Retirement Decisions, Eligibility and Financial Literacy

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Abstract

In the last twenty years, financial products have gained a key role in the accumulation of savings and retirement wealth. This process has gone hand-in-hand with more and more complex financial products and services. Moreover, Italy is experiencing an ongoing shift from a Defined Benefit (DB) to a Defined Contribution (DC) pension system, meaning that retirement decisions are becoming much more of an individual choice. Understanding financial issues is therefore becoming very important, so that appropriate financial choices can be made. In this work we analyze how Italian workers plan their retirement, by looking at their financial literacy. We test whether retirement decisions are affected by financial literacy, using the Survey on Household Income and Wealth (SHIW) data spanning 2006 to 2010. Our findings show that people in households with more financial knowledge are more inclined to retire later when they are enrolled in a DC scheme, while the retirement plans of those who will retire with a DB pension are not responsive to financial knowledge.

1. Introduction

In an increasingly complex financial environment, *financial literacy* matters for every day's life, just as writing and reading mattered when they were made compulsory. Both research and policy are indeed directing their attention to the links between financial knowledge and households' behavior in various fields, such as consumption and saving, the choice of education, labor market performance. 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 instrument - certainly not sufficient - to create a level playing field in the economic sphere.

While a growing body of both data and analysis has documented important worldwide gaps in financial literacy even in sophisticated economies, the literature connecting financial unawareness and saving behavior has expanded rapidly in recent years (see Lusardi and Mitchell, 2013 for a survey). It has been shown that some socio-demographic groups (typically older people and women) are systematically more at risk of bad choices than others; that financial literacy is associated with a wide range of wealth strategies, such as: planning for retirement (Lusardi and Mitchell, 2007b; Van Rooij et al., 2007); stock market participation (Guiso and Jappelli 2008); portfolio diversification (Kimball and Shumway 2007); attitude against over-indebtedness (Lusardi and Tufano, 2009). As a consequence 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).

This paper is centered on the relationship between financial (il)literacy and retirement decisions. Saving for retirement has become more complex not only because it has increasingly assumed a multi-pillars character but also because it normally allows for a greater degree of choice, even in the public component, where a cutback of previous political promises and guarantees has occurred as a way to restore its financial sustainability. In parallel a transfer of responsibility towards the individual worker has taken place. While people are called to make essential choices that will affect their future wellbeing, it is not clear whether they have the minimum conceptual background to avoid important mistakes.

The paper's specific research question, addressed to Italy, is whether financial literacy affects the decisions of eligible people to postpone their retirement. Italy represents a good case to study for three main reasons: i) because of its unfortunate position in the financial literacy ranking among rich countries (Lusardi and Mitchell, 2011); ii) because the Country's significant gender and geographical heterogeneity allows us to investigate different types of behavior; iii) because its pension system (mainly public and PayGo) is undergoing a difficult transition from a rather generous Defined Benefit (DB) formula towards a much less favorable Defined Contribution (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.

To answer our question, we implement a linear probability model with fixed effects on data taken from the Bank of Italy Survey on Household Income and Welfare (SHIW), which provides a suitable longitudinal dataset, spanning from 2006 to 2010, containing a specific section on financial literacy.

2. State of the art

The standard economic model of wealth accumulation posits that consumption decisions are taken in the life cycle framework, where consumption smoothing requires one to save during one's working years to support consumption in the retirement period. To perform this reallocation individually, at an adequate level, the consumer should have at least a basic knowledge of concepts like *present discounted values*, *nominal versus real variables*, *risk diversification*; she should also have conjectures about future labor incomes, social security benefits, retirement age, and survival probabilities. These prerequisites for rational choices are inherently complex and demanding, and hardly satisfied 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). However, it is 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.

Empirically, a compelling body of evidence demonstrates the strong association (not, or not yet, "causation") between financial literacy and household financial well-being. Lusardi and Mitchell (2007b) find that those who understand compound interest and perform numeracy test are more likely to plan for retirement[1]. 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) find that there is a limited knowledge of stocks and bonds, risk diversification and, in general, the working of financial markets; moreover, those who have low financial literacy are significantly less likely to invest in stock. Guiso and Jappelli (2008) show that the measure of financial literacy is strongly correlated with the degree of portfolio diversification. In a similar vein, Kimball and Shumway (2007) find that financial sophistication is positively correlated with holdings of

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[1] The question reads as follows: If 5 people all have the winning number in the lottery and the prize is 2 million dollars, how much will each of them get?"

international investments, measures of diversification, and holdings of an employer's stock. Fornero and Monticone (2011) show the importance of financial literacy in retirement decisions. In particular, their empirical results show that financial literacy has a positive and significant impact on the propensity to save for retirement by participating in a (privately managed) supplementary pension plan.

We would like to add to the existing literature by exploring how financial literacy affects the decisions of eligible people to retire; to the best of our knowledge, this is the first attempt of this kind.

3. Why Italy?

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 (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 demographic structural 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 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 action 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 both the credibility of the DC reform and 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.

The 2011 reform was enacted by a technocratic government, called in to overcome the political impasse. The new reform had to be radical, with practically no phasing-in period. It had to realize immediate savings in 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).

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[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 Factbook

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 various reforms have progressively tightened access 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 (ineffective) incentives to postpone retirement. These changes in retirement requirements went in parallel with the (slow) 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 word, 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, the right decision. Consequently we expect that more financially literate people who are eligible to retire under the DC system tend to postpone their exit from the labor market.

Looking at financial literacy levels of future generations of retirees, the picture does not look re-assuring: 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 provide them with the skills to perform well in financial literacy.

4. Data and descriptive statistics

In this section, using SHIW data from 2006 to 2010, we report relevant descriptive statistics focusing on family heads who have become eligible for retirement.

As we can see from Table 1, both the actual and the expected retirement age increase over time; however, the latter increases more than the former. The average retirement age is 58 over the whole period, while the expected age increases from 62.8 to 63.8 years from 2006 to 2010. This result may reflect the fact

that while in the pre-reform period many people used to retire early, the reforms have stopped people from doing this and caused them to remain longer in the labor market, lowering their expectations.

As for wealth, we note that this increases by 3.6 per cent from 2006 to 2010, while individual income remains quite stable over time. Finally, it is important to note that retirement income experiences the highest growth rate, of 9.7 per cent.

The replacement rate decreases slightly over time, while the expectation about the replacement rate, other than being almost 7 percentage points less than the actual rate in 2006, decreases by 2 percentage points from 2006 to 2010. This result can be connected with the shift from a more generous pension system to one that is more connected with the contributions made during the individual's working life. People, on average over this period, receive 73.5 per cent of their final salary as retirement income, while they expect to receive 65 per cent.

Table 1 Descriptive statistics panel 2006-2010

2006	Obs	Mean	Std. Dev.
Retirement age	2405	58.77048	5.29674
Expected retirement age	3473	62.84221	5.451174
Wealth	6544	255126.4	582704.1
Income	6480	23097.15	22485.16
Retirement income	2404	976.0538	466.4633
Replacement rate	2393	73.51567	16.54238
Expected replacement rate	3473	66.04175	17.12741

2008	Obs	Mean	Std. Dev.
Retirement age	2502	58.47682	5.38788
Expected retirement age	3458	63.50029	4.223387
Wealth	6664	250522.4	531941.5
Income	6600	23112.33	18251.12
Retirement income	2502	1091.872	993.2905
Replacement rate	2495	73.52184	16.53082
Expected replacement rate	3458	65.01735	16.34822

2010	Obs	Mean	Std. Dev.
Retirement age	2364	58.85829	5.257304
Expected retirement age	3324	63.85259	4.206946
Wealth	6666	264426.7	440119.1
Income	6580	23111.88	18491.18
Retirement income	2364	1071.435	546.818
Replacement rate	2360	73.26695	16.60983
Expected replacement rate	3316	64.23372	15.28891

Source: Our calculations using SHIW data

We define 'eligible' those workers who meet the (variable, as we have seen) conditions for retirement in any 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, from Table 3 we see that females 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 behave differently with respect to retirement. We see that this gap decreases over time, with women even 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, but 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 the expected replacement rates by gender and regions. Table 4 shows that both women's and men's expectations decrease over time. In particular, females show lower expectations than men across all years. However, men's expectations decrease more than women's. The lower average seniority and the persisting wage gap in the labor market could explain women's worse expectations.

Table 4 Expected replacement rate by gender panel 2006-2010

	Expected replacement rate					
	Male			**Female**		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	2581	66.42542	17.37738	892	64.93161	16.34143
2008	2494	65.76343	16.18297	964	63.08714	16.62189
2010	2115	64.74799	15.62605	1201	63.32806	14.6389

Source: Our calculations using SHIW data

Comparing the previous results with the replacement rates of those who have retired, we note that, as expected, women have, on average, lower replacement rates than men. The gender gap in replacement rates is greater than the gender gap in expectations: Table 5 shows that the replacement rate for men is higher than that for women by 3 or 4 percentage points, while the gap in the expectations is about 2 percentage points. Finally, the replacement rate for men decreases year by year, while it increases for women, suggesting a slight convergence.

Table 5 Replacement rate by gender panel 2006-2010

	Replacement rate					
	Male			**Female**		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	1704	74.77347	15.8186	689	70.40493	17.84421
2008	1777	74.29263	15.9133	718	71.61421	17.83702
2010	1561	74.27354	16.38175	799	71.30038	16.88454

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 rate by geographic area, panel 2006-2010

	Expected replacement rate								
	Northern region			**Central region**			**Southern region**		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	1833	64.43044	17.12998	660	68.81818	16.90517	980	67.18571	16.956
2008	1757	63.73876	16.06062	645	68.92248	17.28408	1056	64.75947	15.87322
2010	1597	63.23669	15.1982	724	64.79144	16.6816	995	65.42814	14.24864

Source: Our calculations using SHIW data

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

	Replacement rate								
	Northern region			**Central region**			**Southern region**		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
2006	1214	73.26277	16.46854	549	75.07468	15.93165	630	72.64444	17.1317
2008	1276	74.61599	16.47405	584	75.67466	16.43607	635	69.34331	16.01887
2010	1197	73.82623	16.75677	540	74.55556	16.93573	623	71.07544	15.84356

Source: Our calculations using SHIW data

5. Financial Literacy

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.

Since the question about interest rates is missing in the 2008 and 2010 surveys, we substitute it with the one about risk in investment.

Table 8 reports the answers to the various questions for each year. We can see that, possibly because of direct experience, Italian households are fairly 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; we can see that the percentage of people answering all the questions correctly to increases between 2006 and 2010 by 9 points, while the percentage of people answering "Don't know" decreases by 10 points. The performance of both men and women improves year by year, with women's financial knowledge improving much more than men's. In 2006, only 18 per cent of women answered all the questions correctly, and 20 per cent answered "Don't know" to all the questions. In 2010, the proportion of women giving only correct answers was almost 31 per cent, and therefore there is an increment of almost 12 percentage points. Moreover, the proportion of women answering: "Don't know" decreases by 13 points. The proportion of men giving correct answers increases by 10 percentage points, and the percentage of those answering: "Don't know" decreases by 9 points. However, in absolute terms men perform better in all the tests over time. This is easily predictable since finance, historically, has been a male domain; however, the trend suggests 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 worth noting, with the gap between the northern and central regions, who perform better, on the one hand, and South, on the other. The former perform better in each year. In particular, the central area shows the highest proportion of people who answer all the questions correctly, and, moreover, this percentage increases over time: in 2006, 30 per cent answer correctly, and in 2010 the percentage increases to 48 per cent. The north comes second in the areas of Italy for the proportion of people answering all the questions correctly, but this percentage increases less over time than in the central area: it goes from 28 per cent in 2006 to 33 per cent in 2010. Finally, the south shows the worst performance, with only 17 per cent of people giving all the correct answers, and this share increases to 29 per cent in 2010. Therefore, the increment here is higher than in the northern region but lower than in the central region.

Looking at the proportion of people who answered "Don't know" to all the questions, we note that the south of Italy shows the highest figure, and the north the lowest. Again, these shares decrease over time, confirming the increase in financial knowledge described before.

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

2006	Geographic area			
	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

2008	Geographic area			
	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

2010	Geographic area			
	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 when investigating whether financial literacy affects the decision to retire. It displays the retirement decisions 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 eligible and 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, males perform better than females irrespective of their retirement decisions; however, the gap in financial literacy between men and women narrows 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_{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:

$$y_{it} = \beta_1 x_{it} + \alpha_i + u_{it} \tag{1}$$

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

z_i is an unobserved variable that varies among individuals but does not change over time; it captures the unobserved individual characteristics.

We want to estimate β_1: the effect of financial literacy on the decision by people aged under 75 years to retire, given the access requirements of the pension system, 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 from the linear probability model with fixed effects; the first regression estimates the effect of socio-economic variables; we then introduce the financial literacy variables. We run these regressions for the whole sample, and for only men, only women and with respect to geographic areas, in order to capture the differences among categories and regions.

The sample we use is made by all the household head below 75 years old eligible to get the pension or already in retirement and it 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: presumably having a working son has a reassuring effect on parents. Unfortunately, this variable loses its significance as we introduce financial literacy variables.

The probability of retirement declines with income. This is easy to explain: the higher the income, the lower the incentive to retire. Finally, 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, an increment in the replacement rate 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 the more financially literate individuals have a greater propensity for retirement could be reconciled within a DB schemes where the pension benefit is not correlated with the entire working life. If this is the case, we would expect that for people who are under the DC rules, the opposite would hold. People who meet the requirements for claiming a pension under the DB System retire to obtain this pension, staying longer in the labour market would give a disutility of working and a higher benefit in the future, The balancing of the two opposite effects would result in leaving the job earlier for those who are more financially sophisticated. This evidence would suggest that more financially sophisticated people evaluate less the additional money associated with extra year of work. However, given that the pension benefit has been weakly associated to pension contribution, it could be that the high benefit could be a deterrent for extra work. We can speculate that people more financially knowledgeable understating the high benefit with respect to contribution paid, give lower marginal utility to the extra money on top of a "large-proportioanl-to-contribution" benefit.

By focusing, instead, on people entirely within DC method, we expected that being financially literate implies a better understanding of the trade off between monetary gain of an additional year of work and the disutility associated with working an additional year. The DC formula is more neutral (the increase in pension wealth being actuarially fair) and does not penalize the continuation of work, thus inducing preference for early retirement. The worker is thus more free to choose on personal/family elements, like having other activities in which being involved and work disutility.

Tables 13 and 14 report results by gender; we run the same regressions after splitting the sample between women and men. We want to investigate whether there is any gender difference in retirement decisions and in the role played by financial literacy. The first table refers to the regressions on the sample of men, and the second to the sample of women.

Considering the female sample, almost all the variables lose their significance, and in particular none of those measuring financial literacy are significant. In the case of men, we also find no significant relationship between the degree of financial literacy and the decision to retire. The female sample differs from the male one in that having offspring is statistically associated with a higher probability of women retiring. This could mean that women consider the role of their children to be more important than men do.

As for men, being self-employed is significantly associated with a lower probability of retiring, while 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 own willingness to work. Moreover, not having a partner with whom to spend time in retirement could favor men remaining in the labor market. Becoming older is only significantly associated with retiring for men.

It is interesting to note how real and financial wealth have a different effect on the retirement decisions of men and women.

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

An increment in real assets favors retirement only for women; this could be explained by the fact that women tend to be more risk averse than men, and thus the possibility of relying upon real assets at difficult times plays a significant role in retirement decisions. Men's decisions to retire are significantly and positively affected by an increment in financial wealth, meaning that they rely upon financial assets rather than real ones. Considering individual income, we note that, for men, higher wages are associated with a higher probability of staying in the labor market.

Finally, in the case of men, replacement rate acquires significance; it is positively associated with retirement. Moreover, males with a middle school diploma are more likely to stay in the labor market after their retirement age. 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 exit from the labor market, while those giving two correct answers adopt the opposite behavior, and are more likely to retire.

In the northern region, becoming older is statistically and positively associated with retirement; also, an increment in replacement rates increases the probability of retiring. In southern and central regions, only the relationship between retirement and age is significant, while the replacement rate loses its significance. Being self-employed is statistically significant in the northern and central areas; it delays retirement. 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, while an increment in real assets is associated with a higher probability of retiring in the south. An increment in financial wealth increases the probability of retiring in the northern and southern regions. However, with respect to the south, individuals especially rely on real assets: these are significant at the 1 per cent level, while 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.

7.1 Expected age of retirement

The results in the regressions described above show that financial literacy is positively associated with an earlier exit from the labor market. In this section, we try to find a reasonable explanation for this.

We think that one possible reason is that previous results reflected retirement decisions made by people under the DB pension scheme; therefore, these results cannot be compared with those obtained for the sample of younger heads of family who belong to the DC system, which encourage workers to prolong their time in the labor market, in order to accrue a higher retirement income.

To test our hypothesis, we restrict the sample to heads of family aged under fifty, so that we are able to capture working people who will retire under the DC System. As a consequence, we get a sample composed by 991 observations. Then, we run 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 these models our dependent variable is the expected age of retirement, and as independent variables we use the same set of regressors as before; in particular, we include the financial literacy variables. In this situation, we expect 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 incentive to stay longer in the labor market.

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) Expected age of retirement	(2) Expected age of retirement	(3) Expected age of retirement	(4) Expected age of retirement	(5) Expected age of retirement	(6) 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

Household decisions about their accumulation of savings and retirement wealth are nowadays more vulnerable to bad financial planning. Households are forced to face a more and more complex setting, on top of that the ongoing changes in retirement legislation that have been experienced in Italy since the early 1990s have added complexity to the economic scenario. The ageing of the population, the low fertility rate and the generosity of pension system before the 1990s meant that a shift from a DB system to a DC system was necessary. With these reforms, retirement decisions are becoming more and more an individual choice. As a result, financial sophistication has become necessary for Italians to allow them to manage their savings and to take retirement decisions. This study exploits new questions about financial literacy that were recently introduced into the Survey on Household Income and Wealth, to investigate the distribution of financial literacy among the Italian population and its impact on retirement decisions. Moreover, we try to highlight gender and geographical differences.

The descriptive statistics show that Italians perform better on questions about inflation rates and mortgages; this is to be expected, since individuals quite often meet these concepts in everyday life. Moreover, we note a gender gap in financial knowledge, as men perform better than women in all the questions. This was also predictable, since finance is traditionally a male context. It is important to highlight

that the percentage of those answering all the questions correctly increases over time, and that the performance of women improves more than that of men. Therefore, the gender gap in financial subjects is likely to be closed. Considering geographical areas, we note that people in the central region perform better, while people in the south have less knowledge about finance. Finally, we note that those who keep working during retirement age perform better than those who retire.

To analyze the impact of financial literacy on the retirement decisions of eligible heads of household, we run linear probability regressions with fixed effects. Moreover, since the fixed effect method does not permit us to display the effects of some time-invariant variables, we decide to decompose the sample by gender and geographic areas, to be able to capture the differences in the estimates.

Looking at the whole sample, we can note that those answering all questions correctly are likely to retire. When we restrict the sample to the categories mentioned previously, this is confirmed only for those in the central region. Moreover, in this case, the variable accounting for those answering two questions correctly also becomes significant: it is negatively associated with retirement.

Since these results are related to the Defined Benfit Rule affceting the majority of the sample, we restrict the analysis of the effect of financial literacy on the expected age of retirement for heads of family who are under fifty so as to isolate those who will be under Defined Contribution rule only. We restrict the sample to them in order to capture the effect of being part of the Defined Contribution system. In this case we expect that people performing better in financial literacy tests are more likely to prolong their time in the labor market. Our expectations are confirmed by the results, proving that the previous outcomes were influenced by older people who are retiring under the Defined Benefit system.

Moreover, we note that those who answer only two questions correctly show the opposite effect, that is, a lower expected age of retirement; this could be explained by the fact that only people with a very good financial knowledge are able to understand and balance the advantages and disadvantages of staying in the labor market longer.

Other variables play an important role in retirement decisions; in particular, individual income decreases the probability of retiring, while real and financial assets increase it. In the north, income is more significant, while wealth variables acquire more importance in the south. Considering the gender aspect, we note that women rely especially upon real assets, while men rely on financial assets and income. Self-employed tend to stay in the labor market longer, while those having offspring tend to retire earlier. Finally, divorced people extend their time in the labor market.

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	.8743169	.3315267	0	1
Age	4758	6.596.007	5.526.294	48	75
Age^2	4758	4.381.264	7.237.101	2304	5625
Self-employed	4758	.1796974	.3839755	0	1
Partner with job	4758	.1210593	.3262304	0	1
Marital status	4758	.7007146	.4579932	0	1
Widower	4758	.1546868	.3616439	0	1
Divorced	4758	.0582177	.2341793	0	1
Offspring	4758	.6740227	.4687881	0	1
No. of family members	4758	2.217.318	.9675514	1	8

Variable	Obs	Mean	Std. Dev.	Min	Max
Primary school	4758	.3488861	.476668	0	1
Middle school	4758	.2917192	.4546015	0	1
High school	4758	.1939891	.395462	0	1
University	4758	.0632619	.243459	0	1
Replacement rate	4758	7.441.446	1.616.433	0	150
Log of real wealth	4758	1.180.301	1.823.736	0	165.881
Log of financial wealth	4758	9.532.708	1.474.351	270.805	154.423
Log of individual income	4758	10.031	.4895629	7.607.941	1.296.503
All correct answers	3920	.3451531	.4754788	0	1
One correct answer	3920	.1943878	.3957791	0	1
Two correct answers	3920	.3548469	.478528	0	1
All "Don't know"	3920	.0686224	.2528433	0	1
All wrong answers	3920	.1056122	.3073799	0	1

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

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	3457	.8669367	.3396923	0	1
Age	3457	6.572.635	5.572.313	48	75
Age^2	3457	4.350.995	728.585	2304	5625
Self-employed	3457	.1880243	.3907881	0	1
Partner with job	3457	.1533121	.3603402	0	1
Marital status	3457	.8394562	.3671628	0	1
Widower	3457	.0656639	.2477294	0	1
Divorced	3457	.0373156	.1895614	0	1
Offspring	3457	.6933758	.4611587	0	1
No. of family members	3457	2.409.025	.9418323	1	8
Primary school	3457	.3355511	.4722511	0	1
Middle school	3457	.3095169	.4623614	0	1
High school	3457	.1969916	.3977835	0	1
University	3457	.0613248	.2399599	0	1
Replacement rate	3457	7.509.488	1.559.299	0	130
Log of real wealth	3457	1.188.553	1.781.373	0	165.881
Log of financial wealth	3457	9.597.834	1.475.021	270.805	154.423
Log of individual income	3457	1.008.677	.4852015	7.743.839	1.296.503
All correct answers	2820	.3666667	.4819799	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
One correct answer	2820	.1868794	.3898838	0	1
Two correct answers	2820	.3531915	.4780463	0	1
All "Don't know"	2820	.0560284	.2300173	0	1
All wrong answers	2820	.0932624	.2908514	0	1

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

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	1301	.8939277	.3080485	0	1
Age	1301	6.658.109	5.354.846	48	75
Age^2	1301	4.461.694	704.576	2304	5625
Self-employed	1301	.1575711	.3644785	0	1
Partner with job	1301	.0353574	.1847526	0	1
Marital status	1301	.3320523	.4711307	0	1
Widower	1301	.3912375	.488215	0	1
Divorced	1301	.1137586	.31764	0	1
Offspring	1301	.622598	.4849232	0	1
No. of family members	1301	1.707.917	.8426188	1	6
Primary school	1301	.3843198	.4866211	0	1
Middle school	1301	.2444274	.4299124	0	1
High school	1301	.1860108	.389265	0	1
University	1301	.0684089	.2525434	0	1
Replacement rate	1301	7.260.646	1.747.051	0	150
Log of real wealth	1301	1.158.371	191.529	3.912.023	1.617.651
Log of financial wealth	1301	9.359.656	1.459.067	3.660.482	1.381.025
Log of individual income	1301	9.882.811	.4700124	7.607.941	1.209.182
All correct answers	1100	.29	.4539684	0	1
One correct answer	1100	.2136364	.4100594	0	1
Two correct answers	1100	.3590909	.4799521	0	1
All "Don't know"	1100	.1009091	.3013453	0	1
All wrong answers	1100	.1372727	.3442916	0	1

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

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	2604	.8790323	.3261524	0	1
Age	2604	6.581.221	5.651.187	48	75
Age^2	2604	4.363.171	7.396.791	2304	5625

Variable	Obs	Mean	Std. Dev.	Min	Max
Self-employed	2604	.1935484	.3951549	0	1
Partner with job	2604	.1271121	.3331625	0	1
Marital status	2604	.6808756	.4662269	0	1
Widower	2604	.1632104	.3696285	0	1
Divorced	2604	.0729647	.2601285	0	1
Offspring	2604	.6632104	.472703	0	1
No. of family members	2604	212.212	.8988758	1	6
Primary school	2604	.344086	.4751605	0	1
Middle school	2604	.3133641	.4639501	0	1
High school	2604	.187404	.3903104	0	1
University	2604	.0560676	.2300964	0	1
Replacement rate	2604	7.474.501	1.627.898	0	130
Log of real wealth	2604	1.179.892	1.789.117	0	165.881
Log of financial wealth	2604	9.742.326	1.454.942	270.805	154.423
Log of individual income	2604	1.007.851	.476949	8.519.198	1.255.198
All correct answers	2121	.3286186	.4698218	0	1
One correct answer	2121	.2060349	.4045512	0	1
Two correct answers	2121	.3833098	.4863074	0	1
All "Don't know"	2121	.0443187	.2058508	0	1
All wrong answers	2121	.0820368	.2744855	0	1

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

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	1114	.8725314	.3336469	0	1
Age	1114	6.613.375	5.261.625	48	75
Age^2	1114	4.401.333	6.893.091	2304	5625
Self-employed	1114	.1570916	.3640505	0	1
Partner with job	1114	.1140036	.3179584	0	1
Marital status	1114	.7019749	.457596	0	1
Widower	1114	.1463196	.353585	0	1
Divorced	1114	.05386	.2258425	0	1
Offspring	1114	.6669659	.4715103	0	1
No. of family members	1114	2.280.969	1.038.805	1	8
Primary school	1114	.3797127	.4855333	0	1
Middle school	1114	.2594255	.4385163	0	1
High school	1114	.2046679	.4036399	0	1
University	1114	.0610413	.2395136	0	1
Replacement rate	1114	7.571.275	1.614.891	0	150

Variable	Obs	Mean	Std. Dev.	Min	Max
Log of real wealth	1114	1.205.804	1.840.402	3.218.876	1.552.931
Log of financial wealth	1114	9.478.582	1.530.927	3.660.482	1.395.856
Log of individual income	1114	1.007.869	.4866731	8.175.773	1.263.425
All correct answers	938	.4360341	.496156	0	1
One correct answer	938	.1503198	.3575753	0	1
Two correct answers	938	.3017058	.4592431	0	1
All "Don't know"	938	.0788913	.2697128	0	1
All wrong answers	938	.1119403	.3154612	0	1

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

Variable	Obs	Mean	Std. Dev.	Min	Max
Retired	1040	.8644231	.3425035	0	1
Age	1040	6.614.423	5.480.771	48	75
Age^2	1040	4.405.069	7.186.586	2304	5625
Self-employed	1040	.1692308	.375136	0	1
Partner with job	1040	.1134615	.3173087	0	1
Marital status	1040	.7490385	.433775	0	1
Widower	1040	.1423077	.3495335	0	1
Offspring	1040	.7086538	.4546012	0	1
No. of family members	1040	23.875	1.024.642	1	6
Primary school	1040	.3278846	.4696684	0	1
Middle school	1040	.2721154	.4452631	0	1
Replacement rate	1040	7.219.615	1.568.426	1	110
Log of real wealth	1040	1.154.007	1.855.091	460.517	1.476.252
Log of financial wealth	1040	9.065.833	1.344.154	460.517	1.349.146
Log of individual income	1040	9.860.947	.4864738	7.607.941	1.296.503
All correct answers	861	.2868757	.4525659	0	1
One correct answer	861	.213705	.4101592	0	1
Two correct answers	861	.3426249	.4748631	0	1
All "Don't know"	861	.1173055	.3219709	0	1
All wrong answers	861	.1567944	.3638182	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	641.968	4.113.547	49	100
Self-employed	1377	.2084241	.4063292	0	1
Partner with job	1377	.4371823	.4962185	0	1
Marital status	1377	.5744372	.4946077	0	1
Divorced	1377	.0646333	.2459669	0	1
Offspring	1377	.0312273	.1739947	0	1
No. of family members	1377	2.512.709	1.222.972	1	8
Middle school	1377	.1793755	.3838058	0	1
High school	1377	.4132171	.49259	0	1
University	1377	.3013798	.459024	0	1
Replacement rate	1377	6.211.184	1.538.259	0	100
Log of real wealth	1377	1.053.148	2.519.203	0	1.517.777
Log of financial wealth	1377	8.929.055	1.356.434	1.072.058	1.366.178
Log of individual income	1377	9.918.796	.5397524	5.283.875	1.360.506
Years of contributions	1377	7.976.035	3.245.548	1	14
All correct answers	1210	.3727273	.4837303	0	1
One correct answer	1210	.1842975	.387887	0	1
Two correct answers	1210	.3694215	.4828477	0	1
All "Don't know"	1210	.0371901	.1893056	0	1
All wrong answers	1210	.0735537	.2611512	0	1
wave					
2008	1377	.3362382	.4725931	0	1
2010	1377	.4088598	.4918019	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	648.768	4.113.294	49	100
Self-employed	763	.2450852	.4304198	0	1
Partner with job	763	.4338139	.4959251	0	1
Marital status	763	.6697248	.4706206	0	1
Divorced	763	.0249017	.1559278	0	1
Offspring	763	.0327654	.1781388	0	1
No. of family members	763	2.644.823	1.226.751	1	8

Variable	Obs	Mean	Std. Dev.	Min	Max
Middle school	763	.2110092	.4082925	0	1
High school	763	.4102228	.4921967	0	1
University	763	.2634338	.4407846	0	1
Replacement rate	763	6.229.358	1.574.561	0	100
Log of real wealth	763	1.065.955	2.514.643	0	1.517.777
Log of financial wealth	763	8.965.241	1.336.903	5.491.582	1.366.178
Log of individual income	763	1.000.584	.5265915	5.283.875	1.360.506
Years of contributions	763	812.844	3.068.212	1	14
All correct answers	670	.3850746	.4869765	0	1
One correct answer	670	.1820896	.3862066	0	1
Two correct answers	670	.3626866	.4811346	0	1
All "Don't know"	670	.0358209	.1859822	0	1
All wrong answers	670	.0701493	.2555892	0	1
wave					
2008	763	.3591088	.4800538	0	1
2010	763	.3643512	.4815634	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	6.335.179	3.957.361	50	100
Self-employed	614	.1628664	.3695448	0	1
Partner with job	614	.4413681	.4969552	0	1
Marital status	614	.4560261	.4984686	0	1
Divorced	614	.1140065	.3180783	0	1
Offspring	614	.029316	.1688282	0	1
No. of family members	614	2.348.534	1.199.112	1	6
Middle school	614	.1400651	.3473376	0	1
High school	614	.4169381	.4934545	0	1
University	614	.3485342	.4768947	0	1
Replacement rate	614	6.188.599	1.492.887	0	100
Log of real wealth	614	1.037.234	2.517.834	3.912.023	1.474.373
Log of financial wealth	614	8.884.087	138.009	1.072.058	1.274.734
Log of individual income	614	9.810.632	.5367536	6.291.432	1.202.121
Years of contributions	614	7.786.645	3.446.409	1	14
All correct answers	540	.3574074	.4796806	0	1
One correct answer	540	.187037	.3903028	0	1

Variable	Obs	Mean	Std. Dev.	Min	Max
Two correct answers	540	.3777778	.4852812	0	1
All "Don't know"	540	.0388889	.1935094	0	1
All wrong answers	540	.0777778	.2680699	0	1
wave					
2008	614	.3078176	.461967	0	1
2010	614	.4641694	.4991211	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	6.375.334	4.269.398	49	99
Self-employed	673	.179792	.3842997	0	1
Partner with job	673	.4294205	.4953616	0	1
Marital status	673	.5141159	.5001724	0	1
Divorced	673	.0683507	.2525344	0	1
Offspring	673	.0371471	.1892628	0	1
No. of family members	673	2.301.634	1.225.819	1	8
Middle school	673	.1634473	.3700483	0	1
High school	673	.410104	.4922182	0	1
University	673	.2956909	.4566921	0	1
Replacement rate	673	6.106.389	1.488.969	0	100
Log of real wealth	673	1.025.447	2.580.589	0	1.484.869
Log of financial wealth	673	8.980.258	1.343.303	4.798.598	1.366.178
Log of individual income	673	994.154	.5062716	6.357.924	1.187.591
Years of contributions	673	8.271.917	3.255.773	1	14
All correct answers	588	.3401361	.4741581	0	1
One correct answer	588	.1853741	.3889317	0	1
Two correct answers	588	.3979592	.4898937	0	1
All "Don't know"	588	.0323129	.1769804	0	1
All wrong answers	588	.0765306	.2660716	0	1
wave					
2008	673	.3447251	.4756321	0	1
2010	673	.3833581	.486566	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	6.444.178	3.995.707	50	90
Self-employed	292	.1952055	.3970392	0	1
Partner with job	292	.4726027	.5001059	0	1
Marital status	292	.5513699	.498208	0	1
Divorced	292	.0684932	.2530239	0	1
Offspring	292	.0273973	.1635183	0	1
No. of family members	292	2.561.644	1.204.074	1	6
Middle school	292	.1609589	.3681239	0	1
High school	292	.3493151	.4775721	0	1
University	292	.369863	.4835962	0	1
Replacement rate	292	6.297.603	1.684.117	10	100
Log of real wealth	292	1.087.744	2.522.775	3.912.023	1.506.827
Log of financial wealth	292	9.095.569	1.456.839	3.912.023	1.274.734
Log of individual income	292	9.990.016	.6716019	5.283.875	1.360.506
Years of contributions	292	7.883.562	3.293.251	1	14
All correct answers	259	.4980695	.5009643	0	1
One correct answer	259	.1081081	.3111181	0	1
Two correct answers	259	.3166023	.4660514	0	1
All "Don't know"	259	.046332	.2106102	0	1
All wrong answers	259	.0772201	.2674572	0	1
wave					
2008	292	.2979452	.4581404	0	1
2010	292	.4931507	.5008114	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	6.474.757	3.856.851	55	100
Self-employed	412	.2645631	.4416366	0	1
Partner with job	412	.4247573	.4949071	0	1
Marital status	412	.6893204	.4633345	0	1
Divorced	412	.0558252	.2298631	0	1
Offspring	412	.0242718	.154079	0	1

No. of family members	412	2.822.816	1.163.167	1	7
Middle school	412	.2184466	.4136944	0	1
High school	412	.4635922	.499279	0	1
University	412	.2621359	.4403309	0	1
Replacement rate	412	6.321.117	1.501.181	0	100
Log of real wealth	412	1.073.878	2.366.197	460.517	1.517.777
Log of financial wealth	412	87.274	1.281.437	1.072.058	13.017
Log of individual income	412	9.831.169	.4741102	6.291.432	1.126.114
Years of contributions	412	7.558.252	3.151.334	1	14
All correct answers	363	.3360882	.4730215	0	1
One correct answer	363	.2369146	.4257763	0	1
Two correct answers	363	.3608815	.4809191	0	1
All "Don't know"	363	.0385675	.1928276	0	1
All wrong answers	363	.0661157	.2488272	0	1
wave					
2008	412	.3495146	.4773964	0	1
2010	412	.3907767	.4885177	0	1

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