Financial Inclusion and Life Insurance Demand; Evidence from Italian households *

by

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November 2015

updated April 2016

Abstract

This paper studies whether financial market inclusion drives the demand for life insurance, using the Bank of Italy (SHIW) panel dataset 2004-2012. We consider both participation and invested amounts. We use stock market participation, home ownership and financial literacy as measures of financial market inclusion. We find that financial inclusion stands as the pivotal regressor in shaping life insurance demand, especially annuities, even when we include pension funds in the definition of annuities. The traditional drivers of insurance demand, such as income, wealth, geographical or sociological variables, have a lower impact than financial inclusion. These results are robust to the inclusion of time and individual fixed effects, as well as the IV approach to tackle the potential endogeneity of financial inclusion.

* The Authors thanks participants to the Second Cintia Conference 2014, the ILO Summer School on Gender, Economics and Society 2015, the EFMA Conference 2015, the Paris-Dauphine Workshop on Pensions 2015, the Workshop on Household Finance, Luxembourg 2015, the Netspar International Pension Workshop, 2016, for comments and suggestions. They are grateful to Agar Brugiavini, Pierre Andrè Chiappori, Arthur van Soest, Allison Stashko and Bart Dirtis for helpful comments. Discussions with J.F. Outreville on a companion paper are also gratefully acknowledged. We thank the EU MOPACT Grant n. 320333 and Netspar for funding.

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1. Introduction

Among all forms of savings, life insurance has a distinctive feature: it permits to distinguish long-term savings from straightforward bequest intentions. Indeed, the so-called pure life insurance, be it in the form of an annuity or in the form of a lump-sum amount, which can be withdrawn or converted into an annuity by the insured, represents a form of long-term savings. Life insurance protects against the risk of longevity, especially when it comes as an annuity. As a complement to it, term insurance, which pays in case of death of the insured, isolates bequest intentions. Separating pure life from term insurance we can pick savings intentions which are not directed towards bequest. For the sake of simplicity, we call pure-life insurance simply "life insurance"[4].

Since life insurance may play a pivotal role in households' saving strategies, great attention has been paid to the empirical study of its demand, even using microdata. Up to our knowledge, financial literacy, or proximity to the financial market, which can have a reverse causality effect on financial literacy, has not been included among the determinants of life insurance demand. This is particularly surprising, since life insurance, be it in the form of an annuity, which provides lifetime income smoothing, or in the form of a lump sum, namely pure savings, has enjoyed, over the last decades, a number of advantages in comparison to other forms of savings, which should have made it particularly attractive to financially literate people. Advantages span from guaranteed capital, even if the contract is closed prematurely, to minimum returns, to a favourable tax treatment.[5] The demand for insurance has indeed been steadily increasing over the last decade, in Europe as well as in the rest of the world. A minor slowdown has been observed during the Great Recession only.

Italy stands out as a good candidate to study the demand of life insurance since, together with Germany, the UK and France, it accounts for 70% of the overall premiums in Europe. It is also a paramount example of the important role of insurance among other forms of savings: the expected payments from insurance companies to households amount to 11.7% of the Italian households' total wealth (see Ania 2014). As a comparison, bonds represents 16%, shares 23% and mutual funds 8% of it.

In order to analyze the drivers of insurance demand in Italy, and financial literacy or proximity in particular, we make use of the Survey on Household Income and Wealth (SHIW) data, as collected by the Bank of Italy between 2004 and 2012. This unique survey allows us to investigate traditional drivers of demand, such as income, wealth, geographical and demographic variables, as well as newer ones, such as financial market inclusion. We use as proxies for the latter stock holding, home ownership and financial literacy since they all represent proximity to financial market. In a second stage, we recognize the potential endogeneity of financial market participation and try to address it by using parental capabilities, as measured by parents' managerial skills, as instruments.

4 In tha data analysis below we include also the so-called "mixed policies", which act as life together with term insurance.

5 Its role in providing diversification benefits on top of interesting returns is discussed below.

Finally, we increase the robustness of our results by exploiting the panel dimension of the dataset and controlling for time and individual fixed effects. We look at both participation to the insurance market and the magnitude of the insurance investment, when positive.

To anticipate on our results, we show that the demand for insurance - both participation and invested amount, given participation - is correlated with the explanatory variables already pointed out in the literature. However, financial-market inclusion has a much bigger impact than the traditional drivers.

Italian workers have a compulsory annuitization given by public pensions. When we interpret life insurance as potential annuity, we can therefore investigate the amount of annuitization over and beyond public provisions, provided we control for annuitization in the form of private pension plans, which in few cases can be acquired by non-workers as well (individual, open and category). To do so, we include a robustness check using either the life insurance subscription or private pension plan subscription as a source of annuitization. Results of this investigation confirm the pivotal role of financial inclusion.

In all our specifications, an important feature of our analysis is the distinction between genders. Our results show that, even controlling for financial inclusion, in all forms, gender still plays a role, and lowers further women's propensity to buy insurance and the amount they buy, when they do.

We conclude that, all else equal, an effective way in which insurance demand can be further increased is by increasing financial awareness through market inclusion.

The outline of the paper is the following. Section 2 provides the conceptual background and reviews the existing micro-data literature on insurance demand. Section 3 presents the data and the related descriptive statistics. Section 4 is devoted to our empirical analysis: we present the estimation strategy, followed by the estimation results. Section 5 concludes.

2. Conceptual Background

The empirical investigation of the drivers of insurance demand has provided puzzling results. A detailed account is given by Liebenberg et al. (2012), who cover both term and life insurance, report the conclusions of a number of previous studies, and show that age may have mixed, non-significant, positive and negative effects on the demand for insurance. Similar results hold for education level and number of children. Marital status has a negative or mixed effect, while financial vulnerability has a positive or non-significant one. Some of these puzzling results may be eliminated by focusing on life insurance and excluding direct bequest intentions on the one side, and by avoiding cross-country studies, on the other. Indeed, those papers, such as Millo and Carmeci (2014), which rely on official classification of insurance contracts, and therefore pool life and term insurance, may have difficulties in separating the income protection or annuitization motive from the bequest motive. Cross country studies reflect a lot of unobserved heterogeneity in institutional settings, legal enforceability of contracts,

judicial system efficiency, regulatory framework, which are very likely to affect the demand for specific asset classes such as insurance, as well as the level of savings in general.

This is why we restrict our attention to life insurance and we perform a study on Italian data. With that restriction, we control for traditional determinants of life insurance and focus on the effect of financial inclusion.

As far as the main determinants of life insurance are concerned, micro-data-based studies have traditionally included – among others – household income, tax treatment, education, life expectancy, young dependents' ratio, risk aversion, financial vulnerability, age.

A wide strand of literature has focused on the importance of income to purchase life insurance. At the aggregate (country) level, one can see for instance Li et al (2007), who look at OECD countries. Their findings highlight that a 1% increase in aggregate income is associated with an increase of about 0.6 percent in life insurance sales. The results are in line with the literature: see for instance Lewis (1989), Outreville (1996) and Beck and Webb (2003), who cover both developing and developed ones. Overall, there is consensus that income is significant in shaping insurance demand.

Tax treatment, and specifically the heterogeneity of the tax treatment of insurance contracts, is, under some circumstances, relevant in shaping demand. For instance, the fact that in several countries the premiums are either tax deductible or tax-exempt should spur the demand with respect to other forms of savings with comparable gross returns and risk profile. This is not the case of Italy, though, as already demonstrated in Jappelli and Pistaferri (2002). Further amendments to the Italian tax code, which rendered the tax advantage of insurance even smaller than at the time Jappelli and Pistaferri conducted their study, have reduced the bias in favor of insurance even more[6]. For this reason, in this paper we do not take into consideration any specific tax code provision, and content ourselves with using net income, instead of gross income, as an explanatory variable.

The evidence on education, as collected for instance in Liebenberg et al. (2014), is mixed. This is not much a surprise, if the investigator does not control for a number of effects. Indeed, education tends to increase the demand for insurance, since it increases the awareness of unfavourable shocks and the desire to protect oneself and the dependents against them. Second, more educated parents tend to educate better their offsprings, which increases the duration of dependency of the latter and the savings need. On the other side, education tends to decrease the demand for insurance, since higher education is often accompanied by higher income, higher wealth, and lower risk aversion. To isolate the awareness of shocks, in the sequel, while investigating the role of education, we will control for the family mix, in terms of number and age of dependents, as well as income, wealth and risk aversion.

6 Premia were deductible up to euros 1291 in 2010, at the time of the Jappelli and Pistaferri investigation. The deductible was halved to euros 530 in 2014. We are not concerned in this study with inheritance tax treatment, since we do not study the bequest motive.

Higher life expectancy, when it is significant, should lead to higher savings channeled through life insurance products and annuities. Previous papers on life expectancy and insurance demand, such as Beck and Webb (2003), find mixed evidence on the correlation between life expectancy and insurance penetration, because they pool protection against death and life of the insured. Since demand of the former should decrease, all equal, with life expectancy, while demand of the latter should increase, we are not surprised by the mixed evidence.[7]

The importance of the number of dependents has been stressed theoretically since Campbell (1980), and evidenced in a number of empirical studies, together with their overall consumption needs (Lewis (1989)). It holds for life and term insurance, and is likely to hold in a different way for elder dependents and younger ones, as shown for instance by Beck and Webb (2003), who indeed provide evidence that the number of senior versus very young dependents matters, on top of the overall number of dependents. However, a number of empirical studies, summarized in Liebenberg et al. (2014), also point at a mixed evidence, with an increase of demand when there is a newborn in the household.

Traditionally, risk aversion is supposed to increase the demand for insurance, all others equal. See for instance Zietz (2003). On top of that, in a recent survey, Outreville (2014) focuses on risk aversion and general education stressing that the two variables can be strongly correlated. More risk-averse individuals are likely to choose lower educational level and thus lower insurance demand.

Bernheim et al. (2003) do not find evidence that financial vulnerability to a shock matters, even controlling for family composition and the tax system. Financial vulnerability is a fuzzy concept: to pin it down, Bernheim et al. select the spouse death. Lin and Grace (2007) extend the analysis of financial vulnerability, defined as spouse death, controlling for age. At any level of financial vulnerability, the older the household the lower the demand for life insurance. Vulnerability as measured by death matters because the contribution to family's welfare of the dead member disappears, be the contribution monetary or non-monetized, in terms of time and services. We do not investigate such shocks, because we do not have a proxy for non-monetary contributions.

As concerns age, insurance demand considered as a savings tool is likely to display the hump-shaped behavior that we observe for savings over the life cycle: smaller when young, at the peak when mid-aged, lower when old. For this reason, in the sequel we adopt the approach taken for instance by Campbell (2006). We explore both the dependence on age and age squared. Since our interest is in the contribution of both the household head and its spouse, we extend the consideration to the same variables for the spouse, an approach that is not common in the household finance literature.

7 Indeed, Beck and Webb (2003) interpret life insurance – in our definition, i.e. annuity or lump sum in case of life of the insured – in any case as a form of protection against death, on top of savings, since savings can be passed on to heirs.

As concerns the main focus of our analysis, we like the term financial inclusion, which we measure through home ownership and financial literacy or stock holdings, as opposite to pure financial literacy, for a number of reasons. First, the measure of financial literacy that the Bank of Italy survey includes is the result of three specific questions, and – as most measures – cannot cover the many nuances of familiarity with the financial market and interest in diversification that we would like to capture. Home ownership is a proxy of basic literacy gained-on-the-field, as well as stock holdings is a proxy of more advanced familiarity with financial markets, in particular with the concepts of risk and return. As such, it should at least be used as a robustness check of financial literacy as measured in the questionnaire. Second, there is the long-standing issue of the possible reverse causality between financial literacy and participation in financial markets, especially the stock one. Third, financial literacy in its strict sense is not reflected in all the waves of the survey. To address the measurement of financial literacy and reverse causality problems, in single-year regressions we use an IV approach. To address the last concern, when we investigate panel data, we use stock ownership instead of other forms of inclusions.

Up to our knowledge, the growing literature on financial literacy has not focused on the demand for life insurance. Financial literacy provides the ability to manage wealth and help avoiding the mis-management of resources, particularly at old age (Lusardi and Mitchell (2007, 2011) and Brown (2008)). It has been shown that financially illiterate households do suffer in terms of portfolio performance and wealth accumulation (Jappelli and Padula (2013), Van Rooij et al. (2011)), irrespective of whether they ask for professional financial advice or whether they discuss investment choices with friends and relatives. Financial illiteracy leads to underperformance mainly because of lower participation to the stock market and under diversification. Evidence is mixed, though: for example, Guiso and Viviano, in a recent paper (2013) highlight that even highly literate individuals tend to choose the dominated alternative in the market, suggesting that literacy may be a poor protection against financial mistakes. As a consequence, even though the effect of financial literacy is statistically significant, it is economically small.

A priori, the effect of illiteracy on insurance could be stronger than in other savings instruments, since insurance contracts may have both a financial component, such as the presence of a minimum guaranteed return of a guaranteed capital, and a longevity one, since their payoff is linked to the event of death or survival of the subscriber.

3. Data

The data source we use for our empirical analysis is the Survey of Household Income and Wealth (SHIW) which is conducted every two years by the Bank of Italy. The SHIW dataset provides detailed information about Italian households[8], including household composition and characteristics, income and employment variables, wealth and its

8 A household is defined as a group of individuals related by blood, marriage or adoption and sharing the same dwelling. In the tables we have often shortened the term household with hh.

components. To our purpose, we make use also of information on the type of insurance held and the amount of premium paid.

For our empirical analysis, we have exploited the waves between 2004 and 2012. In order to carry out our analysis, we selected a sample consisting of individuals aged between 25 and 65 that are either a household head or the head's spouse, where the head is self-stated, as the person who takes financial decisions. We exclude other relatives and children living in the household so as to focus on the couple (or single) decisions. Our final sample consists of around 7,500 individual-observations in each wave.

To provide descriptive statistics for the sample, we focus on the 2010 wave. As Table 1 in the Appendix shows, the probability of owning life insurance – which is the sample frequency – is close to 7%, and it goes up to 20% if we include private pension funds, with an average premium of euros 1672. As concerns the socio-economic variables, 48% of the interviewed individuals are women. Household heads are close to their fifties. A very small percentage (3%) lives with a partner without being married, while 79% of the individuals in the selected sample are married. Among all household heads and spouses, 32% has a high school diploma, 15% also a bachelor degree or higher, with the rest – an astonishing 53% - with less than a high school diploma. As concerns employment, close to 11% is inactive, which means that he or she does not participate in the job market (students, housewives, unemployed people) but is not retired. So, a high 89% has either labour income or a pension. The inactive percentage goes up to more than 18% if we consider women only. Thirteen percent of the sample is self-employed. The number of years in which household heads have been working is quite high, 23, but consistent with the age and education profile of the sample. 18% of the household heads and spouses live in a medium city (20,000 to 40,000 inhabitants), 46% in a large one (40,000 to half a million), 9% in a mega city (more than half a million), while the rest live in urban conglomerates with less than 20,000 inhabitants. North and Centre Italy host around 66% of the respondents, with the rest living either in the South or in the Islands. In order to assess the effect of family composition, which is expected to affect the propensity to buy insurance, we exclude both the household head and its spouse from the following indicators. Given that, on average there is less than one member in the family who is below 25 years, with an even smaller percentage of members above 25 (less than a third). These numbers point to the small number of family members typical of Italian families, and come as no surprise. Similarly, the proportion of households with offspring outside the household, be them sons or daughters of the household head or his spouse, is 29%. Last, if we look at wealth and income, average net individual income is 22,283 euro (median is 19,831), and it represents 60% of the household income. This shows that the person who takes financial decisions and his or her spouse are also the main income providers in the family. The median ration of individual net income over individual net wealth - which comprehends real and financial assets, net of debts – is around 0.09.

Surprisingly, few households have stocks, around 8%, which includes mutual funds, while a large majority, more than 70%, owns a house. Again, this is typical of the Italian propensity to allocate wealth. Last, in a scale from 0 to 1, the average self-stated risk

aversion is 0.4. The corresponding dummy takes the value one only if the respondent, in choosing among four levels of increasing returns with increasing risk, are tied to the safest solution ("low returns, but no risk of losing the invested capital"). We will come back to this measure after having described financial literacy in the sample. We will see that risk diversification as demonstrated by wealth allocation, risk understanding as appearing in the financial literacy questions and self-stated risk aversion sometimes provide contradictory signals.

Given the importance that financial literacy will play later, Descriptive 1 separates the percentage of household heads and spouses owning a life insurance product who were able to answer correctly to at least two out of the three SHIW questions which measure financial literacy, from the ones who were not. We consider them as having respectively "high" and "low" literacy. The Appendix shows that, on average, household heads give about two correct responses (the median is 2). As a consequence, low financial literacy in this section corresponds to giving less than the sample average correct answers. Financial literacy is measured in the SHIW survey through three questions. The questions assess the respondent's knowledge of the concepts of variable versus fixed interest-rate mortgage, inflation rate, portfolio risk and diversification. Two of the questions, regarding inflation and diversification, are similar to the questions formulated in the seminal paper by van Rooij et al. (2011), while the third is even more challenging than theirs, since in the van Rooij set-up it is sufficient to be aware of the difference between simple and compound interest rate to answer all questions correctly, while in the SHIW case a more subtle difference, between fixed versus variable interest rate, qualifies the respondent as 100% financially literate. Given the importance that financial literacy will play later, Descriptive 1 separates the percentage of household heads and spouses owning a life insurance product who were able to answer correctly to at least two out of the three SHIW questions which measure financial literacy, from the ones who were not. We consider them as having respectively "high" and "low" literacy. The Appendix shows that, on average, household heads give about two correct responses (the median is 2). As a consequence, low financial literacy in this section corresponds to giving less than the sample average correct answers.

The table Descriptive 1 indicates that independently of gender, insurance coverage more than doubles for more financial knowledgeable households. Among those with low financial literacy, only about 3.8% owns a life insurance, while among the financially literate respondents around 7.8% are insured. This already suggests that financial literacy is a driving factor of insurance demand. Furthermore, in the whole sample there is a substantial gender gap, and this is true at all levels of financial education. While 4.4% of the low-financially literate men own insurance, the percentage goes down to 3.2% for women with the same level of financial knowledge. The same happens for highly literate household heads and spouse: 9.5% of them buy insurance if men, only 5.9% if women. Since highly financially literate household give the average or higher than average answer, we can consider the column "high" of the table as quite representative of the sample: this explains why the last column, which includes the whole sample, is close to the "high" one.

Descriptive 1: Percentage of insured individuals in the sample

	Financial literacy (at least 2 out of 3)		Total (%)
Sex	**low**	**high**	
Male	4.4	9.5	8.25
Female	3.2	5.9	5.2
Total	3.8	7.8	6.8

Source: SHIW 2010

4. Empirical Analysis

After the description of the data, let us investigate the determinants of life insurance demand, starting from participation (section 4.1) and then examining the amount of premiums paid, given participation (4.2). In Section 4.3 we explore robustness with respect to the inclusion of other non-compulsory annuities, i.e. private pension plans.

4.1 Estimation results on life insurance participation

We start our analysis by looking at the probability of owning a life insurance product. Results are presented in Table 2, which contains the marginal effects on that probability of increasing the regressors. A detailed description of them is in the Appendix.

We initially estimate the probability using a linear regression model and exploiting data available from the 2010 SHIW[9]. This is the content of Columns 1 to 3. All specifications include the traditional determinants of insurance demand such as gender, age, marital status, education, working situation, geographical variables, household composition, income, wealth, risk aversion. In addition to these variables, Column 1 includes financial literacy, while Column 2 takes into account the potential endogeneity of financial literacy by instrumenting it with two dummy variables indicating whether the mother or father of the respondent were managers, entrepreneurs or self-employed (when they had the same age of the respondents). Column 3 approximates financial inclusion with stock holding. In order to check the robustness of our results, we use the 2012 and 2010 wave to estimate a time and individual fixed effects model using the same regressors of the OLS estimation. In order to control for possible unobservable confounders factors, we

9 We did not run the same regressions for 2012 since financial literacy had not been asked in the 2012 SHIW.

run a fixed effect estimation model[10-11] We estimate the model using the whole sample as well as keeping males and females separated (Column 4-6). We focus mainly on the FE estimates, because they are the most robust.

Among the traditional determinants of life insurance demand, being a female, which is evidently taken into consideration when fixed effects are not present, lowers the demand for insurance, by 2% on average. This obviously happens controlling for income, contribution to household income and wealth and labour market features, including being inactive and both female and inactive. We are going to find again this gender bias when investigating the premia amount. Given the aforementioned controls, it seems to us that the bias reflects an underestimate of the woman's contribution to the family welfare. Note that here we do not distinguish between households in which a man has the highest income from households in which the highest income comes from a woman. We do that because in both cases there would be a substantial amount of services, mainly care and housekeeping, which are non-monetized and not captured in the survey, and are very often provided by women. Our estimates say that, being the welfare of the household due to man or women, both in monetized and monetized terms, female individuals, all others equal, are asking for less insurance than men.

Age is another significant variable, in all OLS specifications. The demand for life insurance is concave in age, as expected from its savings nature, with a peak at around 48[12]. In most specifications, the age of the spouse instead is not significant. The fact that age of the spouse if not a relevant determinant may suggest that the decision of buying a life insurance is done at the individual level rather than the family one[13].

In the FE version, individuals who live together but are not legally married are more likely to have a life insurance than singles. The same happens for married individuals, with the exception of males. This seems to suggest that ensuring a smooth consumption profile to the spouse prevails over the idea of receiving it.

10 Given that financial literacy has not been measured in 2012, we have been able to estimate this FE model only by including stock holding. Financial literacy was measured in the 2008 survey as well, but the different questions about life insurance make it impossible to compare results across years. Indeed, in 2010 and 2012 individuals were asked if they owned a life insurance, and subsequently they were asked separately if the contract included a life and/or death clause. On the other hand, in 2008 the follow-up question asked about the death clause but not the life one. Therefore, since there are also mixed insurances which include both life and death clauses, we cannot derive the total number of life insurances In other words, we can derive exactly how many pure life and death insurances were subscribed, but we cannot evaluate the number of mixed life insurances. As a consequence, we cannot even derive the premium paid for such insurances.

11 Since we use only two waves in these specifications, the individual FE is equivalent to a First-Difference estimator. Furthermore, adding both time dummies would lead to perfect collinearity, so only the indicator variable for 2010 has been included as a regressor.

12 0.0097*1000/(0.1000*2) since age^2 is divided by 1000.

13 If the respondent did not have a spouse, the age of the spouse is set to zero. We have also tried to impute the average spouse in each wave if the respondent did not have a spouse: the results did not change substantially. Table available upon request

Education is an important determinant in the OLS estimation, while is not significant any more once we look at the IV and FE version. When it is significant, the effect is positive. It is likely that the low significance level is due to the low variability in the sample because we have not included individuals younger than 25.

We expect individuals who do not participate in the labor market and who are not retired yet to be more likely to have life insurance, because they need to protect themselves against the risk of not having enough income once old. Indeed, this is what we observe for males (Column 5). However, the coefficient of "inactive" is negative and significant for women. This is a particularly worrying result, especially if we take into account that women participate less in the labor force and are therefore at risk of under-annuitization. However, the interaction between being a woman and being inactive is not significant, with the exception of the FE case.

Consistently with intuition and with the findings of Luciano et al. (2015), we expect that being self-employed raises the probability of buying life insurance. While the OLS estimator is significant, we cannot reject the null that the FE estimator is zero. However, in the latter we are controlling for time invariant factors, such as background and entrepreneurial risk, which are likely to be related to the employment status.

Similarly, once we control for income and working status, we expect more individuals willing to subscribe to life insurance among the new generations, given the recent pension reforms and the precarious working conditions of these generations. Nevertheless, the number of working years does not significantly affect insurance demand, so it does not seem that young people protect themselves against income volatility later in life by insuring themselves, even keeping all the other determinants fixed.

The magnitude of the city where the household lives cannot be rejected to be null: in this sense, there does not seem to be a price effect, due to higher price levels in big cities, which was expected to lower insurance demand. In some isolated cases there is a negative effect of living either in the North or in the Center, with respect to the islands, which could reflect some cultural effect.

Household composition does not seem to affect the participation to the insurance market, be it measured by the number of household members below, above 25 or offspring outside the household. While the couple support has, if ever, a positive effect, the support to be given or to be provided by other household members seems to be irrelevant. This is consistent with previous findings of the literature, such as Liebenberg et al. (2014).

As predicted by most of the theoretical literature and confirmed in previous empirical literature, the logarithm of income has a positive effect on the demand for life insurance.[14] This points to the nature of life insurance as a form of savings, and comes

14 We include income in the regressions in log form since we expect the relationship to be exponential, i.e. linear in log.

as no surprise. Nevertheless, the coefficient is no longer significant when the sample includes only women.

Individual income over wealth instead cannot be proved to be significant. The same happens with the ratio of the respondent's income over the total income of the family. Faced with concentration of income on one individual, households should rationally react by buying more insurance, so as to protect their permanent income. Despite this consideration, the coefficient does not differ significantly from zero, which may be again a worrying result for the member of the couple who earn less, i.e. typically the woman.

Risk aversion – which in the SHIW dataset is measured by the risk attitude of the financial decision maker in the household rather than at an individual level – cannot be proven to be significant in the OLS case, it has a positive effect when we go to FE, although it is not significant when only men are considered. However, we should remember that self-assessed risk aversion, as in the SHIW dataset, is usually not very reliable. We will have a confirmation of that for the current survey once we consider the rest of the household asset allocation, namely having stocks or a house. An individual who states not to be risk averse but diversifies is indeed quite contradictory in his statement.

Once we look at our regressors of interest, i.e. those used as proxies of financial inclusion, we can notice that home ownership increases the probability of having a life insurance, with the IV exception. Despite this, its coefficient in the FE estimation is not statistically significant, probably because of the low variability of this regressor over time. The result for stock participation is more interesting: holding stock has a positive and significant coefficient both for the whole sample and for men alone, but not for women. When households participate to the financial markets, they do it across asset classes. On average, holding stocks increases by 5 percentage points the likelihood of having insurance, while this increase amounts to more than 8 percentage points for men.

Last but not least, our estimates allow us to claim that financial literacy is a key determinant of life insurance demand: as the descriptive statistics anticipated, literacy matters, in that both the estimates in the OLS and IV regressions are positive and significant. Improving financial literacy scores increases up to 45 percentage points the likelihood of having insurance[15-16-17]. It is a fact that people who are financially literate do

15 The OLS estimate is significantly lower than the IV one. This downward bias of the OLS coefficient may be due, among other things, to measurement errors.

16 Since we have two instruments (mother and father working conditions), we can test the exogeneity of these instruments through a Sargan-Hansen J test. The Hansen p-value reported at the end of Table 2 is very high, thus we are far from rejecting the null, which means that we can be confident in the exogeneity of our instruments.

17 As usual with the IV strategy, we may be concerned about the weakness of our instruments. In order to dissipate any doubt, we estimated the same model using a LIML estimation, which is less biased than the 2SLS in case of week instruments. Furthermore, we picked our strongest instrument, i.e. father managerial ability, and we estimated a simple IV model, which is median-unbiased and therefore not subject to the same critiques. The estimated coefficients of financial literacy are still between 0.44 and 0.45, thus supporting our results. Finally, we

participate more to the stock market, hence, showing a better balanced portfolio (van Rooi et al. 2011). This is the case, also, of life insurance market participation.

4.2 Estimation results on life insurance premiums

This section studies the correlation of premiums paid with the explanatory variables introduced above. Instead of focusing simply on participation, we look at the amount of income or wealth devoted to insurance protection. We use a Tobit model to allow for the zero values of the dependent variable for those who do not have any insurance contract. The results are presented in Table 3. As in Table 2, Column 1 includes financial literacy among the regressors, Column 2 accounts for the endogeneity of financial literacy by fitting an IV Tobit model[18], Column 3 one uses stock holding as a proxy for financial inclusion.

First of all, the coefficient of women is negative, statistically significant and it has an ample magnitude in all specifications. This confirms the scarce importance given to annuitization and consumption smoothing by the female head or spouse, even when they participate. It may thus signal that women undervalue the opportunity cost associated to their role in the household.

Second, as it already happened with participation, premiums paid are concave in the age of the household head, while the age of the household's spouse does not seem to play a relevant role.

Living together is insignificant, while being married is relevant only in the IV specifications. This is not much of a surprise, since the presence of a spouse may increase precautionary savings (in her favour) as well as decrease them, in case the prevailing direction of support is from the spouse to the respondent.

Holding higher education (high school and more) was significant in the OLS estimation of life insurance demand but not in the IV and FE ones. Similarly, both secondary and tertiary educations are positive and significant in the Tobit specifications, even if they become insignificant in the IV Tobit one. This suggests that general education gives a sense of the amount of coverage one needs, once he decided to enter the insurance market, more than affecting the decision to insure or not. It is positively associated with the amount of insurance demand. This reconciles our evidence with previous studies.

Contrary to what we found above for participation, the intensity of life insurance demand does not depend on the employment condition. Indeed, both "inactive" and its interaction with the female indicator have insignificant coefficients. Nevertheless, self-employed workers tend to pay higher premiums, in the same way as they tended to participate more[19]. The number of working years is still not relevant.

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have also estimated a GMM model, which is more efficient: the coefficient of financial literacy is still significant at 1% level. Tables available upon request.

18 The Stata command ivtobit provides a Wald test for the exogeneity of financial literacy: since the test statistic is significant, we can reject the null hypothesis of no endogeneity. Thus, the IV strategy is appropriate here.

Geographical variables, in the sense of amplitude of the city one lives in, are still not significant. Living in the North or Center has again a negative effect. So, geographical variables play roughly the same role they had for participation.

A similar phenomenon occurs for the age mix of the dependents and the presence of offspring outside the house, which again do not affect the level of premiums. This result then holds for the probability of buying and the amount of insurance bought, in contrast with some previous empirical evidence, namely Beck and Webber (2003), who however worked cross country, and therefore with different background institutional and welfare systems.

Income has a positive and significant effect in all specifications except when financial literacy is instrumented. On the other hand, income over wealth and individual income over household income are never significant, as in the participation case.

Risk aversion is not significant in explaining the amount spent. Again, we would impute this to the fact that risk-aversion is self-assessed, since other implicit indicators of risk aversion in the survey, i.e. diversification via home ownership and stock holding, do appear significant.

Home ownership has a substantial impact, although it disappears in the IV specifications. Stock market participation has positive and significant coefficients with a high magnitude.

Once we take into account endogeneity, financial literacy seems to be the driving force among the explanatory variables. As for market participation, our new regressors turn out to be extremely important in determining the intensity of the life insurance demand. Home ownership, stock market participation and financial literacy, either combined or in isolation, appear as significant and give a high contribution to the explanation of premiums. This confirms the role of financial market inclusion, as well as the understanding of risky market values and payoffs, in explaining the amount of hedging through insurance. People who are included in the financial market participate more and spend more than their peers, all others equal.[20]

19 This holds true in all specifications except when financial literacy is instrumented. We can explain this change by noticing that the excluded instruments, i.e. mother and father managerial experiences, are highly correlated not only with financial literacy, but also with self-employment.

20 At this point, we may worry that the restrictions imposed by the Tobit model are too stringent: we are assuming that the same variables explain participation to the life insurance market and the premium amount. Furthermore, the coefficients have to have the same sign both when explaining the probability of a nonzero observation and the level of a positive one. In addition to this, the Tobit model - since it is built to take into account the censoring of the latent variable - predicts not only a cluster of zeros, but also some relevant mass around zero. We do not believe that these assumptions are too strong in this setting: there are no potential variables which would affect participation but not demand intensity, not the sign of the regressors is expected to differ, and there is some relevant mass around zero. Even if the latter were not true, the coefficient would be attenuated, so our results would still be valid. Nevertheless, in order to check the robustness of our estimates, we have estimated a Heckman (Tobit II) model where the first step is a Probit model for computing the probability of owning a life insurance (0-1 variable), and the second step has the premium amount as dependent

4.3 Estimation results on life insurance and pension funds

As a robustness check, we have used the same model as in Section 4.1 but we have considered as dependent variable an indicator equal to one if the respondent owned a life insurance or a pension fund. This has allowed us to extend the analysis using the 2004 and 2006 waves, where – opposite to what happens with the other waves – insurance and pension participation were not separated. Results are reported in Table 4, where, as before, the first column includes all respondents, while the next two are divided by gender.
We have also added as control a variable indicating whether the respondent's severance payment (TFR) had been allocated to a pension fund. This has been necessary in order to take into account the reform implement in 2007 where the employee could decide to leave his or her severance package to the employer, or to invest it with a pension fund. The default option was the pension fund, so the ones who answered "don't know" to the question whether they had a fund or not were counted as having it. Since the reform started in 2007, the indicator variable takes always value zero in the 2004 and 2006 waves. This may be considered a strong imputation, so we checked our results by including an additional column (the fourth) where the 2010 and 2012 waves only are used. Results do not change substantially. This last column is also useful also to compare the coefficients between Table 2 and 4.

Home-ownership has now negative and significant coefficients, instead of having a not significant one, as in the FE column of Table 2. This result does not contradict the previous ones: here we are explaining participation, and we can think of having real estate as a factor which could foster insurance, because it signals proximity to the financial market, while it depresses the quest for additional pensions. A negative overalla effect in Table 4 shows that the pension effect prevails.

The main – reassuring – result is that the effect of holding stock is again positive and significant in all specifications. This supports the conclusions drawn in the previous sections: financial inclusion is a pivotal determinant of long-term savings, even when we include pension funds.

5. Concluding Remarks

Our study on life insurance determinants points at a pivotal driver, which stands as a natural candidate to explain most of insurance subscription: financial inclusion - as measured by financial literacy or stock and home holding. Individuals with higher participation to the financial market have knowledge of insurance potentials and thus they subscribe a life insurance product.

The conclusion is thus that fostering financial inclusion, which stands as the main factor in shaping the demand for insurance, both in terms of participation and invested

variable, so people without insurance have missing values for premium amount. In the second stage, the coefficient of the Mill's ratio is not statistically different from zero, thus we can rule out the sample selection issue. Results are available upon request.

amounts, would generate huge spillovers. Fostering education in a targeted way, by improving financial education, would work at best as a device to foster insurance participation and would reduce the vulnerability of those people who are at risk of under-annuitization or of running out of wealth in the old age[21]. Indeed, even in countries like Italy, where there is a compulsory annuitization provided by state pension, there are non-negligible fractions of the population subject to those risks.[22]

This holds in particular for women, who, as shown above, demand less insurance than men and are often out of the labor market. They would benefit most from a broader financial inclusion. Indeed, in our sample in 2012 almost 37% of women (24% men) were not participating into the labor market[23]. 20% women were inactive. Furthermore, taking into account the divorce rates computed by ISTAT[24], almost 60% among inactive women in 2012 should be considered vulnerable since they were not married or they were likely to getting divorced in the future. Therefore, 12% of Italian women are at risk of not being able to sustain themselves once retired, because they did not pay any pension contribution. Life insurance is an important tool to protect these individuals who are at risk of under annuitisation.

21 We are aware that, as documented by Ania (2015), the percentage of life insurances converted into annuities is very small. The key aspect is just the possibility embedded in the life insurance to convert the accumulated wealth into a constant flow of income which can raise living standards during retirement age, not whether life insurances are currently used for such purpose.

22 Recall indeed that the basic theoretical conceptualization of the demand for life insurance, in the form of annuities, is Yaari's model (1965). The optimal solution for the household is to subscribe to an annuity, so as to neutralize the risk of running out of wealth before death. Under Yaari's assumptions, which exclude any bequest desire, everyone should annuitize all wealth. This is in contrast with empirical evidence and generates the so-called annuity puzzle. A huge amount of literature tried to reconcile Yaari's prediction with empirical evidence.

23 This is in line with the official statistics of 39.7%. Source: https://research.stlouisfed.org/fred2/series/ITALFPWNA. The category "not employed" in these statistics includes individuals who are unemployed, looking for their first job, housewives, retired, students, volunteers and wealthy, as well as children younger than 6, who are excluded from our sample since we selected individuals aged between 25 and 65.

24 Source: http://www.istat.it/it/archivio/126552

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Appendix

Descriptive Statistics (2010)

Variable	Obs	Mean	Std.Dev.	Min	Max
Life insurance	7,580	0.067942	0.251663	0	1
Life insurance or Pension fund	7,580	0.203298	0.402479	0	1
Premium amount (Tobit)	7,580	113.6248	695.9824	0	31021.7
Premium amount (Heckman)	515	1672.381	2128.5	106.2387	31021.7
Female	7,580	0.478892	0.499587	0	1
Age hh Head	7,580	49.61201	10.27054	21	84
Age hh Head^2	7,580	2.566821	1.007043	0.441	7.056
Age hh Head spouse	7,580	39.68562	21.18634	0	81
Age hh Head spouse^2	7,580	2.02375	1.309731	0	6.561
Living together	7,580	0.031794	0.175463	0	1
Married	7,580	0.787203	0.409312	0	1
High School	7,580	0.325066	0.46843	0	1
Tertiary education	7,580	0.15	0.357095	0	1
Inactive	7,580	0.112797	0.316365	0	1
Female*Inactive	7,580	0.088786	0.284454	0	1
Self-Employed	7,580	0.135488	0.342267	0	1
# working years	6,793	23.06521	11.07312	1	49
Medium city	7,580	0.185092	0.388398	0	1
Large city	7,580	0.457124	0.498191	0	1
Mega city	7,580	0.09406	0.291936	0	1

		3			
North Italy	7,580	0.450528	0.497579	0	1
Centre Italy	7,580	0.214644	0.410602	0	1
# hh members <=25	7,580	0.943668	0.996428	0	6
# hh members >25	7,580	0.267019	0.578175	0	5
Offspring outside hh	7,580	0.288391	0.453044	0	1
Log(Ind Income)	7,580	9.76088	0.853612	3.198519	11.68716
IndIncome/Wealth	7,580	199.7552	1643.259	-94.1042	26559.67
IndIncome/hhIncome	7,580	0.60405	0.294735	0.000895	4.378581
Holding stocks	7,580	0.082454	0.275073	0	1
Home-owner	7,580	0.711214	0.453228	0	1
Risk Averse	7,580	0.418338	0.493319	0	1
Financial literacy	7,580	2.064644	0.939405	0	3

Variables description

This appendix contains the detailed description of all the variables used in the regression models. All income and wealth indicators, as well as premium amounts, have been adjusted for inflation[25].

Life insurance is a dummy dependent variable which takes value one if the respondent owned a life insurance. Note that this includes also mixed policies, but not pure death insurances[26].

25 Source: All-items HICP annual data from Eurostat

26 Note that in 2010 and 2012 individuals were asked if they owned a life insurance, and subsequently they were asked separately if the contract included a life and/or death clause. As explained before, in 2008 the follow-up question asked about the death clause but not the life one, so it is not comparable and this wave has not been included in the analysis. In 2004 and 2002 there was one question dedicated to death insurance, while life insurance had been measured together with private pension funds, so it has been possible to include these waves only in the last empirical section. Finally, in 2002 individuals were asked if they owned a life insurance, but there is no follow-up question, thus this wave has been excluded because it is impossible to distinguish between life and death insurance.

Life insurance or Pension fund is a dummy dependent variable which takes value one if the respondent owned a life insurance or a private pension fund. Severance pays transfers to private pension plans are also included.

Premium amount is the amount paid for the individual insurance by the interviewed household in the year of the survey. In the Tobit model, this dependent variable includes premiums both for life and mixed insurances, while it takes value zero if the individual did not own an insurance or if the insurance was a pure death one. On the other hand, in the Heckman model (see footnote 20) premium amount is missing for those uninsured or with a death insurance[27].

In 2007 a reform had been introduced which, in absence of an explicit choice of the worker, allocated the severance payment to a pension fund (*TFR to pension*). In order to take into account the effect of such reform, we have added as regressor whether the respondent had decided to allocate his or her severance pay to a pension fund[28]. Given the default option, if the individual did not know, we assumed that the money had been indeed dedicated to a pension plan. "No answer" was imputed as missing. Obviously, such variable takes always value zero in the two waves before the reform.

Log(Individual Income) is the logarithm of the individual net, or disposable, income. This individual income includes labor income, capital gains, pension and other transfers. This variable takes value zero if the individual income was reported to be negative or missing. From the panel dataset, the observations in the upper and lower 0.5 percentile of the individual income distribution have been dropped.

Individual income/Household income is the ratio of individual income over the total income of the household, which provides a measure of how important the contribution of the individual is to the total disposable resources of the family.

Individual income/Wealth is the ratio of the net individual income and net wealth. This ratio has been set equal to one if wealth was reported to be zero.

Female is a dummy variable which is equal to one if the respondent is a woman.

Age hh Head is the age of the household head, while *Age hh Head spouse* is the age of the household head's spouse. If the household head does not have a partner, the latter is set to zero. In order to capture any concavity, we have also included among the regressors the squared of both variables (divided by 1000). Note that we have considered only observations whose age was between 25 and 65. However, since some individuals have younger partners, some of these variables may actually take values lower than 25 (see the summary statistics above).

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27 This dependent variable has still some zeros because few respondents (below 5% of the insured) had a life insurance but they did not pay any premium in the year of the interview.

28 Indeed, in the 2012 and 2010 questionnaire, individuals were explicitly asked to count as private pension policies all the severance pays allocated to a pension fund.

Married is an indicator variable which takes value one if the respondent declares that he/she is married.

Living together is an indicator variable which takes value one if the respondent declares that he/she is single/divorced/widow but somebody in the household declared to be the spouse or the cohabitee.

High school is an indicator variable which takes value one if the respondent has a high school diploma

Tertiary education is an indicator variable which takes value one if the respondent has at least a bachelor degree.

Offspring outside hh is an indicator variable which takes value one if the respondent or his/her partner has sons or daughters alive who do not live in the same household.

North/Centre/South is an indicator variable which takes value one if the respondent lives in North Italy/Centre Italy/South Italy and Islands (the latter being the baseline).

Small city is an indicator variable which takes value one if the respondent lives in a city with population 0-20,000. This is the baseline.

Medium city is an indicator variable which takes value one if the respondent lives in a city with population 20,000-40,000

Large city is an indicator variable which takes value one if the respondent lives in a city with population 40,000-500,000

Mega city is an indicator variable which takes value one if the respondent lives in a city with population over 500,000.

Self-employed is an indicator variable which takes value one if the respondent was working as entrepreneur, freelancers, self-employed, artisan, owner or member of a family business, and similar. We did not include among them the so-called "atypical" workers, those whose working conditions are precarious, since they are very different from the other categories.

Inactive is an indicator variable which takes value one if the respondent did not participate in the labor market (such as students, unemployed people, and housewives) and he/she was not retired. We have also added the interaction *Female*Inactive* to capture a potential gender heterogeneity.

Risk averse is also a dummy variable that takes the value of one if the respondent has given the lowest degree of appeal to risky portfolio[29].

29 The question RISKFIN used is the following: "In managing your financial investments, would you say you have a preference for investments that offer: i) a very high returns, but with a high risk of losing part of the capital; ii) a good return, but also a fair degree of protection for the invested capital; iii) a fair return, with a good degree of protection for the invested capital; iv) low returns, with no risk of losing the invested capital."

In order to control for the number of components and their different role in the family we include a set of a variables counting the household members within a certain age range. We count the *Number of Components below 25 years* and the *Number of Components above 25 years*. These numbers do not include the household head and the spouse since we already accounted for them by adding their ages as regressors.

Home-owner is an indicator variable which takes value one if the respondent owned the house where the household used to live.

Holding stock is an indicator variable which takes value one if the respondent owns domestic or foreign listed stocks as well as participations in domestic or foreign companies, as well as mutual funds which do not invest exclusively in fixed income.

Number of working years count the years in which the worker of his/her employer has paid pension contributions. Years required for obtaining a bachelor have been included if the respondent had paid the required contribution.

Financial literacy counts the number of correct answers that the respondent gave to the three questions concerning financial education, as reported in the main text. In 2010, around 16.9% individuals in the sample made two mistakes, 35.6% answered two questions correctly, while 39.5% answered all questions correctly.

Father and mother managers: in order to take into consideration potential endogeneity of financial literacy, we have instrumented the financial literacy score using as instruments two dummy variables taking the value of one if the respondent's father or mother had a high managerial job at the age of the respondent[30]. The rational of the instrument relies on the fact that having a parent with a managerial job increases the likelihood of having a higher cognitive ability and financial knowledge (Calcagno and Urzì (2014)).

30 The main respondent is asked "what was the occupation of your mother and father at your age?". We consider managers, freelancers and entrepreneurs as managerial occupations so as to build up the instruments.

Table 2: Life Insurance (D)

	(1) OLS - FinLit	(2) IV - FinLit	(3) OLS - Stock	(4) FE - All	(5) FE - Male	(6) FE - Female
Female	-0.0180**	-0.0214*	-0.0179**			
	(0.0071)	(0.0114)	(0.0071)			
Age hh Head	0.0097***	0.0122**	0.0095***	-0.0115	0.0171	-0.0259
	(0.0025)	(0.0057)	(0.0025)	(0.0160)	(0.0284)	(0.0172)
Age hh Head^2	-0.1000***	-0.1309**	-0.0982***	0.0474	-0.2334	0.1830
	(0.0250)	(0.0580)	(0.0250)	(0.1211)	(0.2084)	(0.1360)
Age hh Head spouse	-0.0010	-0.0094**	-0.0008	-0.0011	-0.0056	-0.0006
	(0.0015)	(0.0044)	(0.0015)	(0.0042)	(0.0075)	(0.0053)
Age hh Head spouse^2	-0.0008	0.1087*	-0.0036	-0.0174	0.0797	-0.0351
	(0.0172)	(0.0555)	(0.0172)	(0.0590)	(0.1196)	(0.0729)
Living together	0.0088	0.2025*	0.0037	0.2006**	0.2686*	0.1485*
	(0.0363)	(0.1063)	(0.0363)	(0.0859)	(0.1523)	(0.0870)
Married	0.0415	0.1815**	0.0374	0.1647**	0.1886	0.1638*
	(0.0341)	(0.0838)	(0.0340)	(0.0733)	(0.1415)	(0.0865)
High School	0.0194***	-0.0488	0.0192***	0.0077	-0.0564	0.0488
	(0.0073)	(0.0307)	(0.0073)	(0.0382)	(0.0548)	(0.0485)
Tertiary education	0.0429***	-0.0347	0.0418***	0.0656	0.0555	0.0563
	(0.0113)	(0.0367)	(0.0114)	(0.0931)	(0.1573)	(0.0508)
Inactive	0.0196	-0.0812	0.0195	0.0820***	0.0967***	-0.0274*
	(0.0204)	(0.0564)	(0.0204)	(0.0308)	(0.0336)	(0.0145)
Female*Inactive	-0.0037	0.0730	-0.0056	-0.0962***		
	(0.0235)	(0.0577)	(0.0235)	(0.0344)		
Self-Employed	0.0541***	-0.0076	0.0551***	0.0327	0.0487	-0.0059
	(0.0114)	(0.0300)	(0.0114)	(0.0274)	(0.0377)	(0.0371)
# working years	-0.0000	-0.0020*	0.0000	-0.0001	-0.0005	0.0005
	(0.0004)	(0.0012)	(0.0004)	(0.0011)	(0.0017)	(0.0014)
Medium city	0.0086	0.0302	0.0071	-0.0287	-0.0621	0.0262
	(0.0106)	(0.0223)	(0.0107)	(0.0386)	(0.0571)	(0.0251)
Large city	-0.0054	0.0240	-0.0068	-0.0652	-0.1306	0.0122
	(0.0082)	(0.0201)	(0.0082)	(0.0574)	(0.0850)	(0.0272)
Mega city	-0.0147	0.0011	-0.0160	-0.0728	-0.1474*	0.0075

	(0.0130)	(0.0268)	(0.0130)	(0.0578)	(0.0865)	(0.0303)
North Italy	-0.0153*	-0.0459**	-0.0173**			
	(0.0087)	(0.0211)	(0.0087)			
Centre Italy	-0.0023	-0.1367**	-0.0003			
	(0.0104)	(0.0574)	(0.0102)			
# hh members <=25	-0.0016	0.0009	-0.0015	-0.0044	-0.0094	0.0049
	(0.0044)	(0.0086)	(0.0044)	(0.0117)	(0.0158)	(0.0173)
# hh members >25	0.0001	0.0154	0.0002	-0.0013	-0.0014	0.0006
	(0.0064)	(0.0144)	(0.0064)	(0.0134)	(0.0184)	(0.0168)
Offspring outside hh	-0.0061	-0.0004	-0.0066	-0.0182	-0.0197	-0.0063
	(0.0084)	(0.0183)	(0.0084)	(0.0154)	(0.0217)	(0.0205)
Log(Ind Income)	0.0291***	-0.0203	0.0277***	0.0246*	0.0342*	0.0170
	(0.0066)	(0.0236)	(0.0066)	(0.0127)	(0.0186)	(0.0143)
IndIncome/Wealth	-0.0000	0.0000	-0.0000	0.0000	-0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
IndIncome/hhIncome	-0.0176	0.1156*	-0.0178	-0.0103	0.0120	-0.0451
	(0.0165)	(0.0637)	(0.0164)	(0.0354)	(0.0512)	(0.0416)
Risk Averse	0.0032	-0.0268	0.0063	0.0196**	0.0145	0.0273**
	(0.0070)	(0.0182)	(0.0070)	(0.0092)	(0.0126)	(0.0115)
Home-owner	0.0256***	-0.0197	0.0262***	-0.0113	0.0004	-0.0325
	(0.0075)	(0.0242)	(0.0074)	(0.0229)	(0.0300)	(0.0302)
Hold stocks			0.0384**	0.0523**	0.0868***	0.0099
			(0.0161)	(0.0230)	(0.0313)	(0.0274)
Financial literacy (0-3)	0.0107***	0.4518***				
	(0.0036)	(0.1753)				
Constant	-0.4661***	-0.8864***	-0.4269***	0.2586	-0.5317	0.6739
	(0.0833)	(0.2387)	(0.0823)	(0.5187)	(0.9635)	(0.5300)
Time dummies	No	No	No	Yes	Yes	Yes
Observations	6792	6792	6792	13496	7552	5944
R^2	0.03075	-2.20420	0.03108	0.01020	0.01728	0.00756
WithinR^2				0.01203	0.02041	0.01156
OverallR^2				0.00476	0.00645	0.00110
Hansen p-value		0.91687				
Weak F test		5.95732				

Standard errors in parentheses

Clustered SE at household level
Source: SHIW 2010-2012, individuals aged 25-65, household head and partner
Upper and lower 0.5 percentile of individual income dropped
Excluded instruments for financial literacy: father and mother manager, entrepreneur, self-employed
Note: age^2 has been divided by 1000
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Premium amount - Life Insurance

	(1)	(2)	(3)
	Tobit - FinLit	IV Tobit - FinLit	Tobit - Stock
Female	-513.4**	-598.1*	-522.4**
	(240.7)	(345.9)	(242.2)
Age hh Head	420.1***	467.8***	406.9***
	(120.8)	(138.1)	(121.1)
Age hh Head^2	-4472.5***	-5051.3***	-4342.3***
	(1279.4)	(1433.2)	(1282.3)
Age hh Head spouse	-13.1	-185.5**	-6.3
	(45.8)	(93.5)	(45.9)
Age hh Head spouse^2	-263.1	1958.2*	-358.4
	(575.3)	(1185.2)	(579.8)
Living together	-572.1	3363.5	-764.0
	(1144.3)	(2260.6)	(1148.1)
Married	901.0	3799.9**	776.0
	(959.9)	(1797.9)	(954.6)
High School	641.8***	-780.5	657.7***
	(241.9)	(637.5)	(244.3)
Tertiary education	1230.8***	-389.5	1255.7***
	(318.4)	(758.9)	(323.7)
Inactive	632.5	-1468.1	653.8
	(706.7)	(1309.9)	(710.3)
Female*Inactive	-315.7	1321.0	-323.3
	(941.6)	(1460.7)	(943.8)
Self-Employed	1239.2***	-54.4	1288.7***
	(259.6)	(618.0)	(263.5)
# working years	14.3	-25.5	16.2
	(15.4)	(26.3)	(15.5)
Medium city	322.2	746.0*	253.6
	(318.8)	(435.8)	(318.4)
Large city	-181.6	425.5	-243.3
	(247.4)	(408.8)	(246.5)
Mega city	-379.0	-63.0	-424.4
	(415.7)	(557.5)	(416.8)
North Italy	-653.8**	-1307.3***	-690.6***
	(263.5)	(431.6)	(264.3)
Centre Italy	-199.8	-2998.0***	-140.7
	(284.6)	(1152.8)	(281.2)
# hh members <=25	-148.4	-105.4	-147.3
	(126.8)	(178.5)	(127.2)
# hh members >25	5.4	316.5	4.0
	(208.3)	(300.5)	(208.7)
Offspring outside hh	-162.3	-39.9	-178.0
	(291.7)	(394.1)	(292.5)
Log(Ind Income)	1024.1***	-35.3	997.4***
	(264.1)	(508.9)	(267.8)
IndIncome/Wealth	-0.1	0.1	-0.1
	(0.1)	(0.2)	(0.1)
IndIncome/hhIncome	-760.8	2004.7	-786.0
	(571.1)	(1315.9)	(580.1)

Risk Adverse	30.7	-585.4	126.9
	(208.3)	(370.3)	(209.5)
Home-owner	892.6***	-60.6	900.9***
	(290.7)	(510.8)	(292.6)
Hold stocks			744.5**
			(331.3)
Financial literacy (0-3)	419.4***	9519.4***	
	(137.1)	(3540.0)	
Constant	-26676.8***	-34856.6***	-25271.7***
	(4427.3)	(5390.6)	(4396.7)
sigma			
Constant	4004.8***		4018.1***
	(471.1)		(476.7)
Observations	6793	6793	6793
Pseudo R^2	0.02199		0.02138
Wald exogeneity p-value		0.00002	

Standard errors in parentheses
Clustered SE at household level
Source: SHIW 2010-2012, individuals aged 25-65, household head and partner
Upper and lower 0.5 percentile of individual income dropped
Excluded instruments for financial literacy: father and mother manager, entrepreneur, self-employed
Note: we have also estimated a the two-step Heckman model (see footnote 20). In the second stage, the coefficient of the Mill's ratio was not statistically different from zero.
Note: ivtobit provides a Wald test for the exogeneity of Financial literacy, since the test statistic is significant, we can reject the null hypothesis of no endogeneity. Thus, the IV strategy is appropriate here.
Note: age^2 has been divided by 1000

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Life Insurance and Pension Funds(D)

	(1) FE - All	(2) FE - Male	(3) FE - Female	(4) FE - All 2012-10
Female				
Age hh Head	0.0285**	0.0212	0.0342**	0.0490
	(0.0124)	(0.0165)	(0.0158)	(0.0380)
Age hh Head^2	-0.2522**	-0.1844	-0.3359**	-0.4222
	(0.1122)	(0.1501)	(0.1380)	(0.3055)
Age hh Head spouse	-0.0032	-0.0056	0.0001	-0.0078
	(0.0042)	(0.0055)	(0.0060)	(0.0093)
Age hh Head spouse^2	0.0430	0.0622	0.0105	0.1111
	(0.0605)	(0.0814)	(0.0823)	(0.1275)
Living together	-0.0709	-0.0027	-0.1555	0.1785
	(0.0896)	(0.1237)	(0.1153)	(0.1813)
Married	0.0135	0.0494	-0.0260	0.2001
	(0.0755)	(0.1077)	(0.0981)	(0.1656)
High School	-0.0375	-0.0290	-0.0520	0.0710
	(0.0350)	(0.0457)	(0.0531)	(0.1191)
Tertiary education	-0.0392	-0.0205	-0.0552	-0.2973
	(0.0734)	(0.1253)	(0.0898)	(0.1835)
Inactive but not retired	0.0397	0.0553	0.0087	0.1409***
	(0.0483)	(0.0489)	(0.0359)	(0.0534)
Female*Inactive	-0.0108			
	(0.0583)			
Self-Employed	0.0576*	0.0880**	-0.0085	
	(0.0319)	(0.0363)	(0.0602)	
# working years	0.0008	0.0010	0.0009	0.0064**
	(0.0010)	(0.0012)	(0.0016)	(0.0027)
Medium city	0.0549	0.0870	0.0380	-0.0797
	(0.1081)	(0.1707)	(0.1341)	(0.1931)
Large city	0.0671	0.1875	-0.0224	0.1783
	(0.1191)	(0.1934)	(0.1334)	(0.2226)
Mega city	0.2786	0.4933**	-0.0244	0.3026
	(0.1696)	(0.2509)	(0.1366)	(0.2504)
North Italy				
Centre Italy				
# hh members <=25	-0.0031	0.0024	-0.0071	-0.0000
	(0.0131)	(0.0162)	(0.0192)	(0.0329)
# hh members >25	0.0164	0.0448**	-0.0154	0.0399
	(0.0145)	(0.0198)	(0.0196)	(0.0338)
Offsprings outside hh	0.0135	0.0181	0.0094	0.0245
	(0.0161)	(0.0210)	(0.0219)	(0.0483)
Log(Ind Income)	0.0374***	0.0545***	0.0201	0.0202
	(0.0125)	(0.0159)	(0.0182)	(0.0421)
IndIncome/Wealth				
IndIncome/hhIncome	0.0071	0.0107	0.0072	0.1411

	(0.0378)	(0.0465)	(0.0688)	(0.1008)
Risk Adverse	0.0147	0.0114	0.0183	0.0009
	(0.0095)	(0.0119)	(0.0131)	(0.0201)
TFR to pension	0.3696***	0.3464***	0.3974***	0.3792***
	(0.0221)	(0.0289)	(0.0295)	(0.0277)
Home-owner	-0.0604***	-0.0633**	-0.0628**	-0.1332**
	(0.0210)	(0.0252)	(0.0302)	(0.0546)
Hold stocks	0.0616***	0.0675***	0.0548**	0.0862**
	(0.0201)	(0.0257)	(0.0239)	(0.0405)
Constant	-1.0349***	-1.1067**	-0.8680*	-1.6567
	(0.3588)	(0.4862)	(0.4720)	(1.2028)
Time dummies	Yes	Yes	Yes	Yes
Observations	20771	11696	9075	6895
R^2	0.15308	0.14907	0.16611	0.18622
WithinR^2	0.15422	0.15104	0.16859	0.18906
OverallR^2	0.07169	0.05070	0.10816	0.04902

Standard errors in parentheses
Clustered SE at household level
Source: SHIW 2004-2012, individuals aged 25-60, household head and partner
Note: age^2 has been divided by 1000
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$