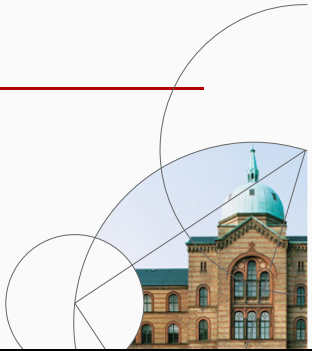
CENTER FOR
ECONOMIC
BEHAVIOR &
INEQUALITY

Do Tax Subsidies for Retirement Saving Impact Total Private Saving? New Evidence on Middle-income Workers

EEA, August 24th 2022

Camilla Skovbo Christensen and Bastian Emil Ellegaard
University of Copenhagen, Center for Economic Behavior and Inequality (CEBI)



Danmarks
Grundforskningsfond
Danish National
Research Foundation

Introduction

Motivation: The Effect of Tax Incentives

This literature: Retirement savings policies

Motivation: The Effect of Tax Incentives

This literature: Retirement savings policies

- Tools to make workers save more for retirement
- Substantial resources on tax subsidies
  - ◇ Poterba, Venti and Wise (1995, 1996), Engen, Gale and Scholz (1996), Bernheim (2002), Attanasio and Rohwedder (2003), Gelber (2011), Friedman (2017), Lavecchia (2019)

Motivation: The Effect of Tax Incentives

This literature: Retirement savings policies

- Tools to make workers save more for retirement
- Substantial resources on tax subsidies
  - ◇ Poterba, Venti and Wise (1995, 1996), Engen, Gale and Scholz (1996), Bernheim (2002), Attanasio and Rohwedder (2003), Gelber (2011), Friedman (2017), Lavecchia (2019)

But can governments impact private savings using tax subsidies? Or do tax subsidies simply cause a shift of savings between different savings accounts?

Motivation: The Effect of Tax Incentives

This literature: Retirement savings policies

- Tools to make workers save more for retirement
- Substantial resources on tax subsidies
  - ◇ Poterba, Venti and Wise (1995, 1996), Engen, Gale and Scholz (1996), Bernheim (2002), Attanasio and Rohwedder (2003), Gelber (2011), Friedman (2017), Lavecchia (2019)

But can governments impact private savings using tax subsidies? Or do tax subsidies simply cause a shift of savings between different savings accounts?

Concept: Crowd-out

- Tax subsidies in retirement accounts can only increase private savings if the change in retirement savings does not fully *crowd out* other types of savings.
  - ◇ Chetty et al (2014), Andersen (2018), Goodman (2020)

Results

Goal of this paper: Crowd-out responses of middle-income individuals

Results

Goal of this paper: Crowd-out responses of middle-income individuals

Natural experiment: Tax reform in 2018 with new contribution limits to the age pension scheme

Results

Goal of this paper: Crowd-out responses of middle-income individuals

Natural experiment: Tax reform in 2018 with new contribution limits to the age pension scheme

What we find: Less than full crowd-out for middle-income workers

What is new? This is an example of tax subsidies in retirement accounts being effective in changing private savings for middle-income workers

Research Design

The Age Pension Scheme

- *Aldersopsparing* introduced in 2013
- Popular private voluntary pension schemes among middle-income workers

The Age Pension Scheme

- *Aldersopsparing* introduced in 2013
- Popular private voluntary pension schemes among middle-income workers
- Taxation by TTE: Contributions are taxed, return on investment is taxed, while payouts are exempted

The Age Pension Scheme

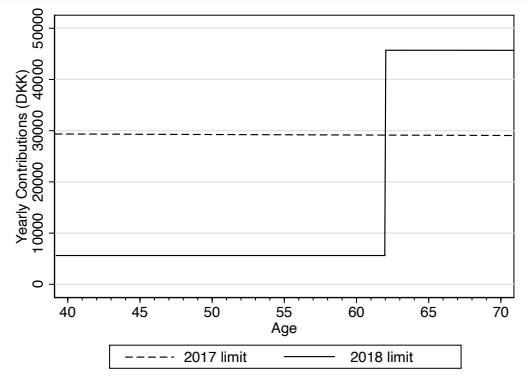
- *Aldersopsparing* introduced in 2013
- Popular private voluntary pension schemes among middle-income workers
- Taxation by TTE: Contributions are taxed, return on investment is taxed, while payouts are exempted
- Tax reform in 2018: New age-dependent contribution limits.
  - Tax penalty of 20 pct. of exceeding contributions
  - Focus: Individuals subject to the lower contribution limit

Table 1: Age Pension Scheme: Annual Contribution Limits, DKK (USD)

	2017	2018	2019
More than five years until retirement	29,600 (4,200)	5,100 (700)	5,200 (750)
Less than five years until retirement	29,600 (4,200)	46,000 (6,500)	48,000 (6,800)

Research Design

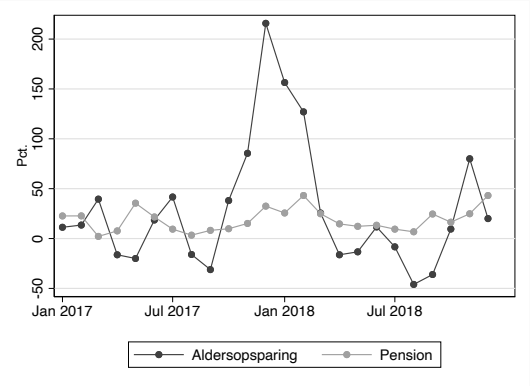
Figure 1: Illustration of the Changes in the Age Pension Scheme



Results

Awareness

Figure 2: Excess Google Searches: "Aldersopsparing" and "Pension"



Data

Data:

- High-quality administrative data from Statistics Denmark
- Data on retirement contributions, income, assets, liabilities, and demographics
- Estimation sample: Age 18-57, positive *private* contributions to the age pension scheme, no self-employed

Distribution of contributions

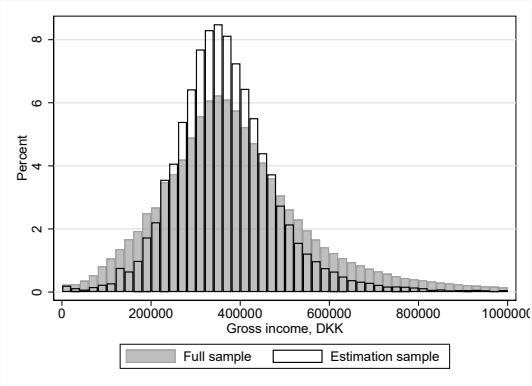
Data

Data:

- High-quality administrative data from Statistics Denmark
- Data on retirement contributions, income, assets, liabilities, and demographics
- Estimation sample: Age 18-57, positive *private* contributions to the age pension scheme, no self-employed

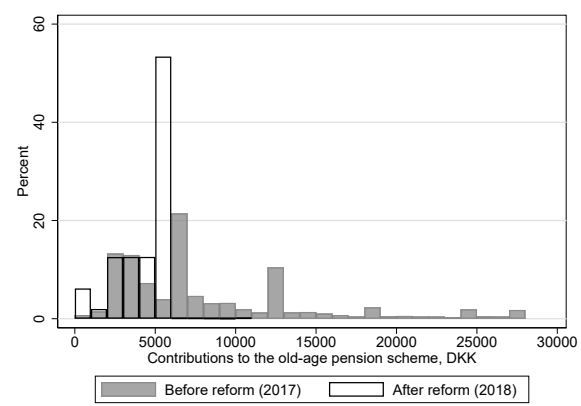
Distribution of contributions

Figure 3: Distribution of gross income in full sample and estimation sample



Contributions Before and After The Reform

Figure 4: Annual contributions before and after the reform in the estimation sample



Empirical Framework

We estimate crowd-out using 2SLS

- $A_{i,t}$: Individual i's contributions to the age pension scheme in year t
- $S^F_{i,t}$: Individual i's post-tax savings in a financial account F (annuity pension, life-long pension, bank deposits, stocks, investment shares, bank debt repayments or mortgage debt repayments)

We estimate crowd-out using 2SLS

- $A_{i,t}$: Individual i's contributions to the age pension scheme in year t
- $S^F_{i,t}$: Individual i's post-tax savings in a financial account F (annuity pension, life-long pension, bank deposits, stocks, investment shares, bank debt repayments or mortgage debt repayments)

First and second stage equations:

$$A_{i,t} = \lambda_i + \beta \text{post}_{i,t} + \delta \text{post}_{i,t} \times \text{treat}_i + X'_{i,t}\beta_X + \eta_{i,t} \quad (1)$$

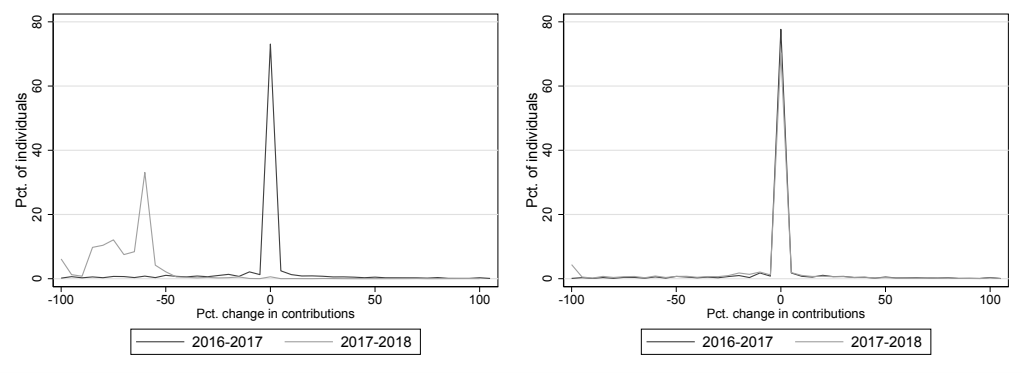
$$S^F_{i,t} = \lambda_i + \beta \text{post}_{i,t} + \phi_F(-A_{i,t}) + X'_{i,t}\beta_X + \varepsilon_{i,t} \quad (2)$$

ϕ_F is the crowd-out parameter of interest.

- If $\phi_F < 1$: Less than full crowd-out

Compliance

Figure 5: Percentage Change in Age Contributions

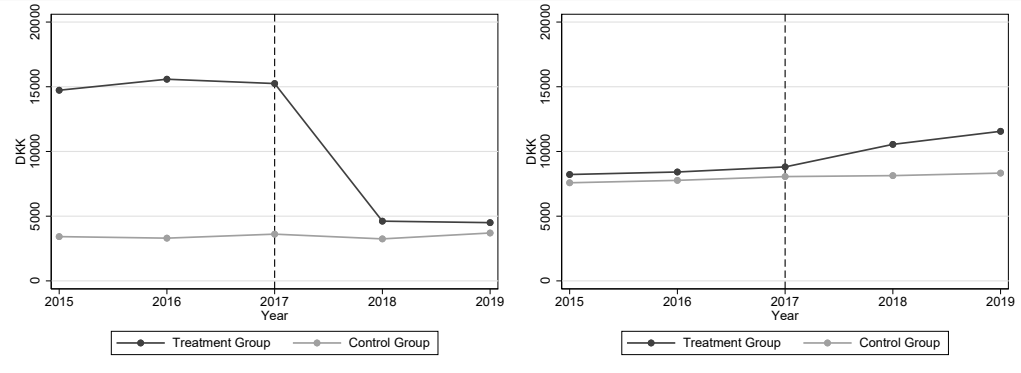


(a) Treatment Group

(b) Control Group

Trends: Age pension contributions and annuity contributions

Figure 6: Mean Savings

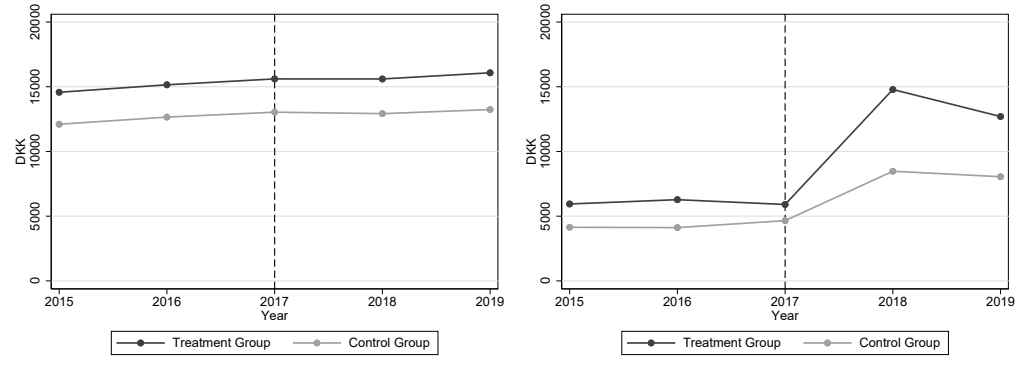


(a) Age pension contributions

(b) Annuity pension contributions

Trends: Life-long contributions and bank deposits

Figure 7: Mean Savings

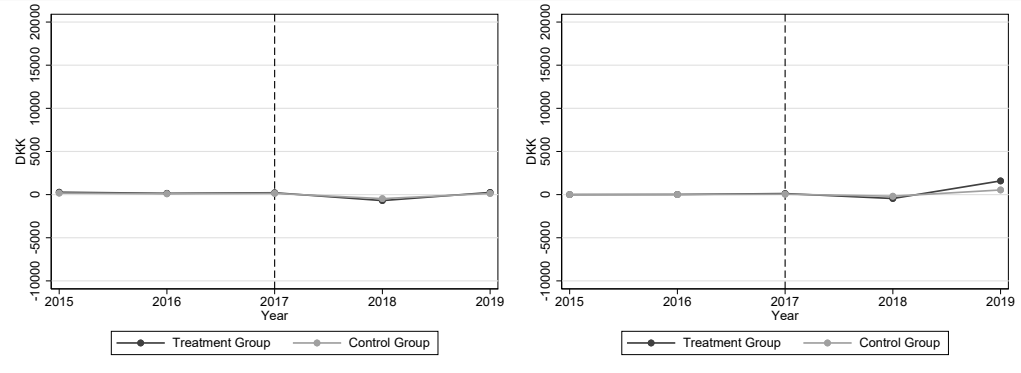


(a) Life-long pension contributions

(b) Bank deposits

Trends: Stocks and shares in investment funds

Figure 8: Mean Savings

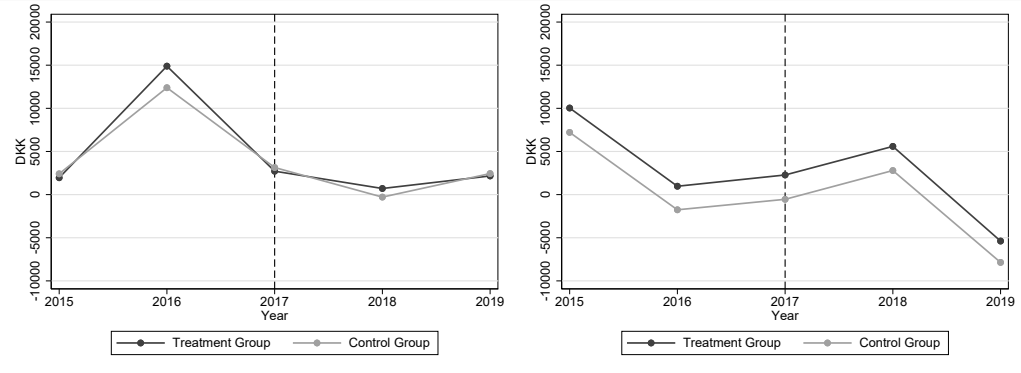


(a) Stocks

(b) Share in investment fund

Trends: Bank debt repayments and mortgage debt repayments

Figure 9: Mean Savings



(a) Bank debt

(b) Mortgage debt

Results

Results: Crowd-out

Table 2: Crowd-out Results

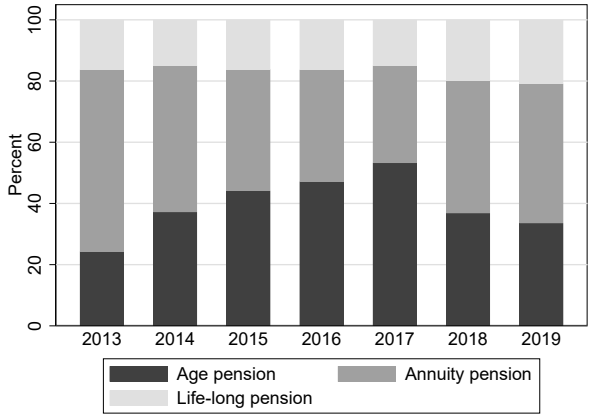
	Explanatory variable: Age pension contributions		
	Main results	Robustness: Not liq. constr.	Robustness: Different sample
Dependent variable	(1)	(2)	(3)
Retirement crowd-out	**0.199**	0.203	0.108
95 pct. CI	**[0.170,0.227]**	[0.164,0.242]	[0.053,0.163]
Total crowd-out	**0.630**	0.588	0.563
95 pct. CI	**[0.460,0.801]**	[0.356,0.820]	[0.231,0.896]
Clusters	30,702	16,230	5,005

Full table | First stage | Robustness | Research design

Appendix

Distribution of Private Retirement Contributions

Figure 10: Private Retirement Contributions Back



Results: First Stage

Table 3: Effect of the Policy Change on Age Pension Contributions

	Main results (1)	Without controls (2)
ATT	-10,364*** (46.124)	-10,372*** (46.101)
Controls	Yes	No
R^2	0.66	0.66
Observations	122,808	122,808
Clusters	30,702	30,702

Results: Crowd-out (Full table)

Table 4: Crowd-out Results Back

	Explanatory variable: Age pension contributions		
	Main results	Robustness: Not liq. constr.	Robustness: Different sample
Dependent variable	(1)	(2)	(3)
Annuity pensions	0.173***	0.176***	0.106***
	(0.006)	(0.008)	(0.012)
Life-long pensions	0.026*	0.027	0.001
	(0.018)	(0.007)	(0.026)
Bank deposits	0.455***	0.467***	0.267*
	(0.052)	(0.078)	(0.150)
Stocks	-0.029***	-0.023***	0.003
	(0.002)	(0.004)	(0.010)
Share in inv. fund	-0.028***	0.028***	0.044***
	(0.001)	(0.002)	(0.015)
Bank debt repayments	0.044	0.015	0.139**
	(0.048)	(0.057)	(0.071)
Mortgage repayments	-0.010	-0.046	0.002
	(0.047)	(0.061)	(0.034)
Retirement crowd-out	**0.199**	0.203	0.108
95 pct. CI	**[0.170,0.227]**	[0.164,0.242]	[0.053,0.163]
Total crowd-out	**0.630**	0.588	0.563
95 pct. CI	**[0.460,0.801]**	[0.356,0.820]	[0.231,0.896]
N	122,808	64,920	20,020
Clusters	30,702	16,230	5,005

Crowd-out: Robustness

Table 5: Crowd-out Results Back

	Explanatory variable: Age pension contributions		
	Tests of:		
	Not liq. constr.	Mean reversion	Retirement subsidy
Dependent variable	(1)	(2)	(3)
Annuity pensions	0.176***	0.171***	0.185***
	(0.008)	(0.006)	(0.007)
Life-long pensions	0.027	0.022	0.028***
	(0.018)	(0.014)	(0.007)
Bank deposits	0.467***	0.480***	0.450**
	(0.078)	(0.052)	(0.057)
Stocks	-0.023***	-0.029***	-0.026***
	(0.004)	(0.002)	(0.003)
Share in invest. fund	-0.028***	-0.028***	-0.027***
	(0.002)	(0.001)	(0.001)
Bank debt repayments	0.015	0.053	0.045
	0.057	(0.048)	(0.054)
Mortgage repayments	-0.046	-0.010	-0.017
	(0.061)	(0.046)	(0.052)
Retirement crowd-out	0.203	0.193	0.214
95 pct. CI	[0.164,0.242]	[0.182,0.211]	[0.195,232]
Total crowd-out	0.588	0.659	0.639
95 pct. CI	[0.356,0.820]	[0.490,0.830]	[0.451,0.828]
N	64,920	117,444	102,648
Clusters	16,230	29,361	25,662