# **Online Appendix**

"Public Pensions and Private Savings" By Esteban García-Miralles and Jonathan M. Leganza

# Appendix A Additional Figures and Tables

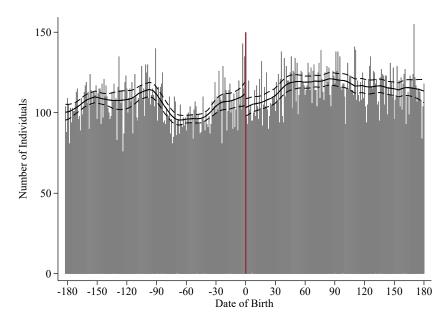


Figure A.1: Histogram of the Running Variable

Notes: This figure depicts the density of the running variable, birthdate. The graph plots a histogram of the running variable for the entire analysis sample. Superimposed on top of the histogram are smoothed values and confidence intervals from local polynomial regressions of the number of individuals on birthdate. A formal density test as proposed by Cattaneo, Jansson and Ma (2019) using our baseline RD bandwidth of 74 days results in a p-value of 0.125.

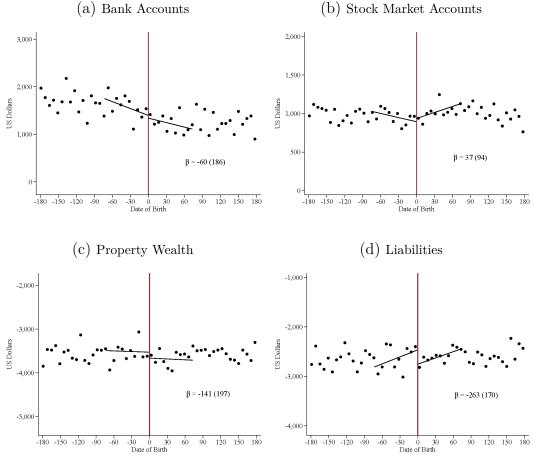


Figure A.2: Anticipatory Savings Responses for Non-Retirement Savings Components

Notes: This figure illustrates the effect of the reform on key outcome variables over the anticipation time period. Each RD graph (a)-(d) corresponds to a separate outcome variable averaged over the three-year anticipation period, from 2011 to 2013. The graphs plot average outcomes in one-week date-of-birth bins. The maroon vertical lines designate the January 1, 1954 birthdate cutoff. The superimposed regression lines are based on the underlying unbinned data.

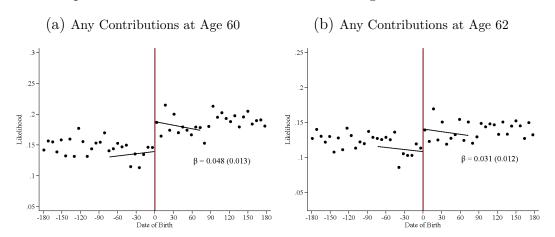


Figure A.3: Impact on Indicator Variables for Contributing to Personal Retirement Plans

Notes: This figure illustrates the effect of the reform on indicators for contributing to personal retirement plans during the critical years. Graph (a) corresponds to 2014, the first critical year, when individuals born at the cutoff date are age 60. Graph (b) corresponds to 2016, the second critical year, when individuals born at the cutoff date are age 62. The graphs plot average outcomes in one-week date-of-birth bins. The maroon vertical lines designate the January 1, 1954 birthdate cutoff. The superimposed regression lines are based on the underlying unbinned data.

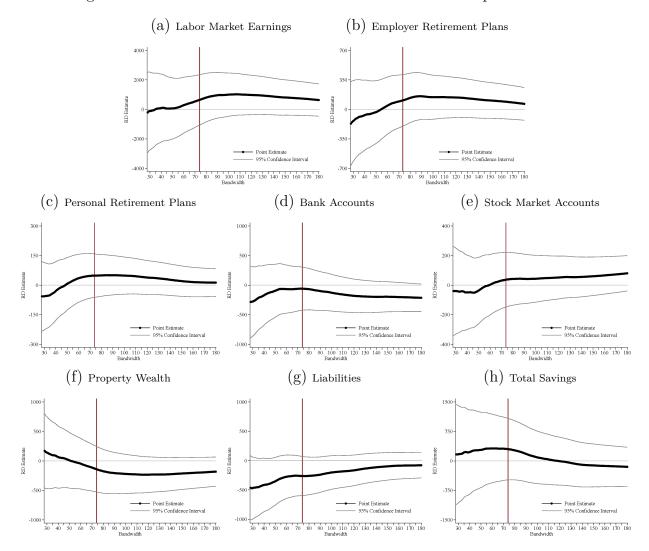


Figure A.4: Robustness: Bandwidth Selection for the Anticipation Period

Notes: This figure illustrates how our RD estimates over the anticipation time period change with the bandwidth. Each graph (a)–(h) corresponds to a different key outcome variable and plots RD estimates and 95-percent confidence intervals as we vary the bandwidth from 28 days to 180 days.

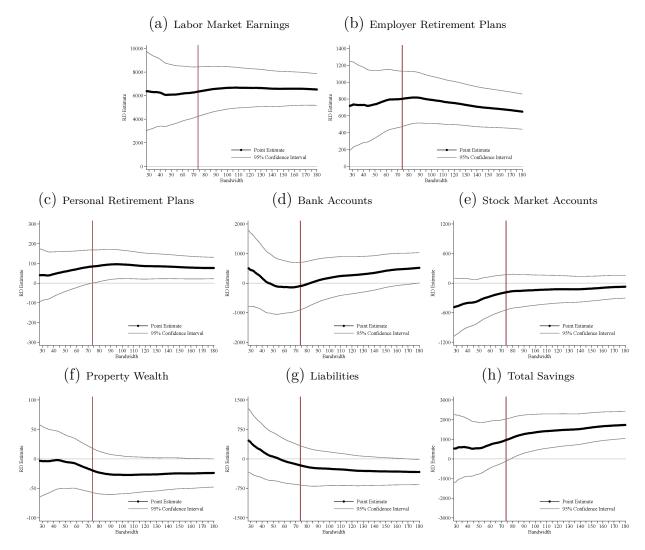


Figure A.5: Robustness: Bandwidth Selection for the First Critical Age

Notes: This figure illustrates how our RD estimates during the first critical year change with the bandwidth. Each graph (a)–(h) corresponds to a different key outcome variable and plots RD estimates and 95-percent confidence intervals as we vary the bandwidth from 28 days to 180 days.

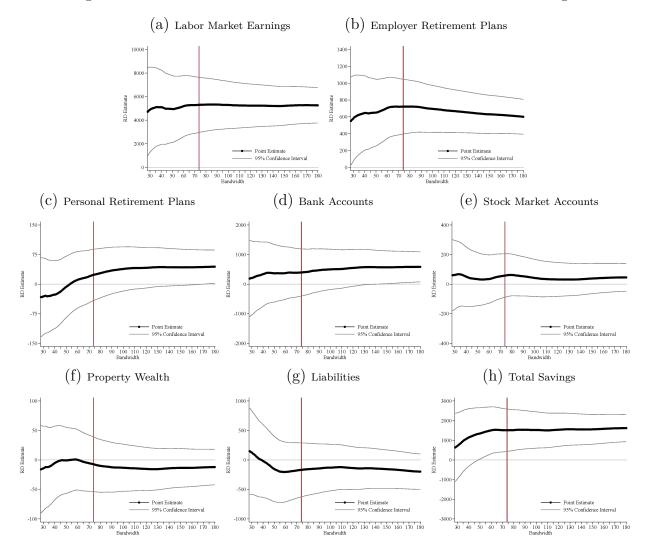


Figure A.6: Robustness: Bandwidth Selection for the Second Critical Age

Notes: This figure illustrates how our RD estimates during the second critical year change with the bandwidth. Each graph (a)–(h) corresponds to a different key outcome variable and plots RD estimates and 95-percent confidence intervals as we vary the bandwidth from 28 days to 180 days.

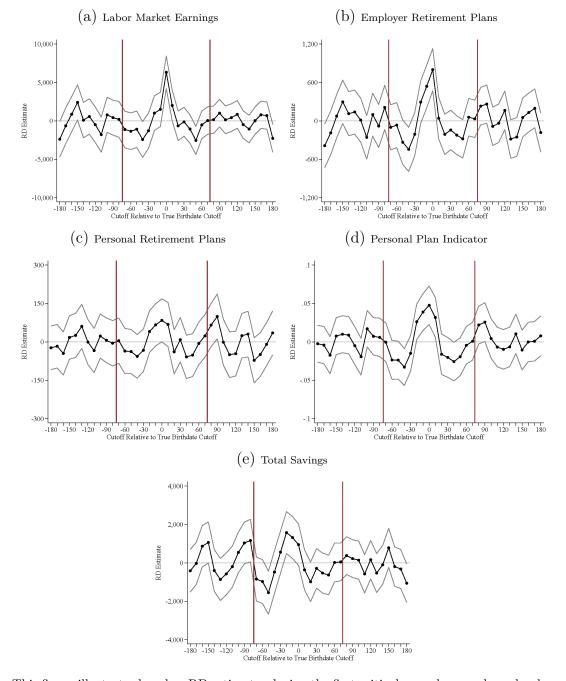


Figure A.7: Placebo Exercise: Pseudo Birthdate Cutoffs at Age 60

Notes: This figure illustrates how key RD estimates during the first critical year change when placebo cutoffs are used rather than the true cutoff. Each graph (a)–(e) plots RD estimates and 95-percent confidence intervals using the baseline RD estimating specification at various pseudo cutoffs. Because we use a bandwidth equal to 74 days on either side of the cutoff, the estimates between the maroon vertical lines include the true discontinuity.

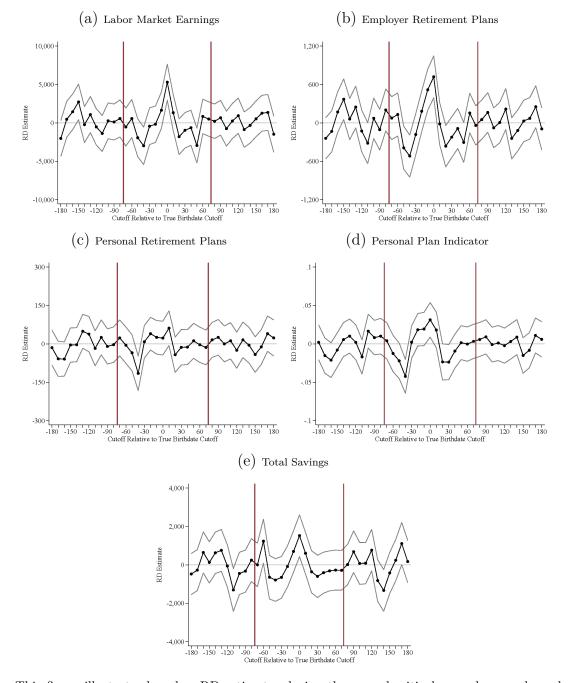
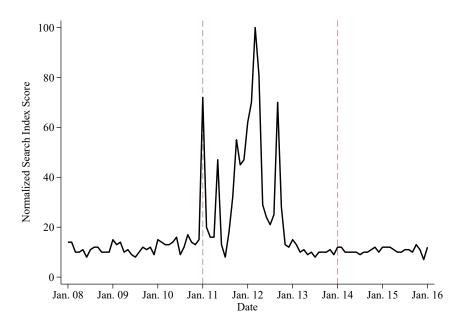


Figure A.8: Placebo Exercise: Pseudo Birthdate Cutoffs at Age 62

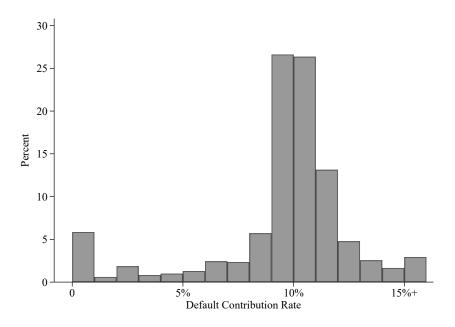
Notes: This figure illustrates how key RD estimates during the second critical year change when placebo cutoffs are used rather than the true cutoff. Each graph (a)–(e) plots RD estimates and 95-percent confidence intervals using the baseline RD estimating specification at various pseudo cutoffs. Because we use a bandwidth equal to 74 days on either side of the cutoff, the estimates between the maroon vertical lines include the true discontinuity.





Notes: This figure plots a Google Trends search intensity index for "efterløn," which is the Danish word for the VERP program, between January 1, 2008 and January 1, 2016. The first vertical line marks the announcement of the reform, and the second vertical line marks the implementation.

Figure A.10: Distribution of Firm Default Contribution Rates



Notes: This figure plots the distribution of our proxy measure for firm default contribution rates for the individuals in our analysis sample, defined during the year 2010.

	Number of Individuals (1)
Restriction 1: Born around the cutoff date	71,095
Restriction 2: Regular participatory contributions to VERP	47,047
Restriction 3: Balanced sample	$43,\!348$
Restriction 4: Exclude the self-employed	40,042

### Table A.1: Analysis Sample Construction

Notes: This table documents the impact of our four main sample restrictions, as detailed in Section III. Our first restriction is to include only Danes born within six months of the cutoff date, January 1, 1954. This leaves us with 71,095 individuals. Our second restriction is to include only those making regular participatory contributions to the VERP scheme, defined as making contributions in 70% of pre-announcement years between 2001 and 2010, which leaves us with 47,047 individuals. Our third restriction is to balance the sample by excluding individuals not in the data for each of the years between 2006 and 2018, which leaves us with 43,348 individuals. Our fourth restriction is to drop the self-employed, defined over the pre-announcement period using Statistics Denmark's definition of an individual's main source of income, which leaves us with our analysis sample of 40,042 individuals.

	RD Estimate (1)	Mean (2)
Male	0.019 (0.0173)	0.46
Married	$0.013 \\ (0.0156)$	0.72
Residence in Hovedstaden	-0.001 (0.011)	0.11
Residence in Sjælland	-0.014 (0.015)	0.25
Residence in Syddanmark	-0.003 (0.015)	0.24
Residence in Midtjylland	$0.020 \\ (0.015)$	0.24
Residence in Nordjylland	-0.003 (0.013)	0.15
Obs.	15,789	

Table A.2: RD Estimates for Control Variables as Outcomes

Notes: This table reports RD estimates for the impact of the reform on (pre-determined) control variables. Control variables include an indicator for being male, an indicator for being married in 2010, and indicators for residing in each of the five regions of Denmark in 2010. The five regions are Hovedstaden (the capital region containing Copenhagen), Sjælland, Syddanmark, Midtjylland (containing Aarhus), and Nordjylland. The RD estimates come from estimating equation (6), except without any control variables on the right-hand side, but rather control variables on the left-hand side as outcomes. The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff and employ triangular weights. Robust standard errors are in parentheses.

	RD Estimate (1)	Mean (2)
Fraction of Years Contributing between ages 57 and 59	$0.012 \\ (0.014)$	0.33
Any Contributions at age 60	$0.048 \\ (0.013)$	0.14
Any Contributions at age 61	$0.024 \\ (0.012)$	0.13
Any Contributions at age 62	$0.031 \\ (0.012)$	0.11
Any Contributions at age 63	$0.013 \\ (0.011)$	0.10
Any Contributions at age 64	$0.008 \\ (0.011)$	0.10
Obs.	15,789	

Table A.3: RD Estimates on Indicator Variables for Contributing to Personal Retirement Plans

Notes: This table reports RD estimates for the impact of the reform on indicators for contributing to personal retirement plans. The RD estimates come from estimating equation (6). The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff, employ triangular weights, and include as controls gender, marital status as of 2010, and indicators for region of residence as of 2010. Robust standard errors are in parentheses.

	Earnings (1)	Employer Plans (2)	Personal Plans (3)	Bank Accounts (4)	Stocks     (5)	Property (6)	Liabilities (7)	Total Savings (8)
A. Anticipatory Responses								
A1. Baseline	$648 \\ (873)$	$109 \\ (156)$	$49 \\ (56)$	-60 (186)	$37 \\ (94)$	-141 (197)	-263 (170)	$301 \\ (400)$
A2. No Controls	$1,005 \\ (894)$	$159 \\ (158)$	$51 \\ (56)$	-56 (186)	$43 \\ (94)$	-136 (203)	-290 (171)	$399 \\ (406)$
A3. No Tri. Weights	1,308 (801)	211 (142)	$55 \\ (52)$	-75 (169)	$79 \\ (87)$	-325 (181)	-280 (157)	197 (364)
B. Critical Age 60					( )			
B1. Baseline	$6,325 \\ (1,079)$	$800 \\ (169)$	$84 \\ (43)$	-105 (412)	-191 (184)	-19 (19)	-157 (257)	$939 \\ (552)$
B2. No Controls	$6,734 \\ (1,103)$	855 (172)	$87 \\ (43)$	-104 (412)	-173 (185)	-25 (20)	-184 (258)	$1,046 \\ (556)$
B3. No Tri. Weights	$6,777 \\ (986)$	$838 \\ (153)$	$   \begin{array}{c}     102 \\     (40)   \end{array} $	$127 \\ (377)$	-53 (168)	-38 (18)	-347 (235)	$1,505 \\ (503)$
C. Critical Age 62								
C1. Baseline	5,299 (1,201)	$721 \\ (167)$	$23 \\ (33)$	$391 \\ (410)$	$57 \\ (75)$	$^{-7}(24)$	-171 (235)	$1,510 \\ (553)$
C2. No Controls	5,769 (1,237)	$776 \\ (171)$	$\begin{array}{c} 26 \\ (33) \end{array}$	$408 \\ (410)$	$59 \\ (76)$	-14 (24)	-177 (235)	$1,611 \\ (557)$
C3. No Tri. Weights	5,433 (1,101)	725 (152)	$47 \\ (31)$	$439 \\ (372)$	$85 \\ (69)$	-19 (22)	-121 (218)	$1,518 \\ (507)$

Table A.4: Robustness: Specification Checks

Notes: This table reports results from assessing the sensitivity of the RD estimates to various specification checks. The panels indicate the time period to which the estimates correspond. Each column corresponds to a different main outcome variable. Each row indicates the regression specification used. The first row within each panel reproduces baseline estimates for ease of comparison, whereas the second row drops control variables from the regressions, and the thrid row does not use triangular weights. Robust standard errors are in parentheses.

	Ages 57–59	
	RD Estimate (1)	Mean (2)
A: Labor Supply		
Average Earnings	$590 \\ (883)$	55,790
<b>B:</b> Retirement Accounts		
Average Contributions to Employer Plans	$101 \\ (158)$	6,080
Average Contributions to Personal Plans	48     (57)	884
Average Contributions to Roth-Style Plans	$\begin{array}{c} 0 \\ (3) \end{array}$	25
Average Distributions from Retirement Plans		636
C: Non-Retirement Savings		
Average Change in Bank Accounts	-4 (190)	1,609
Average Change in Stock Market Accounts	$27 \\ (96)$	964
Average Change in Property Wealth	-218 (198)	-3,488
Average Change in Liabilities	-265 (170)	-2,641
D: Total Savings		
Average Total Savings	$214 \\ (405)$	8,078
Average Total Retirement Savings	144 (237)	6,352
Average Total Non-Retirement Savings	$70 \\ (313)$	1,726
Obs.	15,145	

Table A.5: Robustness: Excluding Those with Real Estate Transactions

Notes: This table reports RD estimates on outcomes over the anticipation time period for a subsample that excludes individuals with real estate transactions. Outcome variables are averaged over 2011 to 2013. Panel A presents results on labor supply. Panel B presents results on retirement savings. Panel C presents results on non-retirement savings. Panel D presents results on total savings. The RD estimates come from estimating equation (6). The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff, employ triangular weights, and include as controls gender, marital status as of 2010, and indicators for region of residence as of 2010. Robust standard errors are in parentheses.

	Earnings (1)	Employer Plans (2)	Personal Plans (3)	Bank Accounts (4)	Stocks (5)	Property (6)	Liabilities (7)	Total Savings (8)
Anticipation (Ages 57–59)	$625 \\ (807)$	$99 \\ (133)$	$41 \\ (28)$	41(28)	-48 (132)	$^{-3}$ (29)	-129 (153)	$173 \\ (307)$
Age 60	$6,172 \\ (1,016)$	754 (148)	55 (18)	$^{-16}(290)$	-23 (51)	-6 (16)	-128 (152)	$951 \\ (375)$
Age 61	$1,840 \\ (1,150)$	$298 \\ (154)$	$23 \\ (14)$	-292 (288)	$31 \\ (47)$		-217 (156)	$322 \\ (411)$
Age 62	5,167 (1,135)	$673 \\ (147)$	17     (9)	405     (287)	14     (18)	7 (19)	-100 (134)	$1,254 \\ (395)$
Age 63	$2,620 \\ (1,118)$	254 (139)	$\begin{pmatrix} 6\\ (4) \end{pmatrix}$	$349 \\ (288)$		-12 (39)	-271 (144)	$872 \\ (398)$
Age 64	$810 \\ (1,086)$	$23 \\ (124)$	$2 \\ (2)$	$83 \\ (359)$	-79 (79)	-24 (30)	-138 (135)	-17 (464)
Obs.				15,78	89			

Table A.6: Robustness: Additional Winsorization of Outcome Variables

Notes: This table reports RD results for outcomes that are more stringently winsorized, at the 10th and 90th percentiles. Each column corresponds to a different main outcome variable, and each row indicates the time period. The RD estimates come from estimating equation (6). The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff, employ triangular weights, and include as controls gender, marital status as of 2010, and indicators for region of residence as of 2010. Robust standard errors are in parentheses.

	Ages $54-56$	
	RD Estimate (1)	Mean (2)
A: Labor Supply		
Average Earnings	$829 \\ (784)$	59,917
<b>B:</b> Retirement Accounts		
Average Contributions to Employer Plans	$69 \\ (171)$	6,639
Average Contributions to Personal Plans		1,280
Average Contributions to Roth-Style Plans	0(.)	0
Average Distributions from Retirement Plans	-60 (121)	381
C: Non-Retirement Savings		
Average Change in Bank Accounts	-36 (183)	1,489
Average Change in Stock Market Accounts	-23 (39)	-182
Average Change in Property Wealth	-472 (542)	-12,727
Average Change in Liabilities	31 (217)	-632
D: Total Savings	× ,	
Average Total Savings	-346 (601)	-3,251
Average Total Retirement Savings	216 (226)	7,538
Average Total Non-Retirement Savings	-562 (590)	-10,789
Obs.	15,789	

Table A.7: Placebo Exercise: Pre-Announcement Period

Notes: This table reports RD estimates on outcomes over the pre-announcement placebo time period. Outcome variables are averaged over 2008 to 2010. Panel A presents results on labor supply. Panel B presents results on retirement savings. Panel C presents results on non-retirement savings. Panel D presents results on total savings. The RD estimates come from estimating equation (6). The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff, employ triangular weights, and include as controls gender, marital status as of 2010, and indicators for region of residence as of 2010. Robust standard errors are in parentheses.

	Age 60	Age 62
	RD Estimate (1)	RD Estimate (2)
A: 1950/1951 Birth Cohorts		
Earnings	-105 (1,120)	-602 (1,162)
Contributions to Employer Plans	-129 (178)	-79 (157)
Contributions to Personal Plans	-3 (71)	-25 (36)
Total Savings	-569 (773)	-367 (618)
Obs.	15,621	15,621
B: 1951/1952 Birth Cohorts		
Earnings	950 $(1,129)$	$1,439 \\ (1,177)$
Contributions to Employer Plans	$175 \\ (173)$	$129 \\ (162)$
Contributions to Personal Plans	$\frac{1}{(65)}$	$13 \\ (34)$
Total Savings	$821 \\ (635)$	$151 \\ (562)$
Obs.	15,620	15,620

Table A.8: Placebo Exercise: Previous Birth Cohorts

Notes: This table reports RD estimates during "critical years" for placebo birth cohorts. Panel A presents results for earnings and contributions to retirement savings accounts using January 1, 1951 as a placebo birthdate cutoff. Column (1) presents results for the year that individuals born on this placebo birthdate cutoff are age 60. Column (2) presents results for the year that individuals born on this placebo birthdate cutoff are age 62. Panel B presents results when using January 1, 1952 as a placebo birthdate cutoff. The RD estimates come from estimating equation (6). The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff, employ triangular weights, and include as controls gender, (pre-determined) marital status, and (pre-determined) indicators for region of residence. Robust standard errors are in parentheses.

	RD Estimate (1)	Mean (2)
Participate in 2011	-0.004 (0.008)	0.94
Participate in 2012	$0.002 \\ (0.009)$	0.93
Participate in 2013	-0.008 (0.009)	0.92
Obs.	15,789	

Table A.9: RD Estimates for VERP Participation

Notes: This table reports RD estimates for the impact of the reform on participatory VERP contributions. The outcome variables are indicators for making qualified contributions to UI funds in each of the three years leading up to the implementation of the reform. The RD estimates come from estimating equation (6). The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff, employ triangular weights, and include as controls gender, marital status as of 2010, and indicators for region of residence as of 2010. Robust standard errors are in parentheses.

	Ages 57–59		
	RD Estimate (1)	Mean (2)	
A: Labor Supply			
Average Earnings	$238 \\ (1,309)$	57,029	
<b>B:</b> Retirement Accounts			
Average Contributions to Employer Plans	$319 \\ (233)$	6,012	
Average Contributions to Personal Plans	$101 \\ (105)$	1,926	
Average Contributions to Roth-Style Plans	3     (7)	48	
Average Distributions from Retirement Plans	167     (247)	729	
C: Non-Retirement Savings			
Average Change in Bank Accounts	$     \begin{array}{c}       140 \\       (301)     \end{array} $	1,561	
Average Change in Stock Market Accounts	$53 \\ (154)$	1,170	
Average Change in Property Wealth	-105 (303)	-3,780	
Average Change in Liabilities	-339 (263)	-2,569	
D: Total Savings			
Average Total Savings		8,777	
Average Total Retirement Savings	$255 \\ (376)$	$7,\!257$	
Average Total Non-Retirement Savings	$426 \\ (490)$	1,520	
Obs.	6,596		

Table A.10: Anticipatory Responses for Users of Personal Retirement Plans

Notes: This table reports RD estimates for the impact of the reform on outcomes over the anticipation time period for the subsample of individuals who had been using personal retirement plans before the announcement of the reform. The subsample is defined as those who made contributions to personal plans in either two or three of the years between 2008 and 2010. Outcome variables are averaged over 2011 to 2013. Panel A presents results on labor supply. Panel B presents results on retirement savings. Panel C presents results on non-retirement savings. Panel D presents results on total savings. The RD estimates come from estimating equation (6). The regressions use separate linear polynomials in the running variable on either side of the birthdate cutoff, employ triangular weights, and include as controls gender, marital status as of 2010, and indicators for region of residence as of 2010. Robust standard errors are in parentheses.

# Appendix B Back-of-the-Envelope Calculation for Anticipatory Savings Responses

Here we carry out the back-of-the-envelope calculation that informs on the expected savings responses over the anticipation time period. We take the retirement response as given. A six-month delay in retirement should give rise to an increase in earnings and a decrease in Old Age Pension benefits. Using pre-period data to guide our calculations, we estimate a positive net effect on income that results from delaying retirement. We then treat this extra income as a pure lifetime income "shock" and calculate the expected declines in savings over the anticipation time period, assuming individuals perfectly smooth consumption.

Our predictions are centered on those induced to retire later due to the reform, namely those who retire right at the key pension eligibility ages. We therefore start by defining individuals who retired at either the first or the second retirement spike, for the treatment and the control group. Specifically, for the control group, we define those retiring at the first spike as those with retirement ages between 60 and 60 and 5 months, and we define those retiring at the second spike as those with retirement ages between 62 and 62 and 5 months. For the treatment group, we define those retiring at the first spike as those with retirement ages between  $60^{\frac{1}{2}}$  and 60 and 11 months, and we define those retiring at the second spike as those with retirement ages between  $62^{\frac{1}{2}}$  and 60 and 11 months, and we define those retiring at the second spike as those with retirement ages between  $62^{\frac{1}{2}}$  and 62 and 11 months.

Those who would have retired at the previous eligibility ages are induced by the reform to work longer. Average pre-period (i.e. 2010) earnings of individuals who ultimately retire at the first spike are \$47,806. Average pre-period earnings of those who ultimately retire at the second spike are \$62,352. Working six more months for each of these groups thus amounts to an expected increase in earnings of \$23,903 and \$31,176, respectively. But retiring later also results in receiving 6 months less of OAP benefits over their lifetime, which amounts to roughly \$7,500. This yields a total increase in income of \$16,403 for those retiring at the first spike and \$23,676 for those retiring at the second spike.

Assuming individuals live until they are 80 years old, they should spread this extra income over the 23 years of life remaining after the announcement of the reform. For those retiring at the first spike, this amounts to an increase in annual consumption of \$713. For those retiring at the second spike, this amounts to an increase in annual consumption of \$1,029.

These calculations are for a subsample of the individuals that we study, but our RD estimates capture aggregate responses, for the entire analysis sample. That is, our analysis sample includes those retiring at the relevant spikes as well as those who retire at other ages. The fraction of people retiring at the first spike as we have defined it amounts to 15.8%, and the fraction of people retiring at the second spike as we have defined it amounts to 10.6%. Thus, the consumption response that we expect to see when studying the population as a whole is: (0.158)(\$703) + (0.106)(\$1,028) = \$220. Since savings is income less consumption, we roughly expect to see a savings response of -\$220 per year in anticipation.

## Appendix C Additional Institutional Details

This section provides additional institutional details that pertain to our analysis time period and the birth cohorts relevant for our study.

#### C.1 Additional Information on Retirement Savings Accounts

Traditional defined contribution retirement savings plans in Denmark can be either employersponsored plans or personal plans. Within each type of plan, there are also three main types of accounts, which differ in the way that they are paid out. Life annuity accounts pay out as annuities for the rest of the account holder's life. Fixed-term annuity accounts pay out as income streams for a designated time period, typically either ten or twenty-five years. Capital accounts pay out as lump sum distributions.

Similar to the U.S. setting, the accounts are tax-advantaged. Contributions to the accounts are tax-deductible. Capital gains in the accounts are taxed upon accrual at approximately 15%, which is typically favorable compared to taxation of capital gains on savings outside of retirement accounts. Payments from life annuity and fixed-term annuity accounts are taxed as regular income, whereas distributions from capital accounts are taxed at approximately 40%.

In 2013, Denmark introduced "Roth-style" retirement plans. Contributions to these accounts are not tax-deductible, but lump sum distributions from the accounts are tax-free. These accounts aimed to replace the traditional capital accounts, as starting in 2013 contributions to capital accounts are no longer tax-deductible.

#### C.2 Additional Information on the Voluntary Early Retirement Pension

Participating in VERP requires making fixed contributions to qualified unemployment insurance (UI) funds during working life. These contributions amount to roughly \$1,000 per year. To be eligible to claim, individuals must have contributed in 25 out of the previous 30 years.

VERP benefits are linked to the UI benefit schedule, but are typically viewed as flat-rate in practice, since they are capped at 91% of the maximum UI benefits. Typically benefit amounts are calculated using the highest twelve months of earnings over the previous two years. Monthly benefits correspond to 90% of these earnings divided by 12. Base benefits are then the minimum of either this amount or 91% of the maximum UI benefits. The maximum VERP benefits amount to roughly \$27,000 per year, in 2010 USD.

Benefits are then subject to means testing, first against assets held in private retirement accounts, which determines base payments for the duration of the program. The government collects information on account balances from banking and financial institutions, usually when workers are around age  $59\frac{1}{2}$ . This information is used to compute base benefits depending on claiming age. Benefits are reduced against assets in retirement accounts at approximately 60% of "could-be annuitized" payments.

In addition to this means testing, benefit payouts are further means tested against income after claiming. Benefits are means tested against drawdown from private retirement accounts, at a rate of around 50%. Benefits are also means tested against hours worked at a rate of 100%. VERP benefits are linked to an hourly rate per month, and each hour of work while on the program reduces VERP benefits by one hour.

Two key rules serve as defining features of the VERP program. The "transition rule" stipulates conditions under which individuals can transition to the VERP program. The regulation states that, to be eligible to claim VERP benefits, one must be "available to the labor force." Individuals can transition to VERP either from employment or from formal unemployment, which involves meeting UI requirements such as searching for jobs. An important implication of this rule is that an individual who retires and exits the labor force before reaching VERP eligibility age will not satisfy the transition rule and will not be eligible for benefits.

The "two-year rule" provides incentives for individuals to retire and transition to the VERP program two years after the earliest eligibility age. To satisfy the rule, individuals must work through the first two years of the VERP program. It is not enough to simply delay claiming of benefits. Satisfying the rule leads to three financial bonuses. First, base benefits for the duration of the VERP program are no longer means-tested against wealth held in private retirement accounts. Second, benefit amounts are weakly increased, as benefits become tied to 100% of the maximum UI benefits, rather than 91%. Third, every additional quarter worked after satisfying the two-year rule results in a tax-free lump sum payment equal to approximately \$2,250.

#### C.3 Additional Information on the Old Age Pension

The OAP provides near-universal old-age benefits for Danes. Benefits are proportionally reduced for individuals that have lived in Denmark fewer than forty years. Benefit amounts are comprised of three main components. First, a base benefit of approximately \$10,000 per year is provided to all individuals. This amount is subject to an earnings test where benefits are reduced at a rate of 30% against earnings above roughly \$40,000. Second, a pension allowance is provided. The allowance is approximately \$10,000 per year for single individuals and \$5,000 for married individuals. This amount is subject to an income test where benefits are reduced at a rate of roughly 30% against earnings above \$9,500. Third, there is a pension supplement available for the poorest pensioners. This amounts to about \$1,000 per year and is delivered to only those with low levels of assets. In general, due to a 2004 reform, OAP benefits can be deferred with adjustments that are approximately actuarially fair.

# References

Cattaneo, Matias D, Michael Jansson, and Xinwei Ma. 2019. "Simple local polynomial density estimators." Journal of the American Statistical Association, 1–7.