Why Financial Advice Cannot Substitute for Financial Literacy ?*

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Abstract

This paper examines the ability of financial advice provided by sellers of financial services to substitute for financial literacy of customers. I set up a simple theoretical model in which an informed financial advisor communicates with a less informed customer of financial services. Given the existence of a conflict of interest from the advisor's perspective, the model predicts that only well financially sophisticated customers receive relevant information from the advisor. This fact tends to prevent less financially sophisticated customers from asking advice although they are the most in need of financial guidance. Overall, the model predicts a positive relationship between financial literacy and the demand for financial advice. I then use a representative sample of French households (PATER 2011) to test the predictions of the model. I find that financial literacy is strongly associated to the probability to ask a financial advisor. Decomposing the measure of financial literacy, I show that the relationship is weakly monotonic which provides support to the fact that financial advice cannot substitute for financial literacy. This result is robust to alternative specifications and instrumental variables regressions.

Keywords: Financial Literacy, Financial Advice, Household Finance

JEL Classification: D14, D82, G11

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1 Introduction

The issue of substituability between financial literacy and financial advice is gaining audience, as financial products become more complex and households exhibit low financial sophistication. Financial illiteracy has been shown to have important consequences for household's financial well-being. Financially unsophisticated households tend to save less than others, especially for retirement (Lusardi and Mitchell 2007a; Banks et al. 2011; Arrondel et al. 2013). They are also less prone to hold stocks (van Rooij et al. 2011; Arrondel et al. 2015), to accumulate wealth (van Rooij et al. 2012) and tend to get over-indebted more often than other households (Lusardi and Tufano 2009; Gerardi et al. 2010). But financial illiteracy would not be an issue if households could seek for guidance from qualified sources such as bankers or independent financial advisors that can mitigate financial mistakes (Bluethgen et al. 2008).

In France, most households lack command of basic economic and financial concepts (Arrondel et al. 2013) and tend to rely on financial advisors when they decide to make a financial decisions. About 49% of French households (PATER Survey 2011) declare to seek financial information mainly from their bank or from independent financial advisors (*conseillers en investissements financiers*). The compensation arrangements of these professionals differ but remain interested and product-biased in both cases. While bankers tend to charge a one-time commission on selling a specific product, independent financial advisors act as intermediaries and receive trailing commissions[1]. These compensation schemes can lead advisors to pursue goals that are not necessarily in the interest of customers and this way alter the capacity of financial advice to provide a consistent substitute for financial literacy. This paper examines this issue from both a theoretical and an empirical perspective. I develop a simple stylized model of communication between a customer and a financial advisor and then test the implications of the model on a representative sample of French households. The model predicts a positive relationship between financial literacy and the demand for financial advice: investors with a high level of financial sophistication tend to seek for advice while investors with a low level of financial sophistication do not ask for advice. Using an original household survey (PATER 2011), I investigate this issue from an empirical perspective and find that in the French population financially sophisticated investors are more prone to seek for advice.

A substantial body of the literature has questioned the capacity of experts (agents) to provide relevant advice to investors (principals) which decisions influence both outcomes in a context of hidden information and incomplete contracts. Several papers focus on the supply side of the financial advice industry either looking at the market structure or the internal organization of firm's sales process. Bolton et al. (2007) consider a model of competition between two financial intermediaries offering advice to uninformed investors. They show that competition can lead intermediaries to provide relevant information to customers even in the presence of small reputational costs. Inderst and Ottaviani (2009) look at the compensation scheme set up by a firm to incentivize its employees to find new customers. They show that the firm tolerance to misselling depends on its own sales process, agent's costs of prospecting new clients and disclosure of commission structure which altogether make

[1] For more information on the legal dispositions regarding the compensation schemes of independent financial advisors in France see: AMF - Reglement general, art. 325-6.

it difficult for policy makers to have a uniform set of regulation.

Other papers like this one rather adopt a demand-side approach. The core question addressed is whether investor's information or financial literacy acts as a substitute or a complement to resorting to financial advisors. No unique answer has been brought in the literature and the main reason for this is because the papers consider different definitions of what relying on a financial advisor means: delegating financial decisions, consulting/asking for advice or following recommendations. The paper by Aghion and Tirole (1997) provides a first insight though it cannot be presented as a model of advice because no communication is involved. The principal trades off delegating her decision to the agent and deciding alone. In the former case, the agent has incentives to gather information but might also choose an option that does not fully match principal's needs while in the latter case the principal decides based on her own information only. The authors show that for principals with higher costs to gather information, it might be optimal to delegate decisions to a more informed agent. In the context of financial decisions, this result works in favor of a substituability between information and delegation (asking the expert to take the right decision).

Another strand of the literature builds on the cheap-talk framework (Crawford and Sobel 1982) which refers to direct and costless communication to analyze the delegation process occuring between a biased expert and an uninformed decision maker. Ottaviani (2000) proposes a model in which principals differ in their degree of naivete and can choose between fully delegating their investment decision to a more informed agent or engaging in a cheap talk. Ottaviani shows that delegation gives higher expected payoff to principals because then all the information is used as compared to cheap-talk in which the agent provides only part of the information to the principal. This result is generalized by Dessein (2002) who shows that least informed principals tend to delegate their decisions rather than interact with the agent suggesting some complementarity between information and the demand for professional advice. Hackethal et al. (2012) study the question of delegation from an empirical perspective using German data and show that richer and experienced investors with potentially higher financial literacy tend to delegate more often to financial advisors. The explanation they provide for this is related to the higher opportunity cost of time of richer investors. Overall, there tend to be a theoretical consensus about the fact that least informed investors prefer delegating their decision rather than asking for advice but empirical evidence as in Hackethal et al. (2012) tend to show that this might not be always the case.

In Bucher-Koenen and Koenen (2011), the authors are interested in the determinants of financial advice seeking and in the determinants of following the advice given by the expert. They build an analytical model in which they posit that better informed customers induce advisors to provide better advice. Hence, customers have an incentive to ask for advice even if their level of information is high enough to invest autonomously. But the authors also show that financially sophisticated customers are less likely to follow professional advice. This conclusion is supported by an empirical analysis of the SAVE-panel survey in Germany. Georgarakos and Inderst (2011) build on a cheap-talk model to look also at how levels of information interact with following professional advice. They highlight the importance of trust in advisor for less financially sophisticated investors to follow or not the advice provided and show that well-informed investors tend to completely disregard advice. Evidence of these results are found in the Eurobarometer data in which trust matters only for less financially

literate investors. These papers both show that in general financially sophisticated investors tend not to follow the advice given by financial experts.

In this paper, I am specifically interested in the demand for professional financial advice and its interaction with financial literacy. Therefore, I leave apart the questions of delegation and of following or not the advice given. Regarding the demand for advice, the rationale is that less informed and financially literate investors should have higher incentives to gather additional information from qualified sources when it comes to make financial decisions. However, several papers show that financially unsophisticated investors tend to turn more often to informal sources of information such as family, friends or acquaintances rather than professional experts when they seek financial guidance (van Rooij et al. 2011; Lusardi and Mitchell 2011a). Bucher-Koenen and Koenen (2011) using the SAVE-panel and Collins (2012) using the FINRA Financial Capability Survey report empricial evidence that the demand for financial advice is associated with higher financial literacy while Hung and Yoong (2010) show using experimental data from the RAND American Life Panel that financial advice tend to be chosen by least financially literate investors.

As opposed to the theoretical model of Bucher-Koenen and Koenen (2011) in which a complementarity is posited *ex-ante* between investor's financial literacy and quality of advice, I let my simple communication model predict the pattern of the relationship. In this respect, the mechanic of my model is very similar to that in Calcagno and Monticone (2015). We both consider a situation in which an uninformed customer (principal) can decide to ask for advice to a better informed financial expert (agent) before investing. The communication game involved differs from the class of cheap-talk models because preferences of the principal and the agent are not always conflicting. As in Calcagno and Monticone (2015) I find that less financially literate customers tend not to ask for advice because they know they will not receive a relevant information from advisors.

However, the stylized model I present in this paper is original in several respects. As opposed to Calcagno and Monticone (2015) I do not assume that the asymmetry of information between the principal and the agent comes from a differential of knowledge regarding future financial markets returns. I do not believe that professional advisors are more knowledgeable than customers regarding future returns as portfolios managed or advised by experts do not necessarily perform better than self-managed accounts (Hackethal et al. 2012; Karabulut 2013). Hence, my analysis does not restrict to the case of investing on financial markets, rather I consider a situation that could apply to any financial product. The source of uncertainty for the customer in my model is on her type or alternatively the characteristics of the financial products. I assume that this uncertainty is decreasing with customer's level of financial literacy. As in Bolton et al. (2007) and Inderst and Ottaviani (2009, 2012a), I assume that the customer does not perfectly observe her type and therefore cannot discriminate between any financial products the one that best suits her needs. As argued in Bolton et al. (2007), I assume that *customers may be unaware of important tax or liquidity advantages of one of the products or they may not be aware of specific fine print contractual clauses.*

The model also considers more complete beliefs for the customer. I assume that the customer has some beliefs regarding the alignment of her preferences with those of the advisor. In the baseline version of the model, this hypothesis does not play a significant part as the believed probability that preferences are aligned is assumed

to be small. Thereby, as in Calcagno and Monticone (2015) the baseline model predicts that less financially literate customers do not ask for advice because they never get a relevant information from the advisor. In the appendix, I present an extended version of the model in which financially unsophisticated customers may find it profitable to ask for advice even if they know the advice received will be biased towards advisor's preferences. This happens when customers believe their preferences have a substantial probability to be aligned with those of the advisor so that the product advised corresponds to customer's type. In that case, the model predicts a non-monotonic relationship between financial literacy and the demand for financial advice. Customers with lower and higher levels of financial literacy tend to ask for advice while customers with average levels of financial literacy do not ask for advice.

In the empirical part of this paper, I test the conclusions of the model on a representative sample of the French population using the 2011 wave of the PATER survey. Financial literacy is measured with three questions on interest compounding, inflation and risk diversification following Lusardi and Mitchell (2011a). I find a positive and significant relationship between the level of financial literacy and the probability to ask for advice which of course does not necessarily entails that all respondents who correctly answer to the financial literacy questions ask for advice. To test for the non-monotonicity of the relationship between financial literacy and the demand for advice suggested by the extended version of the model, I use a set of dummy variables for each number of questions correctly answered. The pattern of the relationship is found to be monotonic thereby supporting the complementarity hypothesis predicted by the baseline model.

The rest of the chapter is organized as follows. In section 2, I present the simple communication model and derive its equilibria. In section 3, I test the predictions of the model on the French PATER survey and provide robustness checks including instrumental variables regressions and alternative constructions of the index for financial literacy. Finally, I conclude in section 4 and explore other promising ways of dealing with widespread financial illiteracy.

2 Theoretical Background

2.1 Overview

The following stylized model considers a customer B which can invest her wealth in two different and mutually exclusive financial products. I borrow from Bolton et al. (2007) and Inderst and Ottaviani (2009, 2012a) the fact that customer B (the principal) does not perfectly observe her type or alternatively does not perfectly observe the characteristics of each financial product. Financial literacy is then understood here as a lack of information. I also borrow from Calcagno and Monticone (2015) the fact that customer B can ask for advice to a more informed advisor A (the agent) and engage in an information revelation game which differs from the class of cheap-talk games[2].

Advisor A derives a different commission from each financial product and so may have an incentive not

[2]The model differs from cheap-talk games (Crawford and Sobel 1982) because preferences of the agent and the principal do not always conflict.

to provide relevant information to the customer. But the advisor cares about reputation and then provides a biased advice only when the reputational cost of doing so does not exceed the benefits. Customer B is assumed to have beliefs regarding which product best suits her needs and preferences alignment. As a consequence, the customer trades off asking for advice or deciding alone which product to buy based on her beliefs and awareness of the advisor's biasedness. I find that the customer may not ask for advice when she knows the advisor will not provide a relevant information i.e. when the reputational costs are too low.

The next subsections present the characteristics of both the customer (she) and the advisor (he) and the last subsection reports the equilibria of the communication game.

2.2 The Customer

I consider a rational customer B with preferences represented by a utility function $u(.)$ with $u'(.) > 0$ and $u''(.) < 0$. This customer buys one unit of a financial product $\theta \in \Theta$ with $card\{\Theta\} = 2$ from a financial intermediary A. In other words, customer B has to choose between two financial products the one $\theta_B \in \Theta$ that best suits her needs[3] such that for any $\theta \in \Theta$, $0 \leq u(\theta) \leq u(\theta_B)$. But B does not know which product is best suited for her needs. As in Bolton et al. (2007) and Inderst and Ottaviani (2009, 2012a) , I assume that the customer might not be aware of certain tax and liquidity advantages or may not be aware of specific contractual clauses.

This is equivalent to assuming that the customer has incomplete information about her true type. She only observes a signal $\gamma \in \Theta$ telling her which financial product is a best match. I assume the conditional probability that the message is true given the financial product that best matches customer's needs $P(\gamma = \theta_B/\theta_B)$ to be an increasing function of customer's financial sophistication:

$$p(\varphi) = \varphi + \frac{1}{2} \tag{1}$$

with $0 \leq \varphi \leq \frac{1}{2}$ being some measure of customer's level of financial literacy.

For simplicity, I restrict the definition of financial literacy to a lack of information regarding customer's true type. In the extreme case of a level of financial literacy close to zero, the customer is unable to discriminate between any financial product. The signal is not informative because the probability of each financial product to be a best match is exactly the same: $p(0) = \frac{1}{2}$. On the contrary if customer's financial literacy is close to the upper bound, she perfectly knows which financial product best suits her needs and $p(\frac{1}{2}) = 1$.

I also assume that the customer can ask for advice to a commissioned financial intermediary when deciding on which product to invest[4]. But the customer and the advisor may not favor the same product leading to a conflict of interests. Customer B is assumed to have prior beliefs such that she believes preferences are aligned with probability $\alpha = P(\theta_A = \theta_B)$ where θ_A is the financial product that provides the advisor with the highest commission.

[3] Conversely, I assume that θ_{-B} corresponds to the product that does not match customer's needs.

[4] In this simple version of the game, I make the assumption that the customer systematically follows the advice given by the advisor.

2.3 The Advisor

The advisor earns a commission $\delta(\theta) \geq 0$ when selling financial product $\theta \in \Theta$. This commission differs from one product to the other such that there is a product $\theta_A \in \Theta$ which provides the advisor with the highest commission. Then for any $\theta \in \Theta$, it follows that $0 \leq \delta(\theta) \leq \delta(\theta_A)$. Let σ be the advice given by advisor A to customer B. At this point, the advisor has always an incentive to send $\sigma = \theta_A$ to the customer even when $\theta_A \neq \theta_B$.

But in practice, the advisor cares about reputation and therefore about the matching between customer's needs and the financial product, at least to some extent. This can be represented by a reputational cost that the advisor incurs whenever the product advised does not suit customer's needs (as in Bolton et al. 2007; Inderst and Ottaviani 2009, 2012a; Calcagno and Monticone 2015). I assume this reputational cost to be an increasing function of two arguments: customer's degree of knowledge of her true type $p(\varphi)$ and a measure of mismatching between customer's needs and product advised which can be represented by the difference between the highest possible utility and the actual utility: $u(\theta_B) - u(\theta)$.

The reputational cost can then be written as the product of these two arguments:

$$p(\varphi).[u(\theta_B) - u(\theta)] \tag{2}$$

The advisor always incurs a loss on misselling but this loss can be dramatically reduced when $\varphi \to 0$ that is when the customer does not understand she has been swindled. Advisor's payoff can finally be written as a profit-like function:

$$\pi(\theta) = \delta(\theta) - p(\varphi).[u(\theta_B) - u(\theta)] \tag{3}$$

Assumption 1: In order to restrict the attention to cases in which a conflict of interest can arise in the communication between the advisor and the customer I make the following assumption:

$$\delta(\theta_A) - \delta(\theta_B) < u(\theta_B) - u(\theta_A) < 2.[\delta(\theta_A) - \delta(\theta_B)] \tag{4}$$

The first condition implies that the advisor does not always have an incentive to swindle the customer when her level of financial literacy is sufficiently high. The second condition implies that the advisor can have some incentives to provide misleading information when financial literacy is too low.

2.4 Resolution of the Model

The timing of the model is as follows:

- At $t = 1$: nature decides whether customer and advisor's preferences are aligned with some unobserved probability. Advisor A always knows whether preferences are aligned but customer B does not, she has beliefs regarding preferences alignment: $\alpha = P(\theta_A = \theta_B)$.
- At $t = 2$: customer B receives a private signal $\gamma \in \Theta$ telling her which product is a best match. This

signal is true with some probability: $p(\varphi) = \varphi + \frac{1}{2}$.

- At $t = 3$: customer B decides whether to invest autonomously based on her signal or to ask for advice to a professional. If she decides to invest autonomously, then she buys the product corresponding to the signal she received because $p(\varphi) \geq \frac{1}{2}$. Otherwise, if she decides to ask for further information to an expert before investing, customer B engages in an information revelation game with advisor A and receives an advice σ which she follows. The information sets are the following: the advisor perfectly observes whether preferences are aligned, he also knows customer's type θ_B and level of financial literacy φ. The customer has beliefs α regarding preferences alignment, she also knows her level of financial literacy φ and the content of signal γ.

- At $t = 4$: payoffs are realized.

I start by analyzing the communication game that occurs at $t = 3$ when customer B decides to ask for advice.

2.4.1 Advisor's strategies

Assuming customer B decides to ask for advice. Given that the advisor perfectly observes whether preferences are aligned, then:

- if $\theta_A = \theta_B$, preferences are aligned and the advisor has no incentive to advise the customer to buy a financial product that would not suit her needs. In that case advisor A advises customer B to buy product θ_B i.e. $\sigma = \theta_B$ so as to get the highest possible payoff: $\pi(\theta_A/\theta_A = \theta_B) = \delta(\theta_A)$.

- if $\theta_A \neq \theta_B$, the advisor may have an incentive to swindle the customer and advise her to buy a product that does not necessarily suit her needs. But advisor A also cares about reputation and therefore might not systematically swindle the customer depending on the reputational cost he would incur which increases with customer's financial literacy φ. Given Assumption 1 there exists a level of financial literacy $\varphi^* \in]0; \frac{1}{2}[$ below which the advisor swindles the customer and above which the advisor provides relevant information to the customer. In case of preferences misalignment, advisor A advises customer B to buy product θ_B only if:

$$\begin{aligned} \pi(\theta_B/\theta_A \neq \theta_B) &\geq \pi(\theta_A/\theta_A \neq \theta_B) \\ \Leftrightarrow \quad \delta(\theta_B) &\geq \delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)] \\ \Leftrightarrow \quad \varphi &\geq \frac{\delta(\theta_A) - \delta(\theta_B)}{u(\theta_B) - u(\theta_A)} - \frac{1}{2} \end{aligned} \tag{5}$$

When $\theta_A \neq \theta_B$, the financial literacy threshold below which $\sigma = \theta_A$ and above which $\sigma = \theta_B$ is then:

$$\varphi^* = \frac{\delta(\theta_A) - \delta(\theta_B)}{u(\theta_B) - u(\theta_A)} - \frac{1}{2} \tag{6}$$

2.4.2 Customer's strategies

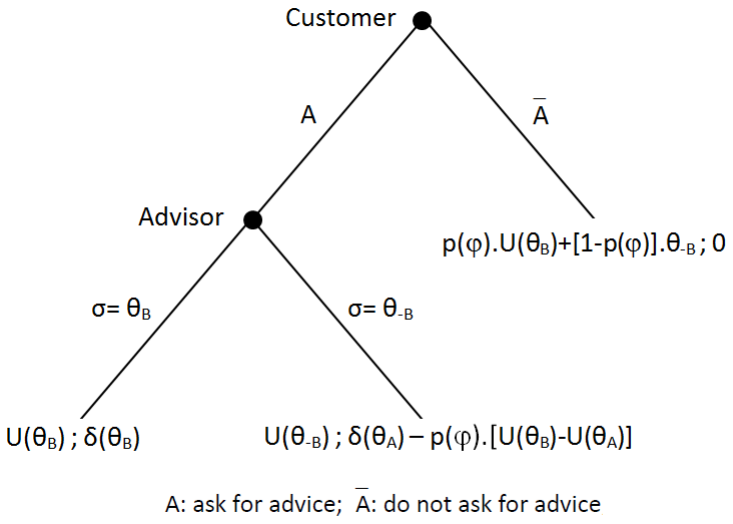
Customer B is assumed to perfectly observe the threshold φ^* before deciding to consult or not the financial advisor. The reliability of the information she gets from the advisor is linked to her level of financial literacy. Hence, customer's decision to ask for advice then depends on whether she stands above or below the threshold.

- if $\varphi \geq \varphi^*$, customer B knows that she will get a relevant information from advisor A regardless to preferences alignment. In this case the customer has always an incentive to ask the advisor before investing. She then gets the highest possible utility $u(\theta_B)$.
- if $\varphi < \varphi^*$, customer B knows that the advice she will get from the advisor depends on the alignment of preferences which she does not perfectly observe. Assuming α is small enough ($\alpha \leq p(\varphi)$), the customer is better off investing on her own rather than asking for advice[5].

2.4.3 Equilibria

The extensive form of this simple communication game can be represented as follows.

Figure 1: Extensive form of the communication game



A: ask for advice; $\bar{A}$: do not ask for advice

Customer B moves first by deciding whether to ask or not for advice before investing. When investing alone, customer B relies only on her signal γ which is true with probability $p(\varphi)$. She then gets $u(\theta_B)$ with probability $p(\varphi)$ and $u(\theta_{-B})$ with probability $[1 - p(\varphi)]$. Otherwise if the customer decides to ask for advice, the advisor gets the move and chooses whether to send a relevant information or to swindle the customer depending on his subsequent payoff. The advisor then chooses $\sigma = \theta_B$ either because $\theta_A = \theta_B$ or $\varphi \geq \varphi^*$, he subsequently gets $\delta(\theta_B)$ and the customer gets $u(\theta_B)$. While the advisor chooses $\sigma = \theta_{-B}$ only when $\theta_A \neq \theta_B$ and $\varphi < \varphi^*$, he then gets $\delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)]$ and the customer gets $u(\theta_{-B})$.

[5] In the appendix, I relax the restriction on parameter α and report the predictions of the extended model. Empirical evidence from PATER (2011) however support the baseline specification with $\alpha \leq p(\varphi)$.

Proposition 1:

In this game, a Nash equilibrium is a set of strategies for advisor A and customer B so that no player has a profitable deviation. Eventually the equilibria of the model depend on customer's level of financial literacy

- if $\varphi \geq \varphi^*$: there is a unique fully revealing equilibrium in which advisor A advises θ_B ($\sigma = \theta_B$) and customer B asks for advice.
- if $\varphi < \varphi^*$: there is a unique pooling equilibrium in which advisor A advises product θ_A ($\sigma = \theta_B$ if $\theta_A = \theta_B$; $\sigma = \theta_{-B}$ if $\theta_A \neq \theta_B$) and customer B does not ask for advice.

These equilibria suggest a complementarity between financial literacy and the demand for financial advice. As in Calcagno and Monticone (2015), the model predicts that financial advisors have a regressive effect in the sense they increase the information of financially literate customers and do not provide any relevant information to financially unsophisticated customers. This phenomenon leads financially literate customers to always ask for advice before investing in the model. Unsophisticated customers are predicted not to ask for advice but rather to invest on their own. In the following section, I use a survey of French households (PATER 2011) to test the validity of these conclusions.

3 Empirical analysis

3.1 Data

3.1.1 The PATER survey

The PATER household survey is a representative survey of the French population. It was first conducted by the French National Statistics Institute (*Institut national de la statistique et des études économiques*, or *INSEE*) in 1998 and then repeated four times until 2011 on the initiative of Luc Arrondel and André Masson at the Paris School of Economics in cooperation with Taylor-Nelson Sofres (TNS Sofres), a private survey company (Arrondel et al. 2013). The survey focuses on preferences (risk aversion, time preference, and altruism) and expectations (on income, stock prices and job insecurity), but it also covers a wide range of topics regarding households' financial behaviors, financial literacy and sources of financial information in addition to wealth, income, socioeconomic, and demographic characteristics.

The module on financial literacy was introduced in the 2011 wave. The paper-based questionnaire was sent out in November 2011 to a representative sample of 5,000 individuals. Respondents in this wave were sampled from the TNS Sofres metascope panel (30,000 households): two-thirds of the sample had been surveyed in the 2009 wave. Respondents had to fill in the questionnaire and return it by mail in exchange for a twenty euro shopping voucher. A total of 3,616 households sent back their questionnaire, representing a 72.3% response rate and weights were adjusted to preserve the representativity of the sample. Any member of the household could answer the questionnaire but more than 70% of respondents claimed to be in charge of the family finances.

3.1.2 Econometric sample

The full sample, which is representative of the French population is used to provide descriptive information on financial literacy and the demand for financial advice. However, due to non-responses to some questions, the analysis is restricted to a smaller sample. The issue of non-responses typically arises when the question is computationally demanding or when the wording requires more concentration. Some questions on income or wealth are also less answered. In our case, this issue mainly concerns the dependent variable on the demand for financial advice but also a question regarding self-confidence on financial issues. Excluding the observations with missing values leads to a subsample of 2,127 observations.

Table 1: Comparison of original and econometric sample

	Original Sample		Econometric sample	
	Mean	**Std. error**	**Mean**	**Std. error**
Consulting a Fin. Advisor	0.49	(0.43)	0.74	(0.44)
Measured FinLit	1.75	(1.05)	1.94	(0.99)
Self-Confidence	1.51	(1.09)	1.72	(1.06)
Male	0.46	(0.50)	0.50	(0.50)
Age	52.01	(17.93)	50.97	(17.32)
Age²	30.26	(19.02)	28.98	(18.25)
Primary / Isced 1	0.10	(0.29)	0.08	(0.27)
Lower sec. / Isced 2	0.07	(0.26)	0.06	(0.24)
Upper sec. / Isced 3	0.52	(0.50)	0.49	(0.50)
Some college / Isced 5	0.16	(0.37)	0.19	(0.39)
College grad. / Isced 5	0.10	(0.30)	0.11	(0.32)
Post grad. / Isced 6	0.06	(0.23)	0.07	(0.26)
Job Employed	0.49	(0.50)	0.52	(0.50)
Job Self-emp.	0.03	(0.16)	0.03	(0.16)
Job Not work.	0.49	(0.50)	0.45	(0.50)
Fin. Wealth < 3k	0.24	(0.43)	0.17	(0.37)
Fin. Wealth [3k;15k[	0.25	(0.43)	0.25	(0.43)
Fin. Wealth [15k;75k[	0.29	(0.46)	0.35	(0.48)
Fin. Wealth ≥ 75k	0.13	(0.34)	0.19	(0.39)
Income < 8k	0.20	(0.40)	0.17	(0.37)
Income [8k;16k[	0.28	(0.45)	0.26	(0.44)
Income [16k;30k[	0.37	(0.48)	0.40	(0.49)
Income ≥ 30k	0.12	(0.32)	0.15	(0.36)
Risky assets	0.24	(0.43)	0.35	(0.48)
Good prev. exp.	0.47	(0.50)	0.52	(0.50)
Neg. impact of the crisis	0.32	(0.46)	0.40	(0.49)
Observations	3,616		2,127	

Source: PATER 2011.

Table 1 reports descriptive statistics for each variable used in the analysis for the original and the econometric samples. Both samples do not dramatically differ except for the demand for financial advice. Respondents in the econometric sample also tend to have slightly higher levels of financial literacy and self-confidence regarding financial issues. Those respondents are more educated and less likely to be unemployed or retired, they are also wealthier and have higher income. Finally, respondents in the econometric sample tend to have had more often a positive previous experience with a financial advisor and have been more often negatively impacted by the crisis. Those differences are however small and I doubt they significantly alter the conclusions I draw from the

analytical part.

3.2 Descriptive statistics

3.2.1 Financial literacy

The PATER survey encompasses a set of three questions on financial literacy that have become standard in the literature to assess the understanding of fundamental concepts for financial decision making. The set of questions on interest compounding, inflation and risk diversification was first designed by Lusardi and Mitchell (2011a) according to four principles: simplicity, relevance, brevity and capacity to differentiate. These questions have been included in many surveys across the world and have been shown to be related to several financial behaviors ranging from stock market participation to financial planning and indebtedness (see Lusardi and Mitchell (2014)). The wording of the question on inflation in the PATER survey corresponds exactly to the literature benchmark. The question on interest compounding is slightly harder to answer as it requires that the respondent grasps the difference between simple and compound interest. Another difference worth noting is on the risk diversification question. In the benchmark, respondents are simply asked to say whether a statement is true or false. In the PATER questionnaire, respondents are asked to rank four financial products according to their riskiness. Using this information, I construct a variable that only considers the relative ranking of stock versus share of a mutual fund regardless to other assets' ranking. The exact wording of the questions in PATER 2011 is as follows (correct answers are in bold):

- **Interest compounding:** Suppose you had 1,000 euro in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you let the money to grow?
  - Less than 1,100 euro
  - Exactly 1,100 euro
  - **More than 1,100 euro**
  - Do not know
  - No answer
- **Inflation:** Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
  - More than today
  - Same as today
  - **Less than today**
  - Do not know
  - No answer

- **Diversification:** Rank these financial products from the less risky to the riskiest:
  - Savings account, Stock, Bond, Share of a mutual fund
  - Do not know / No answer

For the risk diversification question, I consider the answer to be correct when "stock" is ranked as being riskier than "share of a mutual fund" and incorrect otherwise. "Do not know" refers to respondents having checked a box stating they do not know the answer while "no answer" refers to respondents who have completely skipped the question. The distinction between "do not know" and "no answer" can be made in the first two questions but not in the third.

Table 2: Answers to financial literacy questions

	Original Sample (N=3,616)			Econometric Sample (N=2,127)		
	Compound interest	Inflation	Diversification	Compound interest	Inflation	Diversification
Correct	47.98	61.18	66.85	52.69	67.55	73.47
Incorrect	34.80	11.45	18.53	35.95	12.21	18.33
Do Not Know	11.53	21.32	14.62	9.25	17.77	8.20
N/a	5.69	6.05	-	2.11	2.47	-

Source: PATER 2011. Weighted percentages in column.

In the original sample, nearly 48% of the respondents correctly answer the question on interest compounding and this share rises to 53% in the econometric sample. As mentioned, the PATER question on interest compounding differs from the benchmark question of Lusardi and Mitchell (2011b) because it requires a broad understanding of interest computation as well as an understanding of the difference between simple and compound interest. This result can be compared to those of other countries such as Russia (Klapper et al. 2013) and Sweden (Almenberg and Säve-Söderbergh 2011) which have surveys with approximately the same wording. These countries have respectively 36% and 35% of respondents answering correctly the question on interest compounding. In other countries, a simpler wording was adopted for that question explaining part of the higher percentages of respondents answering correctly except for Italy: 65% in the United States (Lusardi and Mitchell 2011b), 82% in Germany (Bucher-Koenen and Lusardi 2011), 40% in Italy (Fornero and Monticone 2011), and 85% in the Netherlands (van Rooij et al. 2011). Therefore when trying to compare French results with other countries' it is hard to disentangle the effect of the wording from the pure effect of a financial literacy differential. Eventually, the fact that half of French respondents fail to give a correct answer to the interest compounding question even when a list of answers is provided, points the lack of basic financial literacy in the French population.

Regarding the concept of inflation, 61% of the original sample display an understanding of the impact of inflation on purchasing power while more than 10% give an incorrect answer, and nearly a quarter does not know the answer or does not answer. As for the question on interest compounding, the percentage of correct answers is higher in the econometric sample with 68% of respondents answering correctly. These results put France in the international average with percentages of correct answers ranging from 59% in Sweden (Almenberg and Säve-Söderbergh 2011) to 78% in Germany (Bucher-Koenen and Lusardi 2011). Broadly speaking, households

are more knowledgeable about inflation when their country has experienced it. Conversely, countries which experienced deflation have fewer respondents able to answer correctly the question on inflation (Lusardi and Mitchell 2011a).

Respondents appear to have less difficulty answering correctly the third question on risk diversification. However, the wording and structure of this question differ enough from the benchmark to call for caution when making international comparisons. About two-thirds of the original sample gets the question on risk diversification right while this share is 73% in the econometric sample. Using PATER 2011, Arrondel et al. (2013) show that these agregate figures hide large differences among population subgroups. Women, the youth and the elderly as well as the less educated tend to have a lower understanding of basic economic and financial concepts. Thereby, these population are the most in need of relevant financial advice when it comes to make financial decisions. The next section reports statistics on the demand for financial advice in France.

3.2.2 Sources of financial information

Respondents in the PATER survey were also questioned about their sources of financial information. Table 3 reports the results for both the original and the econometric samples. While respondents in the econometric sample tend to seek more often for financial advice regardless to the source, the patterns in both samples are similar. Broadly speaking, households tend to rely more often on professional financial advisors when it comes to gather financial information. Nearly half of the original sample and three quarters of the respondents in the econometric sample rely on experts. The second most important source of financial information is family followed by friends. Combining both sources, I find that more than a third of the original sample and more than a half of the econometric sample ask for advice to family or friends. Media either mainstream or specialized are relied on by a quarter of the original sample and nearly fourty percent of the econometric sample. Overall, most households in both samples rely on one or several sources of financial information when it comes to making financial decisions. But financial advisors capture a substantial share of the demand for financial advice and remain the primary source of financial information. Even among households which gather financial information from a single source, financial advisors remain the most relied on.

Table 3: Sources of financial information

	Original Sample (N=3,616)	Econometric Sample (N=2,127)
Financial Advisors	48.73	74.43
Family	30.43	45.25
Friends	23.31	35.51
Mainstream Media	19.18	28.25
Specialized Media	21.72	32.43
Family or Friends	34.88	52.09
Media	25.34	37.48
Any Source	57.03	85.10
Only Financial Advisors	12.00	18.27
Only Family or Friends	4.25	5.37
Only Media	2.06	2.57

Source: PATER 2011. Weighted percentages.

Given the importance of professional advice, Table 3 shows how crucial it is to question the capacity of

financial advisors to provide relevant information to customers. But those agregate figures hide heterogenous patterns of the demand for financial advice among population subgroups. Table 4 reports the shares of respondents consulting different sources of financial information by sociodemographic characteristics. Broadly speaking, respondents aged 65 or above tend to rely less often on financial advisors than the average respondent. This pattern is also true for other sources such as family or friends and the media. This holds even though the elderly could be the most in need of financial advice regarding pension management and budgeting as well as inheritance and gifts. The fact that the share of respondents relying on family or friends for financial advice decreases with age could come from some independence factor which would make individuals less willing to ask for advice to their family or friends when they age. Media either meainstream or specialized are more often relied on by middle-aged respondents. Regardless to the source of financial information, women are found to ask less often for financial advice. This pattern is all the more surprising given the fact that in PATER 2011 more than 58 percent of the respondents claiming to be in charge of the household's finances were women. This actually comes from a composition effect which is controled for in the analytical section. Education appears positively related to asking for financial advice. The higher the level of education, the more often respondents ask either source for advice. Finally, employed and self-employed respondents ask for advice more often than unemployed and retired respondents. For the latter, this may come from the age effect discussed above. Overall, young working men with higher levels of education tend to ask more often for financial advice from either source but in particular from financial advisors.

Table 4: Sources of financial information by sociodemographic variables - Original sample (N=3,616)

	Financial Advisors	**Family or Friends**	**Media**	**Any Source**
Age				
Under 35	50.35	49.02	23.37	60.23
36-50	52.22	36.29	29.91	60.26
51-65	52.07	29.72	30.46	58.72
Over 65	38.57	20.56	16.57	47.03
Pearson chi2(3)	*45.13 (p=0.000)*	*166.44 (p=0.000)*	*56.21 (p=0.000)*	*43.12 (p=0.000)*
Sex				
Male	51.87	37.54	29.92	60.94
Female	45.88	32.47	21.18	53.49
Pearson chi2(2)	*14.23 (p=0.000)*	*10.91 (p=0.001)*	*39.70 (p=0.000)*	*22.60 (p=0.000)*
Education				
Primary / Isced 1	33.30	18.28	9.52	38.66
Lower sec. / Isced 2	34.75	21.71	15.52	43.62
Upper sec. / Isced 3	45.31	31.63	20.92	52.72
Some college / Isced 5	61.17	44.61	31.85	68.77
College grad. / Isced 5	59.91	46.57	42.97	72.74
Post grad. / Isced 6	63.11	55.25	49.56	76.89
Pearson chi2(5)	*133.44 (p=0.000)*	*148.81 (p=0.000)*	*217.07 (p=0.000)*	*179.21 (p=0.000)*
Employment Status				
Employed	55.10	42.41	30.57	62.76
Self-employed	57.59	36.99	24.35	65.56
Not employed	39.38	36.95	19.68	49.96
Retired	43.21	23.41	20.79	51.74
Pearson chi2(3)	*47.15 (p=0.000)*	*100.13 (p=0.000)*	*39.24 (p=0.000)*	*38.77 (p=0.000)*
Total	48.73	34.88	25.34	57.03

Source: PATER 2011. Weighted percentages.

3.2.3 Financial literacy and the demand for professional financial advice

Several papers have shown that populations are not equally equiped to face financial decisions (Lusardi and Mitchell 2007b,c, 2008; Lusardi et al. 2010). In particular in France Arrondel et al. (2013) show using the PATER survey that women, young and old people as well as the less educated and the unemployed tend to have lower levels of financial literacy which can have severe consequences on their ability to plan for the future. It is also the case that these populations are less likely to seek for financial advice as described above despite the fact that they might be the most in need of financial guidance. Given the importance of the demand addressed to financial advisors, I concentrate my attention on this source of financial information to analyze the extent to which financial literacy can be related to the demand for financial advice. Table 5 reports the shares of respondents by number of correct answers to financial literacy questions for respondents consulting and not consulting a financial advisor. In both the original and the econometric samples, the number of questions answered correctly increases when respondents do actually consult a financial advisor. This positive correlation does not shed light on any potential causal relationship but it reflects the composition of the population in terms of financial literacy levels and demand for financial advice. Individuals who actually lack financial sophistication are also those who do not ask for advice.

Table 5: Number of correct answers to financial literacy questions by consulting or not a financial advisor

	Original Sample (N=3,616)					**Econometric Sample (N=2,127)**				
	0	**1**	**2**	**3**	**Total**	**0**	**1**	**2**	**3**	**Total**
Consult a Financial Advisor	7.98	21.62	31.17	39.23	100	7.97	21.60	31.62	38.81	100
Do not consult a Financial Advisor	21.96	27.46	27.56	23.02	100	13.83	29.72	27.36	29.09	100
	Pearson chi2(3) = 220.57 (p=0.000)					*Pearson chi2(3) = 41.85 (p=0.000)*				
Whole population	15.15	24.61	29.32	30.92	100	9.47	23.68	30.53	36.33	100

Source: PATER 2011. Weighted percentages in row.

The theoretical part of this paper suggested a direction of the causality from financial literacy to the demand for financial advice: financially sophisticated customers ask for advice because they know the advice they will get will be relevant while financially illiterate customers do not ask for advice because they anticipate they will not receive any relevant information. In the following section, I attempt to confirm this relationship using the PATER survey and taking into account several determinants of the demand for financial advice.

3.3 Regressions

3.3.1 Specification

So as to characterize the pattern of the relationship between the level of financial literacy and the probability to ask for professional financial advice I perform several econometric regressions. The baseline specification is the following:

$$y_i = \alpha + \beta_1 \, \mathrm{x} \, Financial\,Literacy_i + \boldsymbol{\beta_2} \, \mathrm{x} \, \mathbf{Socioeconomic_i} + \boldsymbol{\beta_3} \, \mathrm{x} \, \mathbf{Financial\,Experience_i} + \varepsilon_i$$

The dependent variable y_i is a dichotomic variable equal to one when respondent i consults a financial advisor and zero otherwise. The right-hand side of the equation includes a variable on financial literacy which

corresponds to the number of financial literacy questions correctly answered by the respondent. This variable takes values between 0 and 3. Two vectors of explanatory variables are also added to the equation. The first one includes socioeconomic variables as gender, age, education, occupation, financial wealth and income. The second vector adds variables that are more specifically related to the financial experience of the respondent. This vector includes a self-assessed measure of financial culture which is considered to be a self-confidence variable regarding financial issues. It also includes a set of dummy variables indicating whether the respondent has ever had previously a positive experience with a financial advisor, whether the respondent experienced a negative impact of the financial crisis and whether the respondent holds risky assets. Eventually, an idiosyncratic error term is added to account for unobserved heterogeneity. The PATER survey does not allow to control for characteristics of the advisor. However while advisor's characteritics, in particular gender and education, may have an influence on how much customers invest in risky assets (Direr and Visser 2013), I do not believe that these characteristics play a central role in the decision to ask or not for advice. The reason for this can be that customers do not observe the characteristics of the advisor unless they actually ask for advice.

In the next sections, regressions are performed using a linear probability model rather than a probit model given the tractability of ordinary least squares regressions and the possibility for a direct interpretation of coefficients. This choice does not alter the results nor does it the conclusions[6]. I perform several regressions starting by including only the index of financial literacy and then including the other vectors so as to disentangle the effects of each set of variables. I then perform several robustness checks to control for the simultaneous decision to invest in risky assets and ask for advice but also instrumental variables (IV) regression to test the endogeneity of the financial literacy index. Indeed I am interested in the potential impact of financial literacy on the demand for financial advice. But there might be a reverse causality arising from the fact that consulting a financial advisor increases the level of financial literacy through some learning effect. It might also be the case that both financial literacy and the demand for financial advice are driven by a third variable that is omitted in the baseline specification. I therefore perform IV regressions with different sets of instruments to take into account any potential endogeneity bias. Finally, I report results of regressions using alternative specifications of the financial literacy index.

3.3.2 Results

Table 6 reports results of ordinary least squares regressions of a dummy for asking for advice to a financial advisor on financial literacy and other explanatory variables. The first column includes only the index of financial literacy. Following the pattern in Table 5 of the descriptive section, the coefficient on financial literacy appears to be positive and significant at the 1% level. The second column adds the set of socioeconomic variables to the regression. In contrast with what is observed in the descriptive part, the demand for financial advice appears to be negatively related to being a man. Some variables appear not to have any influence on the demand for financial advice such as age, education, and income. On the contrary the level of financial wealth is

[6]Following the results by Horrace and Oaxaca (2006) on linear probability models, I also provide estimations using probit models for robustness checks in the appendix. The results I obtain with linear probability models do not significantly differ from those I obtain with probit estimations. The conclusion I draw from the estimations remain the same.

positively and significantly associated to asking for advice. The wealthier the respondent in terms of financial assets, the higher the probability to rely on professional advice. This does not necessarily come from a higher opportunity cost of time of richer households as argued in Hackethal et al. (2012) given that I do not find any significant influence of income. Rather, it might be that everything else equal richer households have access to a greater variety of financial products which makes them more prone to ask for advice. Eventually, this second regression shows that respondents who do not work either because they retired or because they are unemployed tend to ask less often for advice though the coefficient is weakly significant.

In the third regression, the vector of variables on respondent's financial experience is added. This set of variables is expected to have a more direct influence on the demand for financial advice. Indeed, respondents who had a positive previous experience with a financial advisor as well as those who experienced a negative impact of the financial crisis are more likely to consult a financial advisor. Those facts increase in average the probability to ask for advice by respectively 11.2 and 4.2 percentage points. Self-confidence regarding financial issues is also positively and significantly associated to the demand for advice. Investing on financial markets by holding risky assets does not appear to have an influence on the demand for advice. Eventually, the introduction of the financial experience vector does not alter the significance of the variables previously discussed. Answering correctly an extra question of financial literacy increases the probability to ask for advice by 3.2 percentage points while being a man or not working decreases this probability by respectively 4.9 and 4.8 percentage points. Financial wealth is still positively and significantly associated to the demand for financial advice. Respondents with a financial portfolio worth more than 75k euros increase their probability to see a financial advisor by 14.6 percentage points everything else equal.

Table 6: Determinants of the probability to ask for advice to a financial advisor

	OLS (1)		OLS (2)		OLS (3)		OLS (4)	
FL (N correct)	0.060***	(0.010)	0.039***	(0.011)	0.032***	(0.011)		
FL - 0 correct (Ref.)								
FL - 1 correct							-0.008	(0.039)
FL - 2 correct							0.073*	(0.038)
FL - 3 correct							0.071*	(0.038)
Male			-0.039**	(0.020)	-0.049**	(0.019)	-0.049**	(0.019)
Age			0.005	(0.003)	0.006*	(0.003)	0.006*	(0.003)
Age²/100			-0.006*	(0.003)	-0.007**	(0.003)	-0.007**	(0.003)
Primary / Isced 1 (Ref.)								
Lower sec. / Isced 2			0.021	(0.055)	0.011	(0.054)	0.009	(0.054)
Upper sec. / Isced 3			0.052	(0.041)	0.046	(0.040)	0.045	(0.040)
Some college / Isced 5			0.050	(0.045)	0.043	(0.045)	0.042	(0.045)
College grad. / Isced 5			0.004	(0.050)	-0.014	(0.050)	-0.015	(0.050)
Post grad. / Isced 6			-0.044	(0.056)	-0.066	(0.056)	-0.064	(0.056)
Job Employed (Ref.)								
Job Self-emp.			0.019	(0.054)	0.016	(0.054)	0.022	(0.054)
Job Not work.			-0.045	(0.028)	-0.048*	(0.027)	-0.050*	(0.027)
Fin. Wealth < 3k (ref.)								
Fin. Wealth [3k;15k[			0.090***	(0.030)	0.072**	(0.030)	0.071**	(0.030)
Fin. Wealth [15k;75k[			0.131***	(0.029)	0.100***	(0.029)	0.099***	(0.029)
Fin. Wealth ≥ 75k			0.204***	(0.033)	0.146***	(0.034)	0.147***	(0.034)
Income < 8k (Ref.)								
Income [8k;16k[			0.036	(0.031)	0.033	(0.030)	0.034	(0.030)
Income [16k;30k[			0.020	(0.031)	0.016	(0.030)	0.017	(0.030)
Income ≥ 30k			0.050	(0.038)	0.023	(0.038)	0.023	(0.038)
Risky assets					0.032	(0.024)	0.032	(0.024)
Self-confidence					0.041***	(0.010)	0.041***	(0.010)
Good prev. exp.					0.112***	(0.019)	0.113***	(0.019)
Neg. impact of the crisis					0.042*	(0.022)	0.044**	(0.022)
Constant	0.628***	(0.022)	0.453***	(0.095)	0.332***	(0.094)	0.346***	(0.098)
R^2	0.019		0.052		0.084		0.086	
N	2,127		2,127		2,127		2,127	

*Source: PATER 2011. Dep. Var.: =1 if consult fin. advisor, =0 otherwise. Significant at: * 10%, ** 5%, *** 1%. Robust standard errors in parenthesis.*

The last column reports the results of the regression including dummies for each number of financial literacy questions answered correctly. I find no significant difference between not answering any question correctly and answering only one question correctly. But answering correctly two or three questions tends to have a significantly higher influence on the demand for financial advice as compared to not answering any question correctly. This supports the monotonicity of the relationship between financial literacy and the demand for financial advice. Overall, these regressions show that there is a positive and highly significant relationship between financial literacy and the demand for financial advice even when taking into account other factors that could influence the demand for advice. This supports a complementarity between the capacity of individuals to understand basic financial concepts and their willingness to seek advice from qualified sources. As argued in the theoretical part, this phenomenon could stem from the unability of financial advisors to disclose relevant information to less financially sophisticated customers.

This argument is supported by empirical results found in other papers. Using data of individuals interacting

with real professional advisors which are potentially biased, Bucher-Koenen and Koenen (2011), Collins (2012) and Calcagno and Monticone (2015) find a positive relationship between financial literacy and the demand for financial advice. Only investors with higher levels of financial literacy ask for advice because they know they will receive a relevant information. On the contrary, Hung and Yoong (2010) show using experimental data from the RAND American Life Panel that when proposed a hypothetical consultation with an advisor, respondents with the lowest levels of financial literacy tend to ask more often for advice than the average respondent. The implementation of their experiment does not encompass any product-biased compensation scheme for the hypothetical advisor nor does it encompass any compensation. This could explain the reason for which in their case, financial advice is primarily chosen by the less financially literate investors who are the most in need of financial guidance.

In the following section I test the robustness of these results by performing regressions with alternative indices of financial literacy. I also use an instrumental variables approach to test for the endogeneity of financial literacy and account for potential simultaneous demand for advice and financial behaviors.

3.3.3 Robustness checks

Endogeneity of financial literacy

A problem of endogeneity can arise with the index of financial literacy in the regressions. This endogeneity could come from a reverse causality bias driven by a learning effect from consulting a financial advisor. It could also stem from an omitted variable which would influence both the level of financial literacy and the demand for financial advice. To take into account this potential bias and test for the actual endogeneity of financial literacy in the regressions, I perform instrumental variables (IVs) regressions using the generalized method of moments (GMM). This method allows to take into account the heteroskedasticity of the error terms which stems from the linear probability model.

I use two sets of IVs to control for the endogeneity of financial literacy. These variables are related to respondent's financial literacy and unrelated to the demand for financial advice. The first set of IVs is made of a self-assessed measure of the level the respondent had in mathematics at school. Given the basic computational requirements needed to answer the financial literacy questions, this variable has a fair chance to be strongly correlated with financial literacy and unrelated to the demand for advice. The second IV used in this set is a dummy indicating whether respondent's parents held risky assets in their portfolios. This variable acts as a proxy for respondent's parents financial literacy which should be well correlated with respondent's financial literacy. The second set of IVs I use is also made of the variable on respondent's level in mathematics at school and a dummy indicating whether the respondent has no political opinion. This second variable is chosen as an IV given the results found in Arrondel et al. (2013). Using the PATER survey, the authors show that while there is no significant differences in terms of financial literacy between right-wing and left-wing affiliates, respondents with no political opinion tend to have a lower level of financial literacy than the average everything else equal. While there is more research to be done in this field to assert the source of the correlation, it is unlikely that

having no political opinion influences the probability to ask for advice.

Table 7: Two-step GMM estimation of the probability to ask for advice to a financial advisor

	1st Step (1)		GMM (1)		1st Step (2)		GMM (2)	
FL (N correct)			0,028	(0,068)			0,026	(0,059)
Male	0,057	(0,041)	-0,049**	(0,020)	0,045	(0,041)	-0,048**	(0,020)
Age	0,013*	(0,007)	0,006*	(0,003)	0,012*	(0,007)	0,006***	(0,003)
Age²/100	-0,014**	(0,007)	-0,007**	(0,003)	-0,015**	(0,007)	-0,007**	(0,003)
Primary / Isced 1 (Ref.)								
Lower sec. / Isced 2	0,170	(0,105)	0,012	(0,051)	0,152	(0,104)	0,012	(0,050)
Upper sec. / Isced 3	0,238***	(0,078)	0,047	(0,041)	0,226***	(0,078)	0,048	(0,040)
Some college / Isced 5	0,469***	(0,090)	0,045	(0,055)	0,447***	(0,089)	0,046	(0,052)
College grad. / Isced 5	0,469***	(0,099)	-0,012	(0,059)	0,447***	(0,099)	-0,011	(0,056)
Post grad. / Isced 6	0,673***	(0,111)	-0,063	(0,073)	0,648***	(0,111)	-0,061	(0,068)
Job Employed (Ref.)								
Job Self-emp.	0,066	(0,119)	0,016	(0,057)	0,085	(0,119)	0,016	(0,057)
Job Not work.	0,067	(0,056)	-0,048*	(0,027)	0,071	(0,056)	-0,048*	(0,027)
Fin. Wealth < 3k (ref.)								
Fin. Wealth [3k;15k[	0,244***	(0,058)	0,073**	(0,033)	0,242***	(0,058)	0,074**	(0,032)
Fin. Wealth [15k;75k[	0,316***	(0,057)	0,101***	(0,036)	0,314***	(0,057)	0,102***	(0,034)
Fin. Wealth ≥ 75k	0,542***	(0,070)	0,148***	(0,051)	0,537***	(0,070)	0,149***	(0,047)
Income < 8k (Ref.)								
Income [8k;16k[	0,004	(0,061)	0,033	(0,029)	-0,007	(0,061)	0,033	(0,029)
Income [16k;30k[	0,223***	(0,062)	0,017	(0,033)	0,207***	(0,061)	0,018	(0,032)
Income ≥ 30k	0,197**	(0,080)	0,024	(0,041)	0,172**	(0,080)	0,025	(0,040)
Risky assets	0,213***	(0,051)	0,033	(0,029)	0,221***	(0,051)	0,034	(0,027)
Self-confidence	0,070***	(0,020)	0,041***	(0,011)	0,065***	(0,020)	0,041***	(0,010)
Good prev. exp.	-0,042	(0,039)	0,112***	(0,019)	-0,046	(0,039)	0,112***	(0,019)
Neg. impact of the crisis	-0,018	(0,046)	0,042*	(0,022)	-0,012	(0,046)	0,042*	(0,022)
Parents' stock (IV)	0,141***	(0,045)						
Math Level (IV)	0,120***	(0,019)			0,121***	(0,019)		
No Pol. Opinion (IV)					-0,234***	(0,045)		
Constant	1,044***	(0,197)	0,334***	(0,104)	1,258***	(0,199)	0,337***	(0,101)
F test	24.04				32.53			
Sargan test p-value			0.285				0.483	
Endogeneity test p-value			0.962				0.917	
R^2	0.216		0.084		0.222		0.083	
N	2,127		2,127		2,127		2,127	

*Source: PATER 2011. Endogenous Var.: FL (N correct). Dep. Var. GMM: =1 if consult fin. advisor, =0 otherwise. Significant at: * 10%, ** 5%, *** 1%. Robust standard errors in parenthesis.*

Table 7 reports the results of the two-step GMM estimations of the probability to ask for advice to a financial advisor. The first column reports the first-step of the regression with the first set of IVs. Financial literacy is found to be correlated with being a man, the level of education, wealth and income of the respondent. It appears that more financially literate respondents are also those who experienced a negative impact of the crisis. This result may however come from a reporting bias. More financially knowledgeable respondents may also be those who track the more often their finances and therefore those who are the more aware of the adverse effects the crisis had on their portfolios. More importantly, the IV on math level at school which is coded as a scale from 1 to 5 appears to be positively and significantly associated to financial literacy. Parents' stockholding appears to be positively correlated with financial literacy and the coefficient is significant at the 1% level. The F statistic

of this regression (F=24.04) supports a strong joint significance of both IVs.

The second column reports the results of the second step of the first GMM estimation. The instrumented variable of financial literacy does not appear significant anymore while the coefficients of the other variables and their significance do not dramatically differ from those in the baseline regression without instrumentation (Table 6, OLS (3)). I perform two tests to challenge the quality of the instruments. The joint null hypothesis of the Sargan test is that the instruments are valid i.e. uncorrelated with error terms. With a p-value of 0.285 and an F-statistic of 24.04 in the first step I conclude that the instruments are relevant and valid. However, the endogeneity test with a p-value of 0.962 shows that the endogenous variable should actually be treated as exogenous. Thus, there does not seem to be an endogeneity bias in the baseline regression. The measure of financial literacy I use relies on computational skills and other cognitive abilities which are hard to enhance at adulthood (Christelis et al. 2010). This could explain the exogeneity of financial literacy at least regarding a potential reverse causality bias. Asking for advice and interacting with a financial advisor is unlikely to enhance the level of financial literacy of a customer.

The third and fourth columns report the first and second steps of the GMM estimation using the set of IVs including a political opinion dummy. Having no political opinion is negatively associated to the level of financial literacy as found in Arrondel et al. (2013) and the coefficient is significant at the 1% level. Both IVs in this regression appear to be relevant as they are significantly associated to the level of financial literacy with a strong joint significance (F=32.53). The results of the second step do not differ from those of the first GMM regression. The Sargan and endogeneity tests confirm that the instruments are valid but that the index of financial literacy should be treated as exogenous.

Simultaneity issue of financial behaviors and asking for advice

Identifying the relationship between the demand for financial advice and the level of financial literacy is challenging because I cannot exclude the fact that financial literacy is related to financial behaviors. These financial behaviors can indeed be related to the demand for financial advice. In other words, stockholders or financial planners which exhibit higher levels of financial literacy may actually be those who ask for advice either because they need information to make decisions or because the advice influences their financial decisions. Hence, not considering this point may lead to spurious correlation between financial literacy and the demand for financial advice. In that case, the positive relationship I have identified in the previous sections between financial literacy and the demand for financial advice would simply reflect the fact that the individual is a stockholder or a financial planner.

To account for this and identify the genuine relationship between financial advice and financial literacy I included a dummy variable in the baseline regressions (Table 6) indicating whether the respondent holds risky assets. This variable is not significant suggesting that it does not influence the demand for financial advice. But, stockholding might be an endogenous variable because of a reverse causality: financial advice could foster stockholding. Therefore, I need to rely on an IV approach to take into account any endogeneity bias from financial behaviors and confirm the results of the baseline model. Table 8 reports the results of a bivariate

probit estimating simultaneously the demand for advice and the participation to the stock market. I use two instruments to control for the potential endogeneity of holding risky assets. These instruments are two dummies indicating whether the individual has positive expectations regarding future stock market returns and whether the individual is risk averse. Both instruments exhibit the expected sign and are highly significant. Overall, controlling for the endogeneity of risky assets holding barely affects the coefficients of the demand for advice equation. Financial literacy is still positive and highly significant, thereby supporting the results of the baseline model. The correlation coefficient of the error terms of both equations appears not significant suggesting that risky assets holding is not endogenous.

Table 8: Bivariate probit of demand for advice and holding risky assets

	Advice		**Risky assets**	
FL (N correct)	0,117***	(0,036)	0,160***	(0,038)
Male	-0,143**	(0,068)	0,162**	(0,072)
Age	0,019*	(0,011)	-0,002	(0,012)
Age²/100	-0,021**	(0,010)	0,007	(0,012)
Primary / Isced 1 (Ref.)				
Lower sec. / Isced 2	-0,010	(0,159)	-0,197	(0,187)
Upper sec. / Isced 3	0,119	(0,120)	-0,168	(0,139)
Some college / Isced 5	0,122	(0,140)	-0,129	(0,158)
College grad. / Isced 5	-0,082	(0,154)	-0,109	(0,175)
Post grad. / Isced 6	-0,229	(0,177)	0,196	(0,192)
Job Employed (Ref.)				
Job Self-emp.	0,045	(0,197)	-0,109	(0,215)
Job Not work.	-0,172*	(0,090)	-0,209**	(0,100)
Fin. Wealth < 3k (ref.)				
Fin. Wealth [3k;15k[	0,211**	(0,089)	0,229**	(0,114)
Fin. Wealth [15k;75k[	0,323***	(0,096)	0,530***	(0,107)
Fin. Wealth ≥ 75k	0,574***	(0,160)	1,146***	(0,125)
Income < 8k (Ref.)				
Income [8k;16k[	0,109	(0,094)	0,098	(0,112)
Income [16k;30k[	0,056	(0,096)	0,142	(0,111)
Income ≥ 30k	0,117	(0,134)	0,318**	(0,139)
Risky assets	-0,230	(0,409)		
Self-confidence	0,146***	(0,035)	0,185***	(0,035)
Good prev. exp.	0,365***	(0,062)	0,101	(0,069)
Neg. impact of the crisis	0,261	(0,161)	1,197***	(0,069)
Positive exp. returns			0,226***	(0,080)
Risk averse			-0,298***	(0,077)
Constant	-0,631**	(0,297)	-2,088***	(0,348)
ρ		0.206 (0.233)		
P-value test $\rho = 0$		0.403		
N	2,127		2,127	

*Source: PATER 2011. Dep. Var. Advice: =1 if consult fin. advisor, =0 otherwise. Dep. Var. Risky assets: =1 if hold risky assets, =0 if no risky assets. Significant at: * 10%, ** 5%, *** 1%.*

In table 9, I perform the same simultaneous regressions estimation this time considering financial planning as a potential driver for the relationship between financial literacy and the demand for advice. Arrondel et al. (2013) provide evidence that individuals who plan for the future tend to have higher levels of financial literacy, it is therefore important to take into account the simultaneous decision to plan and ask for advice so as to ascertain the role of financial literacy. In the financial planning equation I add controls for expected returns on

financial assets and time preference. As in the previous case, the coefficients of the demand for financial advice are not affected by controlling for the simultanous decision to plan for the future. However, the correlation coefficient of the error terms of both equations appears significantly different from zero. This result simply uncovers the fact that financial planners are more prone to ask for advice but eventually this does not alter the conclusions I draw from the baseline model. Financial literacy appears to be related to the demand for financial advice even when taking into account financial behaviors that could influence the demand for advice.

Table 9: Bivariate probit of demand for advice and financial planning

	Advice		**Financial Planning**	
FL (N correct)	0.106***	(0.034)	0.079**	(0.035)
Male	-0.148**	(0.066)	-0.009	(0.066)
Age	0.020*	(0.011)	0.006	(0.011)
Age²/100	-0.022**	(0.010)	-0.003	(0.011)
Primary / Isced 1 (Ref.)				
Lower sec. / Isced 2	-0.007	(0.160)	-0.211	(0.172)
Upper sec. / Isced 3	0.130	(0.120)	-0.035	(0.125)
Some college / Isced 5	0.136	(0.141)	-0.059	(0.143)
College grad. / Isced 5	-0.082	(0.155)	0.054	(0.156)
Post grad. / Isced 6	-0.253	(0.174)	0.134	(0.174)
Job Employed (Ref.)				
Job Self-emp.	0.056	(0.198)	0.091	(0.186)
Job Not work.	-0.157*	(0.089)	0.093	(0.090)
Fin. Wealth < 3k (ref.)				
Fin. Wealth [3k;15k[	0.194**	(0.089)	0.125	(0.102)
Fin. Wealth [15k;75k[	0.274***	(0.088)	0.424***	(0.096)
Fin. Wealth ≥ 75k	0.450***	(0.115)	0.693***	(0.112)
Income < 8k (Ref.)				
Income [8k;16k[	0.105	(0.095)	0.028	(0.100)
Income [16k;30k[	0.048	(0.097)	0.028	(0.099)
Income ≥ 30k	0.083	(0.129)	0.117	(0.125)
Risky assets	0.102	(0.083)		
Self-confidence	0.127***	(0.031)	0.275***	(0.032)
Good prev. exp.	0.359***	(0.063)	0.112*	(0.063)
Neg. impact of the crisis	0.149**	(0.074)	0.186***	(0.066)
Positive exp. returns			0.034	(0.072)
Time preference			-0.063***	(0.009)
Constant	-0.608**	(0.299)	-2.127***	(0.317)
ρ		0.199 (0.043)		
P-value test $\rho = 0$		0.001		
N	2,109		2,109	

*Source: PATER 2011. Dep. Var. Advice: =1 if consult fin. advisor, =0 otherwise. Dep. Var. Financial planning: =1 if plan for the future, =0 if not planning for future. Significant at: * 10%, ** 5%, *** 1%.*

Alternative indices of financial literacy

The last robustness check I perform consists in replacing the baseline index of financial literacy (number of questions correctly answered) by a dummy variable equal to one when the questions are all correctly answered and a set of dummies for each question correctly answered. The first column of Table 10 reports the results of the regression with the dummy for all questions correctly answered. The coefficient on financial literacy is still positive and significant at the 5% level. Hence, answering correctly all the three questions of financial literacy increases the probability to see a financial advisor by 3.4 percentage points. The second estimation in Table 10

provides information on the influence of each question answered correctly on the probability to ask for advice. While the question on interest compounding does not play a significant part, the understanding of inflation and more importantly of risk diversification influences significantly the probability to ask for advice. In both these regressions, the other coefficients are not altered as compared to the baseline estimation.

Table 10: Robustness checks - Determinants of the probability to ask for advice to a financial advisor

	Robustness OLS (1)		**Robustness OLS (2)**	
FL (All correct)	0,034*	(0,020)		
FL - Interest			-0,002	(0,020)
FL - Inflation			0,044*	(0,023)
FL - Risk			0,063***	(0,023)
Male	-0,047**	(0,019)	-0,049**	(0,019)
Age	0,006*	(0,003)	0,006*	(0,003)
Age²/100	-0,007**	(0,003)	-0,007	(0,003)
Primary / Isced 1 (Ref.)				
Lower sec. / Isced 2	0,016	(0,054)	0,004	(0,054)
Upper sec. / Isced 3	0,053	(0,040)	0,042	(0,040)
Some college / Isced 5	0,053	(0,044)	0,037	(0,045)
College grad. / Isced 5	-0,003	(0,050)	-0,020	(0,050)
Post grad. / Isced 6	-0,053	(0,056)	-0,070	(0,056)
Job Employed (Ref.)				
Job Self-emp.	0,016	(0,054)	0,018	(0,054)
Job Not work.	-0,047*	(0,027)	-0,048*	(0,027)
Fin. Wealth < 3k (ref.)				
Fin. Wealth [3k;15k[	0,079***	(0,029)	0,070**	(0,030)
Fin. Wealth [15k;75k[	0,106***	(0,029)	0,099***	(0,029)
Fin. Wealth ≥ 75k	0,156***	(0,034)	0,146***	(0,034)
Income < 8k (Ref.)				
Income [8k;16k[	0,034	(0,030)	0,030	(0,030)
Income [16k;30k[	0,021	(0,030)	0,014	(0,030)
Income ≥ 30k	0,028	(0,038)	0,021	(0,038)
Risky assets	0,036	(0,024)	0,030	(0,024)
Self-confidence	0,042***	(0,010)	0,041***	(0,010)
Good prev. exp.	0,112***	(0,019)	0,112***	(0,019)
Neg. impact of the crisis	0,042*	(0,022)	0,042*	(0,022)
Constant	0,358***	(0,094)	0,330***	(0,094)
R^2	0.081		0.086	
N	2,127		2,127	

*Source: PATER 2011. Dep. Var.: =1 if consult fin. advisor, =0 otherwise. Significant at: * 10%, ** 5%, *** 1%. Robust standard errors in parenthesis.*

The results I find by performing GMM regressions, bivariate probit and replacing financial literacy by alternative indices provide support to the baseline specification and results (Table 6, OLS (3)). Financial literacy is positively related to the demand for financial advice. Theoretically, the model suggests that the direction of the relationship goes from financial literacy to the demand for financial advice given the unability of financial advisors to provide relevant advice to the less financially literate customers. While it is empirically difficult to assert this causality, the results of the IV regressions support this direction of the causality. This has important consequences because financial advisors do not provide relevant information to those who are the most in need of guidance and tend to widen the informational gap between financially sophisticated and unsophisticated customers. Hence, given product-biased compensation schemes, financial advice cannot provide

a relevant substitute to financial literacy when it comes to making financial decisions.

4 Conclusion

This paper investigates the relationship between the level of financial literacy of a customer of financial products and her probability to interact with a financial advisor. This issue is important as several studies showed that low levels of financial literacy are associated with portfolio underdiversification, poor financial planning and overindebtedness. In this context, I question the communication process occuring between an informed financial advisor and an uninformed customer with a simple theoretical model. The baseline model predicts that only financially sophisticated customers receive relevant information from advisors and that this fact prevents less financially literate customers from asking advice.

Using the 2011 wave of the PATER survey I test this conclusion of the model and find that the higher the level of financial literacy of a customer, the higher her probability to ask for professional advice. The relationship I find is monotonic but only weakly. In light of the model, this suggests that financial literacy and the demand for financial advice are complements rather than substitutes which stems from the compensation structure of financial advisor.

These compensation schemes tend to prevent financial advisors from providing relevant information to customers who are the most in need of financial guidance. As in Calcagno and Monticone (2015) I find that advisors have a regressive effect in the sense they increase the level of information of financially sophisticated customers and decrease that of less financially literate customers. These results therefore call for other promising ways to deal with widespread low levels of financial literacy and help households increase their financial well-being. While reforming financial advisors' compensation schemes could be an interesting way such that advisors would be directly paid by customers in a lump sum manner, it is not sure whether customers of financial services are willing to pay directly for financial advice (Inderst and Ottaviani 2012b).

Other levers include just-in-time education, rules of thumb or simplification of financial products but financial education programs have lately become the mostly used and debated manner to deal with the consequences of low financial literacy. These programs are intended to increase customers' level of financial literacy by giving them the tools to deal with basic financial decisions and cope with adverse financial shocks. The effectiveness of such financial education programs regarding financial outcomes is still debated (Miller et al. 2014). However, the simple model I propose shows that financial literacy is not only important for financial decision making but also for being able to receive relevant advice. Financial advisors in the theoretical model are found to provide relevant advice only to financially sophisticated customers. In that sense, even if financial education programs may not directly alter customer's financial decisions, these programs are still paramount to allow customers to understand their financial needs and empower them when facing biased financial advisors.

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5 Appendix

Proofs of Proposition 1

In what follows I prove the existence and uniqueness of both equilibria of the communication game. I first rely on Nash's existence theorem (Nash 1951) which states that every finite game has a mixed strategy Nash equilibrium to show that there does not exist any other equilibrium than the candidate equilibirum. I then consider every outcome of the game to show that these outcomes are not stable and that deviations lead to the candidate equilibrium.

- $\varphi \geq \varphi^*$: in this candidate Nash equilibrium advisor A advises $\sigma^* = \theta_B$ and customer B asks for advice. Payoffs are $\pi^* = \delta(\theta_B)$ and $u^* = u(\theta_B)$.

Existence

Let us consider a deviation from the advisor with $\sigma = \theta_{-B}$, this deviation is not profitable because advisor's payoff would be $\pi^{dev} = \delta(\theta_{-B}) - p(\varphi).[u(\theta_B) - u(\theta_{-B})] < \pi^*$. Now consider a deviation in mixed strategy where advisor A advises $\sigma = \theta_B$ with probability $\lambda > 0$ and $\sigma = \theta_{-B}$ with probability $(1 - \lambda)$. Then advisor's payoff would be $\pi^{dev} = \lambda.\delta(\theta_B) + (1-\lambda).\{\delta(\theta_{-B}) - p(\varphi).[u(\theta_B) - u(\theta_{-B})]\} < \pi^*$ making the deviation in mixed strategy not profitable as well. Regarding customer B, if she decides to deviate from the candidate equilibrium and invest on her own without asking for advice, she gets $u^{dev} = p(\varphi).u(\theta_B) + [1-p(\varphi)].u(\theta_{-B}) < u^*$. In mixed strategy, if customer B asks for advice with probability $\mu > 0$ and invests on her own with probability $(1 - \mu)$, her payoff would be $\mu.u(\theta_B) + (1 - \mu).\{p(\varphi).u(\theta_B) + [1 - p(\varphi)].u(\theta_{-B})\} < u^*$. In both cases, the deviation is not profitable for customer B.

Uniqueness

Let us consider the pooling strategy where $\sigma = \theta_B$ whenever $\theta_A = \theta_B$, and $\sigma = \theta_{-B}$ whenever $\theta_A \neq \theta_B$, or alternatively $\sigma = \theta_A$. Advisor's payoff is then $\pi^* = \delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)]$. In that case, the advisor gets a higher payoff by advising $\sigma = \theta_B$ regardless to the alignment of preferences because he gets $\pi^{dev} = \delta(\theta_B) \geq \pi^*$. Let us now consider the partially revealing strategy where $\sigma = \theta_B$ with probability $\lambda > 0$ and $\sigma = \theta_{-B}$ with probability $(1 - \lambda)$. Advisor's payoff is then $\pi^* = \lambda.\delta(\theta_B) + (1 - \lambda).\{\delta(\theta_{-B}) - p(\varphi).[u(\theta_B) - u(\theta_{-B})]\}$. Hence, the advisor has an incentive to deviate and advise $\sigma = \theta_B$ which gives him a higher payoff $\pi^{dev} = \delta(\theta_B) > \pi^*$. Consider now customer's strategy not to ask for advice. In that case, she gets $u^* = p(\varphi).u(\theta_B) + [1-p(\varphi)].u(\theta_{-B})$ but she would be better off by asking for advice and getting $u^{dev} = u(\theta_B) > u^*$. The same conclusion holds if we consider mixed strategies in which the customer asks for advice with probability $\mu > 0$. Customer B gets $u^* = \mu.u(\theta_B) + (1 - \mu).\{p(\varphi).u(\theta_B) + [1 - p(\varphi)].u(\theta_{-B})\}$ and therefore has an incentive to deviate and ask for advice to get $u^{dev} = u(\theta_B) > u^*$.

- $\varphi < \varphi^*$: in this candidate Nash equilibrium advisor A advises $\sigma^* = \theta_A$ and customer B does not asks for advice. Payoffs are $\pi^* = 0$ and $u^* = p(\varphi).u(\theta_B) + [1 - p(\varphi)].u(\theta_{-B})$.

Existence

Let us consider a deviation from the customer who decides to ask for advice. Then the advisor chooses $\sigma = \theta_A$ and the payoff of the customer depends on the alignment of preferences. Given customer's beliefs $\alpha = P(\theta_A = \theta_B)$ and assumption $\alpha \leq p(\varphi)$, customer's expected payoff when asking for advice is $u^{dev} = \alpha.u(\theta_B) + (1 - \alpha).u(\theta_{-B}) < u^*$ which makes the deviation not profitable. Now let us assume a mixed strategy in which customer B asks for advice with probability $\mu > 0$ and invests on her own with probability $(1 - \mu)$. Then her payoff would be $u^{dev} = \mu.[\alpha.u(\theta_B) + (1 - \alpha).u(\theta_{-B})] + (1 - \mu).\{p(\varphi).u(\theta_B) + [1 - p(\varphi)].u(\theta_{-B})\} < u^*$. Hence a deviation in mixed strategy is not profitable for the customer. Now let us consider a deviation from advisor A with $\sigma = \theta_B$ regardless to the alignment of preferences. In that case, the advisor gets $\pi^{dev} = 0$ because the customer still does not ask for advice. This comes from the fact that if customer B asks for advice, advisor A cannot commit to advising $\sigma = \theta_B$ because $\delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)] \geq \delta(\theta_B)$. Advisor A would have an incentive to deviate if he could commit to sending $\sigma = \theta_B$ because then he would get a positive payoff. But given that he cannot commit, the deviation would not be profitable. Let us now consider a deviation in mixed strategy in which advisor A advises $\sigma = \theta_A$ with probability $\lambda > 0$ and $\sigma = \theta_B$ with probability $(1 - \lambda)$. In that case also, the advisor would get $\pi^{dev} = 0$ because the customer does not ask for advice. Assuming customer B asks for advice, advisor A would get $\pi^{dev} = \delta(\theta_B)$ whenever $\theta_A = \theta_B$ and $\pi^{dev} = \lambda.\delta(\theta_B) + (1-\lambda).\{\delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)]\}$ whenever $\theta_A \neq \theta_B$. These outcomes are higher than what the advisor gets at the equilibrium. However, as already said the advisor cannot commit to $\sigma = \theta_B$ to make the customer ask for advice because $\delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)] \geq \lambda.\delta(\theta_B) + (1-\lambda).\{\delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)]\}$. Hence, the deviation is not profitable for the advisor.

Uniqueness

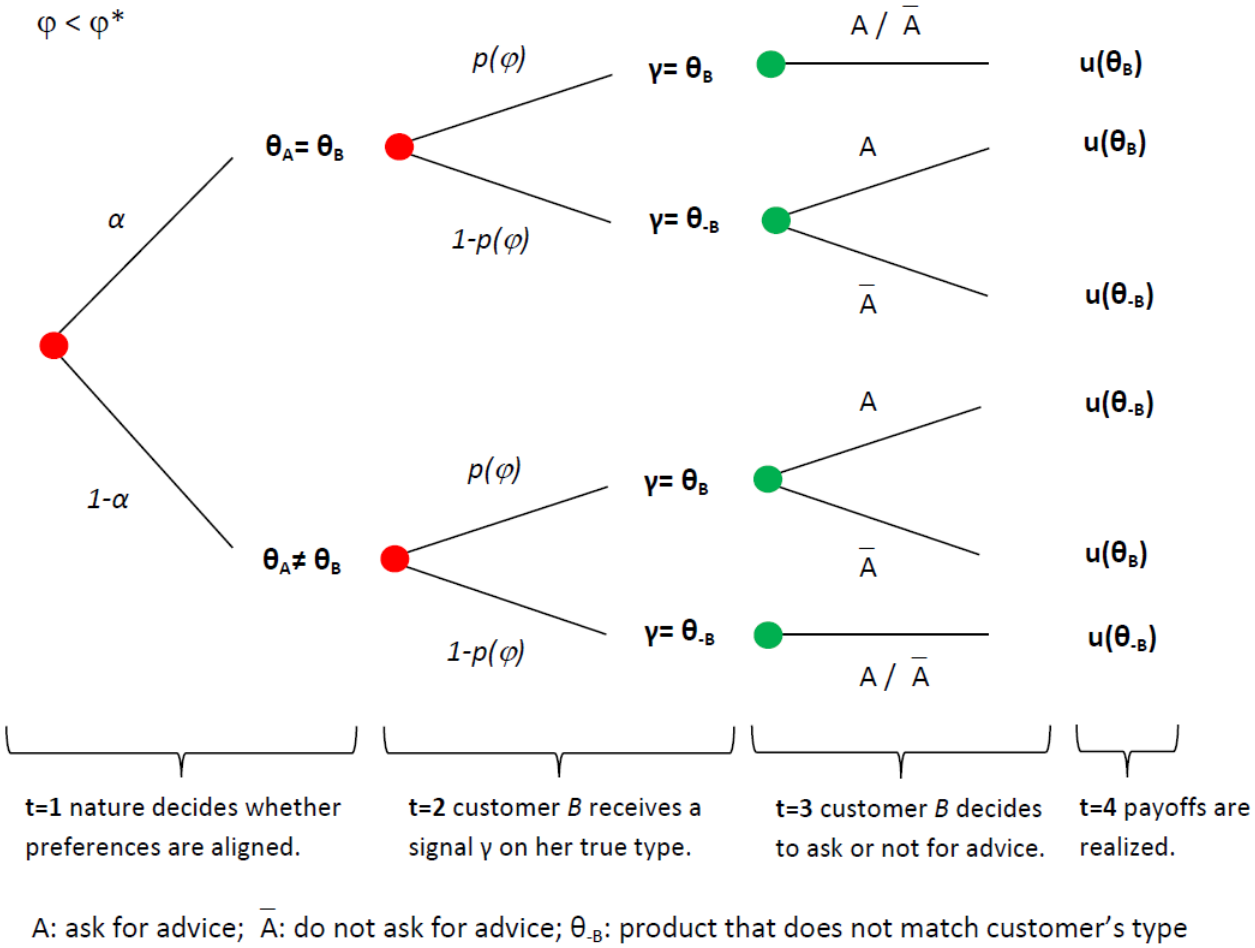
Let us consider the strategy in which the customer asks for advice. In that case, customer B gets $u^* = \alpha.u(\theta_B) + (1-\alpha).u(\theta_{-B})$. The customer would get a higher payoff by investing on her own, $u^{dev} = p(\varphi).u(\theta_B) + [1 - p(\varphi)].u(\theta_{-B}) \geq u^*$ given $\alpha \leq p(\varphi)$. The same conclusion holds if we consider mixed strategies in which the customer asks for advice with probability $\mu > 0$. Customer B gets $u^* = \mu.[\alpha.u(\theta_B) + (1 - \alpha).u(\theta_{-B})] + (1 - \mu).\{p(\varphi).u(\theta_B) + [1 - p(\varphi)].u(\theta_{-B})\}$ and therefore has an incentive to deviate and invest on her own to get $u^{dev} = p(\varphi).u(\theta_B) + [1 - p(\varphi)].u(\theta_{-B}) > u^*$. Regarding the advisor, let us consider the strategy in which $\sigma = \theta_B$, in that case the advisor gets $\pi^* = 0$. If the customer asked for advice, the advisor would get $\pi^* = \delta(\theta_B) \leq \delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)]$. Hence, the advisor would have an incentive to deviate and play the dominant strategy $\sigma = \theta_A$. The same result is found when considering the mixed strategy in which advisor A advises $\sigma = \theta_A$ with probability $\lambda > 0$ and $\sigma = \theta_B$ with probability $(1 - \lambda)$. In that case, advisor's payoff is $\pi^* = 0$ when customer B does not ask for advice. If customer B asks for advice, $\pi^* = \delta(\theta_B)$ whenever $\theta_A = \theta_B$ and $\pi^* = \lambda.\delta(\theta_B) + (1 - \lambda).\{\delta(\theta_{-B}) - p(\varphi).[u(\theta_B) - u(\theta_{-B})]\}$ whenever $\theta_A \neq \theta_B$. Hence, advisor A has an incentive to deviate and play the dominant strategy $\sigma = \theta_A$. Indeed, when customer B asks for advice, the advisor gets $\pi^{dev} = \delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)] \geq \lambda.\delta(\theta_B) + (1-\lambda).\{\delta(\theta_A) - p(\varphi).[u(\theta_B) - u(\theta_A)]\}$ by advising $\sigma = \theta_A$.

Extension of the model

In the baseline version of the model I assumed $\alpha \leq p(\varphi)$ to avoid multiple equilibria whenever $\varphi < \varphi^*$. In what follows, I relax this assumption to see how this influences the predictions of the model. The parameter α is defined as customer's belief regarding preferences alignment such that $\alpha = P(\theta_A = \theta_B)$. Alternatively, α can be considered as a measure of customer's trust in advisor's capacity to disclose relevant information. Now, I assume no restriction on the values α can take. This does not modify the equilibrium when $\varphi \geq \varphi^*$, the model still predicts a fully revealing equilibrium in which customer B asks for advice and advisor A advises $\sigma = \theta_B$.

However when $\varphi < \varphi^*$, the customer knows that the advice she will get from the advisor depends on the alignment of preferences which she does not perfectly observe. The situation customer B faces in this case can be represented in the following graph:

Figure 2: Customer's decision tree without restriction on α



A: ask for advice; Ā: do not ask for advice; θ_{-B}: product that does not match customer's type

Customer B compares her expected utilities in the case she invests alone and in the case she asks for advice. When $\varphi < \varphi^*$ customer B asks for advice only if:

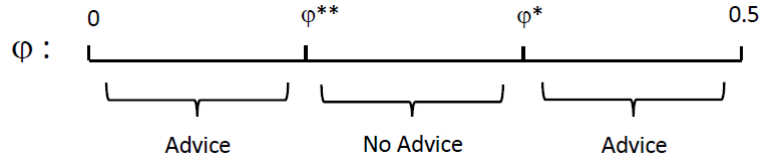
$$\begin{aligned} & EU(Advice \,/\, \varphi < \varphi^*) && \geq && EU(No\,Advice \,/\, \varphi < \varphi^*) \\ \Leftrightarrow \quad & \alpha.u(\theta_B) + (1-\alpha).u(\theta_{-B}) && \geq && p(\varphi).u(\theta_B) + [1-p(\varphi)].u(\theta_{-B}) \\ \Leftrightarrow \quad & && \varphi && \leq \quad \alpha - \frac{1}{2} \end{aligned} \tag{7}$$

Hence there exists a second cutoff for financial literacy below which the customer will benefit from consulting the advisor even if preferences may not be aligned:

$$\varphi^{**} = \alpha - \frac{1}{2} \tag{8}$$

When the belief α that preferences are aligned is higher than the probability $p(\varphi)$ that message γ is true, the customer is better off asking for advice even if $\varphi < \varphi^*$. In that case, the expected utility of investing based on advisor's recommendation is higher than the expected utility of investing based on customer's information only.

Figure 3: Customer's demand for advice given her level of financial literacy



In the econometric section of this paper, I report a regression (Table 6, OLS (4)) which aims at testing whether less financially literate customers have also an incentive to ask for advice. To test this hypothesis and capture the potential heterogenous influence of financial literacy on the demand for advice, I replace the index of financial literacy by a set of dummy variables for each number of questions correctly answered. This allows to capture the differential effects of different levels of financial literacy on the demand for advice. I find no significant difference between not answering any question correctly and answering only one question correctly. However, answering correctly two or three questions tends to have a significantly higher influence on the demand for financial advice as compared to not answering any question correctly. This provides support to a weakly monotonic relationship between financial literacy and the demand for advice in contrast with the predictions of the extended version of the model. Nevertheless this result could still be compatible with the theoretical model. It could simply suggest that the second cut-off for financial literacy φ^{**} is low enough ($\alpha \leq p(\varphi)$) such that none of the less financially literate customers have an incentive to ask for advice. This happens when less financially sophisticated customers believe their preferences differ enough from those of the advisor such that the advisor always advises a product that does not suit customer's needs whenever $\varphi < \varphi^*$.

Probit estimations

Table 11: Determinants of the probability to ask for advice to a financial advisor - Probit

	Probit (1)		Probit (2)		Probit (3)		Probit (4)	
FL (N correct)	0.183***	(0.030)	0.125***	(0.033)	0.104***	(0.034)		
FL - 0 correct (Ref.)								
FL - 1 correct							-0.042	(0.112)
FL - 2 correct							0.216*	(0.111)
FL - 3 correct							0.226**	(0.115)
Male			-0.129**	(0.064)	-0.157**	(0.065)	-0.157**	(0.065)
Age			0.017*	(0.010)	0.020*	(0.011)	0.020*	(0.011)
Age²/100			-0.020**	(0.010)	-0.022**	(0.010)	-0.022**	(0.010)
Primary / Isced 1 (Ref.)								
Lower sec. / Isced 2			0.041	(0.158)	0.007	(0.160)	-0.001	(0.161)
Upper sec. / Isced 3			0.148	(0.117)	0.132	(0.119)	0.129	(0.119)
Some college / Isced 5			0.142	(0.137)	0.131	(0.140)	0.132	(0.140)
College grad. / Isced 5			-0.019	(0.152)	-0.081	(0.155)	-0.085	(0.155)
Post grad. / Isced 6			-0.178	(0.171)	-0.258	(0.176)	-0.250	(0.175)
Job Employed (Ref.)								
Job Self-emp.			0.072	(0.196)	0.056	(0.202)	0.078	(0.202)
Job Not work.			-0.149*	(0.088)	-0.157*	(0.089)	-0.161*	(0.089)
Fin. Wealth < 3k (ref.)								
Fin. Wealth [3k;15k[			0.252***	(0.087)	0.200**	(0.087)	0.197**	(0.088)
Fin. Wealth [15k;75k[			0.383***	(0.086)	0.286***	(0.087)	0.283***	(0.088)
Fin. Wealth ≥ 75k			0.652***	(0.109)	0.471***	(0.114)	0.470***	(0.114)
Income < 8k (Ref.)								
Income [8k;16k[			0.112	(0.093)	0.105	(0.094)	0.110	(0.094)
Income [16k;30k[			0.061	(0.095)	0.046	(0.096)	0.050	(0.097)
Income ≥ 30k			0.172	(0.128)	0.082	(0.130)	0.083	(0.130)
Risky assets					0.122	(0.082)	0.120	(0.082)
Self-confidence					0.130***	(0.032)	0.130***	(0.032)
Good prev. exp.					0.363***	(0.062)	0.368***	(0.062)
Neg. impact of the crisis					0.133*	(0.073)	0.139*	(0.073)
Constant	0.312***	(0.062)	-0.206	(0.283)	-0.602**	(0.293)	-0.545*	(0.301)
Pseudo R2	0.016		0.047		0.074		0.076	
N	2,127		2,127		2,127		2,127	

*Source: PATER 2011. Probit of estimations in Table 6. Dep. Var.: =1 if consult fin. advisor, =0 otherwise. Significant at: * 10%, ** 5%, *** 1%. Robust standard errors in parenthesis.*

Table 12: Bivariate probit estimation of the probability to ask for advice to a financial advisor

	1st Step (1)		Probit (1)		1st Step (2)		Probit (2)	
FL (N correct)			0.132***	(0.043)			0.130***	(0.043)
Male	0.074	(0.088)	-0.159**	(0.066)	0.053	(0.089)	-0.159**	(0.066)
Age	0.013	(0.014)	0.020*	(0.011)	0.014	(0.014)	0.020*	(0.011)
Age²/100	-0.018	(0.013)	-0.022**	(0.010)	-0.021	(0.013)	-0.022**	(0.010)
Primary / Isced 1 (Ref.)								
Lower sec. / Isced 2	0.199	(0.186)	0.001	(0.159)	0.178	(0.187)	0.001	(0.159)
Upper sec. / Isced 3	0.258*	(0.138)	0.125	(0.120)	0.243*	(0.139)	0.125	(0.120)
Some college / Isced 5	0.502***	(0.176)	0.116	(0.141)	0.469***	(0.177)	0.117	(0.141)
College grad. / Isced 5	0.613***	(0.223)	-0.096	(0.155)	0.577***	(0.224)	-0.095	(0.155)
Post grad. / Isced 6	4.721	(198.865)	-0.279	(0.175)	4.677	(200.811)	-0.278	(0.175)
Job Employed (Ref.)								
Job Self-emp.	0.562	(0.347)	0.055	(0.198)	0.626*	(0.353)	0.055	(0.198)
Job Not work.	0.108	(0.117)	-0.159*	(0.089)	0.121	(0.118)	-0.159*	(0.089)
Fin. Wealth < 3k (ref.)								
Fin. Wealth [3k;15k[	0.346***	(0.110)	0.193**	(0.089)	0.347***	(0.110)	0.193**	(0.089)
Fin. Wealth [15k;75k[	0.262**	(0.109)	0.276***	(0.089)	0.268**	(0.109)	0.277***	(0.089)
Fin. Wealth $\geq$ 75k	0.688***	(0.170)	0.455***	(0.115)	0.683***	(0.171)	0.456***	(0.115)
Income < 8k (Ref.)								
Income [8k;16k[	0.198*	(0.112)	0.105	(0.094)	0.183	(0.113)	0.105	(0.094)
Income [16k;30k[	0.344***	(0.122)	0.040	(0.096)	0.317***	(0.123)	0.040	(0.096)
Income $\geq$ 30k	0.538**	(0.211)	0.076	(0.129)	0.491**	(0.212)	0.076	(0.129)
Risky assets	0.218*	(0.119)	0.116	(0.083)	0.219*	(0.119)	0.116	(0.083)
Self-confidence	0.110***	(0.042)	0.128***	(0.031)	0.097**	(0.042)	0.128***	(0.031)
Good prev. exp.	0.118	(0.085)	0.364***	(0.062)	0.119	(0.085)	0.364***	(0.062)
Neg. impact of the crisis	0.131	(0.101)	0.133*	(0.074)	0.132	(0.102)	0.133*	(0.074)
Parents' stock (IV)	0.251**	(0.110)						
Math Level (IV)	0.100**	(0.041)			0.100**	(0.041)		
No Pol. Opinion (IV)					-0.344***	(0.088)		
Constant	0.151	(0.394)	-0.627**	(0.297)	0.438	(0.401)	-0.625**	(0.297)
Rho=0 test p-value			0.301				0.325	
N	2,127		2,127		2,127		2,127	

*Source: PATER 2011. Bivariate probit of estimations in Table 7. Endogenous Var.: FL (N correct). Dep. Var. GMM: =1 if consult fin. advisor, =0 otherwise. Significant at: * 10%, ** 5%, *** 1%. Robust standard errors in parenthesis.*

Table 13: Robustness checks - Determinants of the probability to ask for advice to a financial advisor - Probit

	Robustness Probit (1)		Robustness Probit (2)	
FL (All correct)	0.127*	(0.069)		
FL - Interest			0.003	(0.067)
FL - Inflation			0.136*	(0.073)
FL - Risk			0.198***	(0.071)
Male	-0.151**	(0.065)	-0.156**	(0.065)
Age	0.020*	(0.011)	0.019*	(0.011)
Age²/100	-0.022**	(0.010)	-0.021**	(0.010)
Primary / Isced 1 (Ref.)				
Lower sec. / Isced 2	0.025	(0.159)	-0.016	(0.161)
Upper sec. / Isced 3	0.151	(0.118)	0.119	(0.119)
Some college / Isced 5	0.163	(0.139)	0.111	(0.140)
College grad. / Isced 5	-0.046	(0.154)	-0.098	(0.155)
Post grad. / Isced 6	-0.218	(0.175)	-0.273	(0.176)
Job Employed (Ref.)				
Job Self-emp.	0.057	(0.202)	0.062	(0.202)
Job Not work.	-0.149*	(0.089)	-0.156*	(0.089)
Fin. Wealth < 3k (ref.)				
Fin. Wealth [3k;15k[	0.219**	(0.087)	0.195**	(0.088)
Fin. Wealth [15k;75k[	0.306***	(0.087)	0.287***	(0.087)
Fin. Wealth ≥ 75k	0.500***	(0.114)	0.470***	(0.114)
Income < 8k (Ref.)				
Income [8k;16k[	0.109	(0.094)	0.094	(0.094)
Income [16k;30k[	0.063	(0.096)	0.039	(0.096)
Income ≥ 30k	0.098	(0.130)	0.076	(0.130)
Risky assets	0.133	(0.082)	0.118	(0.082)
Self-confidence	0.134***	(0.032)	0.130***	(0.032)
Good prev. exp.	0.364***	(0.062)	0.362***	(0.062)
Neg. impact of the crisis	0.134*	(0.073)	0.134*	(0.073)
Constant	-0.519*	(0.292)	-0.604**	(0.294)
Pseudo R2	0.072		0.076	
N	2,127		2,127	

*Source: PATER 2011. Probit of estimations in Table 10. Dep. Var.: =1 if consult fin. advisor, =0 otherwise. Significant at: * 10%, ** 5%, *** 1%. Robust standard errors in parenthesis.*