

Online Appendix

The Consumption Effects of the 2007-2008 Financial Crisis: Evidence from Households in Denmark

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Table A1: Elements in the imputation of spending

<i>Disposable income</i>	=	Total realized income
		- Taxes
		- Interest payments
		+ Payments from private pension accounts (net of taxes)
		+ Imputed capital gains from stocks
<i>Net wealth</i>	=	Market value of securities
		+ Market value of savings and checking accounts
		- Market value of mortgage loans
		- Market value of bank debt
		- Market value of other loans

Note: Imputed capital gains from stocks is the market value of stocks in the beginning of the period multiplied by the growth in the stock price index

Table A2: Fully dynamic versions of compact models

	Table 3 - debt				Table 4 - other outcomes					
	Col. 5	Col. 6	Col. 7	Col. 8	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
	Banks (DKK) (1)	Primary bank (DKK) (2)	Other banks (DKK) (3)	Total ("renters") (DKK) (4)	Deposits (DKK) (5)	Shares (DKK) (6)	Low Liquidity (dummy) (7)	Pension withdrawals (dummy) (8)	Income (DKK) (9)	Unemploy- ment (percent) (10)
2004 × Exposed	1,656 (2,097)	209 (6,492)	1,173 (4,234)	-43 (3,031)	3,179** (1,421)	1,094 (738)	-0.0046 (0.0068)	0.0002 (0.0004)	-679 (548)	0.2420*** (0.079)
2005 × Exposed	1,699 (1,691)	1,314 (5,973)	508 (3,597)	630 (2,496)	2,132* (1,112)	1,083** (462)	-0.0013 (0.0063)	-0.000845** (0.0003)	-409 (615)	0.1778*** (0.063)
2006 × Exposed	1,315 (2,062)	1,699 (4,989)	-268 (2,176)	-11 (2,028)	1,413* (844)	366.0** (183)	-0.0017 (0.0032)	-0.0005 (0.0005)	-319 (494)	0.0745** (0.033)
2008 × Exposed	-2,640** (1,135)	-3520 (2,443)	839.2 (1,134)	-3,450*** (484)	-713.7 (1,133)	561.2 (894)	0.00784*** (0.0023)	0.0015 (0.0013)	-416 (287)	0.00116 (0.019)
2009 × Exposed	-5,905* (2,995)	-11082 (7,089)	5017 (3,685)	-4,843*** (547)	157.5 (1,413)	558.8 (855)	0.00657 (0.0045)	0.00116 (0.0009)	-455 (672)	0.0199 (0.044)
2010 × Exposed	-6,836** (3,400)	-13089 (8,563)	6044 (4,726)	-6,237*** (747)	-401.7 (1,762)	309.6 (934)	0.00879* (0.0049)	0.000988 (0.0007)	-1,112 (1,072)	-0.0182 (0.055)
2011 × Exposed	-6,966** (3,441)	-15433 (9,769)	8137 (5,916)	-6,732*** (867)	531.7 (1,797)	396.4 (1,107)	0.00719 (0.0060)	0.000638 (0.0006)	-783 (1,265)	-0.0206 (0.043)
Covariates-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,486,109	3,481,107	3,486,109	1,286,901	3,486,109	3,486,109	3,486,109	3,486,109	3,455,968	3,427,790
R-squared (within)	0.164	0.17	0.063	0.215	0.036	0.042	0.005	0.018	0.357	0.085

Note: Table A2 reports estimates from the fully dynamic baseline model with the following outcomes: bank debt (Column 1), debt in the 2007 primary bank (Column 2), debt in other banks than the 2007 primary bank (Column 3) total debt (Column 4), liquidity on bank accounts (Column 5), market value of shares (Column 6), an indicator of liquid assets below the 25th percentile (Column 7), an indicator of withdrawals from tax favored pension accounts (Column 8), disposable income (Column 9) and unemployment (Column 10). The regressions use the full sample (Columns 1-3 and 5-10) and the subsample who did not own real estate at any time during the period 2003-2011 (Column 4). Exposed indicates that the Loans-to-Deposits ratio of the individual's primary bank in 2007 was above the sample median. Covariates include categorical controls, all measured in 2007, for age, educational level, gender, home ownership, partner, unemployment spells during past 24 months, deciles of bank debt, deciles of income. Municipality fixed effects are indicators for each of the 98 municipalities and industry fixed effects indicators for 9 occupational industries. Standard errors are clustered at the level of the primary bank in 2007 and are reported in parentheses. *, **, *** indicate statistically different from zero at 10%, 5% and 1% level.

Table A2 (Continued): Fully dynamic versions of compact models

	Table 5 - consumption				Table 6 - real estate				
	Col. 2	Col. 3	Col. 6	Col. 7	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
	Spending (no shares) (DKK) (1)	Spending ("renters") (DKK) (2)	Owns a car (dummy) (3)	Owns multiple cars (dummy) (4)	Appraisal value (DKK) (5)	Purchase (dummy) (6)	Δ Appraisal value (DKK) (7)	Δ Total debt (DKK) (8)	Δ Property size (m2) (9)
Exposed							8,368 (7,945)	-946.2 (11,867)	0.712*** (0.193)
2004 × Exposed	-1,117 (5,128)	1,961 (2,191)	0.0009 -0.0018	0.0005 -0.0013	-5,439 (5,287)	0.00218 (0.00242)	-2,393 (11,452)	-2,030 (12,433)	-0.531* (0.297)
2005 × Exposed	-2,761 (5,814)	-162 (1,310)	0.0017 -0.0017	0.0005 -0.0010	-3,100 (3,908)	0.00227 (0.00261)	8,644 (11,952)	3,781 (14,631)	-0.713** (0.349)
2006 × Exposed	965 (2,590)	-604 (1,712)	0.0017 -0.0012	0.0003 -0.0009	-937 (2,491)	0.00319 (0.00218)	5,669 (9,485)	-12,594 (10,006)	-0.521** (0.243)
2008 × Exposed	-4595 (2,823)	-3,090*** (1,156)	-0.000438 (0.0007)	-0.000418 (0.0006)	-3694 (3,082)	0.00040 (0.00116)	-40,425*** (13,262)	-29,044** (14,145)	-1.083*** (0.316)
2009 × Exposed	-9,201* (5,255)	-2086 (1,583)	-0.00197* (0.0011)	-0.00121 (0.0008)	-11,051*** (3,320)	0.00109 (0.00165)	-59,334*** (16,747)	-49,183** (19,006)	-1.567*** (0.379)
2010 × Exposed	-2750 (3,222)	-1152 (1,516)	-0.00201* (0.0010)	-0.00181* (0.0009)	-11,669*** (4,076)	0.00044 (0.00150)	-10,769 (14,673)	-34,029** (16,324)	-0.472* (0.266)
2011 × Exposed	-1658 (2,477)	-125.8 (1,408)	-0.00123 (0.0013)	-0.000902 (0.0012)	-12,277** (4,895)	0.00002 (0.00201)	-15,316 (17,154)	-5,602 (14,143)	-0.672 (0.488)
Covariates-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Observations	2,707,435	1,286,901	3,486,109	3,486,109	3,455,968	3,486,109	239,763	239,763	235,275
R-squared	0.035	0.094	0.026	0.0190	0.294	0.019	0.250	0.203	0.017

Note: Table A2 reports estimates from the fully dynamic baseline model with the following outcomes: imputed spending (Columns 1-2), an indicator of owning car (Column 3), an indicator of owning more than one car (Column 4), total appraisal value of real estate (Column 5) an indicator of purchasing real estate (Column 6), the change in the total appraisal value of real estate (Column 7), the change in total debt (Column 8) and the change in the habitable surface of real estate (Column 9). The regressions use the full sample (Columns 3-6), the subsample who did not hold shares (Column 1), the subsample who did not own real estate at any time during the period 2003-2011 (Column 2) and the subsample where a real estate purchase took place (Columns 7-9). Exposed indicates that the Loans-to-Deposits ratio of the individual's primary bank in 2007 was above the sample median. Covariates include categorical controls, all measured in 2007, for age, educational level, gender, home ownership, partner, unemployment spells during past 24 months, deciles of bank debt, deciles of income. Municipality fixed effects are indicators for each of the 98 municipalities and industry fixed effects indicators for 9 occupational industries. Standard errors are clustered at the level of the primary bank in 2007 and are reported in parentheses. *, **, *** indicate statistically different from zero at 10%, 5% and 1% level. *R-squared* refers to within R-squared in columns with individual fixed effects.

Table A3: Main results with continuous measure of bank exposure

	Total debt (DKK) (1)	Spending (DKK) (2)	Pension withdrawals (dummy) (3)	Owens a car (dummy) (4)	Real estate (DKK) (5)
2004 × Exposure	-12,126 (16,062)	-10,512 (13,896)	0.00215** (0.000968)	-0.000374 (0.00549)	-21,890* (12,585)
2005 × Exposure	-13,023 (16,124)	-13,346 (13,965)	-0.000158 (0.00131)	0.00264 (0.00473)	-16,189* (9,206)
2006 × Exposure	-5,226 (10,818)	-1,226 (7,693)	0.00120 (0.00207)	0.00317 (0.00362)	-8,553 (5,775)
2008 × Exposure	-4,763 (5,646)	-14,544** (6,899)	0.00692** (0.00316)	-0.00194 (0.00208)	-4,781 (7,529)
2009 × Exposure	-19,166* (9,945)	-29,487** (13,529)	0.00389** (0.00184)	-0.00609** (0.00271)	-23,509** (9,715)
2010 × Exposure	-28,022** (11,488)	-19,019 (11,634)	0.00448*** (0.00133)	-0.00511 (0.00347)	-28,079*** (10,525)
2011 × Exposure	-28,188** (12,868)	-15,901 (10,840)	0.00368*** (0.00134)	-0.00423 (0.00367)	-33,081*** (11,966)
Covariates-year FE	Yes	Yes	Yes	Yes	Yes
Municipality-year FE	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes	Yes
Observations	3,455,968	3,455,968	3,486,109	3,486,109	3,455,968
R-squared (within)	0.209	0.033	0.018	0.026	0.294

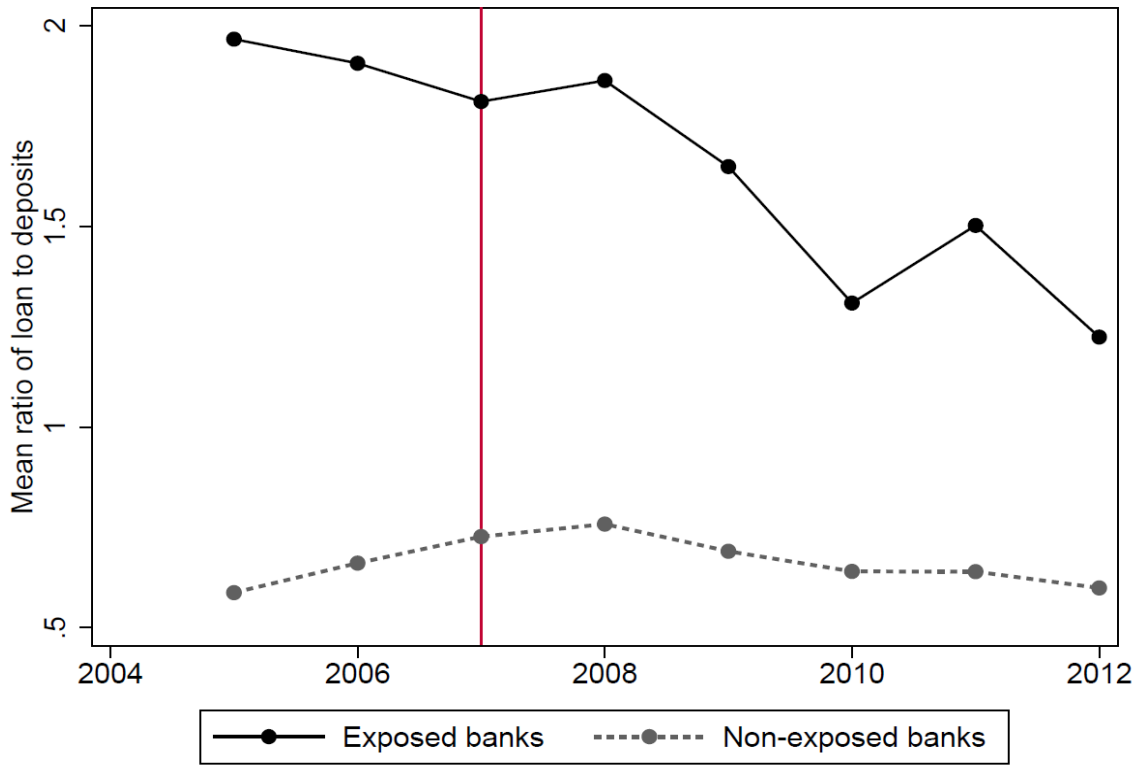
Note: Table A3 reports estimates from the fully dynamic baseline model with the following outcomes: total debt (Column 1), imputed spending (Column 2), an indicator of withdrawals from tax favored pension accounts (Column 3), an indicator of owning a car (Column 4) and the total appraisal value of real estate (Column 5). The regressions use the full sample. *Exposure* indicates the Loans-to-Deposits ratio of the individual's primary bank in 2007. All outcomes and *Exposure* are winsorized at the 1st and 99th percentile. Covariates include categorical controls, all measured in 2007, for age, educational level, gender, home ownership, partner, unemployment spells during past 24 months, deciles of bank debt, deciles of income. Municipality fixed effects are indicators for each of the 98 municipalities and industry fixed effects indicators for 9 occupational industries. Standard errors are clustered at the level of the level of the primary bank in 2007 and are reported in parentheses. *, **, *** indicate statistically different from zero at 10%, 5% and 1% level.

Table A4: Estimates underlying figures

	Figure 4	Figure 5	Figure 6	Figure 7	Figure 8A			Figure 8B		
	New loan full sample	Total debt full sample	Interest rate full sample	Spending full sample	Total debt (by liquidity in 2007) bottom 20% middle 60% top 20%			Spending (by liquidity in 2007) bottom 20% middle 60% top 20%		
Exposed	-0.00319 (0.0344)		0.00102 (0.00259)							
2004 × Exposed	0.00471 (0.0279)	3,572 (4,642)	-0.000234 (0.00289)	-1,690 (5,581)	-7,578* (4,485)	-887.4 (4,520)	25,994* (14,578)	-1,380 (5,689)	-2,740 (5,667)	2,858 (8,026)
2005 × Exposed	-0.00187 (0.0157)	999 (5,675)	-0.00191 (0.00221)	-2,852 (6,135)	-7,142 (4,656)	-2,569 (5,820)	17,587 (12,902)	-4,397 (5,528)	-2,680 (6,242)	-1,274 (8,549)
2006 × Exposed	0.00368 (0.0137)	1,631 (3,679)	0.000965 (0.00184)	1,551 (2,883)	-4,732 (3,557)	-589.1 (4,019)	11,913 (9,491)	1,231 (4,367)	997.7 (2,697)	3,504 (7,179)
2008 × Exposed	0.00578 (0.0177)	-3,984** (1,635)	-0.000816 (0.00164)	-4,903** (2,197)	-7,237*** (2,309)	-5,653*** (1,250)	2,900 (3,347)	-9,836*** (2,667)	-5,327 (3,547)	7,862 (8,021)
2009 × Exposed	-0.149*** (0.0389)	-11,936*** (2,041)	0.00747** (0.00324)	-9,253 (5,725)	-16,408*** (2,876)	-12,110*** (3,138)	-7,374* (4,057)	-13,256*** (4,349)	-8,203 (5,630)	-4,578 (9,483)
2010 × Exposed	-0.0794*** (0.0243)	-14,902*** (2,337)	0.00629* (0.00331)	-3,592 (3,344)	-20,059*** (5,421)	-14,712*** (2,632)	-10,052** (4,527)	-4,399** (2,169)	-3,848 (3,031)	1,674 (8,730)
2011 × Exposed	-0.0688*** (0.0218)	-12,948*** (4,283)	0.00181 (0.00435)	-1,016 (2,392)	-22,109*** (7,880)	-12,065*** (3,501)	-5,879 (4,912)	-6,164*** (2,318)	-1,086 (2,146)	7,383 (7,815)
Covariates-year FE	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality-year FE	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	-	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual FE	-	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-year FE	Yes	No	No	No	No	No	No	No	No	No
Observations	4,631,870	3,455,968	6,514	3,455,968	661,892	2,095,013	699,063	661,892	2,095,013	699,063
R-squared	0.592	0.209	0.324	0.033	0.207	0.223	0.194	0.041	0.041	0.032

Note: Table A4 reports the point-estimates and standard errors underlying Figures (4)-(8). Standard errors are clustered at the bank level (Column 1) or the level of primary bank in 2007 (Other Columns) and are reported in parentheses. *, **, *** indicate statistically different from zero at 10%, 5% and 1% level.

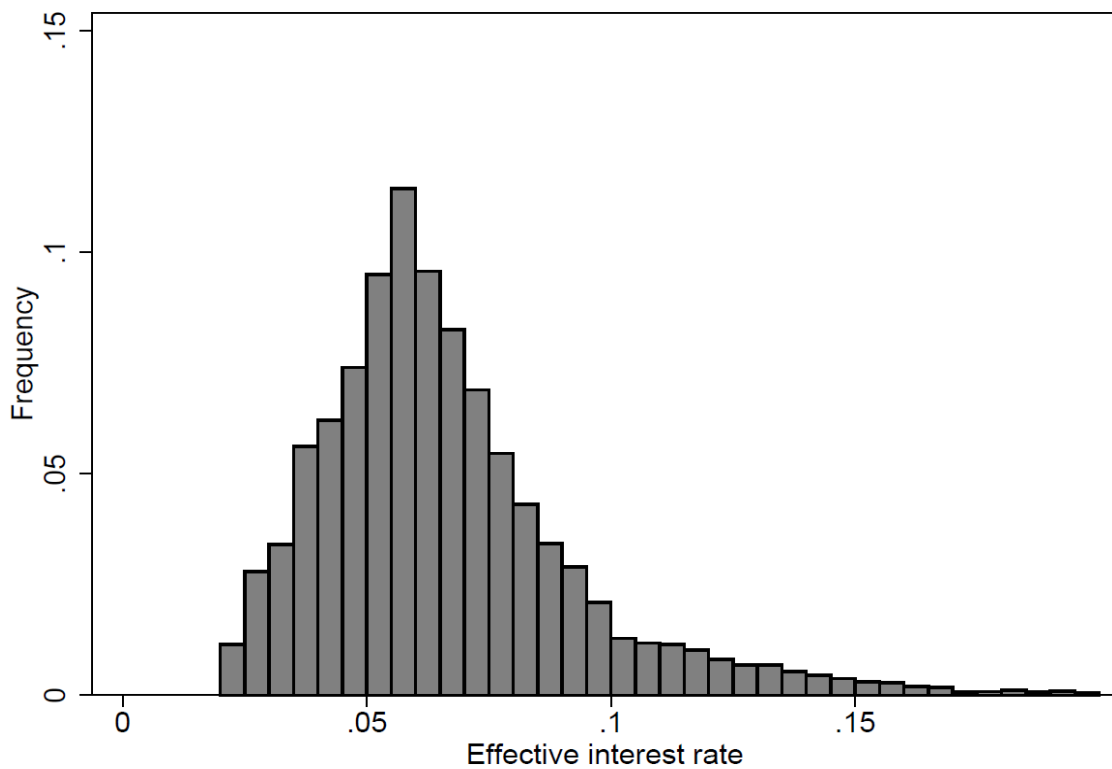
Figure A1: Mean ratio of loan to deposits for exposed and non-exposed banks



Note: Figure A1 shows the mean ratio of loan to deposits for exposed and non-exposed banks respectively over the period 2005-2012

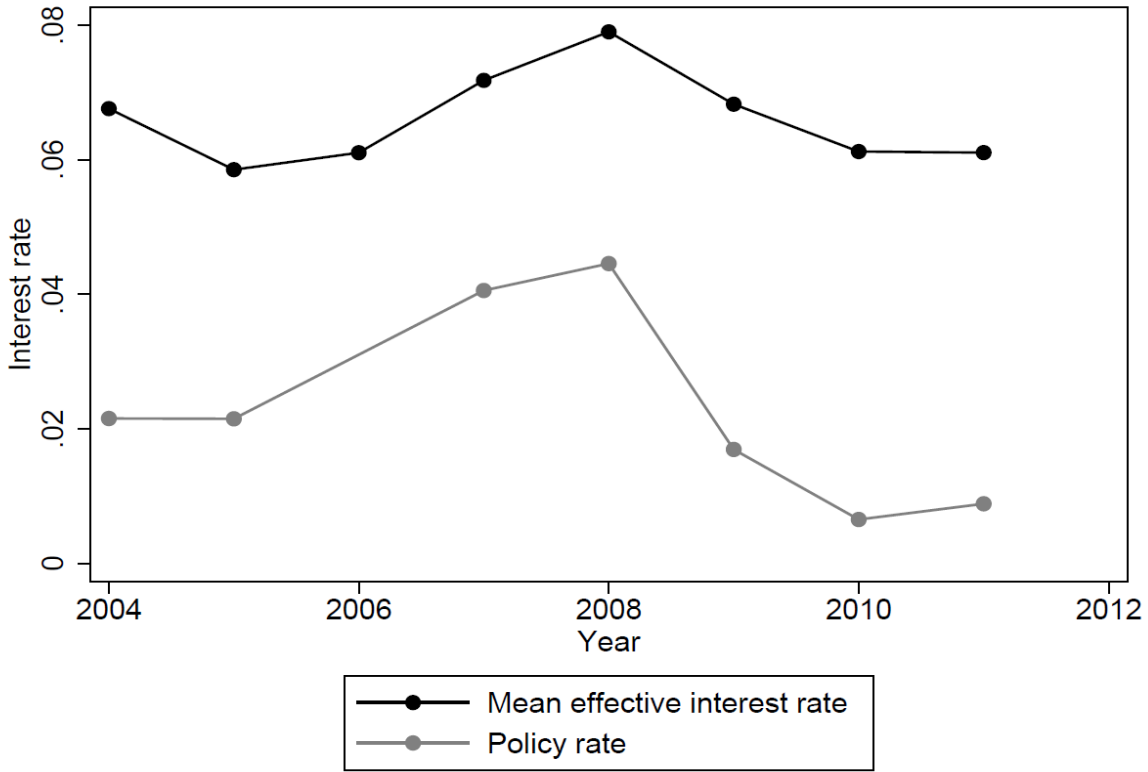
Source: MFI Statistics from Danmarks Nationalbank

Figure A2: Distribution of effective interest rates



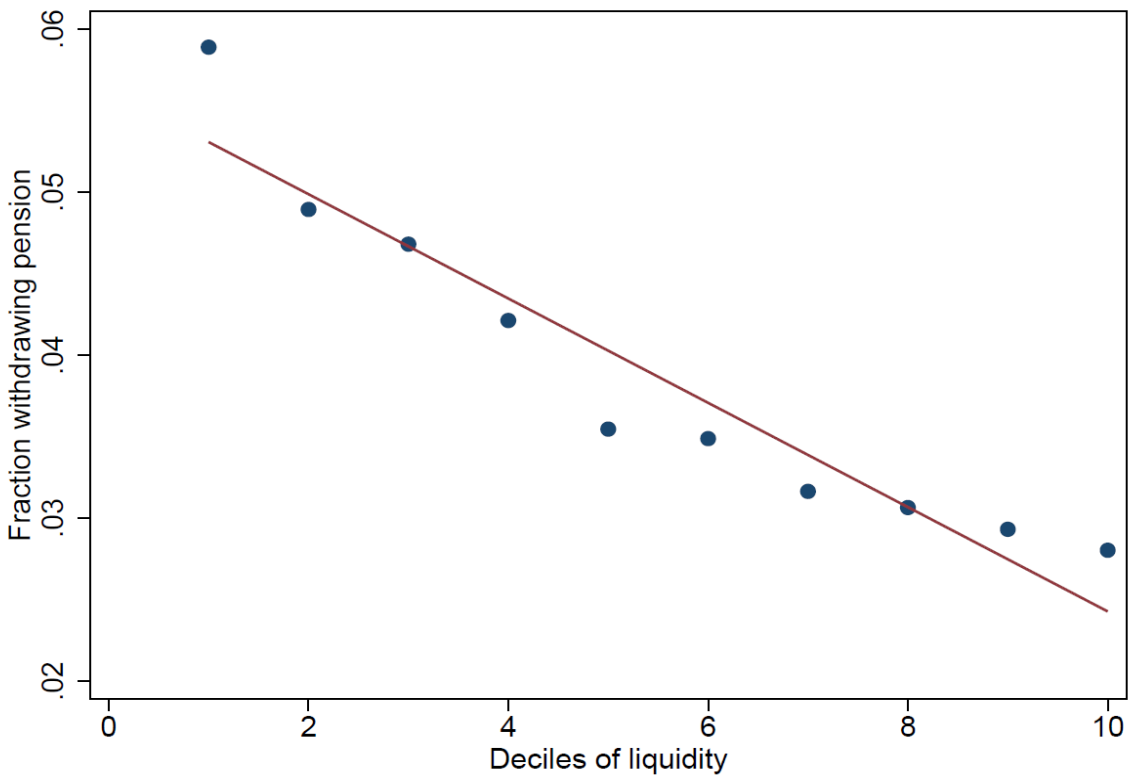
Note: Figure A2 shows the distribution of effective interest rates as defined in the main text. The distribution is censored at 2% and 20%.

Figure A3: Evolution of effective interest rates



Note: Figure A3 shows the evolution of the mean effective interest rate as defined in the main text and the policy monetary interest rate over the period 2004-2011.

Figure A4: Liquid assets and withdrawals from pension accounts



Note: Figure A4 illustrates the correlation between stocks of liquid assets and the propensity to withdraw funds from tax favored pension accounts. The dots indicate the share of individuals withdrawing funds from such accounts in 2009 for each decile of the liquidity distribution.