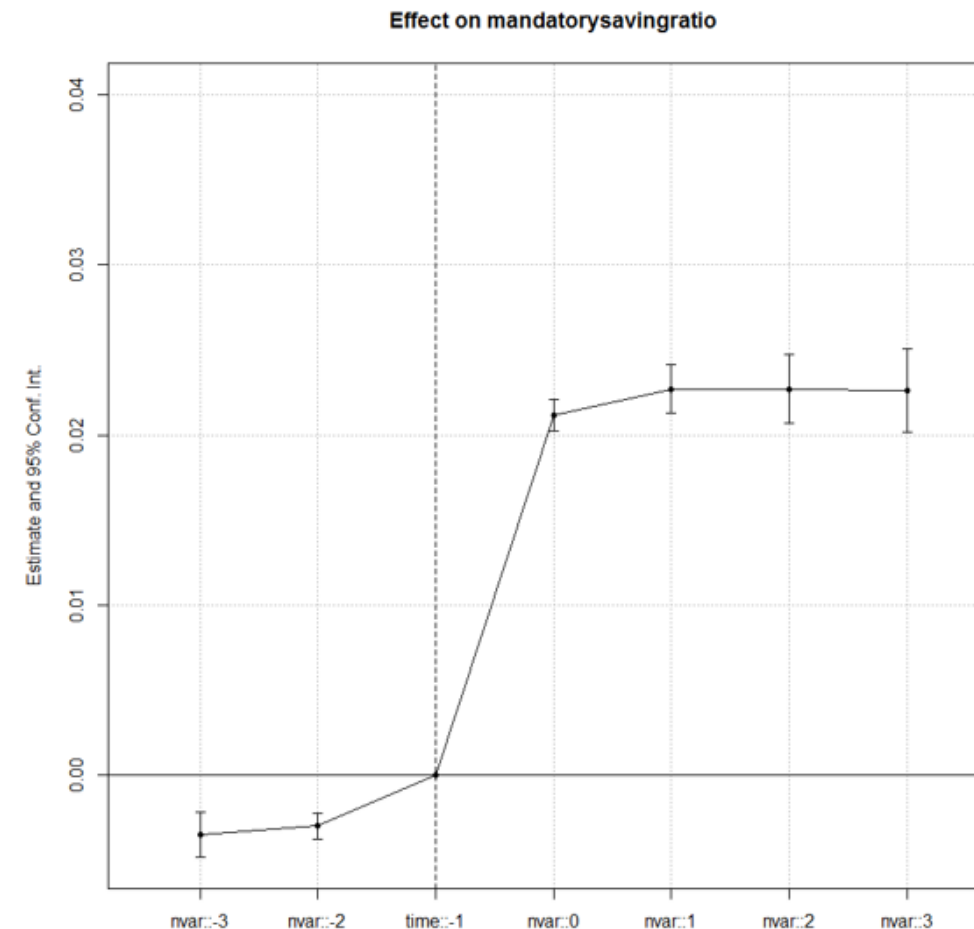
Further evidence

- Job switching
  - Replication of Chetty et al. (2014)
  - Focus on 2008-2016
- We can identify relevant job switches from changes in mandatory contribution rate

$$vs_{i,t} = \alpha + \alpha_t + \beta eventtime^T + \epsilon_{i,t}$$

  - Year 0 denotes year of switch
- Similar results as the main specification:
  - As mandatory saving rises
    - Total saving rises
   - No significant effect on voluntary saving

Robustness check

- Repeat analysis for single adult households only
  - Eliminates households with members belonging to both the treatment and control groups
- Results hold

Table 3: Crowd-out Results.

|	2SLS		Robust 2SLS	
	(1)	(2)	(3)	(4)
$\hat{\rho}$	0.019	−0.052	−0.010	−0.059
	(0.169)	(0.169)	(0.107)	(0.232)
Controls	No	Yes	No	Yes
R^2	<0.001	0.016	<0.001	0.014
N	160,341	160,341	160,341	160,341

Negative sign, but not significant
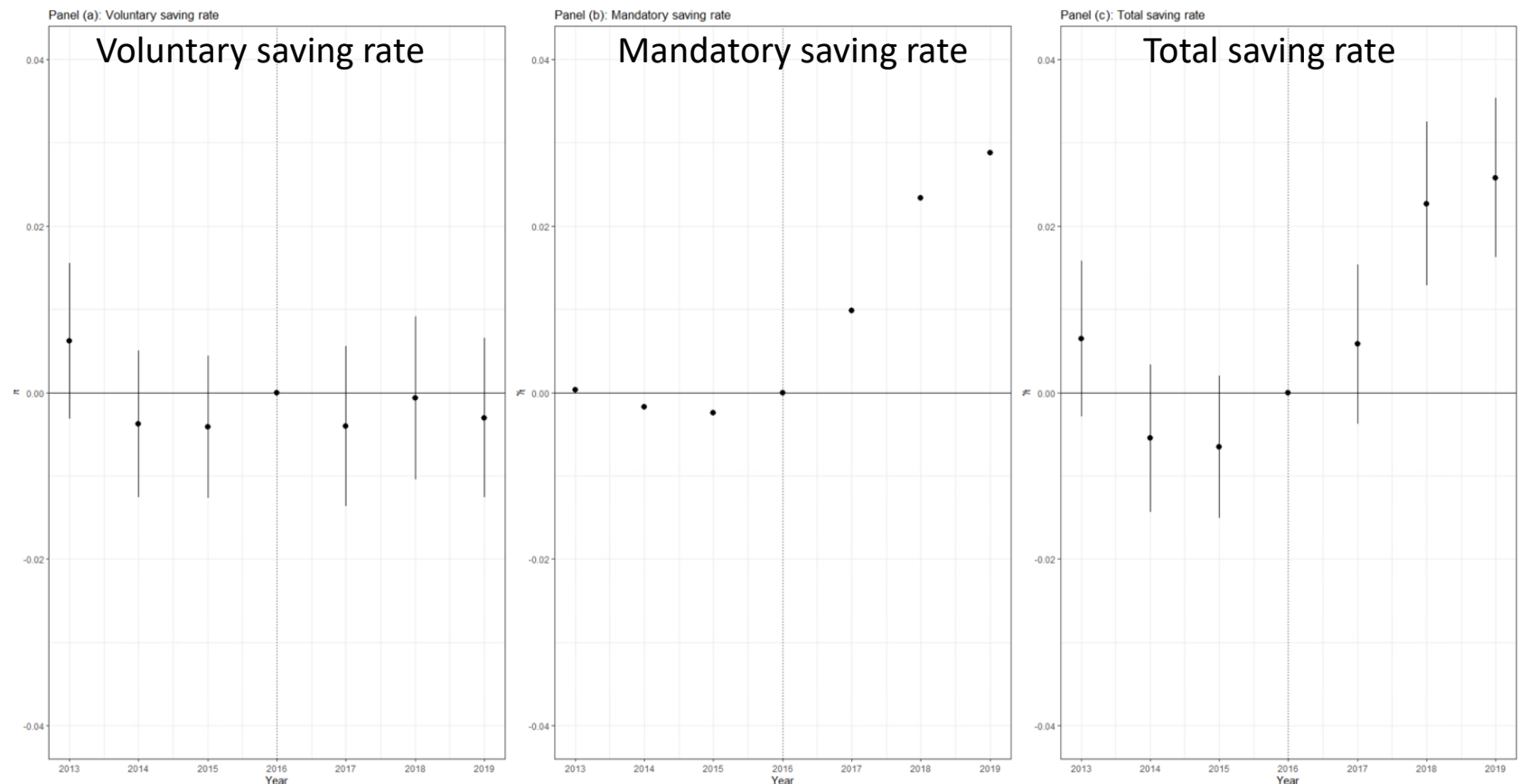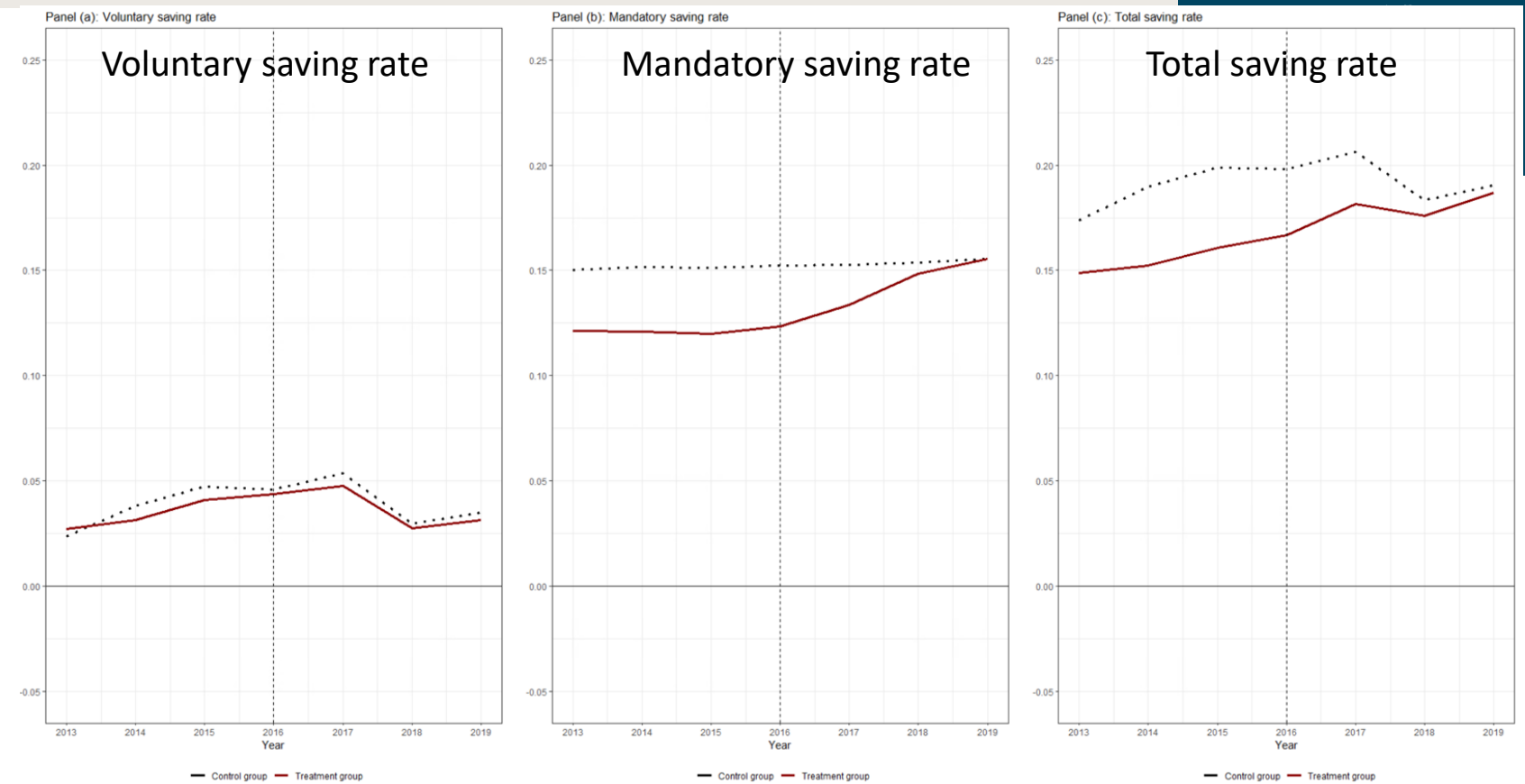
Making sense of the results using a survey

- Survey conducted by the firm Maskína in autumn 2021, 946 individuals responded.

- Four hypotheses for lack of response
  1. Lack of awareness
  2. Liquidity constraints
  3. Saving method
     - Rule of thumb
  4. Saving motives

- Ordered probit

How are your saving today compared to in 2015?

$$\Delta vs_i = \alpha_{j0} + \alpha_{j1} treated_i + \alpha_{j2} G_i^j + \alpha_{j3}(treated_i \times G_i^j) + X_i \beta_j$$

Hypothesis j's group of interest
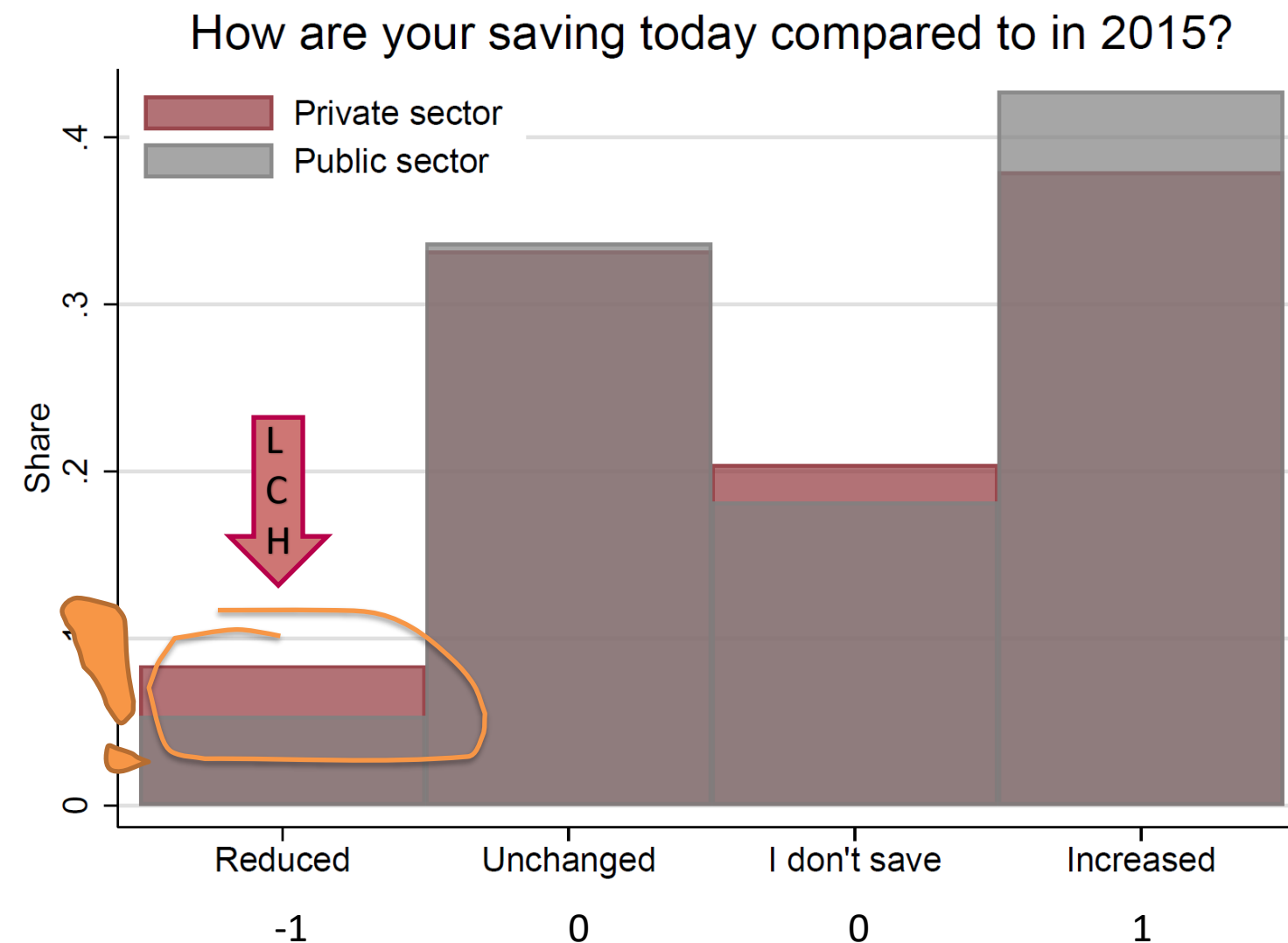
$$\Delta vs_{ij} = \begin{cases} -1 & if\ saving\ has\ reduced \\ 0 & if\ saving\ is\ unchanged \\ 1 & if\ saving\ has\ increased \end{cases}$$

Hypotheses

- Few individuals seem to know of the reform
- Few individuals can correctly approximate their employer's contribution to their pillar 2 pension
- Less than 40% are liquidity constrained, similar across sectors
- Saving mostly motivated by other things than pension

Hyp. 1: Aware

Hyp. 4: Saving motive

Saving motives

$$\Delta vs_i = \alpha_{j0} + \alpha_{j1} treated_i + \alpha_{j2} G_i^j + \alpha_{j3}(treated_i \times G_i^j) + X_i \beta_j$$

- 14% of treatment group reported pension saving as main motive
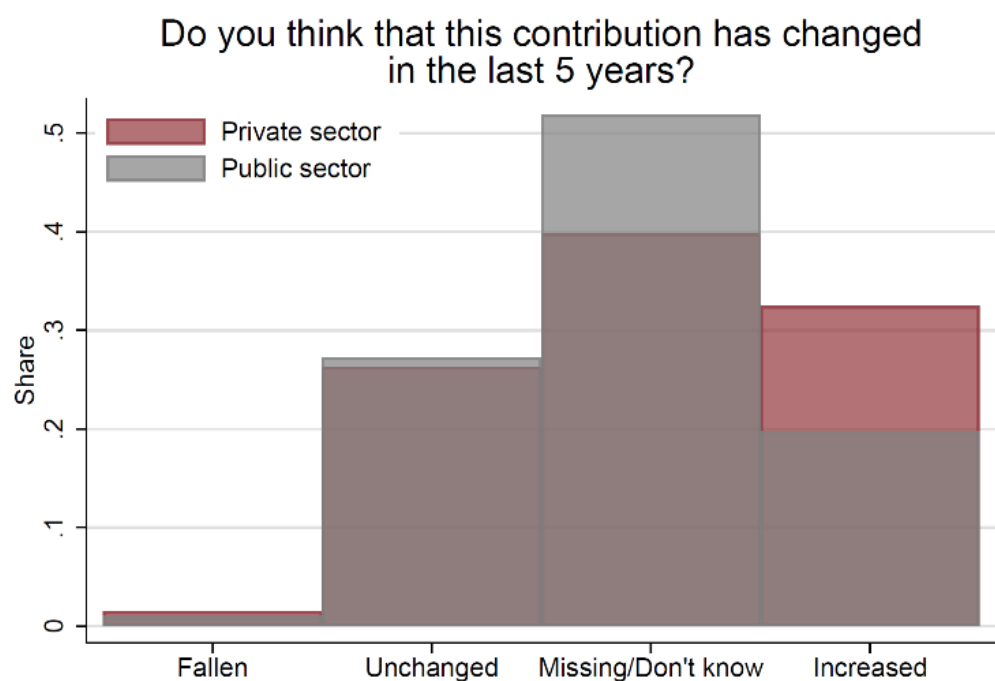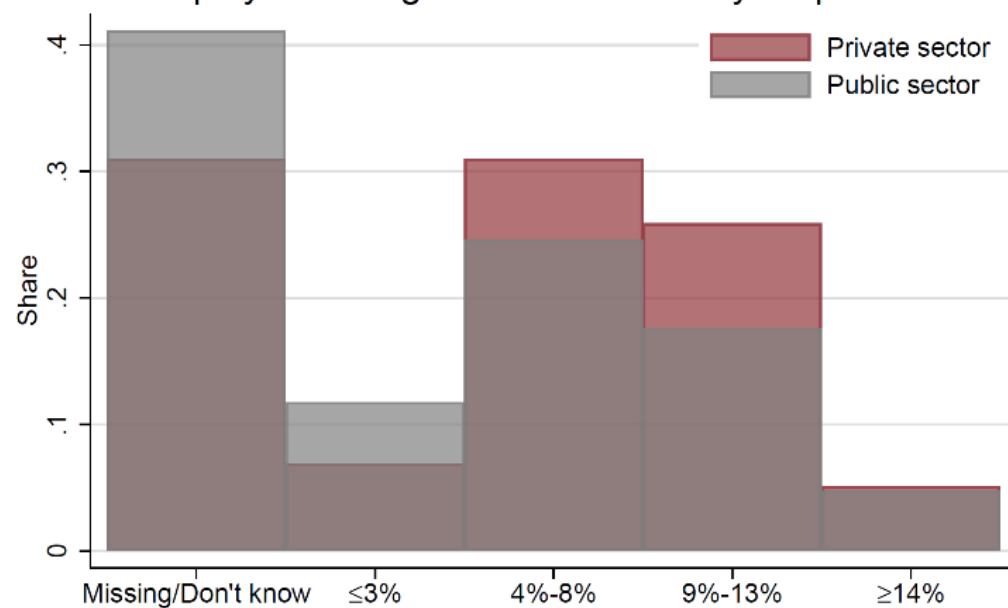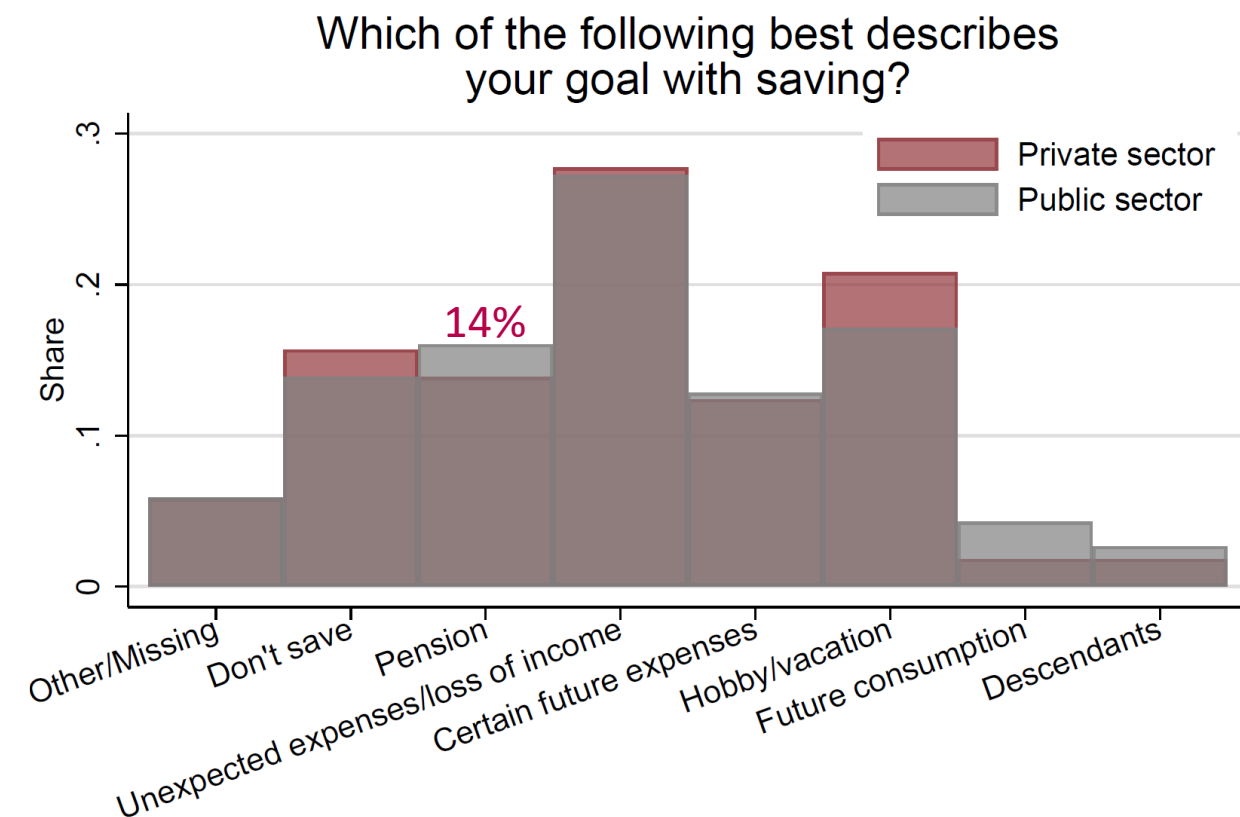
$$\Delta vs_{ij} = \begin{cases} -1 & if\ saving\ has\ reduced \\ 0 & if\ saving\ is\ unchanged \\ 1 & if\ saving\ has\ increased \end{cases}$$

- Point estimate of 27% implies:
  - 13,5-27% of treatment group with pension saving motives responded to reform
    - But only 14% have pension saving motives!
  - → 2-4% responded to the reform
  - <u>Lack of response is (somewhat) explained by few individuals motivated by pension saving</u>

				Aware	Liq.	Meth.	Motive
				Δvs			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.33***	0.37***	0.14	0.12	-0.04	0.15	0.10
	(0.03)	(0.04)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)
Private		-0.08	-0.03	-0.05	0.04	-0.06	0.01
		(0.06)	(0.06)	(0.06)	(0.09)	(0.06)	(0.06)
Aware				0.23			
				(0.15)			
Private × Aware				-0.04			
				(0.17)			
Liquidity					0.31***		
					(0.09)		
Private × Liquidity					-0.10		
					(0.11)		
Target						0.19	
						(0.17)	
Private × Target						0.14	
						(0.20)	
Pension motive							0.37***
							(0.11)
Private × Pension motive							-0.28*
							(0.15)
$P(\alpha_{j1} + \alpha_{j3} = 0)^\dagger$				.601	.355	.667	.049
$P(\alpha_{j2} + \alpha_{j3} = 0)^\ddagger$				.048	.007	.002	.350
R^2	0.00	0.00	0.08	0.09	0.12	0.10	0.10
N	461	461	461	461	461	461	461

<5%

Note: The results from regression (10) using the survey sample restricted to individuals that were 25 to 65 years old and worked in the private or public sector in 2015. Controls used are age, gender, marital status, education, income and sector switch dummies. For those who where public sector workers in 2015, a sector switch dummy generally indicates that they were not employed in 2021. For those who where private sector workers in 2015, a sector switch dummy generally indicates that they were either not employed or self-employed in 2021.† P-value for F-test of $\alpha_{j1} + \alpha_{j3} = 0$. ‡ P-value for F-test of $\alpha_{j2} + \alpha_{j3} = 0$. *** $p < 0.01$,** $p < 0.05$,* $p < 0.1$

Conclusions and implications

- Increase in mandatory saving seems to have little effect on voluntary saving.
- Would we still see this effect if mandatory savings were raised by a huge amount?
- The design of the pension system can effectively play an important role in increasing national saving
- Our results do not provide support for households being rational and forward-looking in their saving behavior.

- Survey results suggest this is caused by:
  - General lack of knowledge about pension the pension system
  - People don't monitor their pension savings
  - Only a handful of individuals are motivated by pension saving