Financial Literacy and Subjective Expectations Questions: A Validation Exercise

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Abstract

I use subjective expectations data on future asset returns from the Italian Survey of Household Income and Wealth to validate widely used financial literacy questions. I argue that financial literacy and the willingness to answer these expectations questions are conceptually related constructs. In fact, both build on financial knowledge and skills and on confidence. From the estimation of simple probit models, I find evidence of positive correlation between responding expectations questions and answering correctly the questions that are typically used to appraise individual financial literacy in surveys. If these latter questions captured just numeracy or generic cognitive skills, the size and significance of their coefficients would go to zero when one controls for formal education. This is not the case, which suggests that they capture knowledge and skills that may indeed be at the basis of financial competence. In addition, based on decomposition analysis, I find that the questions with the largest information content are those eliciting knowledge and skills which are at the basis of day-to-day financial decision making. These include the questions assessing the ability to read a bank statement and the understanding of the effects of inflation.

JEL classification: A20, C80, D14

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1. Introduction

In recent years there has been increasing interest in appraising individual financial literacy, which can be broadly defined as «the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being» (cfr. the 2008 Annual Report to the President by the Advisory Council on Financial Literacy). This notion encompasses *financial knowledge*, the *financial skills* that depend on that knowledge, and the *confidence* that is necessary to use that knowledge.

To measure financial literacy both self-report methods and performance tests have been employed. Early studies have typically relied on questions asking respondents to self-assess their financial understanding and ability to deal with financial matters. In contrast, more recent papers use questions assessing respondents' knowledge of financial terms and their ability to apply financial concepts to particular situations. These questions measure the understanding of interest compounding, the effect of inflation and the time value of money, the knowledge of specific classes of assets, of the concept of diversification and of the relationship between asset prices and interest rates.[1]

The literature has used the answers to these questions to identify the determinants of financial literacy, the consequences of financial sophistication for financial decisions and to measure the effectiveness of financial education.[2] An issue that has been to a large extent overlooked is whether these questions measure actual financial competence or simply ability and cognition. Many concepts, such as numeracy, share features with financial literacy. To the extent that financial literacy involves skills, these skills likely depend on the ability to work with numbers. Indeed, the correlation between available measures of economic literacy and educational attainment and cognitive ability indexes is high (Jappelli, 2009, and Delevande et al. 2008). Nevertheless, they are separate attributes and Gustman et al. (2012) show that people who are numerate do not necessarily have a better understanding of, for example, their pensions or Social Security.

[1] Van Rooij et al. (2011), using a sample of Dutch households, find a positive correlation between objective indicators of financial literacy and self-reported financial sophistication. In contrast, Guiso and Jappelli (2008), using a sample of clients of a major Italian bank, find that objectively measured financial literacy is only weakly correlated to self-perceived sophistication.

[2] A very large number of papers study these issues, including Lusardi and Mitchell (2007), Behrman et al. (2012), Banks and Obstfield (2007), Christelis et al. (2010), and many others. See Hastings et al. (2013) for a review.

From the existing literature, it is not clear what kind of and how much extra information survey based financial literacy indicators provide over the educational attainment ones. Assessing true individual ability to understand finance as separate from general cognition has implications for public policy because it is crucial to identify its determinants and to design suitable policies to address deficiencies.

With this note, I intend to validate standard financial literacy measures using survey questions aimed at eliciting subjective expectations of future asset returns. Generally speaking, once the concept of financial literacy and its domain have been defined, its measurement can be validated by verifying its relationship to other conceptually related constructs. My argument is that the willingness to answer expectations questions of future returns is conceptually related to financial literacy. Survey non-response to expectations questions is high: around 30% in the Survey of Economic Expectations, 20% in the Health and Retirement Survey (HRS), and 50% in the Italian Survey of Household Income and Wealth (SHIW). Non-response is typically attributed to lack of relevant knowledge, and possibly to troubles thinking probabilistically when questions ask for the probability of future returns. Leaving the issue of probabilistic reasoning aside for a moment – which, however, I address in the analysis –, indeed, in order to form and declare expectations of future returns, one needs some *financial knowledge* and *skills* to put knowledge together. Then, the willingness to declare one's expectations depends on *self-perceived knowledge or confidence*. Financial literacy builds just on all these elements. Hence, I predict the willingness to answer subjective expectations questions using standard financial literacy measures plus a broad set of controls that include variables capturing cognitive abilities, and allow for any spurious correlation between financial literacy measures and the error. If such measures captured just numeracy or generic cognitive skills, the size and significance of their coefficients would go to zero when one controls for formal education. This is not the case in this analysis, which suggests that widely used financial literacy questions capture knowledge and skills that may indeed be at the basis of financial competence.

The rest of the paper is organized as follows. In section 2, I present the data. In section 3, I discuss the empirical evidence. In section 4, I conclude and draw implications for survey design.

2. Data

I run the analysis using the 2008 Italian SHIW which asks 9 questions to assess financial literacy. The questions are designed like those of the HRS, of the Dutch Household Survey, of the Survey of Health, Ageing and Retirement in Europe and of a variety of other surveys. These questions cover a range of topics and their exact wording is reported in Box 1.

Box 1 – Financial literacy questions
1) Bank statement (Show card) Imagine that you receive this statement from your bank. Can you tell me what sum of money is available at the end of May? (i) amount in euros €….; (ii) Don't know.
2) Mortgage types Which of the following types of mortgage would allow you from the very start to fix maximum amount and number of instalments to be paid before the debt is extinguished? (i) Floating-rate mortgage; (ii) Fixed-rate mortgage; (iii) Floating-rate mortgage with fixed instalments; (iv) Don't know.
3) Pension funds and annuities (4 questions) Which of the following statements concerning pension funds do you believe to be true? (i) The investment has tax advantages over investment funds; (ii) Part of the capital can be withdrawn at retirement; (iii) Some pension funds guarantee restitution of the capital paid in; (iv) Pension funds guarantee a fixed percentage of the last salary. (Possible answers: true, false, don't know.)
4) Inflation Imagine leaving €1,000 in a current account paying 1% interest with no charges. Imagine that inflation is 2%. If you withdraw the money in a year, will you be able to buy the same amount of goods as if you spent the €1,000 today? (i) Yes; (ii) No, I will be able to buy less; (iii) No, I will be able to buy more;

(iv) Don’t know.
5) Diversification Which of the following investment strategies do you think entails the greatest risk of losing your capital? (i) Investing in the shares of a single company; (ii) Investing in the shares of more than one company; (iii) Don’t know.
6) Shares vs. bonds A company can be financed by issuing either shares or bonds. Which do you think is riskier for the investor? (i) Shares; (ii) Bonds; (iii) They are equally risky; (iv) I don’t know the difference between shares and bonds; (v) Don’t know.

The incidence of responses to these questions is in table 1. Most households answer the questions on the bank statement, on mortgage type and on inflation correctly, although the percentage of incorrect and ‘don’t know’ answers is at 30% or higher. The proportion of correct answers decreases considerably when we consider the other questions. Note also that, while many respondents answer some individual question correctly, the proportion of respondents who answer all questions correctly is only 1%. Overall, the pairwise correlation between answering correctly any two questions ranges from 0.05 to 0.4, with an average of 0.25.

Table 2 relates the answers to these questions to individual characteristics. Household heads answering most questions correctly are younger, more educated, more likely to be male, to be married and to live in the North or Center of the country. Most ‘zero correct answers’ or ‘1-to-3 correct answers’ come from retirees. The number of correct answers is positively related to net wealth, income and consumption. It is also positively related to stockholding and other asset or mortgage holdings. Obviously, the causality can go either way. Quite puzzlingly, 54 percent of those giving no correct answers has a bank deposit and 10 percent has a mortgage.

The SHIW also asks questions eliciting subjective expectations of future interest rates and stock returns. In the interest rate case, it asks to report the chances that in a year's time interest rates will be higher than today's. In the case of stocks, it asks to report

the chances that an investment in the Italian stock market will yield a profit in a year's time.

The incidence of responses to these questions is in table 3. Non-response, as captured by 'don't know' answers, is widespread and above 50 percent to either question.

Table 4 relates the responses to the expectations questions to the questions to assess financial literacy and to individual characteristics. Respondents to the expectations questions are younger, more educated, more likely to be male, to be employed, to be married and to live in the North than non-respondents. They are wealthier, more likely to own their home, to have a bank deposit, government bonds and stocks and to have a mortgage. Only 1 percent gives no correct answer to the questions on financial literacy (versus 17 to 18 percent of non-respondents). Also, respondents answers correctly 5 questions, on average (versus less than 3 questions for non-respondents).

3. Results

Table 5 reports the results of the estimation of probit models for the probability to answer the questions on the interest rate (first 4 columns) and on stock returns (last 4 columns). The table displays the coefficients of a polynomial in the years of schooling and of 9 dummies for financial literacy (FL dummies). These dummies take on value 1 if the answer to the corresponding question is correct. I treat "don't knows" as incorrect answers. Since "don't know's" could reflect unwillingness to answer this type of questions or some lack of confidence, I include also a dummy that takes on value 1 if the household answers "don't know" to all 9 questions (8% of households). In columns (4) and (8), instead of the FL dummies, I include a polynomial in an index computed as ratio of the number of correct answers to the number of questions for financial literacy.

In all regressions I control for a wide set of socio-economic characteristics that could influence the willingness to answer expectations questions. The coefficients of these controls, listed in the note to the table, are not reported for brevity, but they are generally significant with the expected sign.

In columns (1) and (5) I omit financial literacy and find that the probability of responding expectations questions is concave in years of schooling. On average, those with a university degree are over 5 (30) percentage points more likely to answer than

those with just high school diplomas (elementary schooling). This is consistent with the hypothesis that schooling is correlated with numeracy and cognition, which increase comfort with numbers and, hence, the likelihood of responding probabilistic questions.

When included, most FL dummies and the index are statistically significant. They have sizable coefficients relative to the coefficients of years of schooling which are halved after their inclusion, but remain significant. In the probit for the interest rate, only the coefficients of the dummies for shares-versus-bonds riskiness and for risk diversification are small and insignificant. In the probit for stocks, only the dummy for risk diversification is insignificant. Overall, one can get a sense of the predictive power of the questions for financial literacy using the estimates based on the FL index (columns (4) and (8)). Those who answer correctly 6 of the 9 questions (75^{th} percentile) are over 40 percentage points more likely to answer the subjective expectations questions than those who answer correctly only 2 questions (25^{th} percentile).

In columns (3) and (7), I exclude the polynomial in years of schooling. The coefficients of the FL dummies increase slightly. However, the increase is trivial and far from offsetting the effect of the education variables. This is additional evidence that the FL dummies capture something which is to a large extent independent from formal education.

A frequent objection that is raised against probabilistic subjective expectations questions is that non-response is high and due to problems with probabilistic reasoning, which the FL dummies might partly capture. To address this objection, ideally one would like to control for the willingness to answer *other* questions asking the likelihood of some event. However, there are no such *other* questions in the 2008 survey. Hence, I try to tackle the issue using a dummy for answering the questions on stock returns in the probit for answering the questions on the interest rate and viceversa. Results are available upon request. The FL dummies remain largely significant, but their coefficients are reduced. This could be expected. In fact, the dummy for answering the other expectations question refers to a question whose answer depends both on the willingness to answer a probabilistic question and on financial literacy, among other things. As a consequence, part of the predictive power of the FL dummies now passes through the dummy intended to control for the attitude towards probabilistic reasoning. Interestingly, in the probit for

stock returns, the coefficients of the polynomial in education become small and insignificant. This suggests that some of the correlation between schooling and the propensity to answer the expectations questions could come from a correlation between schooling and the disposition towards probabilistic reasoning.

As additional robustness check (also available upon request) against the objection that non-response may be due to problems with probabilistic reasoning, I run a probit for the willingness to answer a question asking expected future risk free rates.[3] In my data, 40 percent of households answer this 'point-forecast' question and the correlation with the willingness to answer the probabilistic question for interest rates is 0.6. The predictive power of the FL dummies is confirmed. Like in the probit of table 5, including these dummies halves the coefficients of the polynomial in education, which however remain significant.

Table 6 reports the results of the estimation of probit models for the likelihood of answering probabilistic expectations questions using the SHIW run in 2010. In 2010, the subjective expectations questions are asked to a randomly selected half of the sample. Furthermore, this survey contains only three of the nine questions on financial literacy available in the 2008 survey. Specifically, it asks only the questions on mortgage types, the effects of inflation, and diversification. The estimated coefficients of all three FL dummies are large and significant. Notice, that, in contrast, the dummy for the question on diversification is insignificant in most regressions using the 2008 survey.

In table 7, I verify whether multicollinearity may be an issue in the probit using the 2008 survey. When I run the probit on 2008 data including only the three dummies available in 2010, I find that all the three FL dummies are significant. Also, when I include only the dummies based on the questions that are excluded in 2010 I find that their coefficients are also all significant, even the dummy for bonds versus stocks riskiness which was not significant when all the nine dummies where included. This suggests some correlation in the information content of the various questions asked to characterize individual financial literacy.

[3] The exact wording of the question is the following: "What interest rate (after tax) would you expect to get if you put money in a risk-free investment for a year? (e.g., Treasury bills, fixed-term deposits or similar investments). Respondents either report a rate or a "do not know".

4. Conclusions and implications for survey design

The objective of this study is to validate an array of very common survey questions designed to measure individual financial literacy by using subjective expectations of future asset returns. Financial literacy and the willingness to answer expectations questions are conceptually related constructs. In fact, in order to form expectations of future returns, one needs some *financial knowledge* and possibly *skills* to put knowledge together; then, the willingness to declare one's expectations depends on *perceived knowledge or confidence*. Financial literacy builds just on all these elements.

From the estimation of simple probit models, I find strong evidence of positive correlation between the probability of responding expectations questions and answering correctly the survey questions designed to appraise financial literacy, even after controlling for formal education, which suggests that these questions may indeed capture financial competence.

When designing a survey, there is a trade-off between how much in detail one can analyse a phenomenon and the number of phenomena one can study. Determining which questions would characterize best individual financial literacy is beyond the scope of this validation exercise. However, to gather some insight on this issue, I have supplemented the regression evidence by decomposition analyses to learn the relative importance of the different dummies. Specifically, [see table for referees only] I have applied the decomposition method of Shorrocks (1982) and Fields (2003) to a simple linear probability model for the likelihood of responding expectations questions. The FL dummies with the largest information content are those related to questions eliciting knowledge and skills which are at the basis of day-to-day financial decision making. These include the questions assessing the ability to read a bank statement and the understanding of the effects of inflation. The corresponding dummies account for almost 40% of the explained variation of the regression, with the dummy for the bank statement being by far the most important. The dummy for mortgage types contributes 5% and the four dummies for pension funds account for 2 to 10%. Finally, the dummies for diversification and bonds-versus-stocks riskiness account for only one percent each.

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Table 1. Financial literacy questions

a) Percentages of respondents

	Bank statement	Mortgage Type	Pension funds: tax advantage	Pension funds: lump sum	Pension funds: guaranteed capital	Pension funds: salary link	Inflation	Diversi-fication	Shares vs. bonds
Correct	60%	66%	26%	33%	33%	20%	73%	44%	34%
Incorrect	3%	11%	20%	17%	15%	21%	6%	27%	34%
Don't know	36%	23%	54%	50%	52%	59%	21%	29%	32%
All	100%	100%	100%	100%	100%	100%	100%	100%	100%

b) Frequencies of correct, incorrect and don't know answers

	None	All	Mean
Correct	10%	1%	3.88
Incorrect	34%	0%	1.55
Don't know	20%	8%	3.57

Table 2. Financial literacy and socio-demographic characteristics

	All	By number of correct answers			
		Zero	1-3	4-6	7-9
Age	58	68	61	56	52
Gender (Male=1) (%)	62	41	57	66	75
Married (%)	63	43	58	69	74
Living in the North (%)	47	28	42	53	54
in the Center (%)	21	17	19	21	26
in the South (%)	32	55	39	27	20
Education (%)					
Elementary school or less	31	72	43	20	7
Middle school (8th grade)	36	21	38	39	30
High school (5 yr diploma)	24	4	15	29	42
University degree	9	1	4	11	21
Occupation (%)					
Payroll employee	34	15	28	38	52
Self-employed	10	3	6	12	15
Retired	46	72	54	41	29
Non-employed	10	11	12	9	5
Wealth and income					
Owner of: home (%)	71	62	66	73	80
bank deposits	81	54	75	89	94
government bonds	11	2	6	14	16
stocks and shares	16	1	6	19	41
With mortgage (%)	26	10	20	31	37
Net wealth (median)	163,500	72,500	122,900	200,900	274,100
Household income (median)	26,700	15,900	21,800	31,200	39,500
Household consumption (median)	20,700	13,800	18,000	23,400	27,600
Number of observations	7,977	829	2,614	3,328	1,206

Table 3. Responses to the subjective expectations questions

	$Prob(r^f_{t+1} > r^f_t)$		$Prob(r^s_{t+1} > 0)$	
	N	Distribution	N	Distribution
0%	633	8%	797	10%
1-100%	1684	21%	2027	26%
Do not know	4480	56%	4642	58%
All	7797	100%	7797	100%

Table 4. Subjective expectations, financial literacy and socio-demographic characteristics

	Interest rate expectations		Stock price expectations	
	Response	Non- response	Response	Non- response
Age	56	61	55	60
Gender (Male=1) (%)	69	56	69	57
Married (%)	71	57	71	58
Living in the North (%)	60	38	60	38
in the Center (%)	19	21	21	20
in the South (%)	21	40	19	41
Financial Literacy				
No correct answers (%)	1	18	1	17
Number of correct answers	5.2	2.8	5.23	2.86
Education (%)				
Elementary school or less	17	43	17	42
Middle school (8^{th} grade)	38	35	37	35
High school (5 yr diploma)	31	17	33	17
University degree	14	5	14	6
Occupation (%)				
Payroll employee	40	30	40	30
Self-employed	12	7	13	7
Retired	41	52	40	52
Non-employed	7	11	7	11
Wealth and income				
Owner of (%): home	76	67	77	67
bank deposits	92	74	92	74
govern. bonds	17	6	17	7
stocks and shares	26	8	28	7
With mortgage (%)	35	19	36	19
Net wealth (median)	221,000	122,800	228,600	126,000
Household income (median)	34,200	21,900	34,900	22,200
Hh consumption (median)	25,200	18,000	25,500	18,000
Number of observations	2,317	4,480	2,824	4,642

Table 5. Probit for the willingness to answer expectations questions

	Interest rates				Stock returns			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Education (yrs)	0.054***	0.027***		0.026***	0.052***	0.022***		0.023***
	(0.007)	(0.007)		(0.007)	(0.007)	(0.007)		(0.007)
Education squared/100	-0.170***	-0.087***		-0.084***	-0.173***	-0.079***		-0.084***
	(0.030)	(0.030)		(0.030)	(0.030)	(0.030)		(0.030)
Financial literacy								
Bank statement°		0.199***	0.206***			0.223***	0.227***	
		(0.013)	(0.013)			(0.013)	(0.013)	
Mortgage type°		0.070***	0.073***			0.050***	0.053***	
		(0.014)	(0.014)			(0.014)	(0.014)	
PF: tax advantage°		0.080***	0.085***			0.091***	0.094***	
		(0.016)	(0.016)			(0.016)	(0.016)	
PF: lump sum withdrawal°		0.080***	0.084***			0.069***	0.071***	
		(0.016)	(0.016)			(0.015)	(0.015)	
PF: guaranteed capital°		0.077***	0.081***			0.121***	0.123***	
		(0.015)	(0.015)			(0.015)	(0.015)	
PF: link to salary°		0.072***	0.073***			0.073***	0.074***	
		(0.016)	(0.017)			(0.016)	(0.016)	
Inflation°		0.139***	0.141***			0.146***	0.148***	
		(0.015)	(0.015)			(0.015)	(0.015)	
Diversification°		0.021	0.022			-0.003	-0.003	
		(0.014)	(0.014)			(0.014)	(0.014)	
Shares vs. bonds°		0.019	0.024*			0.033**	0.037**	
		(0.014)	(0.014)			(0.014)	(0.014)	
Financial literacy index				1.337***				1.511***
				(0.111)				(0.111)
Financial lit. index squared				-0.629***				-0.760***
				(0.108)				(0.108)
Don't know to all fin. lit. quest.°		-0.093**	-0.099**	-0.048		-0.205***	-0.209***	-0.151***
		(0.044)	(0.043)	(0.052)		(0.044)	(0.043)	(0.056)
Socio demographic controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	6,797	6,797	6,797	6,797	7,466	7,466	7,466	7,466
Pseudo R^2	0.1684	0.2692	0.2656	0.2589	0.1772	0.2831	0.2816	0.2682
F-test								
Education=0; education sq.=0	127.22	30.86		27.12	104.93	13.95		15.72
	(0.000)	(0.000)		(0.000)	(0.000)	(0.001)		(0.000)

Note: Coefficients are marginal effects. The symbol ° denotes a dummy variable. The set of controls include age, gender, area of residence, occupation, wealth quartile dummies, second order polynomials in financial wealth and income, and dummies for holding stock, debt and pension funds. Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6. Probit for the willingness to answer expectations in the 2010 Survey

	Interest rate		Stock return	
	(1)	(2)	(3)	(4)
Education (yrs)	0.009	0.008	0.023**	0.022**
	(0.010)	(0.010)	(0.010)	(0.010)
Education squared/100	0.037	0.040	-0.050	-0.047
	(0.047)	(0.047)	(0.043)	(0.043)
Financial literacy				
Mortgage type°	0.057***		0.053***	
	(0.022)		(0.020)	
Inflation°	0.128***		0.106***	
	(0.024)		(0.022)	
Diversification°	0.078***		0.100***	
	(0.021)		(0.019)	
Financial literacy index		1.357***		1.729***
		(0.463)		(0.441)
Financial lit. index squared		-1.434		-2.270**
		(1.087)		(1.022)
Don't know to all fin. lit. quest.°	-0.325***	-0.299***	-0.299***	-0.252***
	(0.035)	(0.046)	(0.030)	(0.042)
Socio demographic controls	*Yes*	*Yes*	*Yes*	*Yes*
Observations	3378	3378	3378	3378
F-test				
Education=0; education sq.=0	35.53	36.35	23.13	23.56
	(0.000)	(0.000)	(0.000)	(0.000)
Fin. lit. index=0; index sq.=0		49.41		62.20
		(0.000)		(0.000)

Note: Standard errors in parentheses. See note to table 5 for a list of controls and for abbreviations and symbol used.

Table 7. Probit for the willingness to answer expectations questions: Checking for multi-collinearity

	Interest rate		Stock prices	
	(1)	(2)	(3)	(4)
Education (yrs)	0.040***	0.032***	0.030***	0.020***
	(0.007)	(0.007)	(0.006)	(0.006)
Education squared/100	-0.128***	-0.112***	-0.101***	-0.076***
	(0.029)	(0.030)	(0.029)	(0.029)
Financial literacy				
Bank statement°		0.223***		0.223***
		(0.013)		(0.013)
Mortgage type°	0.107***		0.094***	
	(0.013)		(0.013)	
PF: tax advantage°		0.090***		0.093***
		(0.016)		(0.016)
PF: lump sum withdrawal°		0.077***		0.052***
		(0.016)		(0.015)
PF: guaranteed capital°		0.085***		0.104***
		(0.015)		(0.015)
PF: link to salary°		0.064***		0.068***
		(0.016)		(0.016)
Inflation°	0.165***		0.157***	
	(0.014)		(0.013)	
Diversification°	0.054***		0.039***	
	(0.013)		(0.012)	
Shares vs. bonds°		0.037***		0.048***
		(0.014)		(0.013)
Don't know to all fin. lit. quest.°	-0.158***	-0.176***	-0.208***	-0.208***
	(0.032)	(0.028)	(0.027)	(0.025)
Socio demographic controls	*Yes*	*Yes*	*Yes*	
Observations	6503	6503	6503	6503
F-test				
Education=0; education sq.=0	68.13	33.25	35.92	10.37
	(0.000)	(0.000)	(0.000)	(0.006)

Note: Standard errors in parentheses. See note to table 5 for a list of controls and for abbreviations and symbol used.

Table for referees only.

Regression-based decomposition analysis of the factors contributing to the response to the subjective expectations questions

	Percentage Contribution of the Variable in Linear Probability Regression	
	Interest rate	Stock return
Financial literacy dummies		
Bank statement	26.6%***	27.3%***
Mortgage type	4.3%***	2.8%***
PF: tax advantage	7.7%***	7.5%***
PF: lump sum withdrawal	7.6%***	5.7%***
PF: guaranteed capital	6.4%***	9.9%***
PF: link to salary	2.4%***	2.1%***
Inflation	11.1%***	10.4%***
Diversification	1.3%	0.2%
Shares vs. bonds	1.6%*	2.0%**
(Total financial literacy dummies)	*(69.0%)*	(67.6%)
Other variables included in the regression	*31.0%*	*32.4%*

Note: Percentage contributions refer to the R^2 of a linear probability model (OLS regression) for the likelihood of responding subjective expectations questions. In addition to these variables, as controls I include all the variables in the probit of table 5.
* significant at 10%; ** significant at 5%; *** significant at 1%