

Retirement and Expenditure in Turbulent Times

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Retirement and household expenditure in turbulent times

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Introduction

- Increasing evidence that consumption sharply declines at retirement
- At odds with lifetime optimising behaviour predictions
- Spatial and temporal consistence:
 - US (Bernheim et al., 2001; Hamermesh, 1984); UK (Banks et al., 1998); Italy (Battistin et al., 2009); France (Moreau & Stancanelli, 2015)
- Explanations:
 - reduction in work-related expenses
 - leisure substitution
 - changes in household composition
 - increased mortality risk

Introduction

- Scarce evidence on both own & spouse retirement effects
- No evidence on this relationship during a crisis period
- Three contributions in the literature:
 - reconcile retirement-consumption evidence conditional on income
 - incorporate the role of spousal retirement
 - examine household behaviour during bad times
- Three main findings:
 - household consumption declines at retirement; partly due to income
 - decline in lifestyle, work- and housing-related expenses
 - spousal retirement does not affect consumption
 - declines were greater when pension reforms were implemented

Institutional context

- Greece entered a severe crisis since 2008Q3
 - unemployment $\approx 28\%$; debt/GDP $\approx 146\%$
- Response: a rescue plan (MoU) along with EC, ECB & IMF in May 2010
 - secure access to government funding conditional on:
 - fiscal consolidation
 - labour market, product market & welfare system reforms
- Two subsequent MoUs followed: 2012, 2015

Institutional context

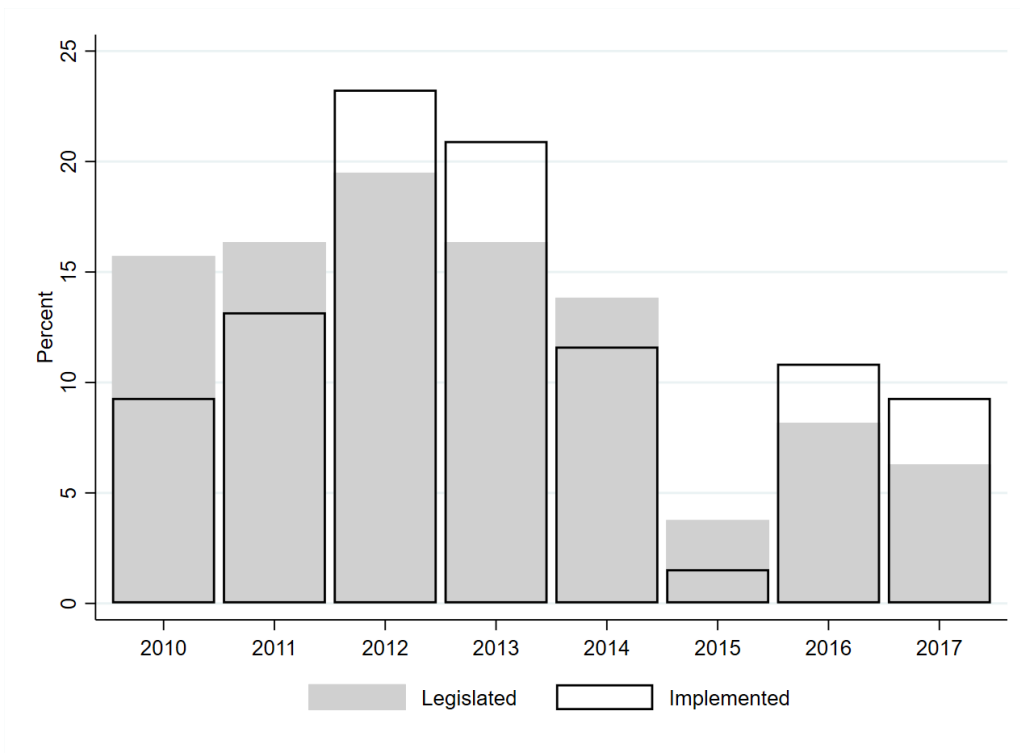
Major pension reforms

- Pension system went through a series of reforms and cuts
 - Act 3845/2010 (before the first MoU): abolished 13th & 14th pension
 - Act 3863/2010 & Act 3865/2010: new pension calculation formula (activated after 2015); increased Official and Early Retirement Ages (65 & 60 years old, respectively)
 - 2011-2013: a series of pension cuts for those receiving high pensions (and had retired before 55 years old)
 - Act 4093/2012: progressive cuts 5% (€1,000-1,500) to 20% (\geq €3,000)
 - Act 4254/2012 (implemented on 07/2014): horizontal 5.2% cut
 - Act 4336/2015: new horizontal cuts
 - Act 4387/2016: several changes were generalised to entire population

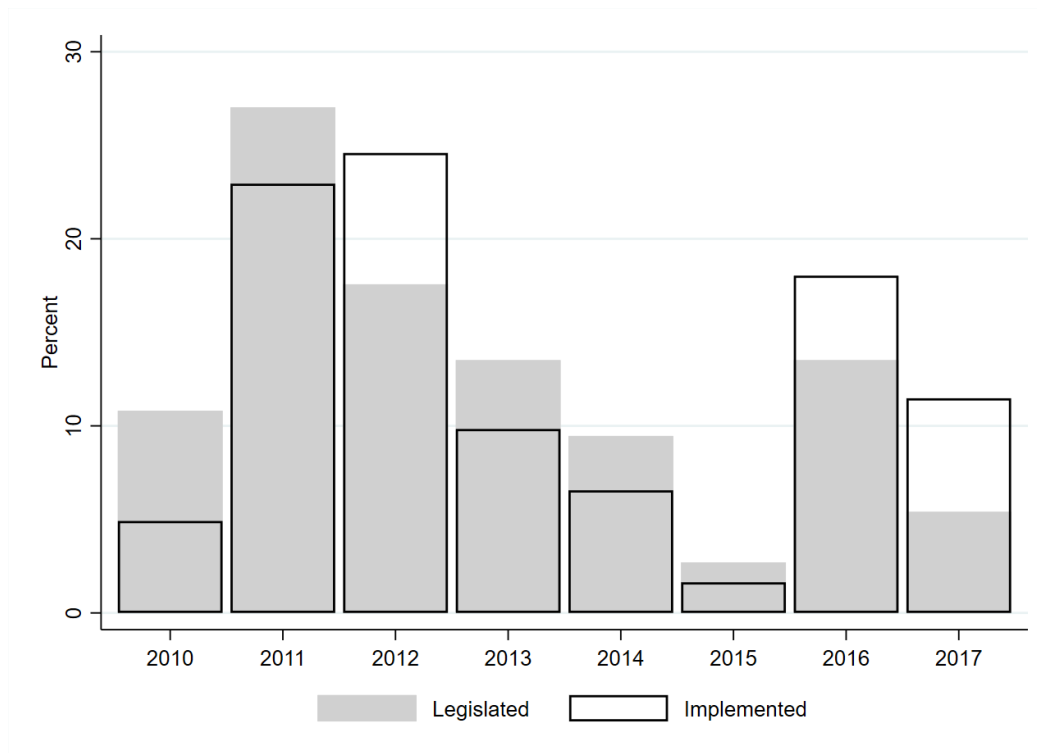
Institutional context

Legislated and implemented reforms

All labour market reforms



Pension-related reforms

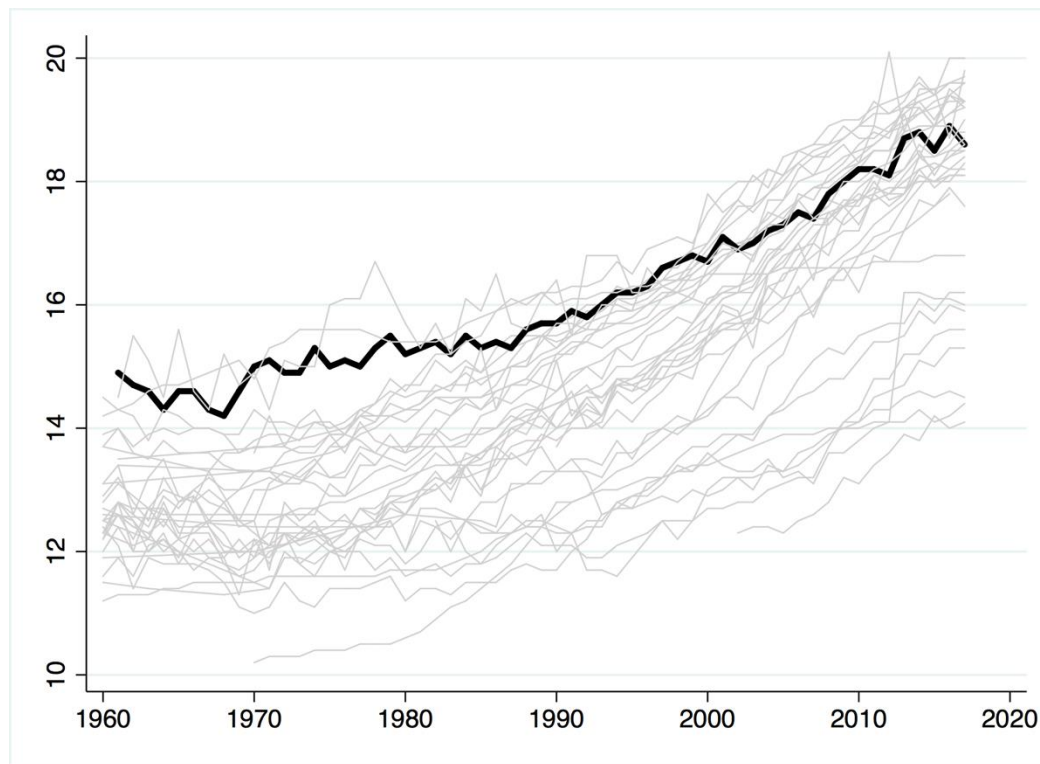


Source: LABREF (European Commission, Employment Committee).

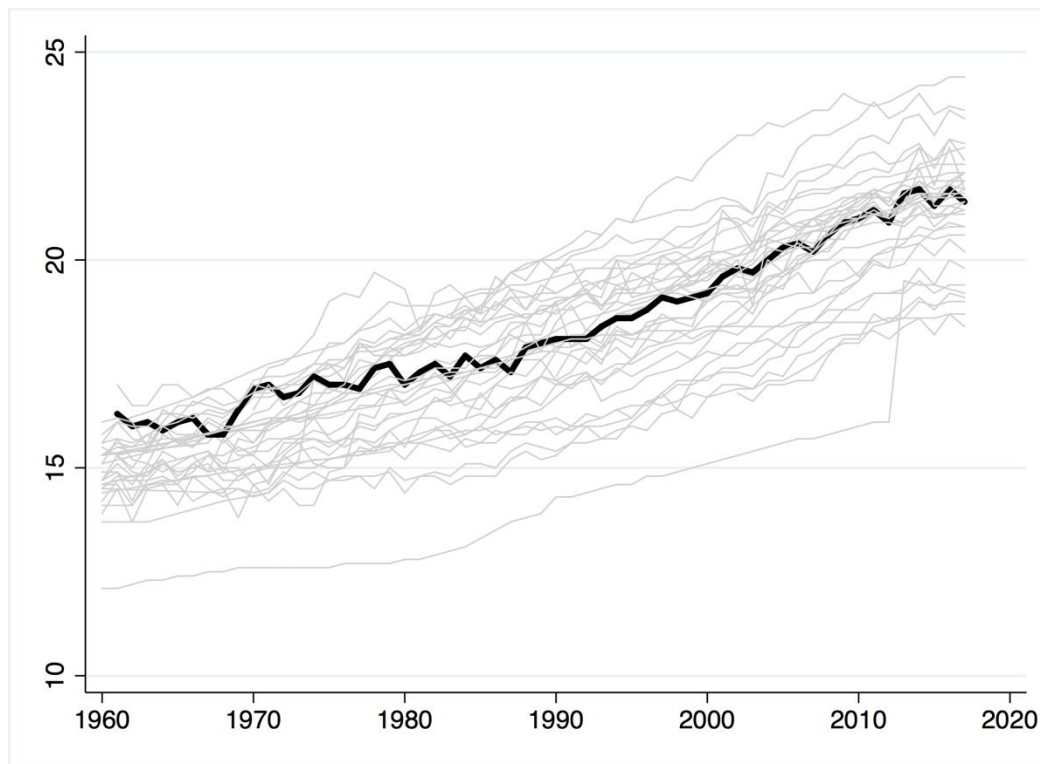
Demographic background

Life expectancy at age of 65 in OECD countries

Men



Women

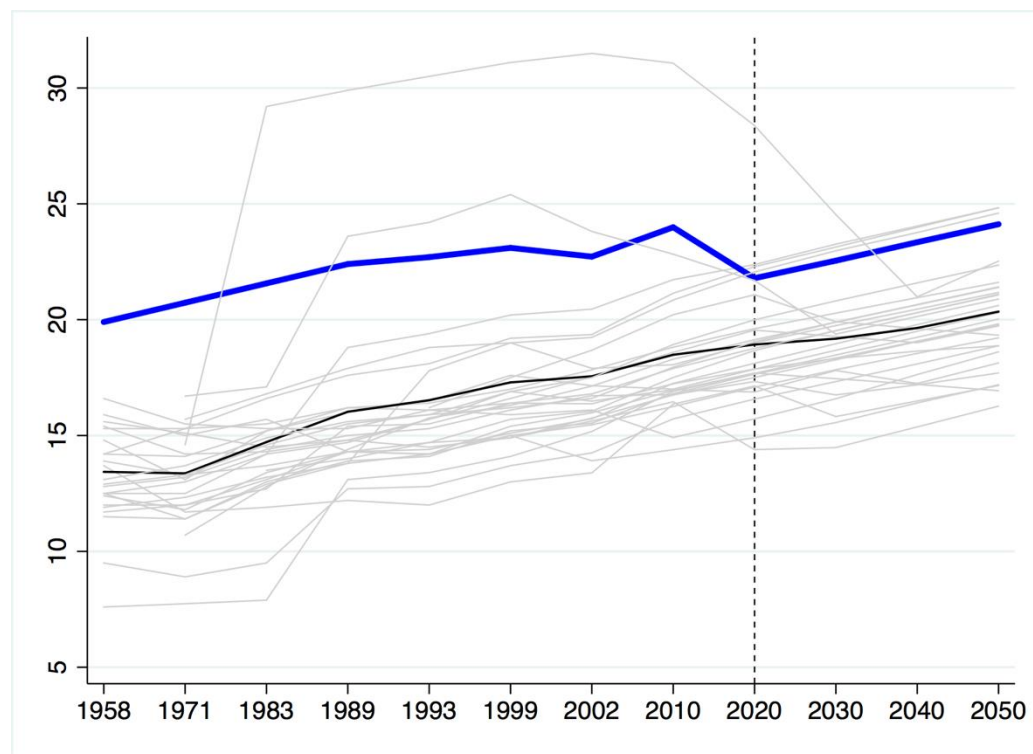


Source: OECD (2019), Life expectancy at 65 (indicator).

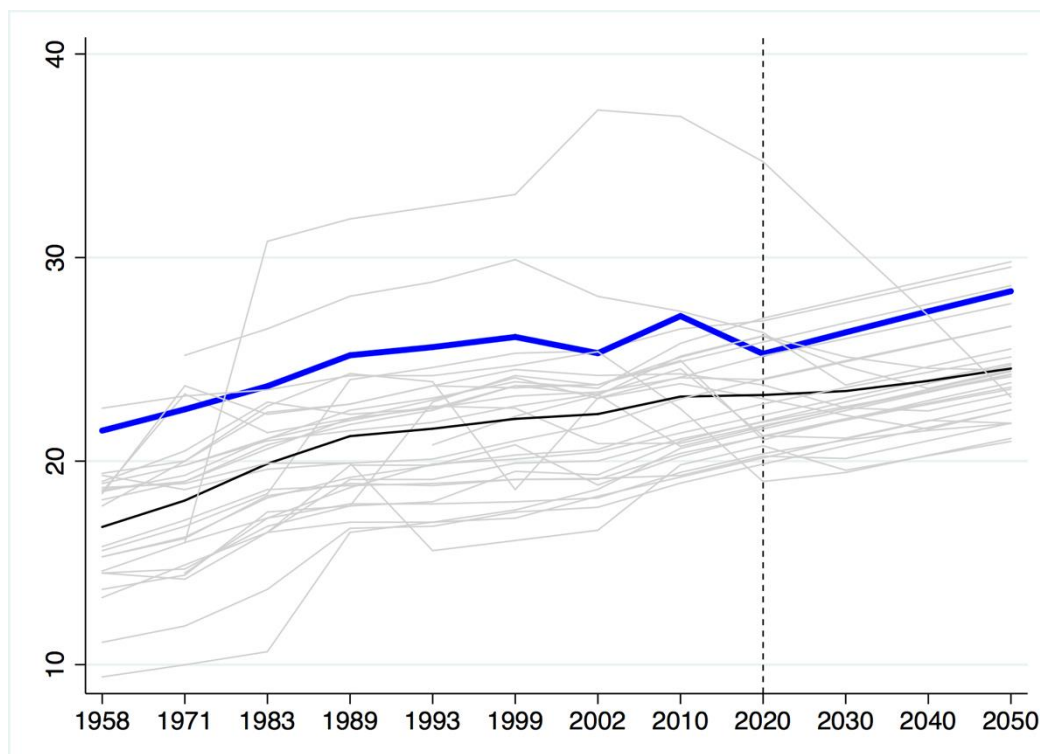
Demographic background

Life expectancy after pensionable age in OECD countries

Men



Women

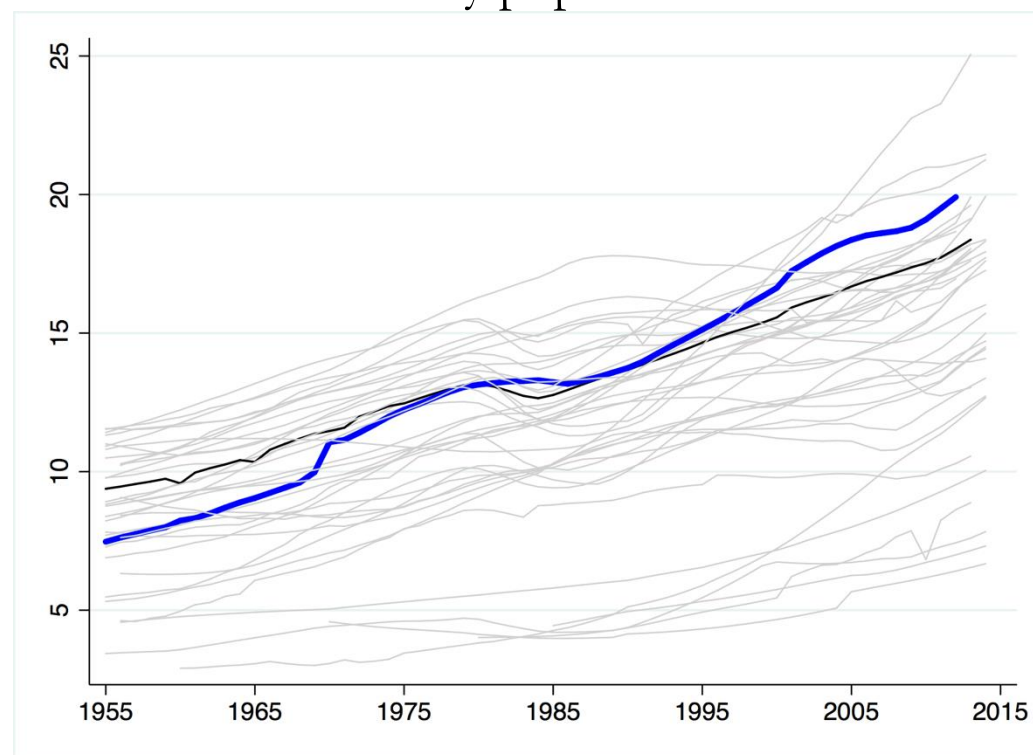


Source: OECD Pensions at a Glance (2011): Retirement-income Systems in OECD and G20 Countries.

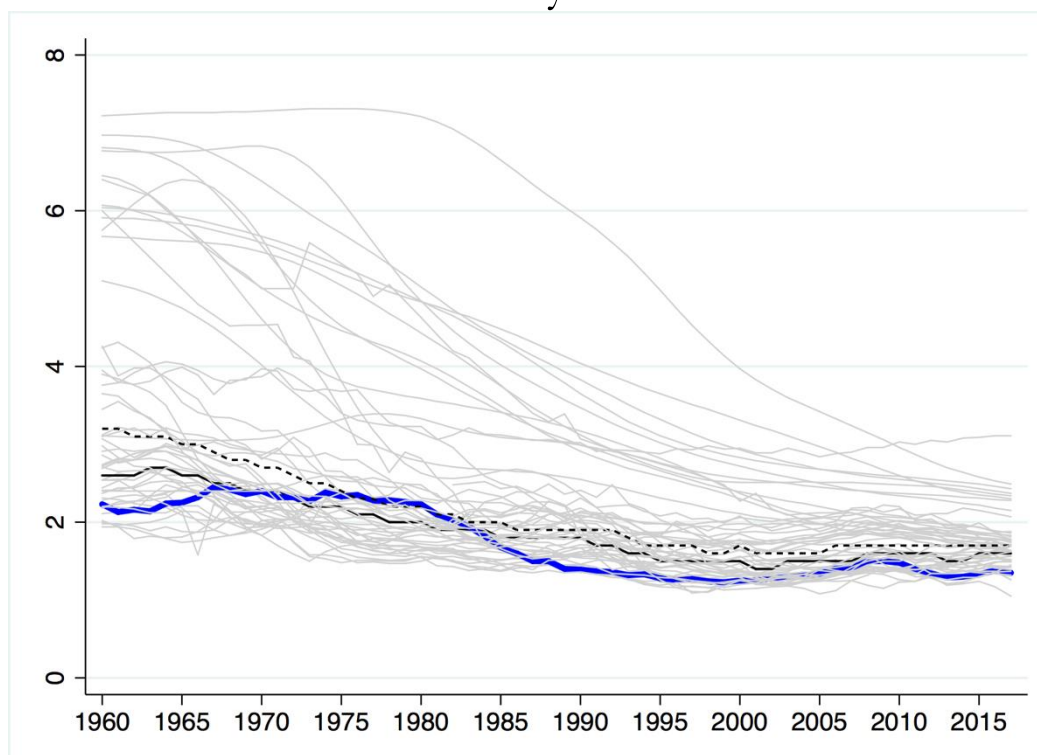
Demographic background

Elderly population and fertility rate in OECD countries

Elderly population



Fertility rate

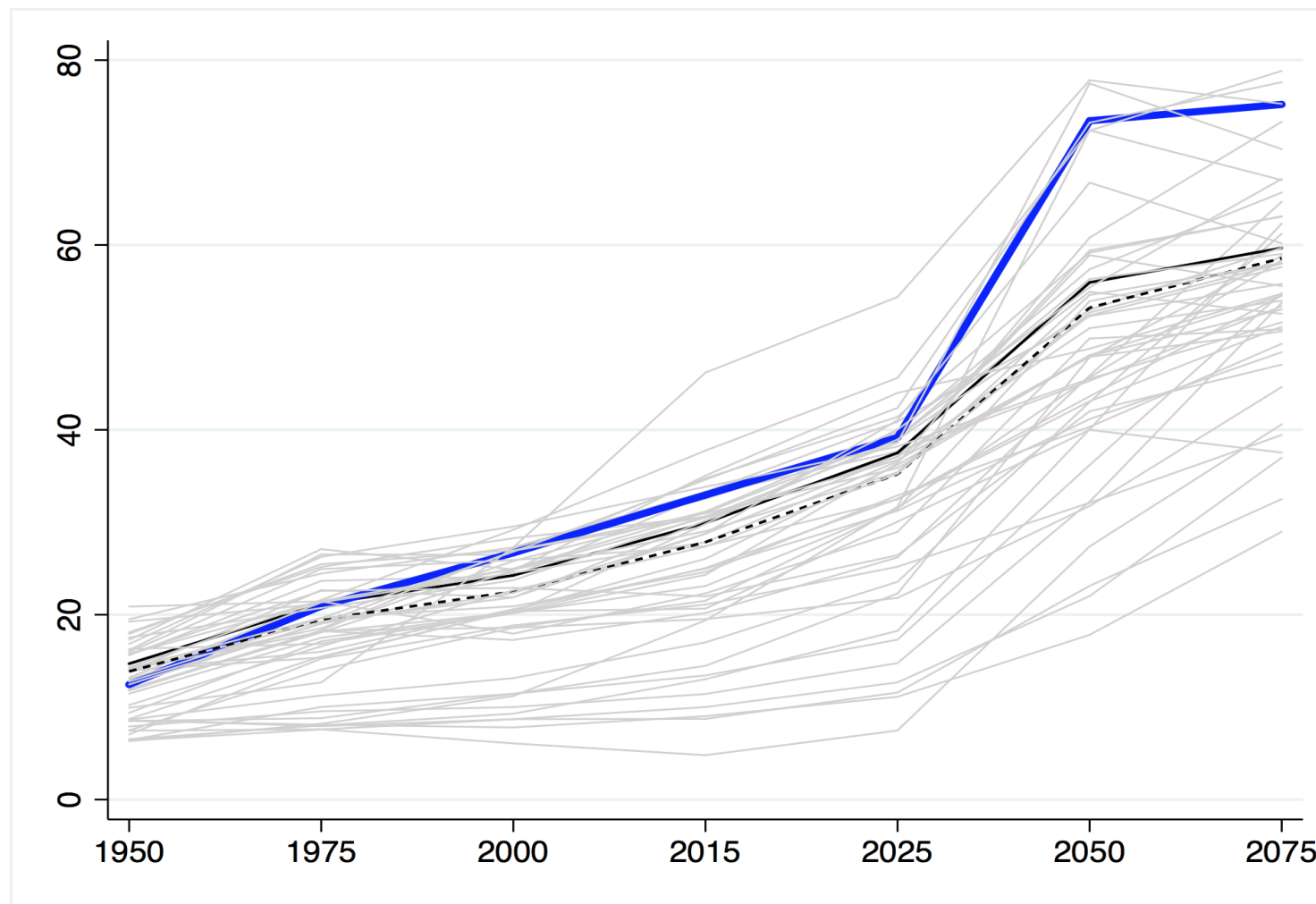


Source: OECD (2019), Elderly population (indicator); OECD (2019), Fertility rates (indicator).

Notes: The elderly population is defined as people aged 65 and over (% of population). The total fertility rate in a specific year is defined as the total number of children that would be born to each woman if she were to live to the end of her child-bearing years and give birth to children in alignment with the prevailing age-specific fertility rates.

Demographic background

Historical and projected old-age dependency ratios in OECD countries



Source: OECD Pensions at a Glance (2017)

Notes: The demographic old-age dependency ratio is defined as the number of individuals aged 65 and over per 100 people of working age defined as those aged between 20 and 64 years old.

Data sources

- Individual & household level data (Household Budget Survey 2009-2016)
 - 87,360 individuals in 35,710 households
- Demographics, activity status, household composition, household income
- Household-level expenses (detailed breakdown)
- Estimation sample: household heads (expenses vary at household level)
 - drop: unmarried/cohabiting and widowed (if not living alone)
 - drop: unemployed and those mainly relying on unemployment benefits
 - drop: same-gender households, military, students, domestic tasks
 - keep: 15 years around Early Retirement Age (ERA)
 - ERA: 55 (2009-2010) → 60 (2011-2012) → 62 (2013-2016)

Data sources

Table 1. Descriptive statistics on basic variables.

Demographics					Expenses				
	Total sample	Retired	Non-retired	Diff.:		Total sample	Retired	Non-retired	Diff.:
Retired	.518	-	-	-					
Spouse retired	.439	.728	.129	-.599***	Total expenditure	29,510	23,941	35,497	11,555***
Age	60.05	66.84	52.76	-14.072***	Food & non-alcoholic beverages	5,043	4,587	5,533	946***
Female	.058	.055	.061	.006	Alcohol, tobacco etc.	907	695	1,136	441***
Spouse female	.942	.945	.939	-.006	Clothing & footwear	1,624	1,150	2,135	985***
Primary schooling	.286	.372	.194	-.178***	Housing, water, electricity etc.	7,731	6,935	8,588	1,653***
Secondary schooling	.320	.263	.382	.119***	Household equipment	1,415	1,106	1,747	641***
Tertiary schooling	.311	.235	.393	.158***	Health	1,768	1,787	1,747	-40***
Household size	2.94	2.53	3.39	.859***	Transport	3,143	2,301	4,048	1,747***
No. of children	.354	.112	.614	.503***	Communication	1,025	806	1,261	456***
Economically active	2.24	2.22	2.26	.035***	Recreation & culture	1,242	834	1,682	848***
Monetary income	30,884	26,770	35,307	8,537***	Restaurants & hotels	2,721	1,980	3,517	1,537***
Total income	35,286	30,897	40,004	9,107***	Misc. goods & services	1,822	1,414	2,262	848***
Observations	7,304	3,784	3,520	-	Observations	7,304	3,784	3,520	-

Source: Household Budget Survey, 2009-2016; Hellenic Statistical Authority (EL.STAT). *Notes:* Figures in column (4) correspond to the results of *t*-tests for differences in means. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Empirical Strategy

Basic model specification:

$$Y_{ht} = \alpha_0 + \beta_1 R_{mht} + \beta_2 R_{fht} + f(Age_{mht}) + f(Age_{fht}) + \delta_t + \varepsilon_{ht} \quad (1)$$

- Y_{ht} is (log of total or other) expenditure of household h at year t
- R_{mht} and R_{fht} is retirement status of male and female partners
- second order polynomials in age
- individual controls
- household composition controls
- year fixed effects

Empirical Strategy

Retirement statuses are instrumented:

$$R_{mht} = \gamma + \gamma_1 Z_{mht} + \gamma_2 Z_{fht} + f(Age_{mht}) + f(Age_{fht}) + \delta_t + v_{ht} \quad (2)$$

$$R_{fht} = \tau + \tau_1 Z_{fht} + \tau_2 Z_{mht} + f(Age_{fht}) + f(Age_{mht}) + \delta_t + u_{ht} \quad (3)$$

where:

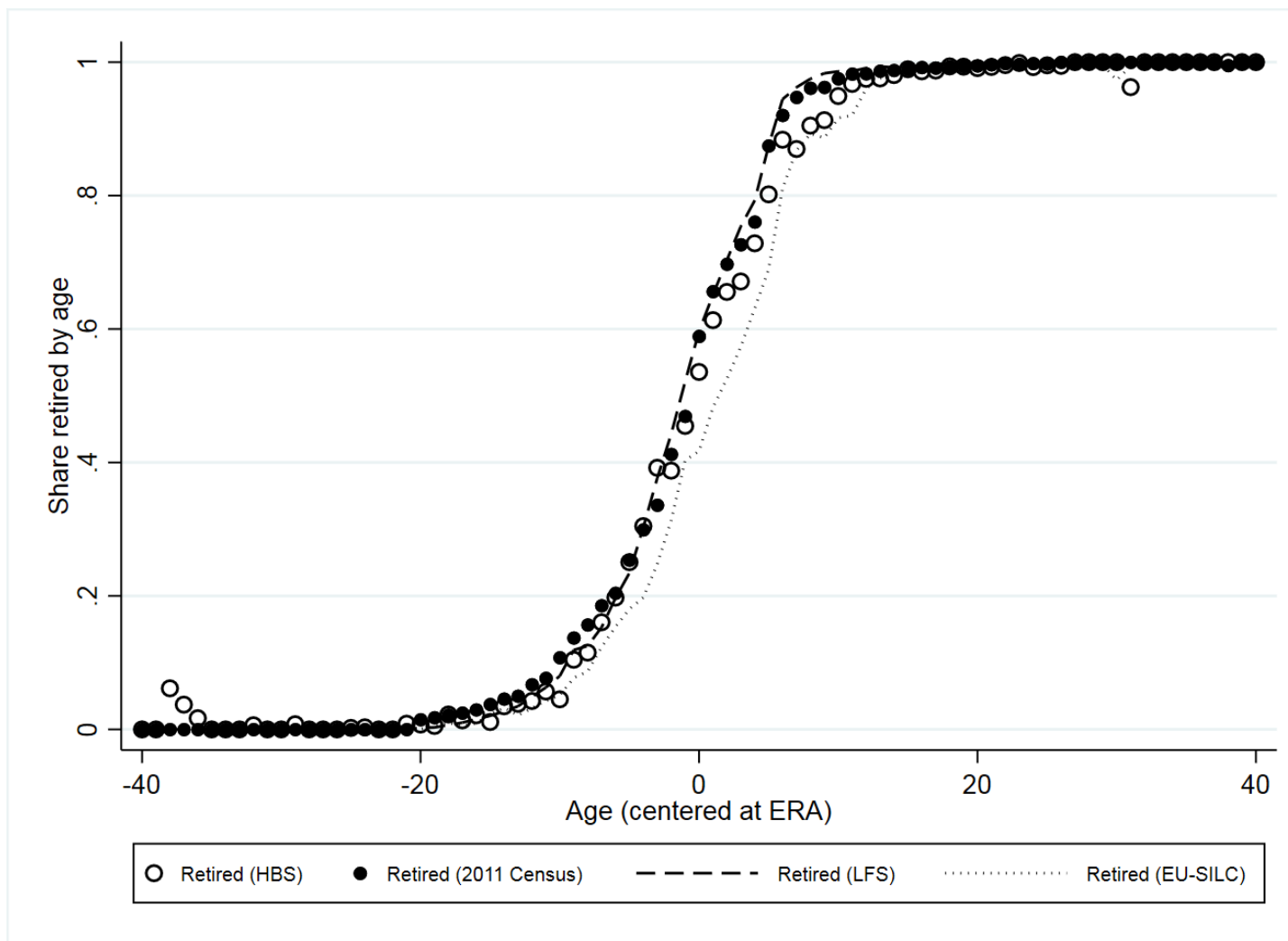
$$Z_{mht} = 1 \text{ if } Age_{mht} \geq ERA_{mt}; 0 \text{ if } Age_{mht} < ERA_{mt}$$

$$Z_{fht} = 1 \text{ if } Age_{fht} \geq ERA_{ft}; 0 \text{ if } Age_{fht} < ERA_{ft}$$

Alternative model specification:

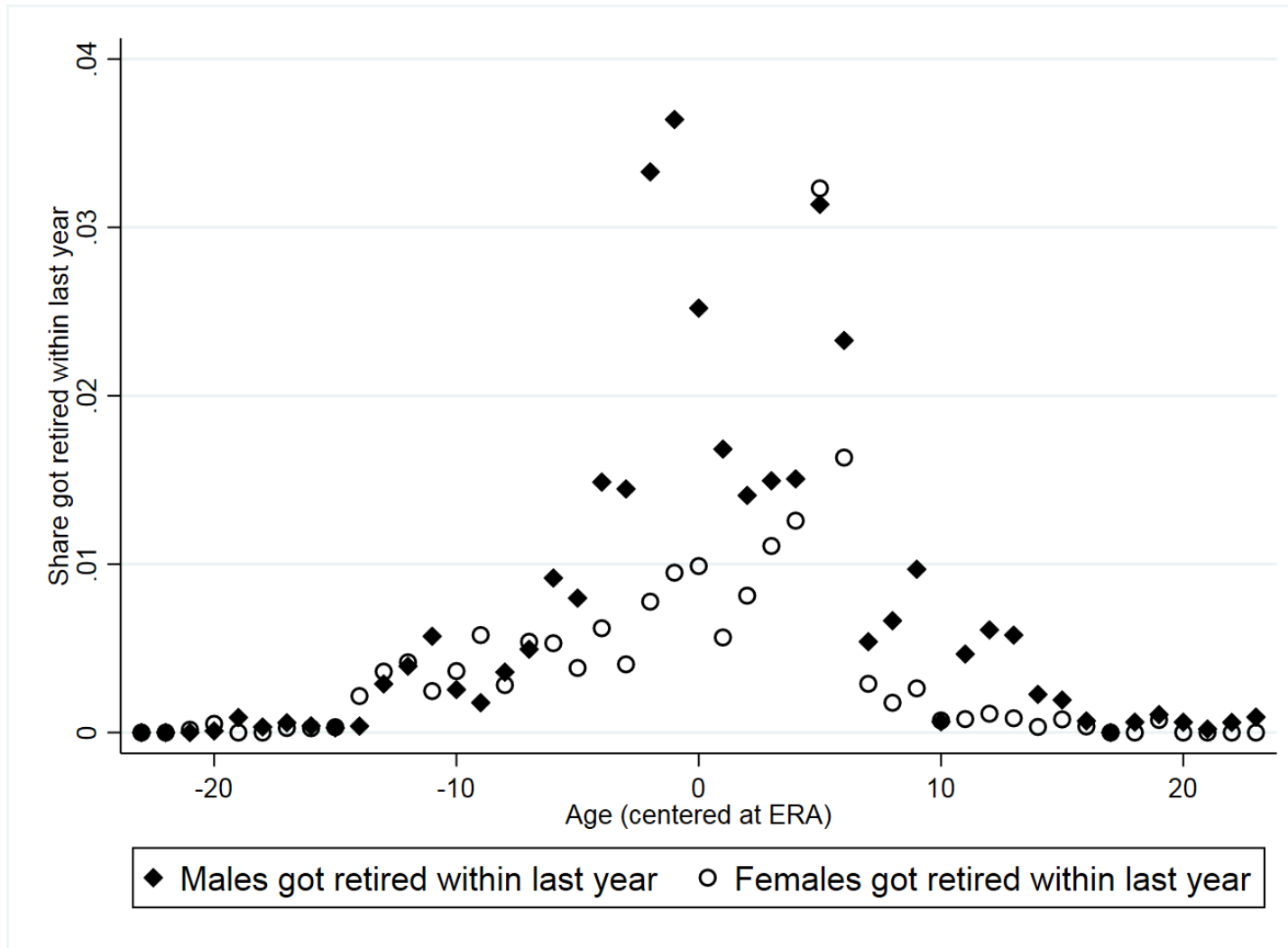
$$Y_{ht} = \alpha_0 + \beta_1 R_{mht} + \beta_2 R_{fht} + \beta_3 R_{mht} \times \delta_t + \beta_4 R_{fht} \times \delta_t \\ + f(Age_{mht}) + f(Age_{fht}) + \delta_t + \varepsilon_{ht} \quad (4)$$

Instrument relevance and validity



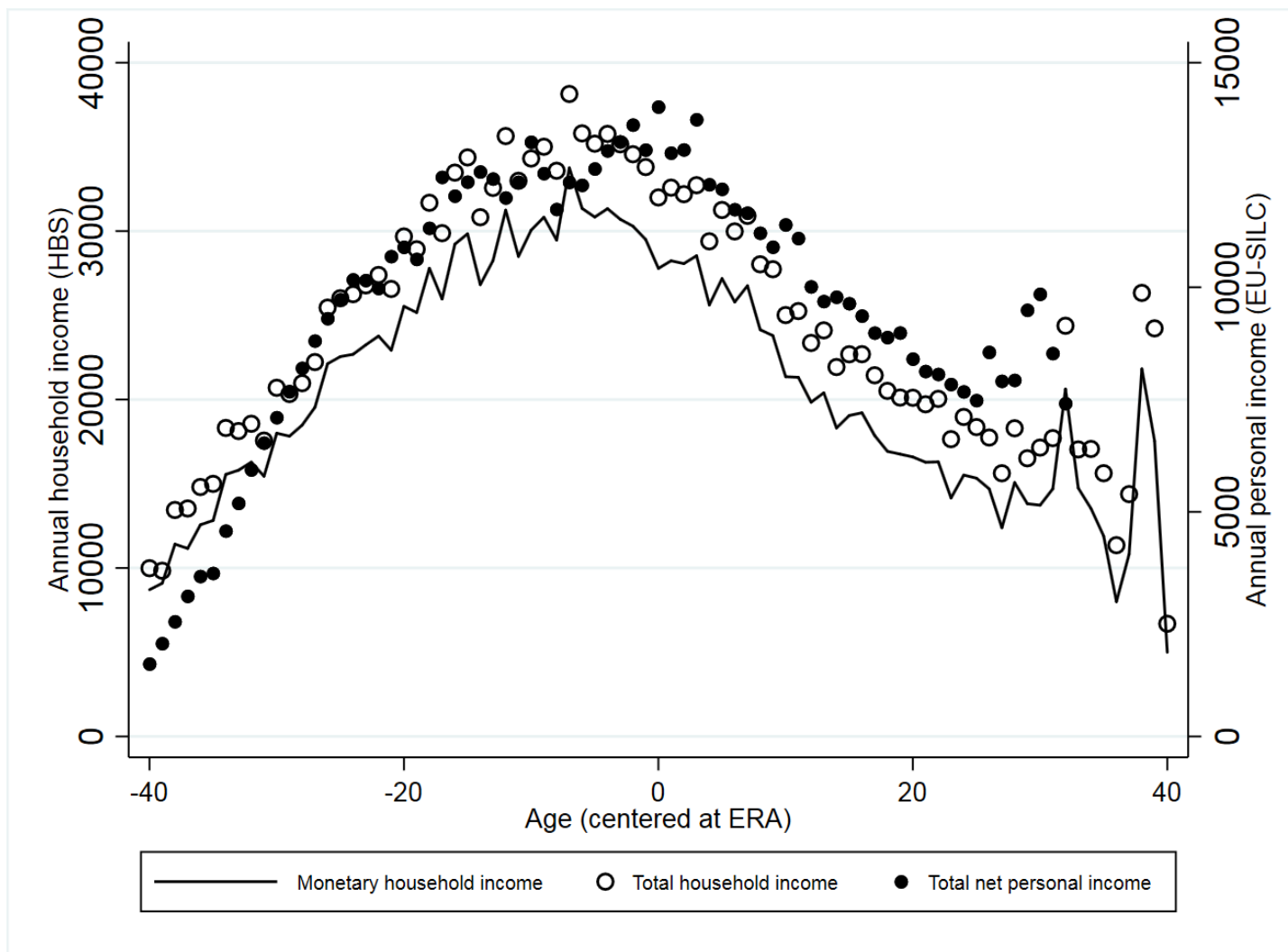
Source: Household Budget Survey (2009-2016); Greek Census (2011); Labour Force Survey (2015Q1-2018Q2); EU-SILC (2009-2017); Hellenic Statistical Authority (EL.STAT). Notes: Shares for each survey are weighted using the respective weights. ERAs are specific to the surveys' time periods.

Instrument relevance and validity



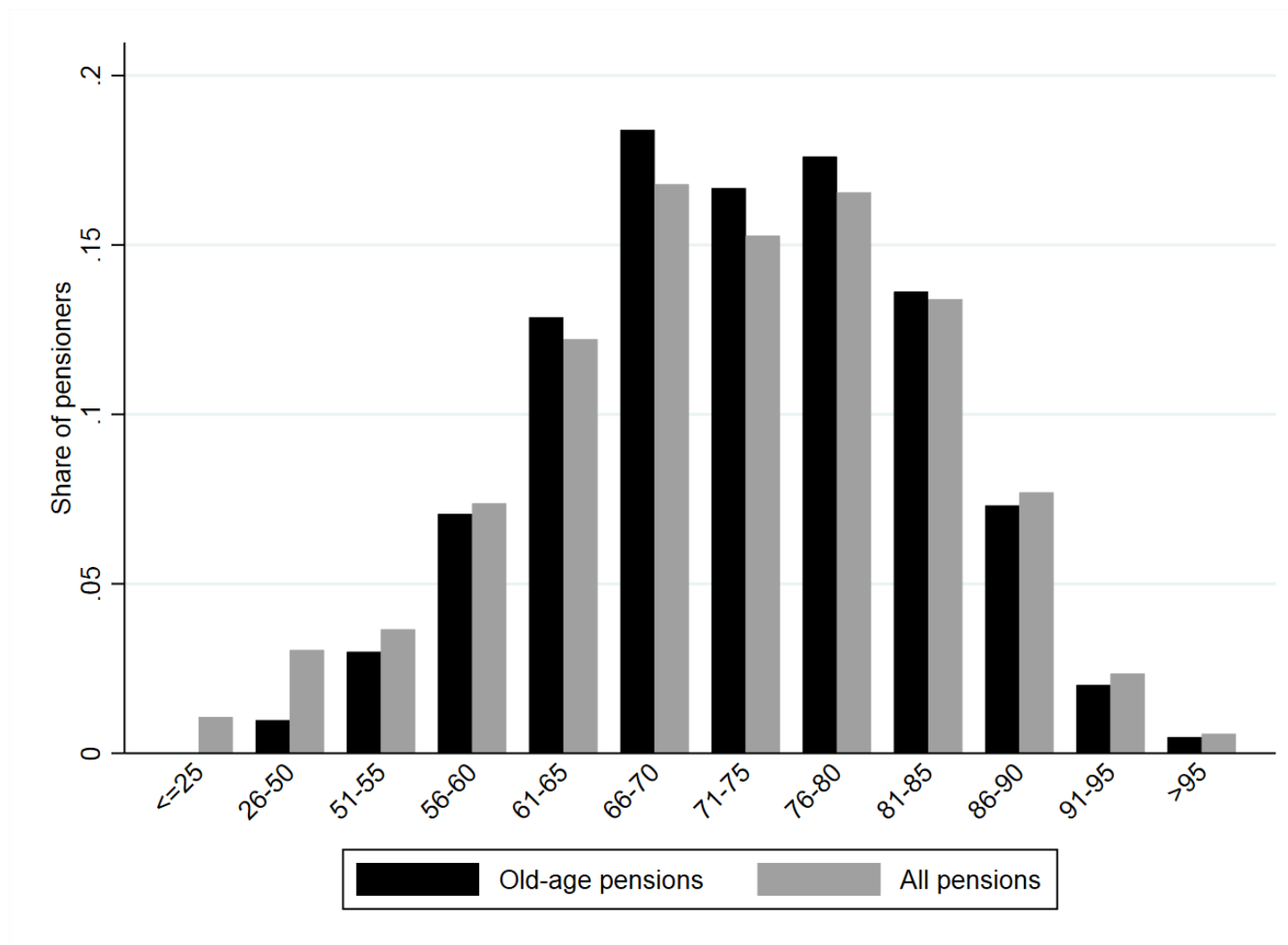
Source: Labour Force Survey (2015Q1-2018Q2); Hellenic Statistical Authority (EL.STAT). Notes: Shares are weighted by the sampling weights.

Instrument relevance and validity



Source: Household Budget Survey (2009-2016); EU-SILC (2009-2017); Hellenic Statistical Authority (EL.STAT).

Instrument relevance and validity



Source: Ministry of Labour, Social Security and Welfare. Notes: The data cover the period between October 2013 and December 2016. All pensions include old-age, disability, death and other pension types. Age groups are the default ones as reported in the source.

Estimation results

Table 2. First stage results.

Dependent variable:	Own retirement [1]	Spouse retirement [2]
Own age > ERA	.193*** (.022)	-.035* (.021)
Spouse age > ERA	.031* (.019)	.112*** (.023)
Total household income (ln)	.012 (.009)	.056*** (.009)
Household size (persons)	-.014** (.006)	-.024*** (.006)
Dependent children in household	-.043*** (.016)	.051*** (.015)
F-test of excluded instruments	30.73	31.47
Individual controls	Yes	Yes
Household controls	Yes	Yes
Year fixed effects	Yes	Yes
Observations	6,883	6,883

Source: Household Budget Survey, 2009-2016; Hellenic Statistical Authority (EL.STAT).

Notes: Linear probability model estimates using own and spousal retirement as dependent variables. The instrument used is a binary indicator on whether own (spouse) age is greater than the Early Retirement Age (interacted with year in Panel B). Controls include a second order polynomial in age, age-treatment interactions, total household income, household size, and whether dependent children live in the household. Robust standard errors in parentheses. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

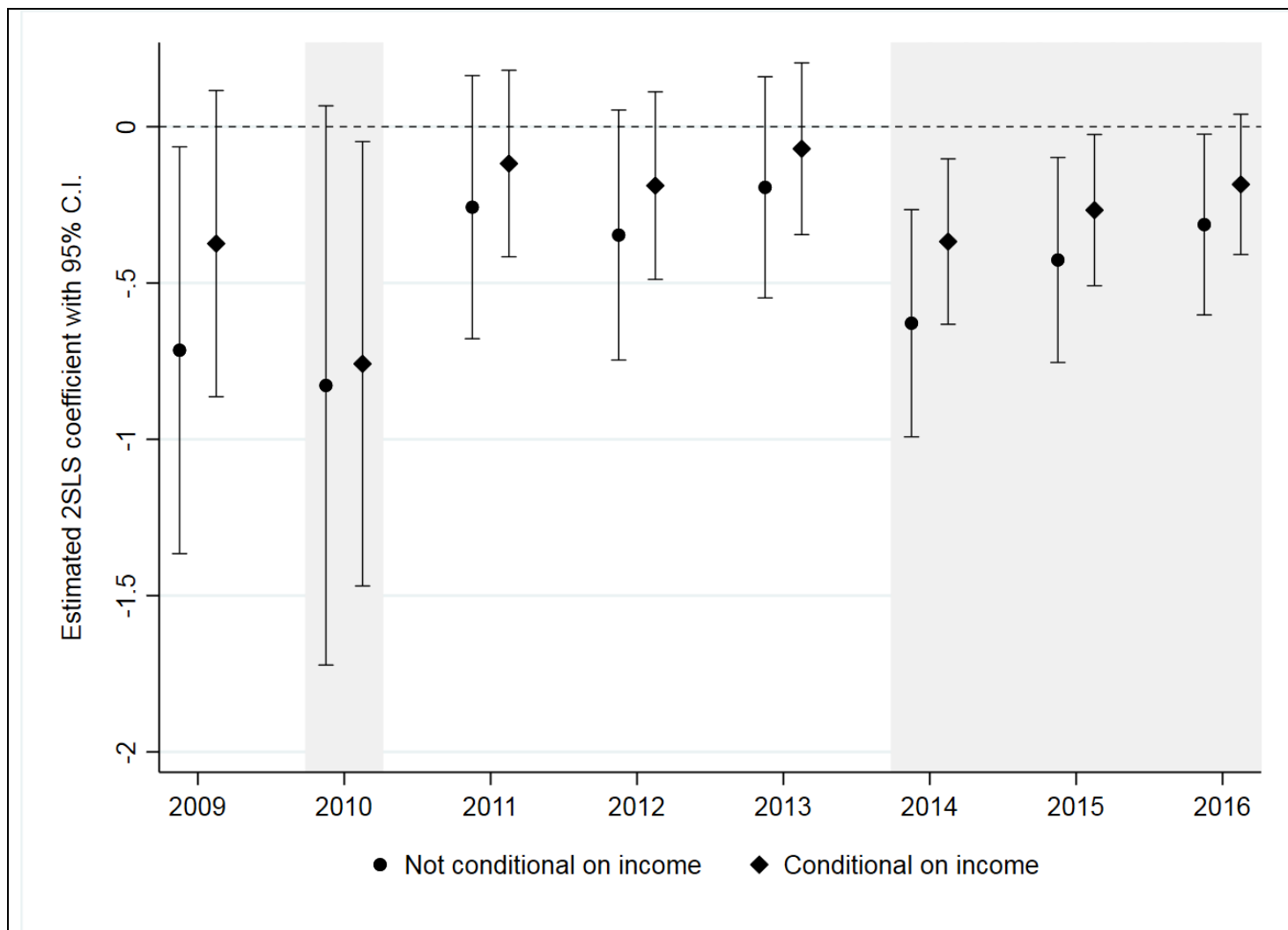
Estimation results

Table 3. Retirement and total expenditure.

	Simple model		Interacted model	
	[1]	[2]	[3]	[4]
Retired	-.396*** (.128)	-.222** (.096)	-	-
Retired×Age	-.026 (.016)	-.029** (.012)	-.012 (.015)	-.016 (.012)
Spouse retired	.075 (.176)	.182 (.125)	-	-
Spouse retired×Age	-.026*** (.009)	.003 (.006)	-.027*** (.010)	.002 (.007)
Retired×2009	-	-	-.715** (.332)	-.374 (.250)
Retired×2010	-	-	-.828* (.456)	-.758** (.362)
Retired×2011	-	-	-.257 (.215)	-.118 (.152)
Retired×2012	-	-	-.347* (.204)	-.188 (.153)
Retired×2013	-	-	-.194 (.180)	-.071 (.140)
Retired×2014	-	-	-.629*** (.185)	-.367*** (.135)
Retired×2015	-	-	-.426** (.167)	-.267** (.123)
Retired×2016	-	-	-.313** (.148)	-.185* (.114)
Spouse retired×2009	-	-	.448 (.382)	.395 (.249)
Spouse retired×2010	-	-	.512 (.551)	.772* (.437)
Spouse retired×2011	-	-	-.231 (.282)	-.040 (.193)
Spouse retired×2012	-	-	-.070 (.291)	.056 (.213)
Spouse retired×2013	-	-	-.193 (.226)	-.003 (.170)
Spouse retired×2014	-	-	.190 (.218)	.246 (.159)
Spouse retired×2015	-	-	.048 (.227)	.221 (.164)
Spouse retired×2016	-	-	.022 (.183)	.110 (.134)
Total household income (ln)	-	.636*** (.013)	-	.636*** (.014)
Observations	6,883	6,883	6,883	6,883

Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT). Notes: 2SLS estimates. Robust standard errors in parentheses. All models include individual and household controls and year fixed effects. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Estimation results



Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT). Notes: 2SLS estimates. 95% confidence intervals are based on robust standard errors. All parameters are obtained from models that include individual and household controls and year fixed effects.

Estimation results

Table 4. Retirement and expenditure categories: Estimates from the simple model.

	Retired	Retired×Age	Spouse retired	Spouse retired×Age	Household income
Expenditure category:	[1]	[2]	[3]	[4]	[6]
Food & alcoholic beverages	.044 (.098)	-.017 (.013)	.219 (.143)	.011 (.007)	.242*** (.012)
Alcohol & tobacco	-.460 (.594)	-.178** (.077)	.787 (.922)	.013 (.047)	.641*** (.076)
Clothing & footwear	-1.453** (.623)	.006 (.082)	1.933** (.915)	.001 (.046)	1.379*** (.075)
Housing, water, electricity	-.107 (.096)	-.014 (.012)	.234* (.134)	-.010 (.007)	.567*** (.014)
Household equipment	-.285 (.393)	-.089* (.052)	1.015* (.563)	.018 (.028)	1.056*** (.051)
Health	1.078* (.568)	-.032 (.072)	-.580 (.757)	-.013 (.039)	.913*** (.074)
Transport	-.595 (.437)	-.111* (.057)	1.314* (.689)	.013 (.037)	1.391*** (.063)
Communications	-.365** (.142)	-.024 (.020)	.106 (.217)	-.015 (.011)	.643*** (.022)
Recreation & culture	-.211 (.356)	.005 (.046)	-.152 (.504)	-.030 (.025)	1.340*** (.043)
Restaurants & hotels	-.0242 (.441)	.031 (.057)	.515 (.669)	.008 (.032)	1.193*** (.058)

Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT).

Notes: 2SLS estimates. Sample size is 6,883 observations. Robust standard errors in parentheses. All models include individual and household controls and year fixed effects. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Estimation results

Table 5. Head of household retirement and expenditure categories during the crisis.

	Food & non- alcoholic beverages	Alcohol & tobacco	Clothing & footwear	Housing, water, electricity	Household equipment	Health	Transport	Communi- cations	Recreation & culture	Restaurants & hotels
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
Retired×2009	.159 (.241)	-.279 (1.504)	-1.138 (1.371)	-.185 (.268)	.408 (.827)	-.324 (1.272)	-.415 (1.095)	-.683* (.366)	.124 (.807)	.488 (.960)
Retired×2010	-.157 (.331)	-1.446 (2.091)	-4.171* (2.386)	-.552 (.377)	-.624 (1.148)	2.536 (2.045)	-3.087 (1.943)	-.504 (.463)	-1.411 (1.102)	.583 (1.128)
Retired×2011	.009 (.160)	.287 (.892)	-1.287 (1.024)	-.144 (.147)	.166 (.592)	1.685* (1.013)	-1.236 (.823)	-.394 (.282)	-.341 (.543)	.392 (.597)
Retired×2012	.088 (.156)	-.471 (.921)	-1.627 (1.027)	-.065 (.125)	-.700 (.645)	1.369 (.863)	-1.526* (.878)	.039 (.207)	-.130 (.504)	-.919 (.681)
Retired×2013	.309** (.143)	.040 (.870)	-1.901* (.974)	.040 (.129)	.559 (.504)	.991 (.851)	.404 (.619)	-.192 (.195)	.213 (.669)	.474 (.538)
Retired×2014	-.183 (.142)	-1.702** (.854)	-1.089 (.843)	-.144 (.122)	-.399 (.581)	1.811** (.759)	-.857 (.643)	-.233 (.180)	-.947* (.564)	-.763 (.633)
Retired×2015	-.067 (.132)	-.832 (.824)	-2.008** (.922)	-.091 (.125)	-1.096* (.603)	1.327* (.767)	-.889 (.616)	-.433** (.179)	-.531 (.458)	-.619 (.670)
Retired×2016	.047 (.121)	-.260 (.769)	-1.140 (.798)	-.135 (.113)	-.017 (.485)	1.064 (.677)	-.118 (.494)	-.550*** (.193)	.147 (.415)	-.086 (.583)
Observations	6,883	6,883	6,883	6,883	6,883	6,883	6,883	6,883	6,883	6,883

Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT).

Notes: 2SLS estimates. Robust standard errors in parentheses. All models include individual and household controls and year fixed effects.

Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Estimation results

Table 6. Impact of retirement on expenditure: Falsification tests.

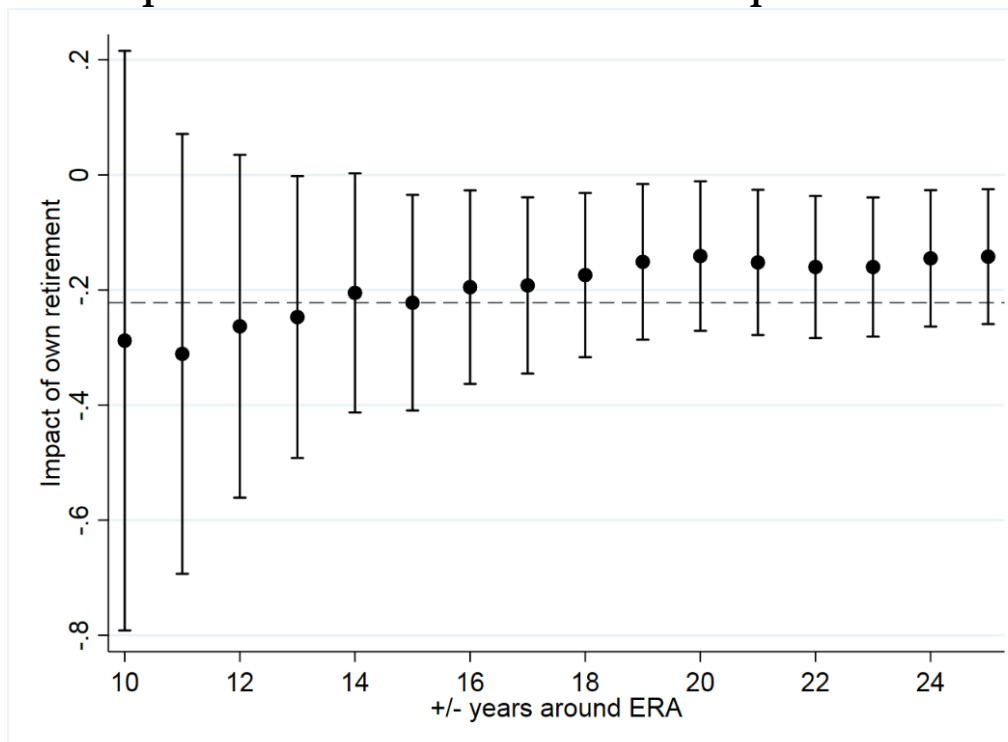
ERA specified at:	t-5	t-4	t-3	t-2	t-1	(Actual ERA) t-0
	[1]	[2]	[3]	[4]	[5]	[6]
Retired	.035 (.120)	.031 (.126)	-.083 (.103)	-.104 (.106)	-.112 (.094)	-.222** (.096)
Retired×Age	-.038** (.017)	-.041** (.017)	-.030** (.014)	-.029** (.014)	-.031** (.013)	-.029** (.012)
Spouse retired	.166* (.097)	.106 (.096)	.128 (.093)	.076 (.103)	.066 (.101)	.182 (.125)
Spouse retired×Age	.001 (.005)	.003 (.005)	.001 (.005)	-.000 (.005)	-.000 (.005)	.003 (.006)
Total household income (log)	.634*** (.013)	.637*** (.013)	.638*** (.013)	.641*** (.013)	.641*** (.013)	.636*** (.013)
Observations	6,883	6,883	6,883	6,883	6,883	6,883

Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT).

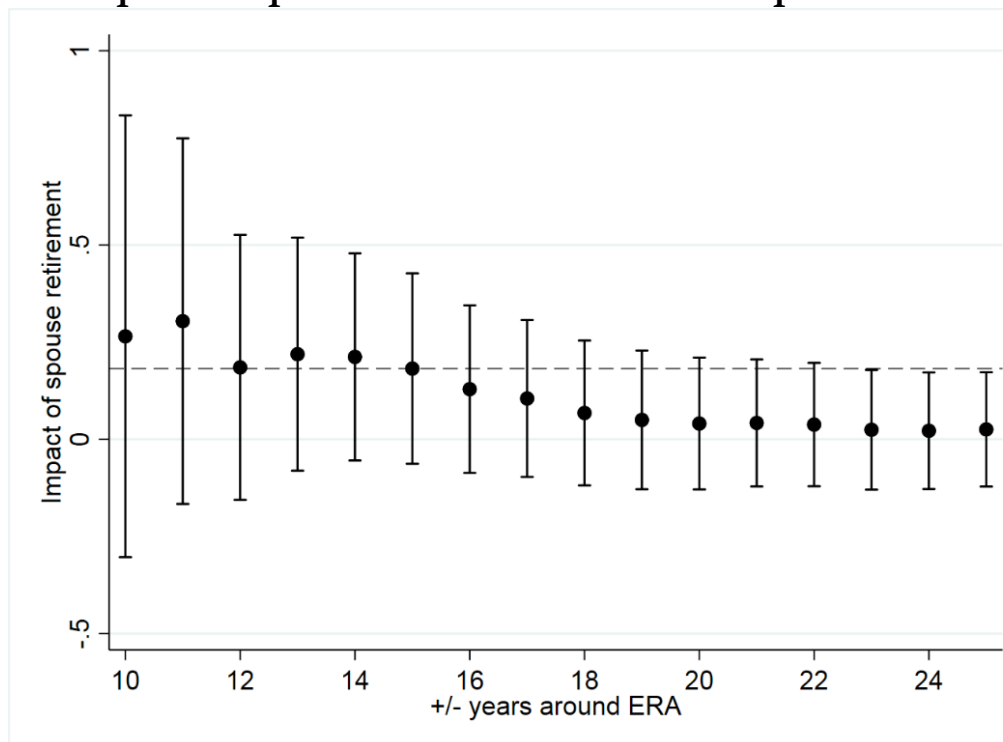
Notes: 2SLS estimates. Robust standard errors in parentheses. All models include individual and household controls and year fixed effects. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Estimation results

Impact of own retirement on total expenditure



Impact of spouse retirement on total expenditure



Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT).

Notes: 2SLS coefficients with 95% confidence intervals based on standard errors corrected for clustering by household. Dashed horizontal lines represent the average baseline effects obtained when estimating the model using a +/- 15 years bandwidth around ERA. All models control for the usual set of individual and household characteristics and time fixed effects.

Estimation results

Table 7. Retirement and total expenditure: Changes in household composition.

	[1]	[2]	[3]	[4]	[5]
Retired	-.257*** (.096)	-.222** (.096)	-.243** (.096)	-.226** (.095)	-.215** (.097)
Spouse retired	.148 (.126)	.182 (.125)	.150 (.125)	.182 (.125)	.198 (.129)
Total household income (ln)	.674*** (.013)	.636*** (.013)	.674*** (.013)	.635*** (.013)	.634*** (.013)
Household size	-	.063*** (.007)	-	.065*** (.007)	.058*** (.008)
Presence of dependent children	-	.088*** (.019)	-	.087*** (.019)	.090*** (.019)
Unemployed children in household	-	-	.050*** (.012)	-.013 (.012)	-.032* (.017)
Adult children in household	-	-	-	-	.027* (.016)

Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT).

Notes: 2SLS estimates. Robust standard errors in parentheses. All models include individual and household controls and year fixed effects.

Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Estimation results

Table 8. Retirement and total expenditure: Controlling for education.

Outcome:	Primary or less education	Secondary education	Tertiary education	Total expenditure
	[1]	[2]	[3]	[4]
Retired	.261** (.107)	-.064 (.117)	-.196* (.105)	-.194** (.094)
Spouse retired	-.322** (.153)	.239 (.156)	.084 (.140)	.163 (.126)
Total household income (ln)	-.345*** (.014)	-.017 (.014)	.362*** (.013)	.593*** (.013)
Primary or less education	-	-	-	-
Secondary education	-	-	-	.043*** (.015)
Tertiary education	-	-	-	.121*** (.017)

Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT).

Notes: 2SLS estimates. Robust standard errors in parentheses. All models include individual and household controls and year fixed effects. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Estimation results

Table 9. Retirement and total expenditure: Age difference.

	Couples with low age difference (less than 5 years)	Couples with high age difference (more than 5 years)	Couples with low age difference (less than 5 years)	Couples with high age difference (more than 5 years)
	[1]	[2]	[3]	[4]
Retired	-.673** (.304)	-.285 (.460)	-.394* (.244)	-.284 (.348)
Retired×Age	-.071** (.031)	-.011 (.025)	-.044** (.022)	-.037* (.019)
Spouse retired	.622 (.591)	.579 (1.033)	.433 (.458)	-.190 (.897)
Spouse retired×Age	.032 (.033)	-.037 (.023)	.037 (.024)	-.017 (.017)
Control for income	No	No	Yes	Yes

Source: Household Budget Survey (2009-2016); Hellenic Statistical Authority (EL.STAT).

Notes: 2SLS estimates. Robust standard errors in parentheses. All models include individual and household controls and year fixed effects. Asterisks ***, ** and * denote statistical significance at the 1%, 5% and 10% level, respectively.

Conclusions

- some first evidence on the retirement-expenditure puzzle in bad times
 - adverse economic conditions
 - implementation of pension cuts (and reforms)
- expenditure drops at retirement
 - part of it explained by changes in income
 - drop is greater when pension cuts were implemented
- gender asymmetries
 - spouse retirement is not significant
- work in progress:
 - wider time window: 2008-2017 data
 - ...plus the 2004 wave for some “good times” evidence
 - individual data on income, income source, insurance

Retirement and Expenditure in Turbulent Times

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