Economics Bulletin

Volume 34, Issue 1

Do more financially literate households invest less in housing? Evidence from Italy.

Riccardo Calcagno
EM Lyon Business School and CeRP, Collegio Carlo Alberto

Maria Cesira Urzi Brancati
University of Modena and Reggio Emilia, and CeRP-Collegio Carlo Alberto

Abstract

Using the Bank of Italy's Survey of Households Income and Wealth (SHIW) covering a 5-year panel, we measure the impact of the degree of households' financial literacy on the quota of housing investment in their portfolio. We find that households with higher levels of financial literacy hold a relatively lower share of illiquid wealth, and the results are more pronounced at older ages, when according to the lifecycle hypothesis they are meant to decumulate their wealth.

We wish to thank Elsa Fornero, Maela Giofrè, Pasquale Scaramozzino and Mariacristina Rossi for the invaluable support and useful comments. We also wish to thank the participants to the Netspar International Pension Workshop 2013 in Amsterdam for the useful suggestions and Elisabeth Brüggen for the discussion; the participants to the 8th Winter School on Inequality and Social Welfare Theory (2013) and to the PhD lunch seminar in Tor Vergata (March 2013). We are very grateful for the insightful comments and suggestions given by an anonymous referee which helped us improve the manuscript. We are much obliged to the University of Rome "Tor Vergata" for the PhD scholarship, and we gratefully acknowledge financial support from CeRP-Collegio Carlo Alberto (Moncalieri, Turin) and .
Citation: Riccardo Calcagno and Maria Cesira Urzi Brancati, (2014) "Do more financially literate households invest less in housing? Evidence from Italy.", *Economics Bulletin*, Vol. 34 No. 1 pp. 430-445.
Contact: Riccardo Calcagno - calcagno@em-lyon.com, Maria Cesira Urzi Brancati - cesira.urzi@carloalberto.org.
Submitted: July 24, 2013. **Published:** March 04, 2014.

1. Introduction

The impact of housing on the Italian economy is huge, both on a macro and on a microeconomic level: while the construction sector accounts for roughly 6 per cent of GDP, employing up to 10 per cent of the labour force (Eurostat, Statistics in Focus 7/2010), real assets represent over 60 per cent of household wealth.

Finance theory also suggests that housing plays a dominant role in the households' portfolio and has non-trivial effects on its degree of diversification. According to standard mean-variance analysis (Markovitz, 1952), the vector of liquid asset holdings should lie on the efficient portfolios frontier. Given that housing is an illiquid asset potentially constrained by the exogenous housing need, homeowners may hold a mean-variant inefficient portfolio in the sense that a sale of housing for some financial assets would both increase the expected return and reduce variance of their portfolio. Evidence of the fact that households overinvest in housing is reported by Brueckner (1997), Flavin and Yamashita (2002), Yao and Zhang (2005) and Davidoff (2006). The first two papers show that the optimal real estate ownership from the point of view of the consumption of housing services may differ from the optimal level from a portfolio point of view. In terms of standard optimal portfolio theory, Yao and Zhang (2005) solve numerically for the optimal lifetime housing investment given the need to hedge the risk in their net housing position. Davidoff (2006) studies the effect of the correlation between housing prices and labour income on the optimal household portfolio.

Holding an excess of housing assets may turn into a severe hindrance at retirement age, when individuals are meant to decumulate and keep consumption smooth. Elderly individuals are more exposed to health shocks and healthcare related expenditures, and keeping most of their wealth in housing assets could translate into greater financial fragility (Lusardi and Mitchell, 2006).

Focusing on the Italian case, Pelizzon and Weber (2009) find that Italian elderly are 'over housed', i.e. their dwellings are too large compared to their age related needs. Further evidence of this phenomenon is provided by Guiso and Jappelli (2002), who show that the ratio of housing wealth over net wealth for Italian households has been increasing from 62% in 1989 to 66% in 1998. Using the Luxembourg Income Study, Chiuri and Jappelli

(2010) provide evidence that, at individual level, Italians aged 61-70 are among the populations who downsize their housing net position at a lower rate across Europe. They argue that among elderly Italians downsizing tends to be associated more with dramatic events such as the death of a spouse rather than with retirement as it occurs in Northern and Central Europe. Finally, using individual data from the European Community Household Panel, Tatsiramos (2006) shows that elderly Italians homeowners have one of the lowest mobility rates in Europe, and one of the highest ownership rates.

In this paper we analyse whether the excessive exposure of elderly Italian households to real estate found in Pelizzon and Weber (2009), Chiuri and Jappelli (2010) and Tatsiramos (2006) is related to a lack of financial literacy (FL).

Lusardi and Mitchell (2006) define FL as a set of tools enabling a better allocation of financial resources. FL is often associated with numerical skills, or with the understanding of economic concepts such as the trade-off between risk and return, and the benefits of diversification. Guiso and Jappelli (2009) show that financially illiterate households own poorly diversified portfolios, but they do not take the presence of housing into account. Fornero and Monticone (2011) find a positive effect of FL on pension plan participation and report that Italian elderly are less financially literate.

To our knowledge, the impact of a low degree of FL on housing investment has not been investigated yet. Using Italian survey data, we show that financially sophisticated households hold a less illiquid portfolio with a lower share of housing assets, and the effect appears stronger at older ages. We isolate the partial effects of FL on portfolio illiquidity by controlling for individual heterogeneity, and try to assert a causal relationship by addressing potential endogeneity of FL. Our results are robust to different specifications of FL, as well as different specifications of the dependent variable.

2. Data and Methodology

Our investigation draws from a 5 years panel dataset, Bank of Italy's Survey on Household Income and Wealth (SHIW) waves of 2006, 2008 and 2010. The analysis is conducted at household level. In our analysis we only consider households who are present in at least

two waves, resulting in a panel of 14,478 observations[1] for 5,486 households. The average head of household, i.e. the household member with the highest income, is aged 58; roughly 31 per cent are females, 62 per cent are married and 43 per cent are retired (see Table 1). Over 69 per cent of head of households is a homeowner, with average net housing wealth[2] amounting to €216,447 for homeowners (€158,690 including non homeowners); 90 per cent of households own at least one financial asset, most commonly bank or post office deposits, with average net financial wealth equal to €17,667.

To gauge respondents' level of FL, we follow Lusardi (2011) and exploit three survey questions regarding inflation, interest rates and a basic understanding of stocks and bonds.[3] We first create three binary variables taking the value of 1 for every correct answer for each individual, and then sum them up to build an indicator ranging from 0 to 3.

We observe that the level of FL is quite low for Italian households, with an important difference between young and elderly households: only 19.0 per cent (resp. 32.4 per cent) of households with head older (resp. younger) than 65 years old answer correctly to the three questions.

2.1. Estimation technique: pooled OLS

To investigate the relationship between FL and portfolio imbalance we define a new variable, housing weight (HW), as the ratio of net housing wealth over total net wealth, i.e. all real and financial wealth net of financial liabilities, such as debt or mortgages. The mean HW is 0.59 for the entire sample[4], or 0.64 for the 65 years old and over.

We use the 3 waves of the SHIW, 2006, 2008 and 2010 and the following regression model (1):

$$HW_{it} = \eta_t + FL_{it}\beta_1 + x_{it}\beta_2 + c_i + u_{it}, \qquad t = 1,2,3 \tag{1}$$

[1] Head of households younger than 18 were dropped, losing only 20 observations.
[2] Net housing wealth is calculated as the self-assessed value of respondents' first home multiplied by the fraction owned net of any mortgages - only 2.85% do not have full ownership -.
[3] Only 3,992 respondents, half of sample, are asked the FL questions in the 2006 wave.
[4] The value includes zero housing wealth for households who do not own a house.

where HW_{it} is our dependent variable for individual i at time t, η_t represents an aggregate time effect $\boldsymbol{x_{it}}$ is the vector of covariates, c_i is the time-constant unobserved individual heterogeneity, and u_{it} the idiosyncratic errors. The unobserved heterogeneity c_i is treated as a random variable (as in Mundlak; 1978 Chamberlain, 1984), not a parameter to be estimated; and small *t*'s are treated as time effects or different intercepts to be estimated (Wooldridge, 2002).

The vector of covariates $\boldsymbol{x}_{it}$ includes a second order polynomial in age, the natural logarithm of household income, the natural logarithm of average regional house value per square meter, an indicator of subjective health status, dummy variables indicating head of household female, with university degree, pensioner, single/divorced/widow, region of residence, a dummy for risk aversion and, finally, a dummy indicating whether the head of household had inherited the house in which he or she lived. Time dummies are also included.

The first assumption we make is that idiosyncratic errors are uncorrelated with the *x*'s and the individual heterogeneity term; we cannot however assume that the individual heterogeneity is not correlated with the explanatory variable, since c_i could represent innate cognitive ability or a taste for financial matters, which is very likely to be correlated with FL. A first step to get consistent estimates then is to proxy c_i using mother and father's education i.e. dummies taking the value of one if either of them is a university graduate, and father's occupation (i.e. father high skilled). The justification is that highly educated parents (high skilled parents) may have children with higher cognitive ability[5].

2.1.1. Pooled OLS Results

A simple OLS regression on the pooled sample using the above proxies shows the effect of FL on housing investment: the coefficient has a negative sign and high statistical significance (-0.02, p-value 0.000). If we run the same regression on a sub-sample of older respondents (65 years or over), we find that the correlation of FL and HW is even larger in

[5] These same instruments are often used in labour economics as instruments for education in order to study the causal impact of education on wages allowing for unobserved ability (Angrist and Pischke, 2008, Chapter 3).

magnitude (-0.03; p. 0.000) and robust to the inclusion of all different proxies (see Table 2).

2.2. Estimation technique: Fixed Effects

Even though we have included several proxies for c_i, there may still be unobserved characteristics driving our results, thus we should take further steps to obtain consistent estimates.

We take advantage of the panel structure of our sample and choose not to impose any assumption on the relationship between c_i and the other explanatory variables. We can do so by eliminating time-invariant individual heterogeneity and de-meaning our data to obtain

$$HW_{it} - \overline{HW}_i = \left(FL_{it} - \overline{FL}_i\right)\beta_1 + \left(x_{it} - \bar{x}_i\right)\beta_2 + \left(c_i - c_i\right) + u_{it} - \bar{u}_i, \qquad t = 1,2,3 \qquad (2)$$

This procedure is viable as long as 1) both our dependent variable (HW) and our regressor of interest (FL) change over time, 2) c_i is constant over time and 3) errors are uncorrelated with the *x*'s over time.

Under these assumptions, equation [2] can be estimated by fixed-effects (FE) or within estimator. By taking out time averages, time invariant individual heterogeneity c_i will disappear if and only if a strict exogeneity assumption holds (Wooldridge, 2007).

2.2.1. FE Results

The effect of a variation of FL on HW appears to be negative as expected; the impact is significant, but not too large in magnitude. An additional correct answer causes HW to decrease by approximately 0.008 points (-0.012 for the older sub-sample), but we must bear in mind that the FE estimator is going to suffer from attenuation bias (Angrist and

Pischke, 2008), therefore the real impact of FL on HW is likely to be understated and will be addressed with an instrumental variable approach.

Among the other covariates, only a few show significant effects, which are quite intuitive: getting a divorce has strong negative impact, -0.091 for the whole sample and -0.202 for the older sub-sample; inheriting a house has a strong positive impact; entering retirement also has a positive effect, which suggests that pensioners either start decumulating financial assets, or use their severance pay to accumulate more illiquid assets (see Table 2). Interestingly, while within a cross sectional framework higher income is correlated with higher HW, the FE estimator tells us that a 1 per cent increase in income leads to a 0.033 points decrease in HW (0.06 for the over 65).

2.3. Estimation technique: Fixed Effects Instrumental Variable (FE-IV)

Another source of potential concern is simultaneity / reverse causation, according to which the variation in FL results from successive investment in stocks or improved portfolio allocation, rather than causing it. A fixed-effects instrumental variable approach can solve this problem, as well as reducing the attenuation bias (Wooldridge, 2007). To use the IV approach we need to identify an observable variable z_1 not present in equation [2] which is highly correlated with FL but uncorrelated with the idiosyncratic errors, u_{it}.

The OECD 2005 report on FL documents the close relationship between FL and the use of payment instruments different from cash, therefore a natural candidate to instrument the level of FL is the amount of credit/debit/cashline cards held by different households. In order to ensure the least possible correlation with u_{it}, we calculate the difference between the respondents' number of cards and the average number of cards owned by region and municipality size and use it as an instrument. A second instrument is given by the presence of at least one economic graduate within the household.

The test of over-identifying restrictions, denoted by the Sargan statistic, implies that our instruments are valid, however the F-statistic on the first stage shows that the instruments are strong for the entire sample (F>10) but weak for the over 65 (F<10).

Since just identified IV is less biased, we can pick our best single identified instrument and report just-identified estimates (Angrist and Pischke, 2008, Chapter 4).

In order to pick our best instrument, we run a likelihood ratio redundancy test and found that the relative number of cards was not redundant (p val 0.000) so we kept it as the just identified instrument (F-statistics = 22.85 for all and 12.26 for the older sample), and find a very similar impact: -0.184 for the entire sample and -0.164 (at the 5 per cent significance level) for the older sample.

We then run a Hausman test by plugging in the residuals from the first stage in the structural regression and confirm that FL is indeed endogenous, so we proceed to estimate the model using our instruments[6].

The results confirm the negative effect of FL on HW, and as expected, the coefficient (-0.182 for the entire sample and -0.164 for the over 65) is of an order of magnitude larger than with FE or OLS (see Table 2).

2.4. Robustness Checks

We check for robustness using different indicators of FL: a dummy variable equal to 1 if all answers are correct and zero otherwise, and 4 different dummies for each level of FL {0,1,2,3}, with 0 correct answers as the baseline and find that the results confirm previous estimates, and are even larger in magnitude with a coefficient of -0.013 for the entire sample and -0.034 for the over 65 (see table 3) In order to exclude that the results are driven by the presence of stocks in the portfolio, we also use a different specification of HW, excluding stocks but including all bonds and other types of riskless savings, and find that the results are still robust, albeit slightly lower in magnitude in the fixed effects specification, with a coefficient of -0.007 for the entire sample and -0.011 for the over 65, both at the at the 1 per cent significance level (see table 4).

[6] Less so for the older subsample.

3. Conclusions

Individuals lacking financial literacy are not empowered to make the right choices when it comes to financial matters. Our study illustrates the impact of low financial literacy on one of such choices: the proportion of wealth an investor should hold in housing assets.

We find a negative relation between the level of financial literacy of the head of household and the share of housing wealth over total net wealth in his or her portfolio. The effects are robust to different specifications of financial literacy, and larger in magnitude for the sub-sample of households headed by a 65 year old or older. A possible explanation is that financially literate heads of household correctly anticipate the need to dissave when they are older and hold a lower share of illiquid assets.

In order to ensure that our results are not driven by the presence of stocks in the portfolio, we also estimate a second specification using as dependent variable the share of housing wealth over total net wealth excluding stocks owners, but including the owners of government bonds, long-term financial positions and other, less information intensive financial assets. The results remain robust, and highly statistically significant.

We deal with potential endogeneity with a fixed effect instrumental variable approach, using as instruments the presence of at least one economics graduate in the households and the difference between the head of households' number of debit/credit cards and the average by region and municipality size. The use of an instrumental variable approach brings evidence in favour of a causal impact.

Policy makers have encouraged the "homeownership dream" in most OECD countries, regardless of the potential consequences of being overexposed on real estate investment.

If low financially literate households, coeteris paribus, downsize their home after retirement less than other households, one can argue that programs that permit older households to remain at their homes but at the same time allow them to adjust their housing consumption could be beneficial. The same might hold for policies that reduce mobility constraints.

References:

Andrews, D., Caldera Sànchez, A. (2011) "Drivers of Homeownership Rates in Selected OECD Countries" OECD Economics Department Working Papers number 849.

Angrist, J. D. and Pischke, J. S. (2008) *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton University Press: Princeton, New Jersey.

Brueckner, J. (1997) "Consumption and Investment Motives and the Portfolio Choices of Homeowners" *The Journal of Real Estate Finance and Economics* **15**, 159-80.

Chamberlain, G. (1984) "Panel data" in *Handbook of Econometrics* (2) Ch. 22 in Griliches, Z. and M. D. Intriligator, Eds., Elsevier Science: North Holland.

Chiuri, M. C. and T. Jappelli (2010) "Do the elderly reduce housing equity? An International comparison" *Journal of Population Economics* **23**, 643-663.

Davidoff, T. (2006) "Labor income, housing prices, and homeownership" *Journal of Urban Economics* **59**, 209-235.

Eurostat, Statistics in Focus 7/2010.

Flavin, M., and T. Yamashita (2002) "Owner-Occupied Housing And The Composition Of The Household Portfolio" *American Economic Review*, **92**, 345-362.

Fornero, E. and C. Monticone (2011) "Financial literacy and pension plan participation in Italy" *Journal of Pension Economics and Finance* **10**, 547-564.

Guiso, L. and T. Jappelli (2009) "Financial Literacy and Portfolio Diversification", CSEF Working Papers number 212, Centre for Studies in Economics and Finance (CSEF), University of Naples, Italy.

Guiso, L., and T. Jappelli (2002) "Households Portfolio in Italy" in *Household Portfolios* by L. Guiso, M. Haliassos, and T. Jappelli, Eds., MIT Press.

Lusardi, A. and O. Mitchell (2006) "Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education", *Michigan Retirement Research Center*.

Lusardi, A. (2011) "Financial literacy around the world: an overview" *Journal of Pension Economics and Finance* **10**, 497-508

Markovitz, H. (1952) "Portfolio selection" *Journal of Finance* **7**, 77-91.

Mundlak, Y. (1978) "On the Pooling of Time Series and Cross Section Data" *Econometrica* **46**, 69-85.

OECD (2005), "Improving Financial Literacy: Analysis of Issues and Policies", OECD Publishing.

Pelizzon, L. and G. Weber (2009) "Efficient portfolios when housing needs change over the life cycle" *Journal of Banking & Finance* **33**, 2110-2121.

Tatsiramos, K. (2006) "Residential mobility and housing adjustment of older households in Europe", IZA Discussion Papers number 2435.

Wooldridge, J. (2002) *Econometric analysis of cross section and panel data*, MIT press: Cambridge, Massachusetts.

Wooldridge, J. (2007) *Linear Panel Data Models – What's New in Econometrics? Lecture 2*. NBER Summer Institute.

Table 1: Summary Statistics of estimation sample (#:12,137)

Variable	Mean	Std. Dev.	Min	Max
Housing weight	0.56	0.42	0.00	12.00
Financial Literacy (0-3)	1.66	1.09	0.00	3.00
Financial Literacy (Dummy)	0.29	0.45	0.00	1.00
Age	54.69	16.82	15.00	104.00
Female	0.31	0.46	0.00	1.00
University graduate	0.11	0.31	0.00	1.00
Pensioner	0.38	0.48	0.00	1.00
Married	0.60	0.49	0.00	1.00
Single	0.17	0.38	0.00	1.00
Separated/divorced	0.07	0.26	0.00	1.00
Widow/er	0.15	0.36	0.00	1.00
Average number of children	1.60	1.29	0.00	20.00
Log household income	10.17	0.68	0.99	13.61
Log of avg. Housing value[(a)]	7.58	0.39	6.70	8.42
House inherited	0.21	0.40	0.00	1.00
Resident in the south	0.31	0.46	0.00	1.00
Healthy	3.92	0.88	0.00	5.00
Risk averse	0.51	0.50	0.00	1.00
Mother college graduate	0.03	0.16	0.00	1.00
Father college graduate	0.01	0.10	0.00	1.00
Father white collar	0.08	0.27	0.00	1.00
IV1(relative number of cards) [(b)]	0.04	1.34	-2.62	4.43
IV2 (At least one economics grad).	0.02	0.16	0.00	1.00

Source: SHIW 2006 - 2010 – weighted data.

[(a)]Mean housing wealth is estimated taking the natural logarithm of housing value per square metre, by region and municipality size.

[(b)] Difference between head of households' number of cards owned (outliers collapsed at 5) and the average by region and municipality size

Table 2: Estimation results

	Pooled OLS I		Pooled OLS II		FE		FE-IV (2 instr)		FE-IV (1 instr)	
	All	65 and over	All	65 and over	All	65 and over	All	65 and over	All	65 and over
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Financial Literacy	-0.020***	-0.029***	-0.019***	-0.028***	-0.008**	-0.012**	-0.168**	-0.182**	-0.184***	-0.164**
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)	(0.07)	(0.08)	(0.07)	(0.08)
Age	0.009***	0.043**	0.008***	0.044**	0.003	-0.010	0.006	-0.015	0.006*	-0.014
	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.03)	(0.00)	(0.03)
Age squared/1000	-0.068***	0.291**	-0.066***	0.295**	-0.037	0.066	-0.062**	0.084	-0.064**	0.082
	(0.02)	(0.13)	(0.02)	(0.13)	(0.02)	(0.16)	(0.03)	(0.19)	(0.03)	(0.19)
Female	0.003	-0.005	0.003	-0.005	0.013	0.028	0.017	0.016	0.018	0.017
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.03)	(0.02)	(0.04)	(0.02)	(0.03)
Graduate	-0.027*	0.097***	-0.015	0.082***	0.037	-0.032	0.043	-0.116	0.044	-0.107
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.07)	(0.03)	(0.10)	(0.03)	(0.09)
Single	-0.020	-0.022	-0.021	-0.022	-0.027	-0.027	-0.035	-0.055	-0.036	-0.052
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.06)	(0.03)	(0.08)	(0.04)	(0.07)
Divorced	0.085***	-0.024	0.082***	-0.020	0.093***	0.217***	-0.082**	-0.163**	-0.081**	-0.169**
	(0.02)	(0.04)	(0.02)	(0.04)	(0.03)	(0.06)	(0.03)	(0.08)	(0.04)	(0.08)
Widow(er)	0.018	0.014	0.020	0.017	-0.031	-0.042	-0.043	-0.041	-0.044	-0.041
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
Retired	0.088***	0.202***	0.086***	0.198***	0.044***	0.105***	0.060***	0.135***	0.062***	0.131***
	(0.01)	(0.03)	(0.01)	(0.03)	(0.02)	(0.03)	(0.02)	(0.04)	(0.02)	(0.03)
House inherited	0.237***	0.210***	0.237***	0.209***	0.179***	0.148***	0.187***	0.160***	0.188***	0.159***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
With children	0.021*	0.004	0.020	0.003	-0.025	-0.041**	-0.034*	-0.039*	-0.035*	-0.039*
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Healthy (0-5)	0.002	0.003	0.002	0.003	0.007	0.008	0.009	0.012	0.009	0.012
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Risk averse (d)	0.019**	0.012	0.018**	0.012	-0.001	-0.003	-0.015	-0.022	-0.017*	-0.020
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Log HH income	0.098***	0.097***	0.100***	0.101***	0.026***	0.060***	-0.012	-0.043*	-0.010	-0.045**
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
Log house prices	0.059***	0.090***	0.056***	0.088***	0.091	0.053	0.081	0.062	0.080	0.061
	(0.02)	(0.03)	(0.02)	(0.03)	(0.07)	(0.09)	(0.08)	(0.11)	(0.08)	(0.11)
Constant	-0.306*	-1.461*	-0.336**	-1.538*	0.055	1.099	-	-	-	-
	(0.17)	(0.81)	(0.17)	(0.81)	(0.54)	(1.23)	-	-	-	-
Proxies	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES
Year and reg. dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
First stage										
Cragg-Donald Wald F statistic							10.29	6.31	22.85	12.35
Anderson-Rubin Wald test							9.59	9.59	9.13	6.13
Sargan statistic (p-val)							0.3987	0.3329	Exactly id	Exactly id
N. obs	12,137	4,512	12,137	4,512	12,137	4,512	11,619	4,021	11,619	4,021
N. households	5,450	2,243	5,450	2,243	5,450	2,243	4,932	1,752	4,932	1,752
R^2	0.110	0.097	0.112							

[(a)] Mean housing wealth is estimated taking the natural logarithm of housing value per square metre, by region and municipality size.

*The superscripts ***, **, and * indicate the 1%, 5%, and 10% levels of statistical significance, respectively.*
Standard errors in parentheses are robust to heteroskedasticity and clustered at the household level.

Table 3: Sensitivity analysis

FL=1 if all 3 correct, 0 otherwise; comparing with Table 2, columns 5 and 6 (Fixed Effects estimation)

	FL specification I		FL specification II	
	All ages	65 and over	All ages	65 and over
	b/se	b/se	b/se	b/se
FL index 0-3	-0.008***	-0.012**	-	-
	(0.00)	(0.00)	-	-
FL all correct	-	-	-0.013*	-0.034***
	-	-	(0.01)	(0.01)
Age	0.003	-0.01	0.003	-0.01
	(0.00)	(0.02)	(0.00)	(0.02)
Age2/1000	-0.037	0.066	-0.037	0.066
	(0.02)	(0.16)	(0.02)	(0.16)
With Children	-0.025	-0.041**	-0.024	-0.040**
	(0.02)	(0.02)	(0.02)	(0.02)
Single	-0.027	-0.027	-0.027	-0.027
	(0.03)	(0.06)	(0.03)	(0.06)
Divorced	-0.093***	-0.217***	-0.093***	-0.216***
	(0.03)	(0.06)	(0.03)	(0.06)
Widow	-0.031	-0.042	-0.031	-0.042
	(0.02)	(0.03)	(0.02)	(0.03)
Pensioner	0.044***	0.105***	0.044***	0.105***
	(0.02)	(0.03)	(0.02)	(0.03)
House inherited	0.179***	0.148***	0.179***	0.147***
	(0.01)	(0.02)	(0.01)	(0.02)
Log of household income	-0.026***	-0.060***	-0.027***	-0.060***
	(0.01)	(0.02)	(0.01)	(0.02)
Log of avg. Housing value[(a)]	0.091	0.053	0.089	0.049
	(0.07)	(0.09)	(0.07)	(0.09)
Constant	0.058	1.118	0.065	1.132
	(0.54)	(1.23)	(0.54)	(1.23)
Proxies	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES
R^2	0.042	0.059	0.042	0.059
Rho	0.727	0.782	0.727	0.782
P-value	0.000	0.000	0.000	0.000
Number of observations	12,137	4,512	12,137	4,512
Number of households	5,450	2,243	5,450	2,243

[(a)] Mean housing wealth is estimated taking the natural logarithm of housing value per square metre, by region and municipality size.

*The superscripts ***, **, and * indicate the 1%, 5%, and 10% levels of statistical significance, respectively.*

Unreported control variables without significant effects are: average number of children, head of household (hh) female (dummy), hh healthy (1-5 index), hh university graduate (d), hh risk averse (d), hh resident in the south (d).

Table 4: Robustness – different specifications of housing weight

Depvar in specification I: housing weight = fraction of net housing wealth over total net wealth
Depvar in specification II: housing weight = fraction of net housing wealth over total net wealth, excluding stocks and other information intensive assets.

Panel A: all ages

	Fixed Effects		**FE-IV**	
	Spec. I	**Spec. II**	**Spec. I**	**Spec. II**
	b/se	**b/se**	**b/se**	**b/se**
FL index 0-3	-0.008***	-0.007***	-0.184**	-0.252**
	(0.00)	(0.00)	(0.08)	(0.07)
Proxies	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES
First Stage				
Instrument			0.062***	0.062***
			-0.01	
F			22.85	13.12
R^2 / centred R^2	0.042	0.051	-0.312	-0.737
P-value	0.000	0.000	0.000	0.000
Number of observations	12,137	10,172	11,619	9,769
Number of households	5,450	5,132	4.932	4,199

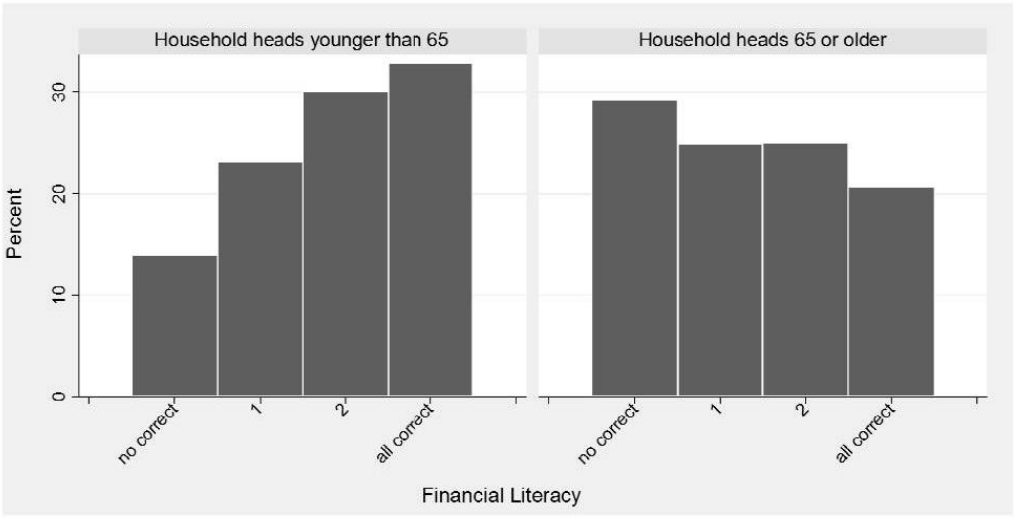
Panel B: 65 years and over

	Fixed Effects		**FE-IV**	
	Spec. I	**Spec. II**	**Spec. I**	**Spec. II**
	b/se	**b/se**	**b/se**	**b/se**
FL index 0-3	-0.012**	-0.011***	-0.164**	-0.171**
	(0.00)	(0.00)	(0.08)	(0.08)
Proxies	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES
First Stage				
Instrument			0.109***	0.109***
F			12.26	12.24
R^2 / centred R^2	0.059	0.058	-0.291	-0.272
P-value	0.000	0.000	0.000	0.000
Number of observations	4,512	4,074	4,022	3,154
Number of households	2,243	2,107	1,752	1,547

*The superscripts ***, **, and * indicate the 1%, 5%, and 10% levels of statistical significance, respectively.*
FE: Clustered robust standard errors in parentheses;
IV: Clustered s/e in parentheses.
All controls as previously mentioned are included in the regression, but not reported.

Appendix:

Figure 1: Distribution of Financial Literacy, by over/under 65



	No correct	1 answer	2 answers	All correct
Mean FL (<65)	14.7%	23.0%	29.9%	32.4%
Mean FL (>=65)	31.6%	24.9%	24.5%	19.0%
Mean FL (All)	20.0%	24.2%	28.5%	27.3%

Source: SHIW 2006 - 2010 – weighted data. Number of observations: 19,920.