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RETIREMENT DECISIONS, ELIGIBILITY AND FINANCIAL LITERACY

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Abstract

In this work, we analyze if and to what extent financial literacy has an impact on workers' retirement decisions. We do so with reference to Italy, a country that has undergone important pension reforms in the last two decades. We use the Survey on Household Income and Wealth (SHIW) in the period 2006 to 2010, for which we have information on financial literacy. Our findings show that financially literate workers are more inclined to postpone retirement when they are (at least partially) enrolled in a DC scheme, Conversely, financial literacy does not seem to affect the retirement plans of workers who are still covered by the more generous DB formula.

JEL classification: D14

Key words: Eligibility, retirement decisions, financial literacy

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1. Introduction

The links between financial knowledge and households' behavior in various fields, such as consumption and saving, the choice of education and performance in the labor market have recently attracted much attention by both research and policy-making. Understanding the role of financial illiteracy in explaining why (some) people save too little for their retirement, or take on too much debt, make poor mortgage decisions or experience other financial problems is very important because illiteracy can be remedied, even if it takes time. Indeed, financial literacy can be seen as a necessary tool - certainly not sufficient - to create a less unequal playing field in the economic sphere.

In the field of retirement wealth, the pension reforms of last few decades have generally increased both the individual responsibility and the complexity of the formulae that determine benefits. The binary transition from Defined Benefit (DB) to Defined Contribution (DC) pension formulae and from PayGo to more funding reflects these important changes. In this increasingly complex environment, understanding the basic financial issues has become very important, as a basis to avoid major mistakes and improve choices.

This paper is centered on the relationship between financial (il)literacy and retirement decisions. More specifically, we investigate whether financial literacy affects the decisions of *eligible* people to postpone their retirement.

We take Italy as our case study because of three main reasons: i) its unhappy position in the financial literacy ranking among rich countries (Lusardi and Mitchell, 2011); ii) its significant gender and geographical heterogeneity, which allows us to investigate different types of behavior; iii) its pension system (mainly public and PayGo) is undergoing a transition from a rather generous DB formula towards a much less favorable DC one. While the first contained an "*implicit*" tax on the continuation of work and induced people to retire at the lowest possible age, the second, in consequence of its (almost) actuarial neutrality, allows for greater flexibility in the age of retirement (Belloni and Maccheroni, 2013).

From a methodological perspective, we use a linear probability model with individual fixed effects. We apply the model to a sample drawn from the Survey of Household Income and Wealth, run by the Bank of Italy, which provides a suitable longitudinal dataset containing, in the period 2006-2010, a specific section on financial literacy.

2. How important is financial literacy for savings formation and management?

The standard economic model of wealth accumulation posits that consumption decisions are taken in the life cycle framework, where consumption smoothing requires an individual to save during his/her working life to support consumption in retirement. To adequately perform this reallocation of resources, the worker should have a basic knowledge of concepts like *present discounted values, nominal versus real variables*, *risk diversification*; she should also be able to conjecture future labor incomes, social security benefits, retirement age, and survival probabilities. These prerequisites for rational choices are inherently complex and demanding, and hardly met empirically. That is why, at least in the public pension system, the most crucial decisions, starting with participation and the level of the contribution rate, have traditionally been compulsory, with no or very little discretion left to the individual. The age of retirement, on the other hand, has generally allowed for some flexibility - with, for example, an option to "early" retirement as a substitute for the "normal" retirement age. It is, however, a known fact that the exploitation of an early retirement option may cause the pension benefit to be too low later on, particularly in systems that have downgraded indexation from nominal wages to prices (as it occurred in most European countries).

In private pensions, the degree of freedom has traditionally been much greater, for example with respect to portfolio choices (absent in public pay-as-you-go systems). Although it is likely that people who *voluntarily* participate in private pensions are financially literate and thus more aware of the implications of their choices, this should however not be taken for granted.

Empirical research has demonstrated the strong association (not, or not yet, "causation") between financial literacy and households' financial well-being, through the adoption of a wide range of better strategies for wealth formation and management. These include: planning for retirement and life insurance coverage (Lusardi and Mitchell, 2007b; Van Rooij et al., 2007; Luciano et al. 2016); stock market participation (Guiso and Jappelli 2008); portfolio diversification (Kimball and Shumway 2007); avoidance of over-indebtedness (Lusardi and Tufano, 2009); participation in private supplementary pension plans (Fornero and Monticone, 2011).

Research has also shown the bad consequences of financial illiteracy. For example, Lusardi and Tufano (2009) show that people with a low level of financial literacy tend to enter into high-cost transactions. Van Rooij *et al*. (2007) document that a limited knowledge of stocks, bonds, risk diversification and, in general, of the working of financial markets implies a significantly lower propensity to invest in riskier/more rewarding assets, like stocks.

Moreover, a compelling body of evidence has demonstrated that some socio-demographic groups (typically, women older people and) are systematically more at risk of bad choices than other groups[1]. Because of these empirical results, various institutions are promoting initiatives to reduce illiteracy and support a better understanding of financial matters by citizens (OECD and PACFL, 2008).

We would like to add to the existing literature by exploring how financial literacy affects the retirement decision of eligible workers. To the best of our knowledge, this is the first study specifically devoted to the topic.

3. Italy as an interesting case study

Italy is a country with one of the oldest populations in the world: in 2014, the country occupied the fifth position, internationally, for the median age (44.5), after Monaco (51.1), Germany and Japan (46.1) and Saint Pierre and Miquelon (44.6). Projections of old age dependency ratios show one of the largest increases (from the 34 of 2014 to 70 of 2050)[2]. While longevity is steadily increasing, fertility is one of the lowest (1.42 children per woman)[3]. Confronted with these structural demographic changes, an ill designed pension system was hardly sustainable.

The political awareness of the unsustainability of pension promises started in the late Eighties and brought a series of reforms, which opened in the 1992 financial emergency, when the lira came under a speculative attack and Italy was forced to temporarily leave the European Monetary System (EMS). Social opposition imposed, however, an exasperatingly slow phasing in of the new rules (a less generous DB formula and restrictions to early retirement), so that three years later, in 1995, further restructuring was required. An NDC Swedish-style system was then adopted, but the pace of the reform continued to be impossibly slow, which implied transferring almost the entire adjustment burden to the young and future generations. Further piecemeal adjustments – some advancing on the reform path, some retreating - were introduced in subsequent years, spanning from stricter eligibility criteria to increases in payroll tax rates, from the abolition of the possibility to cumulate earnings and pension benefits to equalization of retirement ages of men and women in the public sector. This very long transition coupled with swift population aging reduced the beneficial effects on public finances and aggravated the effect of the sovereign debt crisis that hit the euro area — and Italy in particular — in summer/autumn of 2011, when a new reform was strongly advocated by international institutions.

A technocratic government, called in to overcome the political impasse, enacted the 2011 reform. The new reform had to be radical, with very short phasing-in period. It had to realize immediate savings in

[1] See Lusardi and Mitchell, 2013, for a survey.
[2] Projected number of persons aged 65 and over as a percentage of the projected number of persons aged between 15 and 64. According to Eurostat data, Italy will pass from 32.66 in 2013 to 53 in 2050 and to 57 in 2080.
[3] CIA World Fact book

pension expenditure and to provide for the demographic transition by reducing the burden on the young and future generations; it had to correct the inequities and the distortions still embedded in the system (like the "implicit tax" on the continuation of work after reaching the minimum age/seniority requirements). The reform speeded up the transition to the NDC system by extending to all workers (including members of Parliament), as of January 1, 2012, the DC method of benefit calculation. This was very important to restore credibility to the formula, still largely unfamiliar to the public and considered "too severe" (or too transparent?) by politicians. In terms of parametric changes, the reform significantly raised statutory retirement ages and almost canceled the "seniority pensions", awarded according to years of work, almost irrespective of age; it aligned, as of 2018, the retirement ages of women to those of men; and it indexed all retirement requisites to changes in life expectancy (Fornero 2015).

The reform process haa progressively tightened the eligibility conditions. From an initial situation which *de facto* encouraged early retirement (men and women could retire at any age with 35 years of seniority or at ages 60/55, respectively, having worked 15 years) regulation established subsequent increases in both age and seniority, or in their combination, and introduced incentives to postpone retirement. These changes in retirement requirements went in parallel with the change in the pension formula from a generous DB to a more actuarially neutral DC one.

For the purpose of this study, an exact description of the whole transition is not necessary. Given our dataset, we are interested in rules characterizing retirement in the period 2006-2010. Table 1A of the appendix summarizes the rather complex normative framework. In simple words, this could be described as the passage from a situation in which retirement at the earliest possible age was (and was known) to be the most convenient choice to a situation in which, because of the increasing relevance of the DC formula, postponing retirement could, from an economic point of view, be the right decision. We thus expect that more financially literate people who are eligible to retire at least partly under the DC system tend to postpone their exit from the labor market.

Looking at the other side of the thread, i.e. financial literacy levels, Fornero and Monticone (2011), again using SHIW data, show that most Italians lack knowledge of basic concepts such as interest rates and inflation and that, in term of differentiation, men, the more educated, and residents in the Centre–North possess higher financial literacy. As for the young generations (i.e. the future generations of retirees), the picture does not as well look reassuring. Italy's performance is below the average of the 13 OECD countries (PISA 2012). More than one in five students in Italy does not reach the baseline level of proficiency in financial literacy. Overall, Italy's performance in financial literacy is lower than might be expected, based on students' skills in mathematics and reading. This is particularly true among students with a strong performance in mathematics. This evidence suggests that the core skills students acquire in school do not include financial literacy.

4. Data and descriptive statistics

For our empirical analysis, we use SHIW data from 2006 to 2010, and take into account family heads that have become eligible for retirement and may or may not have retired. Table 1 reports the relevant descriptive statistics of our sample.

Considering the retirement age, both the actual and the expected one increase over time (the latter more than the former). The average retirement age is 58 over the whole period, while the expected one moves up from 62.8 to 63.8 years. This may reflect the progressive tightening of the access requirements, as imposed by the reforms.

As for labor income and wealth, the first is quite stable over the period, while the second increases moderately (3.6 per cent). Retirement income experiences the highest increase (9.7 per cent).

As for the replacement ratio, the actual one reached 73.5 per cent, on average, over the period. In terms of expectation, both its lower value of 65 per cent and its decrease of 2 percentage points over the years 2006-10 reflect workers' awareness of the restrictive effects of the reforms.

Table 1 Descriptive statistics panel 2006-2010

2006	*Obs*	*Mean*	*Std. Dev.*
Retirement age	2405	58	5
Expected retirement age	3473	62	5
Wealth	6544	255126	582704
Income	6480	23097	22485
Retirement income	2404	976	466
Replacement rate	2393	73	16
Expected replacement rate	3473	66	17

2008	Obs	Mean	Std. Dev.
Retirement age	2502	58	5
Expected retirement age	3458	63	4
Wealth	6664	250522	531941
Income	6600	23112	18251
Retirement income	2502	1091	993
Replacement rate	2495	73	16
Expected replacement rate	3458	65	16

2010	Obs	Mean	Std. Dev.
Retirement age	2364	58	5
Expected retirement age	3324	63	4
Wealth	6666	264426	440119
Income	6580	23111	18491
Retirement income	2364	1071	546
Replacement rate	2360	73	16
Expected replacement rate	3316	64	15

Source: Our calculations using SHIW data

We define 'eligible' those workers who meet the (variable, as we have seen) conditions for retirement in each particular year. Their number is around 2.6 thousands in all years; of them only a fraction varying from 6.8 to 11.4 per cent was still working.

Table 2 Eligible people panel 2006-2010

Eligible people	**Years**			
	2006	**2008**	**2010**	**Total**
Still working	252	179	294	725
	34.76	24.69	40.55	100.00
	9.70	6.83	11.45	9.31
Eligible and retired	2345	2443	2273	7061
	33.21	34.60	32.19	100.00
	90.30	93.17	88.55	90.69
Total	2597	2622	2567	7786
	33.35	33.68	32.97	100.00
	100.00	100.00	100.00	100.00

Source: Our calculations using SHIW data

When analyzing gender differences, Table 3 shows that women represent 28 per cent of the sample in 2006, but only 6.6 per cent of these women decided to postpone retirement, a much lower proportion than observed in men (11 per cent). The numbers support the hypothesis that men and women may have behaved differently with respect to retirement. We also see that the gap decreases over time, with women overtaking man in 2010 (11.8 against 11. 2 per cent).

Table 3 Eligible by gender panel 2006-2010, by percentage

Eligible	**2006**			**2008**			**2010**		
	Male	***Female***	***Total***	***Male***	***Female***	***Total***	***Male***	***Female***	***Total***
Still working	80.95	19.05	100.00	65.92	34.08	100.00	64.63	35.37	100.00
	10.93	6.58	9.70	6.36	7.94	6.83	11.26	11.83	11.45
Retired	70.92	29.08	100.00	71.06	28.94	100.00	65.90	34.10	100.00
	89.07	93.42	90.30	93.64	92.06	93.17	88.74	88.17	88.55
Total	71.89	28.11	100.00	70.71	29.29	100.00	65.76	34.24	100.00
	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Our calculations using SHIW data

We also controlled for geographical areas, and found no significant difference between North and South.

In order to analyze the way in which expectations about retirement differ from the actual result, we study the effective and expected replacement ratios by gender and regions. Table 4 shows that expectations decrease over time for both women and men, and that women have lower expectations across all years (a fact that can be explained by the lower average seniority and the persisting wage gap in the labor market). Men's expected ratios, on the other hand, decrease more than women's.

Table 4 Expected replacement ratios, by gender panel 2006-2010

	Expected replacement rate

	Male			Female		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	2581	66.42	17.37	892	64.93	16.34
2008	2494	65.76	16.18	964	63.08	16.62
2010	2115	64.74	15.62	1201	63.32	14.63

Source: Our calculations using SHIW data

Comparing the previous expected ratios with retirees' effective ones, we confirm women's lower average replacement ratios, both in realizations and in expectations, with the former greater than the second. Table 5 shows that men's replacement ratios are higher by 3 or 4 percentage points than women's, while the gap in expectations is about 2 percentage points. Finally, the replacement ratio for men decreases year by year, while it increases for women, suggesting a slight convergence.

Table 5 Replacement ratios, by gender panel 2006-2010

	Replacement rate					
	Male			Female		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	1704	74.77	15.81	689	70.40	17.84
2008	1777	74.29	15.91	718	71.61	17.83
2010	1561	74.27	16.38	799	71.30	16.88

Source: Our calculations using SHIW data

Considering the geographic areas, the Centre and the North show respectively the highest and the lowest expected replacement rate (Table 6); in terms of realizations, the Centre (Table 7) has always the highest value, while the South has the lowest.

Table 6 Expected replacement ratios by geographic area, panel 2006-2010

	Expected replacement ratios								
	Northern region			Central region			Southern region		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	1833	64.43	17.12	660	68.81	16.90	980	67.18	16.95
2008	1757	63.73	16.06	645	68.92	17.28	1056	64.75	15.87
2010	1597	63.23	15.19	724	64.79	16.68	995	65.42	14.24

Source: Our calculations using SHIW data

Table 7 Replacement ratios by geographic area, panel 2006-2010

	Replacement ratios								
	Northern region			Central region			Southern region		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	1214	73.26	16.46	549	75.07	15.93165	630	72.64	17.13
2008	1276	74.61	16.47	584	75.67	16.43607	635	69.34	16.01
2010	1197	73.82	16.75	540	74.55	16.93573	623	71.07	15.84

Source: Our calculations using SHIW data

5. How Financially Literate are Italians?

In order to measure the degree of financial literacy, we consider three of the six financial literacy tests included in the SHIW. Following Fornero and Monticone (2011), we select the tests on inflation rate, interest rate and mortgage from the 2006 questionnaire. However, we replace the question about the interest rates with the question on investment risk since the former is missing in both the 2008 and 2010 surveys.

Table 8 reports the answers to the various questions for each year. We can see that, possibly because of direct experience, Italian households are knowledgeable about inflation and mortgage, with respectively 72 and 64 per cent of correct answers. As for investment risk, the share of correct answers falls to 50 per cent, which is mirrored by Italian households' low propensity to hold stocks. For the question on interest rates, only 41 per cent of people gave the correct answer. Overall, the performance over time is improving, which could be partly due to greater exposure to financial information in con sequence of the financial crisis.

Table 8 Financial literacy panel 2006-2010, by percentage

	Years			
Inflation rate	**2006**	**2008**	**2010**	**Total**
Exactly same amount	15.68	32.62	51.71	100.00
	3.69	3.87	6.14	4.74
Less (correct)	17.71	41.64	40.66	100.00
	63.20	74.95	73.16	71.87
More	36.51	34.43	29.07	100.00
	6.28	2.99	2.52	3.46
Don't know	27.97	37.58	34.45	100.00
	26.84	18.19	16.67	19.32
No answer	0.00	0.00	100.00	100.00
	0.00	0.00	1.52	0.61
Total	20.14	39.93	39.94	100.00
	100.00	100.00	100.00	100.00

	Years			
Mortgage	**2006**	**2008**	**2010**	**Total**
Variable rate mortgage	15.63	36.59	47.78	100.00
	3.66	4.32	5.64	4.72
Fixed rate mortgage (correct)	17.67	42.83	39.50	100.00
	56.44	69.00	63.62	64.32
Variable rate mortgage	23.09	31.64	45.27	100.00
	9.73	6.72	9.62	8.48
Don't know	28.19	36.98	34.83	100.00
	30.17	19.96	18.80	21.55
No answer	0.00	0.00	100.00	100.00
	0.00	0.00	2.33	0.93
Total	20.14	39.93	39.94	100.00
	100.00	100.00	100.00	100.00

	Years		
Risk	**2008**	**2010**	**Total**
One company shares (correct)	45.26	54.74	100.00

	45.35	54.83	50.09
Shares of several companies	56.93	43.07	100.00
	28.68	21.69	25.18
Don't know	57.74	42.26	100.00
	25.98	19.01	22.49
No answer	0.00	100.00	100.00
	0.00	4.47	2.24
Total	49.99	50.01	100.00
	100.00	100.00	100.00

Interest rate	**2006**
Less than 1,020	8.03
	100.00
Exactly 1,020	25.97
	100.00
More than 1,020 (correct)	41.06
	100.00
Don't know	24.93
	100.00
Total	100.00
	100.00

Source: Our calculations using SHIW data

Table 9 reports the overall performance by gender: the percentage answering all the questions correctly increases between 2006 and 2010 by 9 points, while the percentage of “Don’t know” decreases by 10 points. The performance of both men and women improves over time, with women’s financial knowledge progressing more than men: in 2006, only 18 per cent of women answered all the questions correctly, while 20 per cent answered “Don’t know” to all questions; in 2010, the corresponding numbers were 31 per cent (+ 12 percentage points), and 5 per cent (-13 % points). Not surprisingly, since finance has traditionally been a male “domain” (Boggio *et al*. 2014), men score better in all tests; however, their progress is slower, suggesting that women will bridge the gap.

Table 9 Overall performance by gender panel 2006-2010, by percentage

2006	**Gender**		
	Male	**Female**	**Total**
All correct	76.21	23.79	100.00
	28.79	18.10	25.25
All “Don’t know”	55.79	44.21	100.00
	12.86	20.52	15.40

2008	**Gender**		
	Male	**Female**	**Total**
All correct	70.35	29.65	100.00
	35.97	29.33	33.70
All “Don’t know”	55.90	44.10	100.00
	7.88	12.02	9.29

2010	**Gender**		
	Male	**Female**	**Total**

All correct	62.27	37.73	100.00
	38.01	30.76	34.91
All "Don't know"	44.30	55.70	100.00
	4.59	7.71	5.93

Source: Our calculations using SHIW data

Geographic differences are noticeable, with a gap unfavorable to Southern regions, with respect to both Northern and Central ones, which perform better in all years. Central Italy shows not only the highest proportion of people correctly answering all questions, but also the fastest progress (the percentage passing from 30 per cent in 20006 to 48 in 2010). The North is second and progresses more slowly over time, passing from 28 to 33 per cent. The respective figures for the South are 17 and 29 per cent, implying an intermediate increase in literacy.

Looking at the proportion of "Don't know" to all questions, the South shows the highest figure and the North the lowest; all figures, moreover, decrease confirming the improvement in financial literacy.

Table 10 Financial literacy by geographic area panel 2006-2010, by percentage

	Geographic area			
2006	**North**	**Center**	**South**	**Total**
All correct	55.01	23.56	21.44	100.00
	28.49	30.30	17.11	25.25
All "Don't know"	41.31	17.18	41.51	100.00
	13.06	13.48	20.21	15.40

	Geographic area			
2008	**North**	**Center**	**South**	**Total**
All correct	47.86	26.98	25.16	100.00
	33.56	44.96	26.74	33.70
All "Don't know"	28.27	22.29	49.43	100.00
	5.46	10.24	14.48	9.29

	Geographic area			
2010	**North**	**Center**	**South**	**Total**
All correct	43.06	29.22	27.72	100.00
	33.17	48.12	28.90	34.91
All "Don't know"	28.35	21.27	50.38	100.00
	3.71	5.94	8.92	5.93

Source: Our calculations using SHIW data

Table 11 is particularly significant for investigating whether financial literacy affects the decision to retire. It displays the retirement choices of eligible people by gender and financial literacy, across the years. For example, in 2006, 35 per cent of eligible but still working people answer all the questions correctly, while among retired people this percentage decreases to 21 per cent. Therefore, it seems that individuals who decide to work instead of retiring are more financially literate. This is true for all years.

With respect to gender, men perform better than women irrespective of their retirement choice, with a gap that is narrowing over time. This is especially true for eligible people who are still working: among these, the share of women answering all the questions correctly increases by 19 percentage points from 2006 to 2010, while, among those who are retired, it increases by 9 points.

Table 11 Retirement decisions by gender and financial literacy panel 2006-2010, by percentage

2006	**Gender**		
	Male	**Female**	**Total**
Eligible but still working:			
All correct	90.70	9.30	100.00
	38.24	20.00	35.25
All "Don't know"	50.00	50.00	100.00
	4.90	25.00	8.20
Eligible and retired:			
All correct	78.95	21.05	100.00
	23.67	15.16	21.17
All "Don't know"	55.60	44.40	100.00
	18.69	35.86	23.74

2008	**Gender**		
	Male	**Female**	**Total**
Eligible but still working:			
All correct	66.20	33.80	100.00
	39.83	39.34	39.66
All "Don't know"	44.44	55.56	100.00
	3.39	8.20	5.03
Eligible and retired:			
All correct	79.82	20.18	100.00
	30.99	19.24	27.59
All "Don't know"	61.34	38.66	100.00
	12.62	19.52	14.61

2010	**Gender**		
	Male	**Female**	**Total**
Eligible but still working:			
All correct	65.25	34.75	100.00
	40.53	39.42	40.14
All "Don't know"	37.50	62.50	100.00
	1.58	4.81	2.72
Eligible and retired:			
All correct	73.16	26.84	100.00
	33.85	24.00	30.49
All "Don't know"	49.75	50.25	100.00
	6.68	13.03	8.84

Source: Our calculations using SHIW data

6. Methodology

We want to estimate the effect of financial literacy (x_{it}) on the retirement decision ($y_{\downarrow}it$) of older workers, but under 75 years old, who are eligible for retirement. Our dependent variable is a dummy taking value 1 when the individual has decided to retire and 0 otherwise. Financial literacy is measured using five dummy variables:

- *All correct*: taking value 1 when the individual answers all the questions correctly
- *One correct*: taking value 1 when the individual answers one question correctly
- *Two corrects*: taking value 1 when the individual answers two questions correctly
- *All "Don't know"*: taking value 1 when the individual answers "Don't know" to all the questions
- *All wrong*: taking value 1 when the individual answers all the questions wrongly

We use a linear probability model with fixed effects, an empirical strategy that allows us to control for individual and time-invariant characteristics that we are not able to observe. The model is the following:

$$y_{it} = \beta_1 x_{it} + \alpha_i + u_{it} \qquad (1)$$

with: $$\alpha_i = \beta_0 + \beta_2 z_i$$

where z_i is an unobserved variable that varies among individuals but does not change over time, capturing the unobserved individual characteristics.

We want to estimate β_1: the effect of financial literacy on the decision by people aged less than 75 years to retire, given the access requirements, keeping the unobserved individual characteristics constant.

Since we have five different variables measuring financial literacy, we are going to estimate five different regressions in order to be able to select the most significant one. We control for some individual and socio-economic variables: age, age squared, partner's work, gender, occupation, education, replacement rate, and individual income; as a measure of wealth, we use the value of the individual's real and financial assets.

Descriptive statistics suggest a possible presence of gender and geographical differences in the results. However, the fixed effect methodology does not enable us to include a gender and/or geographical dummy because they are individual and time-invariant variables and the model already takes them into account. Therefore, we estimate the regressions again, reducing the sample to only men, only women, and only people in the northern, then the central, and then the southern regions. From the results, we can provide evidence for differences between men, women and regions in retirement decisions and in the way they are influenced by financial literacy.

7. Estimation results

Table 12 shows the results. The first regression estimates the effect of socio-economic variables; we then introduce the financial literacy variables. We run these regressions first for the whole sample, and then by gender and geographic area.

The sample we use consists of 3407 observations. Once we introduce financial literacy variables, the sample lowers to 2942 observations. With respect to the whole sample, the first regression shows that becoming older increases the probability of retiring, while being self-employed is positively associated with postponing retirement; these two variables remain statistically significant in all model specifications. As expected, getting divorced extends the time spent in the labor market, probably because of the costs (both monetary and psychological) connected with divorce. This effect is quite strong, and it remains stable in all specifications. Having offspring increases the probability of retiring (a “grandparent effect”? Coda Moscarola *et al* 2015; Calcagno *at al* 2016). Unfortunately, this variable loses its significance as we introduce financial literacy variables.

The probability of retirement declines with income, possibly reflecting the lower disutility of working associated with higher labor income. Conversely, an increment in financial wealth is statistically associated with a greater probability of retiring. Both variables are statistically significant in all specifications.

Considering the financial literacy variables, only the dummy acquiring value 1 when the individual answers all questions correctly is significant, at the 5 per cent level. These are the people who are more likely to retire. Moreover, in the specifications with financial literacy, three other variables become statistically significant: widows are more likely to retire, people with a middle school diploma tend to remain longer in the labor market and, finally, a higher replacement ratio is associated with a higher probability of retiring. We controlled also for other educational levels, but they were not significant.

Table 12 Impact of financial literacy on decision to retire, linear probability model with fixed effect

VARIABLES	(1) Retired	(2) Retired	(3) Retired	(4) Retired	(5) Retired	(6) Retired
Age	0.288***	0.328***	0.322***	0.324***	0.320***	0.322***
	(0.047)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
Age^2	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Self-employed	-0.119**	-0.158**	-0.160**	-0.159**	-0.160**	-0.160**
	(0.055)	(0.071)	(0.072)	(0.072)	(0.072)	(0.072)
Partner with job	-0.065	-0.080	-0.075	-0.076	-0.073	-0.074
	(0.048)	(0.061)	(0.061)	(0.061)	(0.062)	(0.062)
Marital status	0.116	0.243*	0.249*	0.245*	0.251*	0.248*
	(0.106)	(0.128)	(0.131)	(0.131)	(0.133)	(0.132)
Widow/widower	0.108	0.240**	0.247**	0.244**	0.249**	0.246**
	(0.113)	(0.120)	(0.123)	(0.123)	(0.124)	(0.124)
Divorced	-0.242**	-0.165*	-0.161*	-0.160*	-0.153	-0.159*
	(0.114)	(0.094)	(0.094)	(0.096)	(0.096)	(0.096)

Offspring	0.045*	0.033	0.035	0.036	0.036	0.036
	(0.026)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
No. of family members	-0.000	-0.009	-0.009	-0.010	-0.010	-0.009
	(0.021)	(0.029)	(0.030)	(0.029)	(0.030)	(0.030)
Primary school	-0.016	-0.057	-0.060	-0.063	-0.061	-0.063
	(0.072)	(0.092)	(0.089)	(0.090)	(0.090)	(0.089)
Middle school	-0.075	-0.150*	-0.167**	-0.162*	-0.172**	-0.169**
	(0.058)	(0.084)	(0.084)	(0.084)	(0.084)	(0.084)
High school	-0.038	-0.056	-0.068	-0.070	-0.071	-0.072
	(0.033)	(0.051)	(0.052)	(0.050)	(0.051)	(0.051)
University	-0.089	-0.031	-0.045	-0.040	-0.050	-0.046
	(0.066)	(0.090)	(0.090)	(0.085)	(0.090)	(0.087)
Replacement rate	0.001	0.001*	0.001*	0.001*	0.001*	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log of real wealth	0.000	0.011	0.011	0.011	0.010	0.011
	(0.009)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Log of financial wealth	0.024***	0.023**	0.023**	0.023***	0.024***	0.023**
	(0.007)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Log of individual income	-0.118***	-0.093*	-0.092*	-0.093*	-0.091*	-0.092*
	(0.043)	(0.049)	(0.049)	(0.050)	(0.050)	(0.050)
All correct answers		0.038**				
		(0.017)				
One correct answer			-0.022			
			(0.016)			
Two correct answers				-0.016		
				(0.014)		
All "Don't know"					0.037	
					(0.027)	
All wrong answers						0.009
						(0.021)
Constant	-8.331***	-10.088***	-9.933***	-9.949***	-9.888***	-9.903***
	(1.697)	(2.092)	(2.091)	(2.100)	(2.096)	(2.099)
Observations	4,758	3,920	3,920	3,920	3,920	3,920
R-squared	0.130	0.151	0.148	0.147	0.147	0.146
Number of pid	3,407	2,942	2,942	2,942	2,942	2,942

Standard errors in parentheses. ** p<0.01, ** p<0.05, * p<0.

The fact that financially literate individuals have a greater propensity for retirement can be reconciled with the application of the DB formula, which penalizes the continuation of work after having reached the minimum requirement. In other words, people seem to correctly understand the disincentive (reduction of their pension wealth, irrespective of the increase in the pension benefit[4]) to go on working and tend to leave.

Conversely, allowing for greater actuarial neutrality under a (*pro rata* or full) DC formula, we should expect less influence of financial literacy. Retirement should in these cases reflect personal preferences more than an economic gain. The worker is freer to choose on personal/family elements, like having other activities in which being involved, a preference for traveling and so on.

[4] The reduction (so-called implicit tax on the continuation of work) is due to the fact that the increase in the pension benefit is not enough to pay for the extra year of contributions and year of lost pensions.

Tables 13 and 14 report results by gender. The first table refers to the regressions on the sample of men, and the second to the sample of women.

As for women, almost all the variables lose their significance, and in particular none of those measuring financial literacy are significant. The same is true of men. The female sample differs from the male one in that having offspring is statistically associated with a higher probability of retirement. This could mean that women give more weight to their role as mothers/grandmothers.

As for men, being self-employed is significantly associated with a lower probability of retiring, while, again, being divorced increases the likelihood of remaining in the labor market. Having a working partner encourages men to continue to work: having a partner who is active in the labor market probably has a positive spillover effect on their willingness to work, while not having a partner could induce to stay longer in the labor market. Becoming older is significantly associated with retiring only for men.

Table 13 Linear probability model with fixed effects for men

VARIABLES	(1) Male Retired	(2) Male Retired	(3) Male Retired	(4) Male Retired	(5) Male Retired	(6) Male Retired
Age	0.316***	0.403***	0.401***	0.402***	0.400***	0.402***
	(0.046)	(0.060)	(0.060)	(0.060)	(0.060)	(0.060)
Age^2	-0.002***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Self-employed	-0.154***	-0.212***	-0.215***	-0.216***	-0.217***	-0.216***
	(0.041)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
Partner with job	-0.083**	-0.079*	-0.074*	-0.075*	-0.073*	-0.074*
	(0.035)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Marital status	0.158	0.137	0.147	0.139	0.144	0.141
	(0.113)	(0.131)	(0.131)	(0.131)	(0.131)	(0.131)
Widower	0.149	0.111	0.127	0.114	0.119	0.119
	(0.133)	(0.147)	(0.147)	(0.147)	(0.147)	(0.147)
Divorced	-0.406***	-0.424***	-0.415***	-0.425***	-0.420***	-0.426***
	(0.132)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)
Offspring	0.015	0.017	0.018	0.020	0.020	0.019
	(0.026)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
No. of family members	-0.006	-0.009	-0.009	-0.009	-0.009	-0.009
	(0.021)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Primary school	-0.063	-0.058	-0.062	-0.063	-0.062	-0.064
	(0.073)	(0.090)	(0.090)	(0.090)	(0.090)	(0.090)
Middle school	-0.074	-0.151*	-0.165**	-0.161*	-0.166**	-0.161*
	(0.062)	(0.082)	(0.082)	(0.082)	(0.082)	(0.082)
High school	-0.042	-0.071	-0.083	-0.082	-0.083	-0.078
	(0.097)	(0.117)	(0.117)	(0.117)	(0.117)	(0.118)
University	0.008	0.075	0.060	0.060	0.058	0.064
	(0.163)	(0.304)	(0.304)	(0.305)	(0.305)	(0.305)
Replacement rate	0.001**	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log of real wealth	-0.004	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.009)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Log of financial wealth	0.024***	0.027***	0.028***	0.027***	0.028***	0.028***
	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Log of individual income	-0.148***	-0.148***	-0.146***	-0.148***	-0.147***	-0.148***
	(0.031)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)
All correct answers		0.031				
		(0.019)				
One correct answer			-0.021			

			(0.021)			
Two correct answers				-0.008		
				(0.017)		
All "Don't know"					0.019	
					(0.039)	
All wrong answers						-0.008
						(0.032)
Constant	-8.900***	-11.967***	-11.926***	-11.932***	-11.900***	-11.938***
	(1.567)	(2.027)	(2.029)	(2.030)	(2.031)	(2.031)
Observations	3,457	2,820	2,820	2,820	2,820	2,820
R-squared	0.159	0.220	0.218	0.217	0.217	0.217
Number of pid	2,480	2,125	2,125	2,125	2,125	2,125

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 14 Linear probability model with fixed effect for women

VARIABLES	**(1) Female Retired**	**(2) Female Retired**	**(3) Female Retired**	**(4) Female Retired**	**(5) Female Retired**	**(6) Female Retired**
Age	0.215***	0.068	0.052	0.063	0.056	0.053
	(0.071)	(0.084)	(0.084)	(0.084)	(0.083)	(0.083)
Age^2	-0.001***	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self employed	-0.007	0.003	0.008	0.009	0.008	0.009
	(0.060)	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)
Partner with job	0.074	-0.029	-0.029	-0.024	-0.025	-0.027
	(0.088)	(0.108)	(0.109)	(0.108)	(0.108)	(0.108)
Marital status	-0.313	0.089	0.059	0.087	0.057	0.052
	(0.215)	(0.281)	(0.281)	(0.281)	(0.280)	(0.281)
Widow	-0.300	0.074	0.039	0.083	0.054	0.049
	(0.197)	(0.265)	(0.265)	(0.266)	(0.264)	(0.265)
Divorced	-0.230**	0.033	0.033	0.047	0.048	0.042
	(0.108)	(0.124)	(0.125)	(0.125)	(0.125)	(0.125)
Offspring	0.126***	0.080*	0.081*	0.081*	0.082*	0.081*
	(0.040)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
No. of family members	0.000	-0.018	-0.017	-0.023	-0.022	-0.019
	(0.034)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)
Primary school	0.085	-0.012	-0.012	-0.020	-0.018	-0.013
	(0.118)	(0.127)	(0.127)	(0.127)	(0.127)	(0.127)
Middle school	0.075	0.039	0.017	0.018	0.023	0.004
	(0.151)	(0.195)	(0.194)	(0.194)	(0.194)	(0.194)
High school	0.019	0.025	0.016	0.013	0.015	0.010
	(0.096)	(0.121)	(0.121)	(0.120)	(0.120)	(0.121)
University	-0.136	0.007	-0.001	0.023	-0.003	0.029
	(0.147)	(0.262)	(0.262)	(0.262)	(0.261)	(0.264)
Replacement rate	0.000	0.000	0.000	-0.000	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log of real wealth	0.007	0.031**	0.032**	0.030**	0.031**	0.031**
	(0.013)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Log financial wealth	0.023**	0.015	0.014	0.017	0.016	0.016
	(0.011)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)
Log individual income	-0.061	0.003	0.004	0.003	0.005	0.004
	(0.039)	(0.042)	(0.043)	(0.042)	(0.042)	(0.043)
All correct answers		0.034				
		(0.027)				

One correct answers			-0.011			
			(0.026)			
Two correct answers				-0.029		
				(0.023)		
All "Don't know"					0.062	
					(0.045)	
All wrong answers						0.036
						(0.039)
Constant	-6.314***	-2.155	-1.609	-1.973	-1.810	-1.654
	(2.426)	(2.853)	(2.824)	(2.833)	(2.818)	(2.820)
Observations	1,301	1,100	1,100	1,100	1,100	1,100
R-squared	0.118	0.055	0.050	0.055	0.056	0.053
Number of pid	927	817	817	817	817	817

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Assets seem to influence differently the retirement decisions of men and women. The latter are sensitive to increments in real estate (a higher preference for homeownership?), while men's decisions to retire are significantly and positively affected by both financial wealth and labor income. The replacement ratio is also positively associated with retirement. Finally, education (mid-school diploma) is negatively correlated to retirement. We estimated the same regressions for the northern, central, and southern regions. Financial literacy variables matter only in the central region; in particular, those giving all correct answers tend to postpone their retirement, while those giving two correct answers adopt the opposite behavior, and are more likely to exit.

In the North, becoming older is statistically and positively associated with retirement; also, an increment in the replacement ratio increases the probability of retiring. In southern and central regions, only the relationship between retirement and age is significant, while the replacement ratio loses its significance. Being self-employed delays retirement and the effect is statistically significant in the northern and central areas. Having a working partner is statistically significant only in the North, and has a negative sign. The level of education matters only in the north, where people having a middle school diploma are more likely to postpone retirement. In the south, the variables related to family are very important: being a widow or widower or being married increases the propensity to retire, while having a child extends the time spent in the labor market in the central region.

Finally, considering the wealth and income variables, they are not at all significant in the central region. Increments in real estate are associated with a higher probability of retiring in the south and in financial wealth in the northern and southern regions (with respect to the latter, the result for real estate are significant at the 1 per cent level, while for financial assets are significant only at the 5 per cent level). Individual income acquires significance only in the north, and it is associated with a postponement of retirement. In particular, it is more statistically significant, with a 1 per cent significance level, than financial wealth, which gives a P-value of less than 5 per cent.

Table 15 Linear probability model with fixed effects for the north

VARIABLES	(1) Retired in north	(2) Retired in north	(3) Retired in north	(4) Retired in north	(5) Retired in north	(6) Retired in north
Age	0.301***	0.371***	0.368***	0.367***	0.368***	0.366***
	(0.047)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
Age^2	-0.002***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Self-employed	-0.117**	-0.134**	-0.135**	-0.136**	-0.135**	-0.134**
	(0.046)	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)
Partner with job	-0.077*	-0.089*	-0.089*	-0.089*	-0.089*	-0.088*
	(0.042)	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Marital status	0.106	0.120	0.122	0.119	0.121	0.123
	(0.127)	(0.130)	(0.130)	(0.130)	(0.130)	(0.130)
Widow/widower	0.149	0.153	0.149	0.146	0.147	0.144
	(0.126)	(0.131)	(0.132)	(0.131)	(0.131)	(0.131)
Divorced	-0.054	-0.039	-0.043	-0.045	-0.046	-0.047
	(0.112)	(0.117)	(0.117)	(0.117)	(0.117)	(0.117)
Offspring	0.014	0.000	0.001	0.002	0.002	0.001
	(0.027)	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)
No. of family members	0.016	-0.011	-0.011	-0.012	-0.012	-0.013
	(0.025)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
Primary school	-0.024	0.042	0.030	0.026	0.023	0.030
	(0.102)	(0.132)	(0.132)	(0.132)	(0.132)	(0.132)
Middle school	-0.153*	-0.316***	-0.334***	-0.337***	-0.336***	-0.334***
	(0.090)	(0.114)	(0.113)	(0.113)	(0.113)	(0.113)
High school	-0.052	-0.125	-0.137	-0.139	-0.140	-0.133
	(0.088)	(0.102)	(0.101)	(0.101)	(0.101)	(0.102)
University	-0.079	-0.206	-0.218	-0.219	-0.221	-0.238
	(0.146)	(0.266)	(0.266)	(0.267)	(0.266)	(0.267)
Replacement rate	0.001*	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log of real wealth	-0.007	-0.007	-0.008	-0.007	-0.007	-0.007
	(0.010)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Log of financial wealth	0.020**	0.021**	0.021**	0.021**	0.020**	0.020**
	(0.008)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Log of individual income	-0.176***	-0.124***	-0.119***	-0.122***	-0.122***	-0.120***
	(0.035)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)
All correct answers		0.024				
		(0.020)				
One correct answer			-0.012			
			(0.020)			
Two correct answers				-0.001		
				(0.016)		
All "Don't know"					-0.020	
					(0.046)	
All wrong answers						-0.025
						(0.033)
Constant	-8.089***	-10.921***	-10.829***	-10.798***	-10.801***	-10.775***
	(1.588)	(1.972)	(1.972)	(1.972)	(1.972)	(1.971)
Observations	2,604	2,121	2,121	2,121	2,121	2,121
R-squared	0.149	0.201	0.200	0.199	0.199	0.200
Number of pid	1,817	1,558	1,558	1,558	1,558	1,558

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0

Table 16 Linear probability model with fixed effect for central region

VARIABLES	(1) Retired in central region	(2) Retired in central region	(3) Retired in central region	(4) Retired in central region	(5) Retired in central region	(6) Retired in central region
Age	0.333***	0.312***	0.291**	0.304***	0.291**	0.288**
	(0.094)	(0.114)	(0.115)	(0.115)	(0.115)	(0.115)
Age^2	-0.002***	-0.002***	-0.002**	-0.002**	-0.002**	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-employed	-0.254***	-0.320***	-0.336***	-0.316***	-0.337***	-0.333***
	(0.069)	(0.077)	(0.078)	(0.077)	(0.077)	(0.078)
Partner with job	-0.013	-0.045	-0.006	-0.036	-0.001	-0.001
	(0.064)	(0.081)	(0.080)	(0.080)	(0.080)	(0.080)
Marital status	0.059	0.199	0.242	0.227	0.270	0.258
	(0.168)	(0.234)	(0.236)	(0.234)	(0.235)	(0.236)
Widow/widower	0.126	0.224	0.274	0.242	0.273	0.283
	(0.211)	(0.265)	(0.267)	(0.266)	(0.266)	(0.267)
Divorced	-0.465***	-0.228	-0.198	-0.168	-0.132	-0.157
	(0.142)	(0.181)	(0.182)	(0.180)	(0.184)	(0.184)
Offspring	0.163***	0.120**	0.130**	0.125**	0.138**	0.134**
	(0.048)	(0.056)	(0.056)	(0.056)	(0.056)	(0.057)
No. of family members	-0.024	-0.027	-0.030	-0.025	-0.027	-0.029
	(0.036)	(0.040)	(0.040)	(0.040)	(0.040)	(0.040)
Primary school	-0.066	-0.157	-0.153	-0.156	-0.152	-0.152
	(0.100)	(0.113)	(0.114)	(0.114)	(0.114)	(0.114)
Middle school	-0.017	-0.056	-0.065	-0.049	-0.065	-0.062
	(0.095)	(0.132)	(0.133)	(0.132)	(0.133)	(0.133)
High school	0.008	0.040	0.044	0.024	0.038	0.031
	(0.134)	(0.179)	(0.180)	(0.179)	(0.180)	(0.181)
University	-0.077	0.124	0.121	0.109	0.109	0.108
	(0.185)	(0.355)	(0.358)	(0.355)	(0.357)	(0.358)
Replacement rate	0.000	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log of real wealth	0.005	0.026	0.027	0.029	0.026	0.029
	(0.016)	(0.020)	(0.021)	(0.020)	(0.021)	(0.021)
Log of financial wealth	0.013	-0.002	0.001	-0.002	0.003	0.001
	(0.014)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Log of individual income	-0.049	-0.036	-0.047	-0.029	-0.037	-0.042
	(0.051)	(0.059)	(0.060)	(0.059)	(0.059)	(0.059)
All correct answers		0.070**				
		(0.032)				
One correct answer			-0.041			
			(0.044)			
Two correct answer				-0.062*		
				(0.032)		
All "Don't know"					0.104	
					(0.071)	
All wrong answers						0.050
						(0.059)
Constant	-10.289***	-9.921**	-9.206**	-9.799**	-9.420**	-9.224**
	(3.201)	(3.842)	(3.863)	(3.849)	(3.854)	(3.865)
Observations	1,114	938	938	938	938	938
R-squared	0.194	0.205	0.191	0.202	0.196	0.190
Number of pid	802	706	706	706	706	706

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0

Table 17 Linear probability model with fixed effect for the south

VARIABLES	(1) **Retired in south**	(2) **Retired in south**	(3) **Retired in south**	(4) **Retired in south**	(5) **Retired in south**	(6) **Retired in south**
Age	0.282***	0.302**	0.305**	0.302**	0.301**	0.305**
	(0.093)	(0.126)	(0.126)	(0.126)	(0.125)	(0.126)
Age^2	-0.002***	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Self-employed	0.045	0.067	0.064	0.068	0.071	0.072
	(0.075)	(0.097)	(0.096)	(0.096)	(0.096)	(0.096)
Partner with job	-0.036	0.016	0.010	0.016	0.023	0.020
	(0.084)	(0.099)	(0.099)	(0.099)	(0.099)	(0.099)
Marital status	1.139***	1.180***	1.188***	1.183***	1.185***	1.183***
	(0.273)	(0.287)	(0.286)	(0.287)	(0.285)	(0.286)
Widow/widower	1.165***	1.250***	1.274***	1.255***	1.299***	1.294***
	(0.306)	(0.334)	(0.333)	(0.334)	(0.333)	(0.334)
Offspring	0.044	0.060	0.058	0.060	0.061	0.062
	(0.058)	(0.069)	(0.069)	(0.069)	(0.069)	(0.069)
No. of family members	0.023	0.027	0.033	0.029	0.022	0.028
	(0.040)	(0.057)	(0.056)	(0.057)	(0.056)	(0.056)
Primary school	0.021	0.014	0.018	0.014	0.020	0.017
	(0.133)	(0.173)	(0.173)	(0.173)	(0.172)	(0.173)
Middle school	-0.069	-0.029	-0.040	-0.035	-0.050	-0.049
	(0.120)	(0.158)	(0.156)	(0.158)	(0.156)	(0.157)
Replacement rate	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log of real wealth	0.033*	0.051**	0.052**	0.052**	0.049**	0.049**
	(0.019)	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)
Log of financial wealth	0.047***	0.056***	0.057***	0.056***	0.058***	0.057***
	(0.014)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Log of individual income	-0.075	-0.088	-0.086	-0.089	-0.082	-0.083
	(0.048)	(0.055)	(0.055)	(0.055)	(0.055)	(0.055)
All correct answers		0.003				
		(0.041)				
One correct answer			-0.042			
			(0.037)			
Two correct answers				0.008		
				(0.036)		
All "Don't know"					0.073	
					(0.054)	
All wrong answers						0.059
						(0.051)
Constant	-10.299***	-11.337**	-11.545***	-11.372**	-11.431***	-11.548***
	(3.239)	(4.399)	(4.385)	(4.400)	(4.375)	(4.385)
Observations	1,040	861	861	861	861	861
R-squared	0.172	0.207	0.213	0.207	0.215	0.213
Number of pid	788	678	678	678	678	678

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

7 Financial literacy and *expected* age of retirement under a (partial) DC formula

The results in the regressions described above show that financial literacy is positively associated with an earlier exit from the labor market, i.e. negatively associated with retirement age. As already mentioned, we think it reasonable to relate the association to the working of the DB formula, and more specifically to the penalization on the continuation of work that is implicit in the formula.

These results cannot, therefore, be extended to the behavior of younger family heads who belong (at least in *pro-rata*) to the DC system, which does not contain this implicit taxation (or it does at a lower rate). For these younger cohorts, our hypothesis is that the correlation between financial literacy and retirement age is either positive (showing that people understand the actuarially fair increase in their pension wealth and are available to continue in the retirement savings program); or weak/non-existent, when other factors of the decision process (such as consideration of whether the spouse/partner is still working) are more important that the “wealth effect”.

To test our hypothesis, we restrict the sample to family heads less than fifty years of age, so that we are able to capture working people who will retire at least partially under the DC method. As a consequence, we get a sample composed by 991 observations. We run then the same linear probability model with fixed effects for the whole sample, splitting the sample between male and female, and according to area of residence (the north, center, and south).

In this specification, our dependent variable is the expected age of retirement; as independent variables, we use the same set of regressors as before; in particular, we include the financial literacy variables. We expect, thus, to see that financial knowledge increases the expected age of retirement.

Table 18 shows that our expectations are confirmed. The individuals who answered all the questions correctly are associated with a higher expected retirement age in the whole sample as well as in the sample of people living in the southern region. The effect is statistically significant at the 1 per cent level. This shows that the incentive to stay longer in the labor market is embedded in the DC system, and that people belonging to the DB system were driving the outcomes of the previous regressions.

The individuals who answered only two questions correctly are associated with a lower expected retirement age in the whole sample; the same is true for women and for people living in the south of Italy. Therefore, it appears that only those who are financially literate have a good understanding about decisions connected with retirement, and, as consequence, respond to the cancellation of incentives to exit the labor market as soon as the minimum required are met.

Table 18 Impact of financial literacy on expected age of retirement, linear probability model with fixed effects

	Whole sample	Male sample	Female sample	Northern region	Central region	Southern region
	(1)	(2)	(3)	(4)	(5)	(6)

	Expected age of retirement	Expected age of retirement	Expected age of retirement	Expected age of retirement	Expected age of retirement	Expected age of retirement
All correct answers	1.228**	0.822	1.512	1.108	0.765	1.891**
	(0.541)	(0.575)	(1.001)	(0.971)	(0.988)	(0.861)
One correct answer	0.450	0.754	1.113	1.222	-2.607*	0.809
	(0.645)	(0.895)	(0.956)	(0.920)	(1.479)	(0.908)
Two correct answers	-0.846*	-0.818	-1.306**	-1.129	0.194	-1.731**
	(0.474)	(0.706)	(0.629)	(0.745)	(1.006)	(0.798)
All “Don’t know”	-1.819	-0.318	-6.727	-3.710	0.256	-1.604
	(2.284)	(1.349)	(7.370)	(4.898)	(1.713)	(2.111)
All wrong answers	-1.061	-0.701	-2.151	-1.299	-1.892	-0.781
	(1.167)	(0.881)	(3.396)	(1.952)	(2.174)	(1.257)
Observations	1377	763	614	673	292	412

Notes: Each group of cells show the results from separate regressions, with a common specification across the columns: all heads of family below 50 years old, all men satisfying the same age criteria, all women in the same age group, all heads of family living in the northern region, then in the central region, and finally in the southern region aged below 50 years. Additional controls include time dummies, education, log of real wealth, log of financial wealth, log of individual income, expected replacement rate, number of household members, marital status, and whether the partner is working. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

8. Conclusions

Retirement decisions are strongly influenced by the pension formulae and by workers’ understanding of their functioning, which is connected to financial literacy. Workers understand that the DB system (as applied in Italy) penalizes the continuation of the activity and tend consequently to access an early retirement option. With the DC formula, conversely, this will no longer be true and the decision will not only become more “individualized” but also more dependent on personal, economic and family circumstances. In the new setting, understanding the basic principles and mechanics of pension wealth accumulation and decumulation will represent a pre-requisite for good decisions. A good understanding, however, is hardly possible when financial illiteracy is widespread.

Our study can be considered a first contribution to the analysis of whether and how financial literacy influences the retirement choice. More specifically the study exploits new questions about financial literacy - recently introduced into the Bank of Italy SHIW - to investigate the distribution of financial literacy among the Italian population, and its impact on retirement decisions. We also try to highlight gender and geographical differences.

Our results show that workers answering all questions correctly are more likely to retire when eligible. These results are consistent with the disincentive implicit in the DB method of calculating benefits.

To consider the role of the DC formula, we restrict the analysis of the effect of financial literacy on the *expected* age of retirement for heads of family who are under fifty and thus partly or exclusively under the new regime. Our expectations that workers performing better in financial literacy tests are more likely to prolong their working activity are confirmed. Indirectly, this supports the hypothesis that the previous outcome (a negative correlation between financial literacy and retirement age) was mainly driven by workers' understanding of the reduction in their pension wealth they incur into when they delay retirement after having reached eligibility. These results are somewhat encouraging as to the effects of financial literacy on retirement choice, and on the working of the DC formula.

Appendix

Financial literacy tests:

- *Inflation rate:* Imagine having 1,000 euros in a current account that pays 1 per cent interest and has no charges. Imagine also that inflation is running at 2 per cent. Do you think that if you withdraw the money in a year's time, you will be able to buy the same amount of goods as if you spent the 1,000 euros today?
  Yes — No, I will be able to buy less — No, I will be able to buy more — Don't know — No answer

- *Interest rate*: Imagine leaving 1,000 euros in a current account that pays 2 per cent annual interest and has no charges. What sum do you think will be available at the end of the second year?
  Less than 1,020 euros — Exactly 1,020 euros — More than 1,020 euros — Don't know — No answer

- *Mortgage*: With which of the following types of mortgage do you think you are able to establish from the beginning the maximum amount and number of instalments that you will have to pay before you can pay off your debt?
  Variable rate mortgage — Fixed rate mortgage — Variable rate mortgage and fixed instalments — Don't know — No answer

- *Risk*: Which of the following investment strategies do you think entails the greatest risk of losing your capital?

Investing in the shares of a single company — Investing in the shares of more than one company — Don’t know — No answer

Table 1A – Retirement Requisites in years 2006-2010

MDB					
		men		*women*	
l.243/2004		*employee*	*self-employed*	*employee*	*self-employed*
	old-age	age 65, seniority 20		age 60, seniority 20	
	seniority 40 years	no further requirement			
	seniority 35 years	age 57 (at regime: 62)	age 58 (at regime in 2013: 63)	age 57 (at regime in 2013: 62)	age 58 (at regime in 2013: 63)
l.247/2007	*old-age*	age 65, seniority 20		age 60, seniority 20	
	seniority 40 years	no further requirement			
	seniority 35 years	age 58 (at regime in 2013: 61 and age+seniority 97)	age 59 (at regime in 2013: 62 and and age+seniority 98)	age 58 (at regime in 2013: 61 and age+seniority 97)	age 59 (at regime in 2013: 62 and and age+seniority 98)
NDC					
		men		*women*	
l.243/2004		*employee*	*self-employed*	*employee*	*self-employed*
	old-age	age 65		age 60 and benefit>=1.2 yearly income support for the elderly	
	seniority 40 years	no further requirement			
	seniority 35 years	age 57 (at regime in 2013: 62) and 1.2 yearly income support for the elderly	age 58 (at regime in 2013: 63) and 1.2 yearly income support for the	age 57 (at regime in 2013: 62) and 1.2 yearly income support for the elderly	age 58 (at regime in 2013: 63) and 1.2 yearly income support for the
l.247/2007	*old-age*	age 65		age 60 and benefit>=1.2 yearly income support for the elderly	
	seniority 40 years	no further requirement			
	seniority 35 years	age 62 and benefit>=1.2 yearly income support for the elderly	age 63 and benefit>=1.2 yearly income support for the elderly	age 62 and benefit>=1.2 yearly income support for the elderly	age 63 and benefit>=1.2 yearly income support for the elderly

Table 2A Sum statistics of regressors in table 12

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	4758	0.874	0.331	0	1
Age	4758	65.960	5.526	48	75
Age^2	4758	4,381.264	723.710	2304	5625
Self-employed	4758	0.179	0.383	0	1
Partner with job	4758	0.121	0.326	0	1
Marital status	4758	0.700	0.457	0	1
Widower	4758	0.154	0.361	0	1
Divorced	4758	0.058	0.234	0	1
Offspring	4758	0.674	0.468	0	1
No. of family members	4758	2.217	0.967	1	8
Primary school	4758	0.348	0.476	0	1
Middle school	4758	0.291	0.454	0	1
High school	4758	0.193	0.395	0	1
University	4758	0.063	0.243	0	1
Replacement rate	4758	74.414	16.164	0	150
Log of real wealth	4758	11.803	1.823	0	16.588
Log of financial wealth	4758	9.532	1.474	2.708	15.442
Log of individual income	4758	10.031	0.489	7.607	12.965
All correct answers	3920	0.345	0.475	0	1
One correct answer	3920	0.194	0.395	0	1
Two correct answers	3920	0.354	0.478	0	1
All "Don't know"	3920	0.068	0.252	0	1
All wrong answers	3920	0.105	0.307	0	1

Table 3A Sum statistics for regressors in table 13, male sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	3457	0.866	0.339	0	1
Age	3457	65.726	5.572	48	75
Age^2	3457	4,350.995	728.585	2304	5625
Self-employed	3457	0.188	0.390	0	1
Partner with job	3457	0.153	0.360	0	1

Marital status	3457	0.839	0.367	0	1
Widower	3457	0.065	0.247	0	1
Divorced	3457	0.037	0.189	0	1
Offspring	3457	0.693	0.461	0	1
No. of family members	3457	2.409	0.941	1	8
Primary school	3457	0.335	0.472	0	1
Middle school	3457	0.309	0.462	0	1
High school	3457	0.196	0.397	0	1
University	3457	0.061	0.239	0	1
Replacement rate	3457	75.094	15.592	0	130
Log of real wealth	3457	11.885	1.781	0	16.588
Log of financial wealth	3457	9.597	1.475	2.708	15.442
Log of individual income	3457	10.086	0.485	7.743	12.965
All correct answers	2820	0.366	0.481	0	1
One correct answer	2820	0.186	0.389	0	1
Two correct answers	2820	0.353	0.478	0	1
All "Don't know"	2820	0.056	0.230	0	1
All wrong answers	2820	0.093	0.290	0	1

Table 4A Sum statistics for regressors in table 14, female sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	1301	0.893	0.308	0	1
Age	1301	66.581	5.354	48	75
Age^2	1301	4,461.694	704.576	2304	5625
Self-employed	1301	0.157	0.364	0	1
Partner with job	1301	0.035	0.184	0	1
Marital status	1301	0.332	0.471	0	1
Widower	1301	0.391	0.488	0	1
Divorced	1301	0.113	0.317	0	1
Offspring	1301	0.622	0.484	0	1
No. of family members	1301	1.707	0.842	1	6
Primary school	1301	0.384	0.486	0	1
Middle school	1301	0.244	0.429	0	1
High school	1301	0.186	0.389	0	1
University	1301	0.068	0.252	0	1
Replacement rate	1301	72.606	17.470	0	150
Log of real wealth	1301	11.583	1.915	3.912	16.176

Log of financial wealth	1301	9.359	1.459	3.660	13.810
Log of individual income	1301	9.882	0.470	7.607	12.091
All correct answers	1100	0.290	0.453	0	1
One correct answer	1100	0.213	0.410	0	1
Two correct answers	1100	0.359	0.479	0	1
All "Don't know"	1100	0.100	0.301	0	1
All wrong answers	1100	0.137	0.344	0	1

Table 5A Sum statistics for regressors in table 15, North Italy sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	2604	0.879	0.326	0	1
Age	2604	65.812	5.651	48	75
Age^2	2604	4,363.171	739.679	2304	5625
Self-employed	2604	0.193	0.395	0	1
Partner with job	2604	0.127	0.333	0	1
Marital status	2604	0.680	0.466	0	1
Widower	2604	0.163	0.369	0	1
Divorced	2604	0.072	0.260	0	1
Offspring	2604	0.663	0.472	0	1
No. of family members	2604	2.122	0.898	1	6
Primary school	2604	0.344	0.475	0	1
Middle school	2604	0.313	0.463	0	1
High school	2604	0.187	0.390	0	1
University	2604	0.056	0.230	0	1
Replacement rate	2604	74.745	16.278	0	130
Log of real wealth	2604	11.798	1.789	0	16.588
Log of financial wealth	2604	9.742	1.454	2.708	15.442
Log of individual income	2604	10.078	0.476	8.519	1.255
All correct answers	2121	0.328	0.469	0	1
One correct answer	2121	0.206	0.404	0	1
Two correct answers	2121	0.383	0.486	0	1
All "Don't know"	2121	0.044	0.205	0	1
All wrong answers	2121	0.082	0.274	0	1

Table 6A Sum statistics for regressors in table 16, Center Italy sample

Variable	Obs	Mean	Std. Dev.	Min	Max

Retired	1114	0.872	0.333	0	1
Age	1114	66.133	5.261	48	75
Age^2	1114	4,401.333	689.309	2304	5625
Self-employed	1114	0.157	0.364	0	1
Partner with job	1114	0.114	0.317	0	1
Marital status	1114	0.701	0.457	0	1
Widower	1114	0.146	0.353	0	1
Divorced	1114	0.053	0.225	0	1
Offspring	1114	0.666	0.471	0	1
No. of family members	1114	2.280	1.038	1	8
Primary school	1114	0.379	0.485	0	1
Middle school	1114	0.259	0.438	0	1
High school	1114	0.204	0.403	0	1
University	1114	0.061	0.239	0	1
Replacement rate	1114	75.712	16.148	0	150
Log of real wealth	1114	12.058	1.840	3.218	15.529
Log of financial wealth	1114	9.478	1.530	3.660	13.958
Log of individual income	1114	10.078	0.486	8.175	12.634
All correct answers	938	0.436	0.496	0	1
One correct answer	938	0.150	0.357	0	1
Two correct answers	938	0.301	0.459	0	1
All “Don’t know”	938	0.078	0.269	0	1
All wrong answers	938	0.111	0.315	0	1

Table 7A Sum statistics for regressors in table 17, South Italy sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	1040	0.864	.3425035	0	1
Age	1040	66.144	5.480	48	75
Age^2	1040	4,405.069	718.658	2304	5625
Self-employed	1040	0.169	0.375	0	1
Partner with job	1040	0.113	0.317	0	1
Marital status	1040	0.749	0.433	0	1
Widower	1040	0.142	0.349	0	1
Offspring	1040	0.708	0.454	0	1
No. of family members	1040	2.387	1.024	1	6
Primary school	1040	0.327	0.469	0	1

Middle school	1040	0.272	0.445	0	1
Replacement rate	1040	72.196	15.684	1	110
Log of real wealth	1040	11.540	1.855	4.605	14.762
Log of financial wealth	1040	9.065	1.344	4.605	13.491
Log of individual income	1040	9.860	0.486	7.607	12.965
All correct answers	861	0.286	0.452	0	1
One correct answer	861	0.213	0.410	0	1
Two correct answers	861	0.342	0.474	0	1
All "Don't know"	861	0.117	0.321	0	1
All wrong answers	861	0.156	0.363	0	1

Table 8A Sum statistics for regressors in table 18, whole sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Expected age of retirement	1377	64.196	4.113	49	100
Self-employed	1377	0.208	0.406	0	1
Partner with job	1377	0.437	0.496	0	1
Marital status	1377	0.574	0.494	0	1
Divorced	1377	0.064	0.245	0	1
Offspring	1377	0.031	0.173	0	1
No. of family members	1377	2.512	1.222	1	8
Middle school	1377	0.179	0.383	0	1
High school	1377	0.413	0.492	0	1
University	1377	0.301	0.459	0	1
Replacement rate	1377	62.111	15.382	0	100
Log of real wealth	1377	10.531	2.519	0	15.177
Log of financial wealth	1377	8.929	1.356	10.720	13.661
Log of individual income	1377	9.918	0.539	5.283	13.605
Years of contributions	1377	7.976	3.245	1	14
All correct answers	1210	0.372	0.483	0	1
One correct answer	1210	0.184	0.387	0	1
Two correct answers	1210	0.369	0.482	0	1
All "Don't know"	1210	0.037	0.189	0	1
All wrong answers	1210	0.073	0.261	0	1
wave					
2008	1377	0.336	0.472	0	1

2010	1377	0.408	0.491	0	1

Table 9A Sum statistics for regressors in table 18, male sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Expected age of retirement	763	64.876	4.113	49	100
Self-employed	763	0.245	0.430	0	1
Partner with job	763	0.433	0.495	0	1
Marital status	763	0.669	0.470	0	1
Divorced	763	0.024	0.155	0	1
Offspring	763	0.032	0.178	0	1
No. of family members	763	2.644	1.226	1	8
Middle school	763	0.211	0.408	0	1
High school	763	0.410	0.492	0	1
University	763	0.263	0.440	0	1
Replacement rate	763	62.293	15.745	0	100
Log of real wealth	763	10.659	2.514	0	15.177
Log of financial wealth	763	8.965	1.336	5.491	13.661
Log of individual income	763	10.005	0.526	5.283	13.606
Years of contributions	763	8.128	3.068	1	14
All correct answers	670	0.385	0.486	0	1
One correct answer	670	0.182	0.386	0	1
Two correct answers	670	0.362	0.481	0	1
All "Don't know"	670	0.035	0.185	0	1
All wrong answers	670	0.070	0.255	0	1
wave					
2008	763	0.359	0.480	0	1
2010	763	0.364	0.481	0	1

Table 10A Sum statistics for regressors in table 18, female sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Expected age of retirement	614	63.351	3.957	50	100
Self-employed	614	0.162	0.369	0	1
Partner with job	614	0.441	0.496	0	1
Marital status	614	0.456	0.498	0	1
Divorced	614	0.114	0.318	0	1

Offspring	614	0.029	0.168	0	1
No. of family members	614	2.348	1.199	1	6
Middle school	614	0.140	0.347	0	1
High school	614	0.416	0.493	0	1
University	614	0.348	0.476	0	1
Replacement rate	614	61.885	14.928	0	100
Log of real wealth	614	10.372	2.517	3.912	14.743
Log of financial wealth	614	8.884	1.380	1.072	12.747
Log of individual income	614	9.810	0.536	6.291	12.021
Years of contributions	614	7.786	3.446	1	14
All correct answers	540	0.357	0.479	0	1
One correct answer	540	0.187	0.390	0	1
Two correct answers	540	0.377	0.485	0	1
All "Don't know"	540	0.038	0.193	0	1
All wrong answers	540	0.077	0.268	0	1
wave					
2008	614	0.307	0.461	0	1
2010	614	0.464	0.499	0	1

Table 11A Sum statistics for regressors in table 18, North Italy sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Expected age of retirement	673	63.753	4.269	49	99
Self-employed	673	0.179	0.384	0	1
Partner with job	673	0.429	0.495	0	1
Marital status	673	0.514	0.500	0	1
Divorced	673	0.068	0.252	0	1
Offspring	673	0.037	0.189	0	1
No. of family members	673	2.301	1.225	1	8
Middle school	673	0.163	0.370	0	1
High school	673	0.410	0.492	0	1
University	673	0.295	0.456	0	1
Replacement rate	673	61.063	14.889	0	100
Log of real wealth	673	10.254	2.580	0	14.848
Log of financial wealth	673	8.980	1.343	4.798	13.661

Log of individual income	673	9.941	0.506	6.357	11.875
Years of contributions	673	8.271	3.255	1	14
All correct answers	588	0.340	0.474	0	1
One correct answer	588	0.185	0.388	0	1
Two correct answers	588	0.397	0.489	0	1
All "Don't know"	588	0.032	0.176	0	1
All wrong answers	588	0.076	0.266	0	1
wave					
2008	673	0.344	0.475	0	1
2010	673	0.383	0.486	0	1

Table 12A Sum statistics for regressors in table 18, Center Italy sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Expected age of retirement	292	64.441	3.995	50	90
Self-employed	292	0.195	0.397	0	1
Partner with job	292	0.472	0.500	0	1
Marital status	292	0.551	0.498	0	1
Divorced	292	0.068	0.253	0	1
Offspring	292	0.027	0.163	0	1
No. of family members	292	2.561	1.204	1	6
Middle school	292	0.160	0.368	0	1
High school	292	0.349	0.477	0	1
University	292	0.369	0.483	0	1
Replacement rate	292	62.976	16.841	10	100
Log of real wealth	292	10.877	2.522	3.912	15.068
Log of financial wealth	292	9.095	1.456	3.912	12.747
Log of individual income	292	9.990	0.671	5.283	1.360
Years of contributions	292	7.883	3.293	1	14
All correct answers	259	0.498	0.500	0	1
One correct answer	259	0.108	0.311	0	1
Two correct answers	259	0.316	0.466	0	1
All "Don't know"	259	0.046	0.210	0	1
All wrong answers	259	0.077	0.267	0	1
wave					
2008	292	0.297	0.458	0	1

2010	292	0.493	0.500	0	1

Table 13A Sum statistics for regressors in Table 18, South Italy sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Expected age of retirement	412	64.747	3.856	55	100
Self-employed	412	0.264	0.441	0	1
Partner with job	412	0.424	0.494	0	1
Marital status	412	0.689	0.463	0	1
Divorced	412	0.055	0.229	0	1
Offspring	412	0.024	0.154	0	1
No. of family members	412	2.822	1.163	1	7
Middle school	412	0.218	0.413	0	1
High school	412	0.463	0.499	0	1
University	412	0.262	0.440	0	1
Replacement rate	412	63.211	15.011	0	100
Log of real wealth	412	10.738	2.366	460.517	1.517.777
Log of financial wealth	412	8.727	1.281	1.072	13.017
Log of individual income	412	9.831	0.474	6.291	11.261
Years of contributions	412	7.558	3.151	1	14
All correct answers	363	0.336	0.473	0	1
One correct answer	363	0.236	0.425	0	1
Two correct answers	363	0.360	0.480	0	1
All "Don't know"	363	0.038	0.192	0	1
All wrong answers	363	0.066	0.248	0	1
wave					
2008	412	0.349	0.477	0	1
2010	412	0.390	0.488	0	1

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