Do you Need Less Money in Retirement?

Martina Celidoni
(University of Padua, Italy)

Guglielmo Weber
(University of Padua, Italy)

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Martina Celidoni and Guglielmo Weber

Department of Economics and Management, University of Padua
via del Santo 33, 35122 Padua, Italy

Abstract

The literature has documented a one-off drop in consumption at retirement that may be difficult to reconcile with Modigliani's life cycle model – the retirement consumption puzzle.
We use recently released Italian micro data to estimate the effect of retirement on the minimum amount of money needed to "live comfortably but not in luxury". We find that at retirement non-durable consumption decreases by 9.8 percent and that respondents declare they need 9.9 percent less money to "live comfortably but not in luxury".

Keywords: Retirement consumption puzzle, minimum income question, RDD

JEL Codes: D12, D91, J26, J14

1. Introduction

The key prediction of the life-cycle model is that individuals form inter temporal plans to smooth their marginal utility of consumption over the life course. The literature however has emphasized and documented a one-off drop in consumption at retirement (Banks, Blundell and Tanner, 1998 for the U.K.; Bernheim, Skinner and Weinberg., 2001 for the U.S.; Battistin, Brugiavini, Rettore and Weber, 2009, and Miniaci, Monfardini and Weber, 2010, for Italy, Li, Shi and Wu, 2015, for China). This appears inconsistent with the consumption-smoothing hypothesis by Modigliani and Brumberg (1954) and has therefore been labelled "the retirement consumption puzzle".

Several explanations have been proposed that challenge the very premises of the model: changes in preferences, unexpected low pensions or liquidity problems, intra household bargaining power, myopic or perhaps time-inconsistent behavior. Other explanations, consistent with the model, exploit the notion that retirement brings about the end of work-related expenses, and allows consumers to engage in more efficient shopping for food and other staple commodities (see Attanasio and Weber, 2010, for an appraisal). If these latter explanations are proven right, the retirement consumption drop would be no puzzle after all (Hurst, 2008).

In this paper we use recently released Italian micro data that record the respondents' subjective evaluation of the minimum amount of money needed "to live comfortably but not in luxury". If individuals at retirement reduce expenditure, but not utility, we should also find that retirement is associated to a lower amount of money needed to easily make ends meet ("money needed" from now on).

In the Italian case, Battistin et al. (2009) estimate in a regression discontinuity design setting a consumption drop at retirement of 9.8 percent for non-durable expenditure over the 1993-2004 period. We consider the period 2004-14 for which we have data on money needed. For this period, we estimate a 9.8 percent drop in consumption and a 9.9 percent drop in money needed. The similarity of the estimates is confirmed when both outcomes are deflated by a widely used equivalence scale, the square root of the household size.

The paper unfolds as follows: section 2 describes the data used, section 3 presents the empirical strategy adopted, in section 4 we comment our results, section 5 concludes.

2. Data

We use data drawn from the SHIW provided by the Bank of Italy; this survey represents the main and most important source of information about income, consumption and wealth of Italian households.

We focus especially on the period 2004 onwards, when the question we are interested in was introduced. In the period we consider, the survey is conducted every two years. Data are provided to users in two versions: historical and annual. We use mainly the latter, with the exception of selected socio-demographic variables such as education drawn from the historical dataset to ensure harmonization over time in its definition. Following Battistin et al. (2009), we do not exploit the longitudinal dimension of the survey, but we treat data as repeated cross sections. We take the head of the household to be male and include in the estimation sample couples and single males.

Our main outcome of interest is the answer to the following question: 'How much do you think a household like yours needs per month to live comfortably but not in luxury?' - from now on '*money needed*'.
We show that in our sample the stated amount of *money needed* for a two-person household is comparable to the average total expenditure for two-person households as recorded in the diary-based survey run by the Italian Institute of Statistics (ISTAT).

In the first row of Table 1 we report the average total expenditure computed by ISTAT (2005, 2007, 2009, 2011, 2013, 2015a, 2015b) for two-member households. In Table 1 we show also the average and the median amount of *money needed* stated in our sample for two-member households. We see that the reported statistics are quite close to each other in all available years.

- Table 1 here -

Another key variable in our analysis is the running variable, time to/since eligibility. It is defined based on age and seniority (accrued contribution years), self-reported information in our dataset. Eligibility criteria, described in Appendix A, refer to the year individuals received the first benefit if job pensioners, to the interview year for employed or self-employed. We therefore exclude from our analysis first-time job seekers, unemployed, homemakers, non-job pensioners, students, conscripts or "other". As Battistin et al. (2009), we focus on male retirement due to the relatively low labour force participation by females.
Table 2 reports a breakdown by survey year, showing in the first row the initial number of released households, in the second row there is the number of observations when focusing only on couples (with male heads) and single males whereas in the third row we report observations with time to/since eligibility in between -10 and 10.

- Table 2 here -

We will consider also non-durable consumption. Information on this topic is gathered through a catch-all question on total monthly spending, excluding expenditure to purchase valuables, cars, or for maintenance, allowances, gifts, extraordinary maintenance of dwelling, rental of dwelling, mortgage instalments, life insurance premiums, contributions to supplementary pension schemes. In 2012 this question was asked only to a random subsample that is too small for the type of analysis we do in this paper. In 2014 the question was instead asked again to the full sample.
Due to these questionnaire changes occurring in 2012 and 2014, our baseline results focus on the period 2004-2010 for non-durable consumption.[1]

3. Empirical strategy

To account for the endogenous nature of the retirement decision and estimate its casual effect on the outcomes of interest, we exploit the discontinuity at the threshold for eligibility. We will compare the outcome of those who just retired with the outcome of those who are about to retire.

[1] See Appendix for the inclusion of 2014 data for non-durable consumption.

Let us define our treatment variable, R, the retirement status, which equals one if the household head is retired and zero otherwise. R is a deterministic and discontinuous function of S which represents time to/since eligibility expressed in years and assumed to be continuous. More precisely

$$R = \begin{cases} 1 \; if \; S \; \geq 0 \\ 0 \; if \; S \; < 0 \end{cases}. \tag{1}$$

Let Y_1 and Y_0 be the two potential outcomes one would experience in case she retires or not respectively, if both were observable, the causal parameter of interest would be $\beta = Y_1 - Y_0$, but this will never be the case. To retrieve a consistent estimate of the causal parameter of interest, β, however it is possible to exploit the rule determining treatment (1): individuals are eligible for retirement if and only if S is not negative. According to this rule therefore, for individuals with negative S, the probability of retirement will be zero, for those with positive S, the same probability will be positive but lower than one given that retirement is not mandatory. This discontinuity in the probability of retirement at the eligibility threshold can be used to overcome endogeneity issues due to self-selection into retirement among eligible individuals.

- Table 3 -

As in Battistin et al. (2009), in our data it can be observed that some individuals report being retired for negative values of S. We show in Table 3 the percentage of individuals that self-declare to be retired by distance to/since eligibility in our sample. Strictly positive percentages also before eligibility suggest errors in the definition of eligibility and/or misreporting in the retirement status. While the latter seems unlikely given the questionnaire design and the definition of retirement status we use, we assume that all measurement errors are concentrated in the former, the running variable *time to/since eligibility*.
As discussed in Battistin et al. (2009), in presence of measurement errors in S, the sample analog of the following

$$\frac{E\{Y|S=0^+\} - E\{Y|S=0^-\}}{E\{R|S=0^+\} - E\{R|S=0^-\}}, \tag{2}$$

where $S = 0^+$ and $S = 0^-$ denote individuals marginally above and marginally below S = 0, identifies the causal effect of retirement at the threshold on the outcome, as long as, conditional on the true value of time to/since eligibility, the process generating measurement errors is orthogonal to the process of interest. We therefore rely on this result and estimate parametrically β by an instrumental variable strategy, using eligibility status as instrument for retirement status (see Imbens and Angrist, 1994; Hahn at al., 2001).
We specify the following

$$Y_{h,t} = \beta_0 + \beta_1 R_{h,t} + \beta_2 S_{h,t} + \beta_3 S_{h,t}^2 + \varepsilon_{h,t} \tag{3}$$

where h denotes the household and t the survey year, more precisely $Y_{h,t}$ is the outcome at the household level - non-durable consumption, food consumption and *money needed* -, $R_{h,t}$ is the

household (male) head's retirement status, whereas $S_{h,t}$ is time to/since eligibility for the same individual. In addition to household level data estimates with clustered standard errors, we provide also comparable grouped estimation, as in Battistin et al. (2009), based on sample averages by year and time to/since eligibility (s) following equation (4), where $R_{s,t}$ will be the proportion of retired male heads by t and s

$$Y_{s,t} = \beta_0 + \beta_1 R_{s,t} + \beta_2 S + \beta_3 S^2 + \varepsilon_{s,t} . \quad (4)$$

We use eligibility status as instrument for retirement by specifying the following:

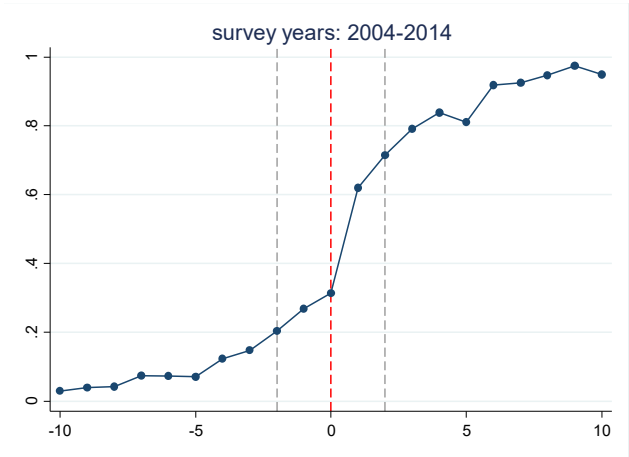
$$R_{i,t} = \alpha_0 + \alpha_1 1[S_{i,t} \geq 0] + \alpha_2 S_{i,t} + \alpha_3 S_{i,t}^2 + \upsilon_{i,t} , \quad (5)$$

the corresponding first stage equation with grouped data will be

$$R_{s,t} = \alpha_0 + \alpha_1 1[S \geq 0] + \alpha_2 S + \alpha_3 S^2 + \upsilon_{s,t} . \quad (6)$$

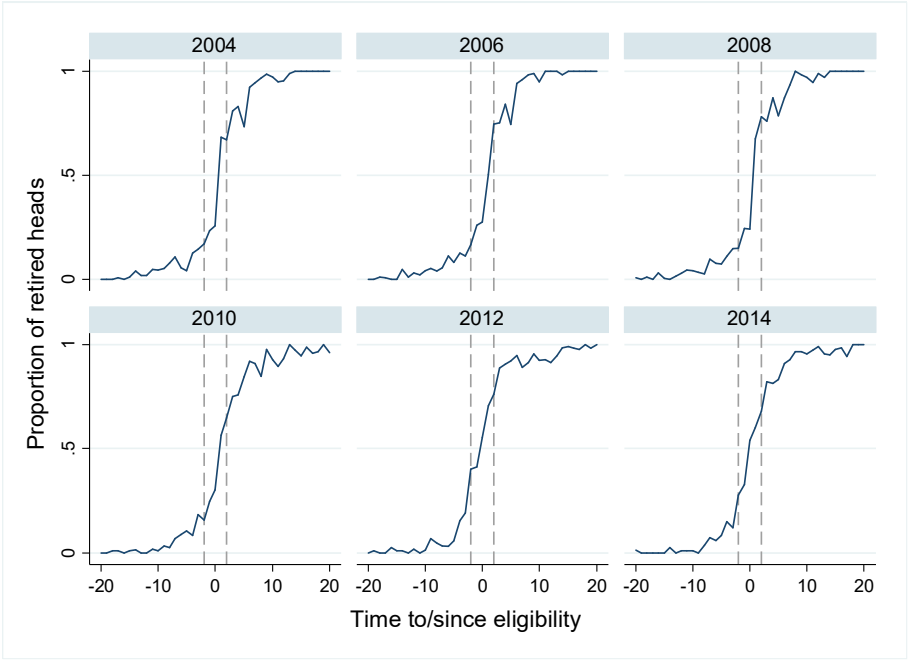
In all cases we allow for year-specific intercepts.
We provide estimates for household heads having time to/since eligibility in between -10 and 10, but exclude those with S = 0 since for Y could include pre- and post-retirement periods if retired. As robustness we show estimates within a five-year and fifteen-year band.

Figure 1. Proportion of retired male heads by time to/since eligibility, 2004-2014



In Figure 1 we report the proportion of job pensioner by time to/since retirement for the period 2004-2014 (we obtain a similar picture considering the period 2004-2010); this figure reveals that at eligibility there a is a sizable jump in the proportion of retired heads. Figure 2 shows the same relationship over the years, highlighting that it is relatively stable over time.

Figure 2. Proportion of retired male heads by time to/since eligibility and survey year



4. Estimation Results

4.1 Non-durable consumption

We first focus on non-durable consumption in the period 2004-2014. For comparability with previous results, in Table 4 we report estimates based on grouped data for non-equivalent and equivalent values.

In Table 4 we can see that the non-durable consumption drop (column (4)) is estimated to be 9.8 percent (as for the period 1993-2004), significant at the 10 percent level. Household level data estimates, with standard errors robust to clustering at the year of retirement/interview and sector, yield very similar results with point estimates slightly lower: 8.3 percent significant at the 5 percent level.

- Table 4 here -

In Table 4 we report also selected first stage estimates that confirm the graphical analysis. The coefficient associated to eligibility is very similar to previous findings (0.415 - s.e. 0.023 - compared to 0.435 - s.e. 0.038) and the F-statistic for the excluded instruments is very large around 200 supporting our identification strategy.

In Table 4 (columns (3) and (4)) we report also estimation results for equivalent non-durable consumption, using as equivalence scale the square root of the household size as a way to account for economies of scale and possible changes in family size upon retirement (see for instance Moretti and

Manacorda, 2006, who stress the role of parents' pension eligibility as determinant of children nest leaving in Italy).[2]
As in Battistin et al. (2009), we do not find statistically significant effects (the analysis at the household level data confirm these findings). It is worth noting however that when considering a larger year band, we find statistically significant drops also with equivalent amounts.

- Table 5 here -

In Table 5 we show the robustness of our results based on different year bands to/since eligibility (five-year and fifteen-year band).

No significant effect are estimated when S is in between -5 and 5 (columns (1) and (2), whereas in column (3) and (4) when considering a larger year-band, [-15;15], we find a significant non-durable consumption drop for both non-equivalent and equivalent amounts (12.7 percent and 7.4 percent respectively). Household level estimates, available upon request, provide a similar picture.
In Appendix, Table A2, we report estimates for non-durable consumption when including also 2014.

4.2 Money needed

We now turn to the *money needed* question. Looking at Table 6, where we report estimates based on grouped data, we can see that retirement causes a reduction in the stated amount the household needs per month to live comfortably but not in luxury. That is, to maintain an acceptable living standard (or a minimum utility level), individuals after retirement need a lower amount of money.

- Table 6 -

This result can be interpreted as an additional evidence in favor of the idea put forward by Miniaci et al. (2003) for Italy that drops in consumption upon retirement does not necessarily imply a drop in utility. Analysing diary-level Italian data on consumer spending in the period 1985-1996, the authors find that consumption of work-related goods (transport to and from work, meals, and business clothing) falls around retirement age and home production of food and other goods increases. Aguiar and Hurst (2005, 2007) as well as Hurd and Rohwedder (2006) highlight that home production of services may become advantageous and the increased leisure time, retirees are provided with, can be used to purchase goods more efficiently. A recent paper by Li et al. (2015), using detailed Chinese consumption data, shows also that when excluding work-related expenditures, food consumed at home and entertainment, retirement does not have an effect on the remaining non-durable expenditures, suggesting again that within an extended life-cycle model with home production the consumption drop upon retirement does not represent an inconsistency with the consumption-smoothing hypothesis by Modigliani and Brumberg (1954) and Freidman (1957).
Table 7 shows that our estimates are robust to different year-bands. In Table A3 in the Appendix we provide estimates for the period 2004-2010, for comparability with non-durable consumption analysis: we can observe that there is a significant drop for the non-equivalent amount (column 3)

[2] In Appendix we report estimates when using as outcomes the household size, a dummy for the presence of a couple and the number of children whose age is lower than/ above 25 (typical age when tertiary education finishes). Table A1 shows that changes in household size upon retirement are mainly due to a reduction in the number of grown-up children.

whereas no significant effects are estimated for equivalent values, even if the p-value is 0.107 slightly above the conventional threshold.

- Table 7 here -

- Table 8 here -

- Table 9 here -

In Table 8 we show household level estimates: in column (3) we can observe results are very similar to Table 6 (column 3) results. In column (4) we add socio-demographic controls - age, age squared, education, geographical location -, in general however, as the covariates vary smoothly around the threshold, their inclusion mainly serves to increase the precision of our estimates; in fact results are rather stable. In Table 9 we focus on equivalent amounts using household level data: results in column 3 are very similar to what estimates in Table 6 column (4).

4.3 Overidentification test

As in Battistin et al. (2009) and Li et al. (2015), we test the validity of our identification strategy following Lee (2008)'s idea, by looking at a battery of outcomes determined prior to eligibility: age, education and years of contribution of the head and home size. The presence of a discontinuity in any of those variables might signal that households marginally above and marginally below $S = 0$ are not fully comparable. Table 10 shows that this is not the case: we do not find any significant effects among the seven outcomes considered.

- Table 10 here -

5. Conclusions

In this paper we have investigated for the period 2004-2014 in Italy how retirement affects the declared minimum amount of money needed to live comfortably but not in luxury. If the consumption puzzle is due to work-related goods without drops in terms of utility, we should also find that, at retirement, they declare a lower amount of money needed to easily make ends meet that excludes work-related expenses.

Following the literature, we overcome endogeneity issues due to self-selection into retirement among eligible individuals, by exploiting exogenous variability in eligibility criteria for early and normal retirement.

According to our baseline estimates at retirement, in the period analysed, non-durable consumption drops by 9.8 percent, whereas the minimum amount of money needed decreases by 9.9 percent.

Changes in family composition at retirement (number of grown up children leaving the parental home) do not completely account for this effect, if the outcomes are deflated by a widely used equivalence scale (square root of household size), results do not vanish, supporting the role of work-related expenses in explaining the drop.

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TABLES

Table 1. ISTAT relative poverty lines and money needed (euros, current prices).

	2004	2006	2008	2010	2012	2014
Average total expenditure (ISTAT) for a two-member households	1839.96	1940.68	1999.34	1984.92	1981.76	2083.82
Money needed among two-member households (SD)	Mean (SD)					
	1903,24 (759,28)	1935,22 (729,26)	1946,89 (732,98)	2057,67 (782,55)	2154,88 (748,73)	2281,47 (789,15)
	Median					
	1800	2000	1850	2000	2000	2000

Table 2. Sample selection by survey years.

Survey year	2004	2006	2008	2010	2012	2014
Raw data	8012	7768	7977	7951	8151	8156
Couples and single males	5594	5415	5545	5349	5412	5211
S ϵ [-10;10]	2075	2071	2068	2039	1673	1671

Table 3. Percentage of retired males by time to/since eligibility, 2004-2014.

Distance	-5	-4	-3	-2	-1	0	1	2	3	4	5
%	7.09	12.4	14.73	20.36	26.82	31.4	62.01	71.4	79.17	83.83	81.13
Obs	776	500	584	506	481	637	487	472	480	507	514

Table 4 - The effect of retirement on non-durable consumption (2004-2010). *Grouped data*

	(3) OLS	(4) IV	(3) OLS	(4) IV
Dep. Var.	log_cons	log_cons	log_eqcons	log_eqcons
job_pensioner	-0.116**	-0.098*	-0.050	-0.047
	(0.050)	(0.052)	(0.050)	(0.050)
S	-0.002	-0.003	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.003)
$S^2/10$	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
First stage				
Eligible		0.415***		0.415***
		(0.023)		(0.023)
F-statistic		217.02		217.02

Notes: Instrumental variables estimates based on 80 cell means. The estimated equation relates expenditure to a dummy for retirement, controlling from time to/from eligibility and survey year dummies. Retirement is instrumented by eligibility status. Standard errors are robust to heteroskedasticity. S ϵ [-10;10], S=0 is excluded. *** p<0.01, ** p<0.05, * p<0.1

Table 5 - The effect of retirement on non-durable consumption (2004-2010) . *Grouped data*

	(1)	(2)	(3)	(4)
	IV			
	S ϵ [-5;5]		S ϵ [-15;15]	
Dep. Var.	log_cons	log_eqcons	log_cons	log_eqcons
job_pensioner	-0.131	-0.117	-0.127***	-0.074**
	(0.082)	(0.082)	(0.033)	(0.031)

S	0.001	0.010	-0.001	0.005***
	(0.007)	(0.007)	(0.001)	(0.001)
$S^2/10$	-0.001*	-0.001	-0.000***	-0.000***
	(0.001)	(0.001)	(0.000)	(0.000)
First stage				
Eligible	0.336***	0.336***	0.514***	0.514***
	(0.038)	(0.038)	(0.021)	(0.021)
F-statistic	58.65	58.65	362.91	362.91

Notes: Instrumental variables estimates based on 40 - S ϵ [-5;5] - or 120 - S ϵ [-15;15] - cell means. The estimated equation relates non-durable expenditure to a dummy for retirement, controlling from time to/from eligibility and survey year dummies. Retirement is instrumented by eligibility status. The equivalence scale used is the square root of household size. S=0 is excluded. Standard errors are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

Table 6. The effect of retirement on money needed (2004-2014). ***Grouped data***

	(1)	(2)	(3)	(4)
	OLS		IV	
Dep. Var.	log_povlin	log_eqpovlin	log_povlin	log_eqpovlin
job_pensioner	-0.094**	-0.052	-0.099**	-0.069*
	(0.036)	(0.035)	(0.042)	(0.039)
S	-0.005**	0.002	-0.005*	0.003
	(0.002)	(0.002)	(0.003)	(0.002)
$S^2/10$	-0.002*	-0.002**	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
First stage				
Eligible			0.400***	0.400***
			(0.022)	(0.022)
F-statistic			212.45	212.45

Notes: Instrumental variables estimates based on 120 cell means. The estimated equation relates subjective poverty line to a dummy for retirement, controlling from time to/from eligibility and survey year dummies. Retirement is instrumented by eligibility status. The equivalence scale used is the square root of household size. Standard errors are robust to heteroskedasticity. S ϵ [-10;10], S=0 is excluded. *** p<0.01, ** p<0.05, * p<0.1.

Table 7. The effect of retirement on money needed (2004-2014). ***Grouped data***

	(1)	(2)	(3)	(4)
			IV	
	S ϵ [-5;5]		S ϵ [-15;15]	
Dep. Var.	log_povlin	log_eqpovlin	log_povlin	log_eqpovlin
job_pensioner	-0.139	-0.154**	-0.092***	-0.047**
	(0.089)	(0.077)	(0.026)	(0.024)
S	-0.000	0.011*	-0.005***	0.001
	(0.008)	(0.007)	(0.001)	(0.001)
$S^2/10$	-0.004	-0.003	-0.003***	-0.002***
	(0.005)	(0.005)	(0.000)	(0.000)
First stage				
Eligible	0.280***	0.280***	0.507***	0.507***
	(0.035)	(0.035)	(0.026)	(0.026)
F-statistic	64.53	64.53	395.60	395.60

Notes: Instrumental variables estimates based on 60 - S ϵ [-5;5] - or 180 - S ϵ [-15;15] - cell means. The estimated equation relates subjective poverty line to a dummy for retirement, controlling from time to/from eligibility and survey year dummies. Retirement is instrumented by eligibility status. The equivalence scale used is the square root of household size. S=0 is excluded. Standard errors are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

Table 8. The effect of retirement on money needed (2004-2014). *Household level data*

	(1)	(2)	(3)	(4)
	OLS		IV	
Dep. Var.	log_povlin	log_povlin	log_povlin	log_povlin
job_pensioner	-0.118***	-0.084***	-0.109***	-0.117***
	(0.016)	(0.010)	(0.027)	(0.026)
S	-0.004***	0.008***	-0.004*	0.010***
	(0.001)	(0.001)	(0.002)	(0.002)
$S^2/10$	-0.002*	-0.002	-0.002*	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
survey year dummies	x	x	x	x
socio-demographic controls		x		x
Observations	10,818	10,818	10,818	10,818
R-squared	0.055	0.174	0.055	0.173
First stage				
Eligible			0.417***	0.425***
			(0.038)	(0.038)
F-statistic			120.27	123.33

Notes: Retirement is instrumented by eligibility status. Socio-demographic controls include age, age squared, education and geographical location (North, Centre and South). Standard errors are robust to clustering at year of retirement/interview and sector (public, private, self-employed). S ϵ [-10;10], S=0 is excluded. *** p<0.01, ** p<0.05, * p<0.1.

Table 9. The effect of retirement on money needed (2004-2014). *Household level data*

	(1)	(2)	(3)	(4)
	OLS		IV	
Dep. Var.	log_eqpovlin	log_eqpovlin	log_eqpovlin	log_eqpovlin
job_pensioner	-0.085***	-0.051***	-0.072***	-0.085***
	(0.016)	(0.011)	(0.026)	(0.024)
S	0.003***	0.006***	0.003	0.008***
	(0.001)	(0.001)	(0.002)	(0.002)
$S^2/10$	-0.002	-0.000	-0.002	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
survey year dummies	x	x	x	x
socio-demographic controls		x		x
Observations	10,818	10,818	10,818	10,818
R-squared	0.043	0.193	0.043	0.192
First stage				
Eligible			0.417***	0.425***
			(0.038)	(0.038)
F-statistic			120.27	123.33

Notes: Retirement is instrumented by eligibility status. Socio-demographic controls include age, age squared, education and geographical location (North, Centre and South). The equivalence scale used is the square root of household size. Standard errors are robust to clustering at year of retirement/interview and sector (public, private, self-employed) S ϵ [-10;10], S=0 is excluded. *** p<0.01, ** p<0.05, * p<0.1.

Table 10. Overidentification test (2004-2014) - *Grouped data*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				IV			
Dep. Var.	Age	$Age^2/10$		Education		Years of	Homesize
			Primary	Secondary	Tertiary	contribution	
job_pensioner	-0.762	-6.779	-0.053	0.034	0.019	0.446	2.492
	(0.739)	(8.387)	(0.052)	(0.062)	(0.045)	(0.852)	(4.978)
S	0.789***	9.250***	0.017***	-0.014***	-0.004	0.422***	-0.082
	(0.046)	(0.509)	(0.003)	(0.004)	(0.003)	(0.056)	(0.299)
$S^2/10$	-0.133***	-1.007***	0.001	0.003**	-0.005***	-0.295***	-0.259*
	(0.023)	(0.238)	(0.001)	(0.002)	(0.001)	(0.028)	(0.134)

Notes: Instrumental variables estimates based on 120 cell means. Retirement is instrumented by eligibility status. Survey years dummies included. Standard errors are robust to heteroskedasticity. S ϵ [-10;10], S=0 is excluded. *** p<0.01, ** p<0.05, * p<0.1.

APPENDIX

Eligibility is defined according to information from Angelini et al. (2009) and Battistin et al. (2009) and other country specific auxiliary data sources.

Statutory retirement

From 1961 to 1993 statutory retirement age is 60 (65 in the public sector), in 1994 and 1995 it is 61, in 1996 62, in 1997 and 1998 63, in 1999 64, from 2000 to 2011 65 (both private and public sector), from 2012 to 2014 66.

Early retirement

No early retirement from 1961 to 1964, from 1965 to 1995 35 years of contributions (25 in the public sector). From 1996 to 2007 we follow Battistin et al. (2009):

	Private sector		Public sector		Self-employed	
	Age + years	Only years	Age + years	Only years	Age + years	Only years
1996	54+35	36	53+35	36	57+35	40
1997	54+35	36	53+35	36	57+35	40
1998	54+35	36	53+35	36	57+35	40
1999	55+35	37	53+35	37	57+35	40
2000	55+35	37	54+35	37	57+35	40
2001	56+35	37	55+35	37	58+35	40
2002	57+35	37	55+35	37	58+35	40
2003	57+35	37	56+35	37	58+35	40
2004	57+35	38	57+35	38	58+35	40
2005	57+35	38	57+35	38	58+35	40
2006	57+35	39	57+35	39	58+35	40
2007	57+35	39	57+35	39	58+35	40

A new pension reform was approved in 2004 (243/2004) - the so called Legge Maroni, that would have introduced among other things new eligibility criteria for early retirement from the 1st January 2008, in particular a three-year increase in eligibility age ('scalone'). This reform however never came into force, and new eligibility rules were proposed since 2008 (individuals with long working career - at least 40 years of contribution could anyway retire at any age):

- from the 1st January 2008 to the 30th June 2009 early retirement requires to be aged at least 58 (59 for self-employed) with 35 years of contribution;

- from the 1st January 2009 the so called 'quotas' were introduced: individuals could retire if the sum of age and year of contributions was at least 95 (being aged at least 59 - 60 for self-employed) and having at least 35 years of contribution);

- from the 1st January 2011 to the 31st December 2011 individuals could retire if the sum of age and year of contributions was at least 96 (being aged at least 60 - 61 for self-employed and having at least 35 years of contribution).

Since 2012 early retirement (i.e. before 66) is possible at any age for individuals with at least 42 years of contribution. Individuals meeting the old requirements before the 31st December 2011 were allowed to retire before the statutory retirement age as well.

Table A1. The effect of retirement on family composition (2004-2014) - *Grouped data*

	(1)	(2)	(3)	(4)
			IV	
Dep. Var.	HH size	Couple	# children under 25	# children 25+
job_pensioner	-0.169*	-0.007	-0.033	-0.188**
	(0.101)	(0.032)	(0.100)	(0.087)
S	-0.043***	-0.001	-0.048***	0.016***
	(0.006)	(0.002)	(0.007)	(0.005)
$S^2/10$	0.003	-0.002	0.025***	-0.025***
	(0.003)	(0.001)	(0.003)	(0.003)

Notes: Instrumental variables estimates based on 120 cell means. Retirement is instrumented by eligibility status. Survey years dummies included. Standard errors are robust to heteroskedasticity. S ϵ [-10;10], S=0 is excluded. *** p<0.01, ** p<0.05, * p<0.1.

Table A2. The effect of retirement on consumption (including 2014)- *Grouped data*

	(1)	(2)	(3)	(4)	(5)	(6)
			IV			
Dep. Var.		log_cons			log_eqcons	
	S ϵ [-5;5]	S ϵ [-10;10]	S ϵ [-15;15]	S ϵ [-5;5]	S ϵ [-10;10]	S ϵ [-15;15]
job_pensioner	-0.035	-0.051	-0.095***	-0.083	-0.033	-0.060**
	(0.106)	(0.053)	(0.032)	(0.087)	(0.047)	(0.029)
S	-0.006	-0.005	-0.002	0.008	0.003	0.004***
	(0.009)	(0.003)	(0.001)	(0.008)	(0.003)	(0.001)
$S^2/10$	-0.001*	-0.001***	-0.000***	-0.001*	-0.001***	-0.000***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Observations	50	100	150	50	100	150
First stage						
Eligible	0.307***	0.400***	0.507***	0.307***	0.400***	0.507***
	(0.038)	(0.026)	(0.025)	(0.038)	(0.026)	(0.025)
F-statistic	64.91	231.45	403.78	64.91	231.45	403.78

Notes: Instrumental variables estimates based on cell means. The estimated equation relates non-durable expenditure to a dummy for retirement, controlling from time to/from eligibility and survey year dummies. Retirement is instrumented by eligibility status. The equivalence scale used is the square root of household size. S=0 is excluded. Standard errors are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

Table A3. The effect of retirement on money needed (2004-2010). *Grouped data*

	(1)	(2)	(3)	(4)
	OLS		IV	
Dep. Var.	log_povlin	log_eqpovlin	log_povlin	log_eqpovlin
job_pensioner	-0.137***	-0.067	-0.135***	-0.077
	(0.047)	(0.044)	(0.050)	(0.047)
S	-0.003	0.002	-0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.003)
$S^2/10$	-0.002	-0.003	-0.002	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)
First stage				
Eligible			0.415***	0.415***
			(0.028)	(0.028)
F-statistic			217.02	217.02

Notes: Instrumental variables estimates based on 80 cell means. The estimated equation relates subjective poverty line to a dummy for retirement, controlling from time to/from eligibility and survey year dummies.

Retirement is instrumented by eligibility status. The equivalence scale used is the square root of household size. Standard errors are robust to heteroskedasticity. S ϵ [-10;10], S=0 is excluded. *** p<0.01, ** p<0.05, * p<0.1