

Quaderni di finanza

Financial advice seeking, financial knowledge and overconfidence

Evidence from the Italian market

M. Gentile, N. Linciano, P. Soccorso



CONSOB

COMMISSIONE NAZIONALE
PER LE SOCIETÀ E LA BORSA

83

marzo 2016

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Progetto Grafico

Studio Ruggieri Poggi

Stampa e allestimento

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www.tiburtini.it

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ISSN 2281-1915 (online)

ISSN 1121-3795 (stampa)

Domanda di consulenza, conoscenze finanziarie e *overconfidence*

Il caso italiano

M. Gentile*, N. Linciano*, P. Soccorso*

Sintesi del lavoro

Il presente studio analizza le determinanti della domanda di consulenza finanziaria per un campione rappresentativo di decisori finanziari italiani. In particolare, lo studio indaga il ruolo delle conoscenze finanziarie, effettive e percepite, e la relazione tra conoscenze effettive e percezione delle competenze. I temi analizzati toccano due aspetti di interesse rilevanti per le possibili implicazioni di *policy*. Il primo concerne l'eventualità che la consulenza finanziaria possa sopperire ai bassi livelli di *financial literacy* dei risparmiatori italiani. A tal proposito è cruciale verificare, dunque, se gli investitori meno sofisticati sono anche propensi a fruire del servizio; in caso contrario, a beneficiarne sarebbero i più *literate* (ossia coloro che potrebbero averne meno bisogno). Il secondo profilo riguarda il ruolo delle percezioni individuali, che qualora si traducano in sopravvalutazione delle proprie capacità generano la cosiddetta *overconfidence*, ossia un'attitudine che può avere effetti distorsivi importanti sulle scelte di investimento (incentivando, ad esempio, un'eccessiva assunzione di rischio). È interessante verificare, quindi, se l'*overconfidence* è una determinante significativa della domanda di consulenza (alcuni studi mostrano che può essere l'unica, in luogo delle competenze effettive) e se, ed eventualmente in quale direzione, il livello di conoscenze finanziarie può incidere sull'*overconfidence*. La principale conclusione a cui giunge lo studio è che i soggetti con un livello di conoscenze finanziarie più elevato mostrano una maggiore propensione ad affidarsi a un esperto. La consulenza sembrerebbe agire, pertanto, in via complementare rispetto alla cultura finanziaria nel contribuire ad innalzare la qualità delle scelte di investimento dei risparmiatori. Gli individui con limitate conoscenze finanziarie e più *overconfident*, che potenzialmente beneficerebbero più degli altri dei consigli di un esperto, sono invece più inclini ad avvalersi dei suggerimenti di parenti e conoscenti (cosiddetto *informal advice*). La domanda di consulenza risulta, inoltre, negativamente correlata all'*overconfidence*, che a sua volta è

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Si ringraziano Henriette Prast, Ugo Rigoni e i partecipanti al convegno Consob-Bocconi 'The Development of Securities Markets. Risks, Trends and Policies', Milano, 26 febbraio 2016 per gli utili commenti. Errori e imprecisioni sono imputabili esclusivamente agli autori. Le opinioni espresse nel lavoro sono attribuibili esclusivamente agli autori e non impegnano in alcun modo la responsabilità dell'Istituto. Nel citare il presente lavoro, non è, pertanto, corretto attribuire le argomentazioni ivi espresse alla Consob o ai suoi Vertici.

negativamente correlata alle conoscenze finanziarie: gli individui con più elevata cultura finanziaria appaiono, quindi, meno inclini alla sopravvalutazione delle proprie capacità. I risultati ottenuti sono robusti in ragione dell'utilizzo sia di modelli econometrici multivariati (che permettono di correggere l'eventuale endogeneità della conoscenza e dell'*overconfidence*) sia di molteplici indicatori per la rilevazione delle conoscenze finanziarie reali e percepite. Lo studio fornisce indicazioni anche sul ruolo di variabili sociodemografiche, economiche, tratti caratteriali e attitudini all'investimento. In linea con l'evidenza empirica disponibile, la propensione a richiedere il servizio di consulenza appare più elevata tra le donne (che risultano essere meno competenti nelle materie finanziarie e in alcuni casi meno *overconfident* degli uomini), gli individui più abbienti e i più anziani. Le evidenze confermano anche il ruolo della fiducia nel consulente, poiché la propensione ad avvalersi del servizio è più elevata tra coloro che dichiarano di sentirsi più motivati ad investire quando sentono di potersi fidare dell'intermediario a cui si rivolgono. Oltre ad essere la prima analisi sulla domanda di consulenza in Italia riferita a un campione rappresentativo della popolazione, il presente studio offre interessanti spunti di riflessione sulle prospettive di sviluppo del servizio di consulenza in ambito domestico e, in particolare, al possibile contributo dell'educazione finanziaria sia all'innalzamento della domanda di consulenza sia al contenimento di distorsioni comportamentali, quali l'*overconfidence*, che possono alimentare scelte di investimento sub-ottimali.

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Abstract

This paper investigates the relationship between the propensity to seek for professional advice, financial knowledge and overconfidence, as well as the determinants of financial knowledge and overconfidence for a representative sample of Italian financial decision makers. The demand for financial advice is found to be positively related to financial knowledge and negatively related to overconfidence as measured by the mismatch between perceived and actual capability. High self-assessment of one's own competence turns out to be significantly and negatively associated with high levels of financial knowledge, which in turn is higher among male, wealthier and more risk averse individuals. These findings show that financial advice acts as a complement rather than as a substitute of financial capability, thus confirming the concerns about regulation of financial advice being not enough to protect less sophisticated investors needing it most. Moreover, behavioural traits such as self-confidence do play a role in financial choices and are related with the level of financial literacy. Therefore, investor education programmes may be beneficial not only directly, i.e. by raising financial competence, but also indirectly, i.e. by enhancing people awareness in their financial capability and by hindering overconfident behaviours and behavioural biases. The paper contributes to the regulatory debate on the development of financial advice as a tool of investor protection. It also delivers relevant policy insights for the Italian context, where the vast majority of individuals exhibit both a low degree of literacy and a high propensity towards informal rather than professional advice.

JEL Classifications: D1, D12, D14, G02.

Keywords: financial advice, financial literacy, overconfidence, investment decisions, behavioural finance.

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We wish to thank Henriette Prast, Ugo Rigoni and all the participants to the conference Consob-Bocconi 'The Development of Securities Markets. Risks, Trends and Policies', Milan, 26th February 2016, for very helpful comments. The responsibility for any mistakes and for the opinions expressed remains our own. The ideas and positions in the paper are personal views of the authors and cannot be attributable to Consob.

Contents

1. Introduction and main findings	7
2. Literature review	8
2.1 The determinants of financial literacy	9
2.2 The determinants of overconfidence	10
2.3 The determinants of demand for advice	11
3. The sample	13
4. Key variables construction	17
4.1 Financial knowledge indicators	17
4.2 Self-confidence indicators	18
4.3 Other control variables	20
5. Model specification	23
6. Estimation results	26
6.1 The determinants of financial knowledge	26
6.2 The determinants of self-confidence	28
6.3 The determinants of the demand for financial advice	30
7. Concluding remarks	32
References	35
Appendix	43

1 Introduction and main findings

As shown by an extensive strand of the literature and by fieldwork evidence, low levels of financial knowledge as well as biases in the selection and processing of information may drive sub-optimal financial choices. Several financial markets regulators are striving to prevent poor financial outcomes through investor education programmes and/or unbiased financial advice, devised as a substitute for financial capability. In particular, the European regulatory framework, sketched among the others by MiFID legislation and MiFID2 rules (amending MiFID and due to come into force in January 2017), encourages the development of independent and high-quality advice services.

However, the effectiveness of both investor education and financial advice may be challenged by individuals' behaviours and reactions. Unbiased financial advice can substitute for financial competence only if unsophisticated investors seek the support of professional advisors. Furthermore, advice may not reach overconfident investors, deciding on their own on the basis of self-assessed rather than actual capability. Conventional financial education initiatives may exacerbate overconfidence and/or other biases distorting further investors' decision-making process.

In this paper, we analyse the relationship between the propensity to seek for professional advice, financial knowledge and self-confidence, as well as the determinants of financial knowledge and self-confidence. We draw on data from the Observatory on investment choices of Italian households, a survey collected by GfK on behalf of Consob, reporting information on investment styles, levels of financial education, financial experience, self-assessed financial capability and some biases that may affect risk perception and investment choices for a representative sample of Italian financial decision makers. As a robustness check, we employ alternative financial literacy indicators, among those used in previous work, as well as alternative excessive self-confidence indicators, based respectively on declared own competence (which we refer to as self-assessment), the gap between perceived capability and actual financial knowledge (overconfidence), the rate of 'do not know' answers to financial knowledge questions (self-confidence indicator).

We find that financial literacy positively affects financial advice seeking either directly or indirectly. In particular, depending on the indicator of financial literacy used, financial knowledge is positively associated to the propensity to rely on an expert and negatively related to high self-confidence, which in turn is found to discourage the demand for advice.

According to our results, financial advice acts as a complement rather than as a substitute of financial capabilities. On policy grounds, this confirms the concerns about regulation of financial advice being not enough to protect investors who need it most. Additionally, our findings suggest that investor education programmes may be beneficial not only directly, i.e. by raising financial capabilities, but also indirectly, i.e. by enhancing people awareness of their financial capability and by hindering overconfident behaviours and behavioural biases. This latter outcome mitigates the

worries about financial education fuelling confidence without improving competence, thus leading to worse decisions (Willis, 2008).

To our knowledge, this is the first study investigating financial advice seeking for a representative sample of the population of Italian financial decision makers. The paper delivers useful and relevant policy insights on the Italian context, where the vast majority of individuals exhibit a very low degree of literacy and where 44% of the investors prefer informal advice (i.e. consulting relatives, friends and colleagues) to professional advice.

A further innovative feature of the study is the analysis of the impact of both measured financial knowledge and self-assessed capability on the propensity to demand for advice and the simultaneous investigation of the determinants of financial knowledge and individual's perception of his/her ability in making financial choices. Such an approach has a twofold advantage. On the one hand, it originally contributes to a full modelling of the drivers of self-confidence in financial matters, as measured by the alternative indicators mentioned above. On the other hand, it allows capturing both direct and indirect effects of financial knowledge on the willingness to look for a professional support, thus shedding light on the 'transmission channels' of policy measures aimed at raising literacy and advice seeking.

Finally, our methodological approach makes our results robust with respect to potential endogeneity of financial literacy and self-confidence and alternative definitions of the financial literacy indicator and of the self-confidence measure. Moreover, the ample data set we could access allows us to control for potential omitted variables problem.

The paper is organised as follows. Section 2 reviews the relevant literature about the determinants of financial advice seeking, financial literacy and overconfidence. Section 3 illustrates the data set. Section 4 describes the construction of key variables, while the succeeding Section discusses the model specification. Section 6 presents the main results and Section 7 concludes.

2 Literature review

It has long been acknowledged that low levels of financial literacy may drive low financial market participation rates and poor financial choices.¹ This raises several concerns on policy grounds, which investor education programmes and unbiased financial advice might help to deal with although at a different pace. While the benefits of financial education initiatives may be appreciated only in the medium-

1 Empirical studies show that households hold under-diversified and home-biased portfolios (Blume and Friend, 1975; Calvet et al., 2007; Goetzmann and Kumar, 2008; Huberman, 2001; Kelly, 1995); are prone to availability and familiarity heuristics (Barber and Odean, 2008), trade too much (Odean, 1999), sell winners too early while holding losers too long (Shefrin and Statman, 1985; Odean, 1998a).

long run, unbiased financial advice may quickly improve the quality of investors' decision-making, provided that low literate individuals rely on financial experts (see Collins, 2012, for references). To ascertain whether financial advice can act as a substitute for financial capability, at least in the short term, one needs to know more about the relationship between the demand for advice and financial knowledge. The propensity to seek for professional help may also be driven by perceived one's own competence. Therefore, one also needs to pay special attention to the interaction between self-confidence, financial literacy and the propensity to seek for advice, given that investor education might exacerbate overconfidence (Willis, 2008) and given that higher levels of knowledge can go along with a higher attitude towards behavioural biases (Gentile, Linciano, Lucarelli and Soccorso, 2015).²

The following review gathers the main findings of closely related strands of the literature in order to model the relationship among advice seeking, self-confidence and financial knowledge.

2.1 The determinants of financial literacy

Several empirical studies support some stylized facts concerning the relation between financial literacy and retail investors' personal traits.

First, men tend to be more literate than women are (Balloch et al., 2015; Hung, Meijer et al., 2009). In particular, Bucher-Koenen et al. (2014) document the so-called 'gender gap': women are far less financial-literate than men independently of the country of residence, marital status, educational level, age, income and their possible role as decision makers. Moreover, women appear to be less confident than men are or more aware of their own limits.

Second, a hump-shaped relation with age is frequently found (Bucher-Koenen, 2009), even when the sample distribution of age is right skewed (Lusardi et al., 2012; Lusardi and Mitchell, 2014; Caratelli and Ricci, 2011, for Italian investors).

Third, the degree of financial knowledge tends to be positively correlated with education, wealth and family size (Balloch et al., 2015; Calvet et al., 2007; Hung, Meijer et al., 2009; Klapper et al., 2012; Van Rooij et al., 2007).³

As for the impact of personal attitudes towards risk and time, high financially literate individuals tend to exhibit a higher risk tolerance (Caratelli and Ricci, 2011; Kramer, 2014) and a higher degree of patience, i.e., a higher willingness to

2 This is not surprising, given that knowledge and biases refer to two different types of cognitive processes, i.e. reasoning and intuition, which do not necessarily interact each other (Kahneman, 2002).

3 In details, Balloch et al. (2015) find that stock market literacy is higher among high-wealth and high-income men. Calvet et al. (2007) show that financial sophistication (defined as the ability to avoid investment mistakes such as under-diversification, inertia in risk taking, disposition effect in direct stockholdings) strongly increases with wealth, income, household size, education and age. Hung, Meijer et al. (2009) highlight that financial literacy is higher for individuals with at least a bachelor degree and higher income earners. According to Klapper et al. (2012) financial knowledge rises also with the degree of non-manual skills requested in the work activity. Van Rooij et al. (2011) argue that highly educated men tend to be better financial literate and that the positive impact of education is greater as the number of highly educated family components rises (so-called family effect).

spend time in a human capital investment such as acquiring financial knowledge (Monticone, 2010).

Finally, financial experience, as measured through the ownership of financial instruments and the length of risky assets' holding period, is positively associated to financial knowledge (Caratelli and Ricci, 2011; Monticone, 2010).

The empirical findings reviewed so far show a certain degree of variability across studies also depending on how financial literacy is gauged. Indeed, definition and measurement of financial literacy are not univocal and some indicators may perform better than others do (Hung, Meijer et al., 2009). Keeping this in mind, as a robustness check we use alternative indicators of financial knowledge, as detailed in Section 4 explaining the construction of key variables.

2.2 The determinants of overconfidence

Overconfidence can be defined as the unmotivated confidence in one's own knowledge and abilities.⁴ This attitude is fuelled by the apparent ease with which a forecast can be made on the basis of memories (availability), commonplaces (representativeness) and external reference points (anchoring). Overconfidence can determine an overestimation of the variability of a phenomenon (the so-called miscalibration effect), foster the better than average effect and cause the so-called illusion of control, that is the tendency to over-emphasize the role of personal skills.⁵

Overconfidence can significantly affect financial decisions. Along with optimism, it may raise risk taking because of upward biased forecasts (Nosic and Weber, 2010). It may nurture the presumption of beating the market or being more informed than others, leading to excessive trading and possibly worse than average market performances (Alemanni and Franzosi, 2006; Glaser et al. 2007; Guiso and Jappelli, 2006; Haigh and List, 2005; Heat and Tversky, 1991; Odean, 1998b). Finally, overconfidence may also discourage advice seeking.

Understanding the determinants of excessive self-confidence is therefore very important on policy grounds, since it allows to investigate whether and how to mitigate it. To our knowledge, so far only a few studies have dealt with this topic.

Lewellen et al. (1977) show that men spend greater resources in financial analysis, are less reliant on the opinions of their brokers, trade more and formulate more optimistic forecasts compared to women. Santos et al. (2010), employing an experimental approach, find that men show a larger degree of overconfidence, with both age and experience having some influence. As for the relation between knowledge and overconfidence, Hung and Yoong (2010) and Kramer (2014) find that higher levels of knowledge may raise overconfidence. Nevertheless, the interaction

4 Some authors describe overconfidence as the investors' attitude to overstate the value of their private information (Guiso and Jappelli, 2006 and Odean, 1998b).

5 In other words, individual believe to be able to exercise more control over events than they actually can do: cherry-picking lottery tickets instead of randomly extract them is an example of this bias.

between knowledge and self-assessment could also go the opposite way: Anderson et al. (2015) point to low literate individuals assessing themselves more financially educated than they actually are (and to women being less knowledgeable but less inclined to misperception errors compared to men) and Tekçe et al. (2016) find that residents in more financial literate regions are less overconfident than residents in low literate areas (and that female, older and wealthier investors are less overconfident than the others are).

2.3 The determinants of demand for advice

As shown by a strand of both theoretical and empirical literature, seeking for an expert can be more frequent among financially sophisticated individuals (Bachmann and Hens, 2014; Bluethgen et al. 2008; Bucher-Koenen and Koenen, 2015; Calcagno and Monticone, 2013; Collins, 2012; Debbich, 2015; Hackethal et al., 2012; Lusardi and Mitchell, 2011; Monticone, 2010; Van Rooij et al., 2007). This evidence is not conclusive, though, as it is called into question by a few conflicting results (Disney et al., 2014; Hung and Yoong, 2010; Karabalut, 2013; Von Gaudecker, 2015), showing either a negative or an insignificant relationship between literacy and propensity to ask for professional help.⁶

This evidence has prompted further investigation. A stream of research has focused on the interaction between financial literacy and behavioural biases. Several studies document that behavioural biases, personal traits and framing effects may drive sub-optimal choices even by literate individuals (Bachmann and Hens, 2014). In other words, knowledge alone may not be sufficient to avoid investment mistakes, as shown also by the evidence on experts being themselves prone to emotions and cognitive errors.

A related strand of research has documented the impact of behavioural biases on the willingness to seek for financial advice. Several analyses point to a significant and negative relation between overconfidence and the propensity to seek for financial advice (Anderson et al., 2015; Barber and Odean, 2008; Calcagno and Monticone, 2013; Georgarakos and Inderst, 2011; Guiso and Jappelli, 2006; Hackethal et al., 2012; Hung, Meijer et al., 2009b; Karabalut, 2013; Kramer, 2012 and 2014; Monticone, 2010; Van Rooij et al., 2007; Von Gaudecker, 2015).⁷

6 A further puzzling evidence is financially sophisticated individuals' attitude to disregard financial advice, although their higher propensity to seek for it (Bhattacharya et al., 2012; Stolper and Walter, 2014). This behaviour can be rational, if it is driven by the investors' perception and anticipation of detrimental supply-side characteristics, such as: agency conflicts (Inderst and Ottaviani, 2009 and 2012); consultants' propensity to reveal relevant information only to knowledgeable investors (Bucher-Koenen and Koenen, 2015; Calcagno and Monticone, 2013; Debbich, 2015); self-interested advisers' behaviour (Hackethal et al., 2012). However, disregarding the received advice may not be rational even when it is clearly unbiased and one has paid for it (Stolper and Walter, 2014). Other studies show that in fact the willingness to follow the advice may depend on a sunk-cost effect, i.e. on whether people paid for it (Gino, 2008).

7 The role of subjective perception and auto-representation in human decision-making is shown also in Lucarelli et al., (2016).

Regret aversion (coupled with low-literacy) may deter from demanding for professional help if individuals anticipate the possibility of advisors highlighting mistakes in their previous decisions (Bachmann and Hens, 2014). Myopia may lessen individuals' willingness to pay for financial advice, unless they are primed to think about future rather than past investment decisions (Godek and Murray, 2008). Framing effects do play a role both in advice seeking and in portfolio choices, as shown by the impact that properly envisaged presentation of the advice service and of the investment options may have on individuals' willingness to pay for the service itself.⁸

Among socio-demographic variables found to have a positive impact on advice seeking, there are wealth (Bhattacharya et al. 2012; Bluethgen et al., 2008; Calcagno and Monticone, 2013; Guiso and Jappelli, 2006) and age (Bhattacharya et al. 2012; Bluethgen et al., 2008; Hackethal et al. 2012; Kelly 1995). Gender has an ambiguous effect as some authors find that women have a higher propensity to delegate (Bluethgen et al., 2008; Calcagno and Monticone; 2013; Guiso and Jappelli, 2006; Hackethal et al., 2012; Kelly, 1995), whereas others highlight the opposite result (Bhattacharya et al., 2012) or no gender difference at all (Hackethal et al., 2012). Education, which can be regarded as a proxy for the opportunity cost of time along with investment experience and employment status, may either raise the willingness to rely on an expert (Elmerick et al., 2002), or decrease it (Calcagno and Monticone, 2011; Hackethal et al., 2010). Self-employed and more experienced clients are more likely to be advised (Hackethal et al., 2012), although the opposite relation may hold (Elmerick et al., 2002) as well as no relation at all (Calcagno and Monticone, 2013, find that experience does not significantly influence advice seeking, while Kramer, 2012, does not find any significant effect of self-employment).

Finally, trust in advisors can be among the main driver of stock market participation when households assess their own financial capability as low (as opposed to high literate households, led by perceived legal protection in financial markets; Georgarakos and Inderst, 2011). Another driver of advice seeking may be the appreciation of consultants' competencies, which in turn may be linked to the goodness of the recommendations received in the past or to a perceived similarity in one or more personal features.⁹ Finally, customers may be impressed by advisors' perceived experience, language, jargon and confidence in judgements, although not unambiguously (Harvey and Fischer, 1997; Joiner and Leveson, 2006; Karmarkar and Tormala, 2010; Van Swol and Sniezek, 2005).¹⁰

8 By relying on framing effects, information presentation may overcome poor saving for retirement by controlling mistakes due to bounded rationality, hyperbolic discounting, procrastination inertia, loss aversion (Benartzi and Thaler, 2004 and 2007) and the so called exponential growth bias (i.e., the tendency to systematically underestimate the returns to saving that accrue from compounded growth; Goda et al., 2012).

9 Customers may feel to share the same value of their consultant (Siegrist et al., 2005), also on the wake of common socio-demographic characteristics, such as gender, education, age, region and political affiliation (Gino et al., 2009).

10 Advisors' disclosure of conflicts of interest to their customers may in some cases prompt a paradoxical behaviour, that is the full compliance with the received advice not because of trust but because of the feeling of an increased pressure to satisfy the advisors' personal interests. This increased pressure may be reduced, among other things, when the disclosure is provided by an external source or the advisee has an opportunity to change his/her mind later or make the decision in private (Sah et al., 2013).

3 The sample

Our study uses a novel survey, the 2015 Observatory on 'The approach to finance and investment of Italian households', conducted by GfK Eurisko on behalf of Consob (Linciano, Gentile and Soccorso, 2015).

The Survey collects information on socio-demographic characteristics and investment choices from 1,013 households, representative of the Italian retail financial decision makers. Sampled individuals are aged between 18 and 74 and are the primary family income earner (or the elder male, when nobody works, or the elder female, when there are no male family members). Decision makers employed in the financial sector (e.g. bank employees, insurance company employees and financial advisers) are excluded.

The Observatory collects data on individuals' investment styles, which are classified as: self-directed investment decisions; informal advice (i.e. making choices with family/friends/colleagues); investing after receiving advice from an expert; delegating an expert (a residual category includes mixed investment habits).

The Survey also contains information on individuals' financial competence. Competence is regarded as driven by financial knowledge and behavioural attitudes. In line with OECD (2015) and Bongini et al. (2014), in our survey knowledge is directly measured with respect to five basic concepts. Three of them underpin financial decision-making (i.e. inflation, portfolio diversification and risk-return trade-off), while the other two concepts gauge numeracy (i.e. the calculation of simple interest and expected pay-off for an investment). Moreover, familiarity with financial products is also assessed, by asking to the interviewees to indicate the financial instruments they know and to rank financial instruments by risk.

Behavioural attitudes and biases may be relevant determinants of financial competence, since they may distort risk perception and, by this way, trigger mistaken investment choices in spite of knowledge. To this respect, the Survey collects data on the stability of individuals' risk preferences across domains (i.e. across gains and losses), as proxied by the individuals' propensity to exhibit the so-called reflection effect and the so-called disposition effect. The reflection effect occurs when declared risk-aversion in the gain domain turns into risk-seeking in the loss domain. The disposition effect is defined as the tendency to sell too quickly the winners – financial assets that have gained value – and to hold too long the losers – financial assets that have lost value. As it will be shown in the following, these attitudes are more frequent among high knowledgeable individuals than low literate ones. The Survey also includes data on self-assessed capability. Perceived financial capability is investigated by ascertaining to what extent respondents feel to be better than average in monitoring budget, saving and investing. In detail, households are asked to rate themselves in: avoiding useless expenses; monitoring household budget; saving; understanding basic products; saving for retirement; making good investment decisions. The mismatch between self-assessed financial capability and actual knowledge is used as a proxy of individuals' overconfidence (see the following Section for further details).

The Observatory also collects data on risk attitude, captured through loss aversion and risk perception. This latter is proxied by two variables, gauging respectively how people regard risk (either as an uncertain event to be avoided or an opportunity) and which among several risk dimensions (capital losses, return volatility, lower than expected returns, etc.) are more relevant to them. Additionally, some personal traits are elicited, such as economic satisfaction and optimism (i.e. the tendency to 'be confident about the future'), captured with respect to the expectations of a positive/negative return delivered by a hypothetical one-year investment in the Ftse Mib stocks. A third feature of risk attitude is captured through differences in risk attitude across contexts and situations. As shown by the empirical evidence, one may be risk seeking in some areas of his/her life and risk averse in others. This inconsistency can be driven by trans-situational propensities for risk taking, which are linked to several personality characteristics, with the implication that risk attitude on one situation is not entirely generalizable to risk propensity in another domain.¹¹ To account for this feature, we complement the standard proxies of risk tolerance with an indicator accounting for differences across context specific risk attitudes. In details, interviewees were asked to state their preferences towards, respectively, alternative remuneration arrangements (job context) and alternative risk-return profiles of a financial investment (financial context). People preferring only or mainly fixed remuneration but choosing a high risky investment and vice versa are regarded as showing a different risk tolerance across contexts.

Table 1 reports descriptive statistics on the sample drawn in the Observatory. Out of the 1,013 interviewees, 75% are men; on average, respondents are 51 years old; 16% of them earned at least a bachelor degree. As for professional status, 23% of respondents are retired, 50% are employees and 14% self-employed, whereas the other categories (unemployed, housewives, students) is approximately equal to 10%.

As for investment habits, among investors, 31% of respondents declare their willingness to invest after receiving advice from an expert; 5% are willing to delegate a professional; 16% decide on their own; 47% rely on informal advice given by friends and relatives.

Table 2 shows how interviewees answered to the financial knowledge questions. Almost half of respondents are not able to describe inflation, whilst 55% and 57% incorrectly define risk diversification and risk-return relationship, respectively. As for numeracy, about 72% of the subjects are not able to compare investment options across expected returns, while roughly 67% show insufficient understanding of simple interest rates.

11 Nicholson et al. (2005) argue that risk behaviour is patterned, i.e. some people have a consistent risk propensity across areas of their life, while others have domain-specific patterns. Such patterns are related to the so called Big Five factorial personality profiles as described in McCrae and Costa (1997), i.e. extraversion, openness, neuroticism, agreeableness and conscientiousness. This implies that while risk attitude on one situation is not entirely generalizable to risk propensity in another domain, personality profiles can be used to predict context-specific risk attitude and overall risk taking. As argued by a referee, risk attitude inconsistencies across areas are not necessarily irrational, given that an individual taking low financial risk may be rationally hedging high career risks.

Table 1 – Descriptive sample statistics

variable		mean (percentage)	st. dev.	min	max	n
gender	female	25	0.43	0	1	245
	all sample	52	12.77	25	74	1,013
age	25-34	11	0.31	25	34	111
	35-44	23	0.41	35	44	217
	45-54	25	0.43	45	54	247
	55-64	20	0.41	55	64	210
	65-74	21	0.42	65	74	228
education	at least bachelor's degree	16	0.37	0	1	162
	high school	47	0.50	0	1	477
	intermediate school	29	0.45	0	1	294
	primary school	7	0.26	0	1	71
	none	1	0.10	0	1	9
area of residence	north	50	0.50	0	1	196
	centre	19	0.40	0	1	309
	south and islands	31	0.46	0	1	405
employment status	self-employed/entrepreneurs	14	0.34	0	1	134
	managers/white collars/officials	30	0.46	0	1	303
	teachers	2	0.14	0	1	21
	manual workers	18	0.38	0	1	181
	retired	23	0.42	0	1	236
	unemployed/housewives/students	10	0.29	0	1	98
wealth	< 10,000€	60	0.49	0	1	609
	10,001€ - 50,000€	25	0.43	0	1	250
	50,001€ - 250,000€	13	0.34	0	1	131
	> 250,000€	2	0.15	0	1	23
monthly family income	< 1,050€	20	0.40	0	1	203
	1,051€ - 2,550€	58	0.49	0	1	588
	2,551€ - 5,000€	20	0.40	0	1	203
	> 5,000€	2	0.14	0	1	19
investment styles ¹	making investment decisions autonomously	16	0.27	0	1	83
	informal advice	47	0.43	0	1	247
	investing after receiving advice from an expert	31	0.37	0	1	168
	delegating an expert	5	0.16	0	1	28

Source: our computations on GfK Eurosko data – Observatory on 'The approach to finance and investments of Italian households'. ¹ Statistics refer to the subgroup of investors.

Table 2 – Financial knowledge
(percentage values)

description		correct answers	wrong answers	do not know answers
basic financial knowledge	Suppose you win € 1,000 euro at the lottery and that you receive it after one year time (during that period your winning is not invested). If the inflation rate is equal to 2%, in one year's time you will be able to buy: 1) More things than those you can buy today; 2) The same things you can buy today; 3) Less things than those you can buy today; 4) Don't know	52	18	29
	Diversifying investments means investing...: 1) in a large number of stocks; 2) with a long investment horizon; 3) in uncorrelated assets; 4) in mixed assets as long as they are characterized by the same type of risk	46	25	30
	What kind of relationship exists between investment risk and return? 1) Direct: the higher the risk, the higher the return; 2) Indirect: the higher the risk, the lower the return; 3) None; 4) Don't know	43	19	38
numeracy	Which of the two following investment options would you prefer? Investment 1 delivers either 7 euros or 4 euros or 3 euros or 2 euros each with a probability of 25%; Investment 2 delivers either 3 euros or 8 euros or 4 euros or 5 euros each with a probability of 25%; I can't answer given the available information; I do not know	28	26	46
	Suppose you have 100 euros in a current account delivering a 2% annual interest rate (zero costs). Suppose you will make neither withdrawals nor deposits during the coming year. How many euros will be in your current account at the end of the year after interest is paid? ___ euros; I can't answer given the available information; Don't know	33	14	53

Source: our computations on GfK Eurosko data – Observatory on 'The approach to finance and investments of Italian households'.

Turning to knowledge of specific investment options, 18% of the sample is not familiar with any instruments, 67% know Italian government bonds, while a share of individuals ranging from 48% to 40% mentions bank bonds, listed stocks, deposits and mutual funds (Table a.1).

As for the biases affecting risk perception, 31% of interviewees seems to be prone to the reflection effect, declaring to be risk averse in the gain domain and risk lover in the loss domain, while the propensity towards the disposition effect, i.e. towards holding losers too long and selling winners too early, is observed among 37% of respondents (Table a.2).

Looking at self-assessment of financial competence, more than 80% of interviewees rate themselves as above average at avoiding useless expenses, budget monitoring and saving, whilst the proportion of 'self-confident' subjects decreases to 70% with respect to the understanding of basic financial products and to 65% and 63% when considering saving for retirement and investment decisions, respectively.

As for feeling about financial risk, 51% of subjects regard it as an uncertain event to be avoided rather than as an opportunity. When detailing risk dimensions, half of the respondents mention the possibility of capital losses, while a proportion ranging from 25% to 29% is concerned about exposure to market trends, lower than expected returns or return volatility. Loss aversion is quite widespread: 55% of respondents are not willing to take financial risk implying a chance of loss and 17% would disinvest even after a very little loss. This evidence confirms a well-documented behavioural attitude, which may cause investors to miss out on opportunities and take emotional actions – such as liquidating their assets – possibly inconsistent with their long-term investment goals. As for stability of risk preferences

across contexts, the percentage of respondents preferring only or mainly fixed remuneration in the job context but choosing a high risky financial investment and vice versa ranges from 15% to 19%.

Finally, optimism, as measured with respect to the expectations of a positive return delivered by a hypothetical one-year investment in the FtseMib stocks, is not predominant: indeed at the end of 2014, 65% of respondents anticipated a loss. Also the elicitation of economic satisfaction returns a 70% of individuals with a negative attitude.

4 Key variables construction

4.1 Financial knowledge indicators

As mentioned above, the definition and measurement of financial literacy used in empirical literature is not univocal (Hung, Meijer et al., 2009).¹² The majority of the empirical studies build up financial literacy indicators exclusively on the basis of numeracy, that is the skill to use numbers and mathematical approaches, and of investors' knowledge of basic financial concepts (Hilgert, et al., 2003; Lusardi, 2008a, 2008b and Lusardi et al., 2012). Other authors adopt wider definitions of financial literacy, alternatively based on: the ability to apply financial knowledge (Lusardi and Tufano, 2008; Mandell, 2008); the decision-making competence (i.e. the ability to avoid investment mistakes driven also by behavioural biases; see Bachman and Hens, 2014; Bruine de Bruin et al., 2007; Finucane et al. 2005; Levin et al. 2007; Parker and Fischhoff, 2005); the financial experience, as gauged by past experience with advisors, financial instruments or market turmoil (Debbich, 2015; Moore, 2003).

These dimensions of financial literacy are often combined into a single indicator. A first widely used method relies on the number of correct answers, taken either in absolute value (Bucher-Koenen and Koenen, 2015; Calcagno and Monticone, 2013; Caratelli and Ricci, 2011; Collins, 2012; Monticone, 2010), or as a percentage of correct answers (Chen and Volpe, 1998; Mandell, 2008; Volpe et al., 1996) or as a dummy equal to one if all the questions are correctly answered (Debbich, 2015).

A second type of indicator is defined as the weighted average of correct answers, with the weights given by the inverse of the relative easiness of the questions (that is, the frequency of correct answers in the whole sample; Bachmann and Hens, 2014):

$$FL_i = \sum_{k=1}^K w_k Q_{i,k} \quad (1)$$

12 The gauged dimensions of financial literacy may also vary across studies and household surveys. They may include: the ability to perform simple calculations (numeracy) and the knowledge of interest compounding, inflation, risk-return trade-off and risk diversification (Lusardi et al. 2012); the understanding of return fluctuations, stock markets and the differences among different products (Bucher-Koenen and Koenen, 2015; Calcagno and Monticone, 2013; Lusardi and Mitchell, 2007a; Kramer, 2014; Monticone, 2010; Van Rooij et al., 2007).

where $Q_{i,k}$ is a dummy variable equal to 1 if the respondent i correctly answers to question k , while $w_k = 1 - \mu_k$ where μ_k is the percentage of participants who answer question k correctly in the sample.

Thirdly, principal component analysis is applied to the answers rescaled on the basis of the easiness of questions (i.e., questions recording a lower rate of correct answers are weighed more), in order to use information about respondents' financial sophistication level (Lusardi et al., 2012).

The last approach used in the literature relies on factor analysis and the distinction between correct, incorrect and 'do not know' answers (Kramer, 2014; van Rooij et al. 2011). 'Do not know' respondents are documented to be, on average, less capable in terms of planning abilities, even with respect to those answering wrongly. Therefore, keeping the 'do not know' answers distinct from the others conveys valuable information for the construction of a robust indicator of financial literacy (Lusardi and Mitchell, 2007).

Following previous work, we constructed three indicators of financial literacy and alternatively entered them in the model specification to the benefit of a robustness check of our findings. In details, we used the following scores:

- I. number of correct answers (NCA);¹³
- II. weighted average of correct answers by the easiness of questions (WACA);
- III. factor analysis indicator, obtained by applying principal component analysis on the answers rescaled by the easiness of questions and by taking into account the distinction among correct, incorrect and 'do not know' answers (FA).¹⁴

Table a.3 reports descriptive statistics as well as the distribution by sample percentiles of the three indicators mentioned above. Sample statistics show that 21% of the interviewees do not answer correctly to any of the literacy questions, and on average respondents are able to answer only to 2 out of 5 questions.

Table a.4 reports the factor loadings of the FA indicator, showing that the first factor explains approximately 57% of the sample variance.¹⁵

4.2 Self-confidence indicators

As for financial literacy, empirical studies use several measures of excessive self-confidence in financial choices. Some papers define an index of self-assessed financial literacy simply on the basis of respondents' own judgment about their abili-

13 We also used the percentage of correct answers as an indicator of financial literacy. However, the estimates are substantially equal to those obtained by using the number of correct answers and are not reported in the paper for the sake of brevity.

14 Factor analysis has been performed by applying iterated principal factor method, while factor scores are obtained by following Bartlett (1973).

15 The adequacy of our factor analysis is confirmed by the Keiser-Meyer-Olkin test of sample adequacy (Kaiser, 1970), returning a statistics equal to 0.79.

ties (Hung, Meijer et al., 2009 and Hung and Yoong, 2010). Other authors proxy individuals' perceived financial capability through a set of variables, such as their level of general education or their perceived complexity of financial instruments and services (Georgarakos and Inderst, 2011). Kramer (2014) regresses self-assessed literacy on the level of actual financial literacy and takes the residual as an overconfidence measure.

Following Glaser and Weber (2005), Alemanni and Franzosi (2006) use psychometric techniques to test overconfidence in its different manifestations, such as mis-calibration, better than average effect and illusion of control.¹⁶ Santos et al. (2010) define overconfidence as the belief that one's own information is more precise than it actually is and apply this definition to undergraduate students required to formulate predictions about future exchange rates and to identify the confidence interval of their predictions.

The indicators mentioned so far may be a weak approximation of overconfidence, since they either rely on indirect proxies (Georgarakos and Inderst, 2011), or are based only on perceived ability without being compared with actual knowledge (Hung, Meier et al., 2009). Alternative measures may suffer from mis-specification due to an omitted variable problem (Kramer, 2014) or to reporting biases driven by errors in calculation of probabilities or difficulties in conceptualizing probabilities (Glaser and Weber, 2005).¹⁷

In the present paper, we use three indicators of (possibly excessive) self-confidence.

The first relies on the individuals' attitude to rate themselves as better than average in making economic and financial choices, already described in the previous Section.

The second is defined as the mismatch between individuals' self-assessed ability and actual financial knowledge. In details, we compared respondents' assessment of their capabilities in 'understanding basic financial products' and 'making good investment decisions' with their understanding of financial basics and financial numeracy as measured by one of the indicators of financial literacy mentioned above (NCA, WACA and FA). High self-assessment is represented through the dummy HSA, equal to one when the respondent rates his/her abilities in understanding basic financial products and making good investment decisions above the average. The high

16 To evaluate mis-calibration, individuals are usually asked to state upper and lower bounds of 90% confidence intervals to some questions concerning general knowledge (such as knowledge of the number of car sold by the biggest domestic car industry, or the number of drugstore in the country of residence, etc.). Investors are defined as mis-calibrated when more than 10% of intervals as defined by their indicated upper and lower bounds miss the correct answers. As for the elicitation of the better than average effect attitude, respondents are generally asked to answer to questions similar to the following: 'What percentage of customers of your discount brokerage house have better skills (e.g. in the way they interpret information; general knowledge) than you at identifying stocks with above average performance in the future? (Please give a number between 0% and 100%)'.

17 Individuals' fallacies in conceptualizing and using probabilities are shown by our data on Italian investors' attitudes and financial choices (Linciano, Gentile and Soccorso, 2015).

financial literacy dummy HFL is equal to one when the respondent's financial knowledge score (as measured alternatively either by the NCA, WACA or FA indicator) is greater than the sample median score. Our overconfidence indicator (OVC) is therefore equal to:

$$\begin{aligned} OVC_i &= 1 \text{ if } HSA_i - HFL_i = 1 \\ OVC_i &= 0 \text{ otherwise} \end{aligned} \quad (2)$$

where the difference between HSA and HFL is equal to:

- a) '-1' in case of under-confidence (i.e. individuals rate their abilities as below the average but show a high financial knowledge);
- b) '0', when the judgment of one's own competencies is consistent with the measured level of knowledge;
- c) '1' in case of overconfidence (i.e. individuals rate their abilities as above the average while showing a poor financial knowledge; OVC).

Therefore, individuals are defined overconfident when their financial literacy score was below or equal to the sample median, in spite of rating their abilities in understanding basic financial products and making good investment decisions above the average. In our sample, among the individuals reporting an understanding of basic financial products equal or higher than the average person, 30% is not able to correctly define inflation and 44% cannot solve a simple-interest problem, whereas the mismatch between respondents' self-assessment on investment capabilities and their actual knowledge involves approximately 10% of the subjects (Table a.5).

The third indicator is what we call a 'self-confidence' index (SC), which is defined by taking into account respondents' propensity to answer 'do not know' to financial knowledge questions. This indicator is regarded as another proxy of individuals' overconfidence, since it is linked with the propensity to answer 'do not know' rather than hazarding a guess.

4.3 Other control variables

Following the extensive literature on the demand for financial advice, we include additional control variables in our analysis (Table 3).

Table 3 – Control variables

variable	description
risk preferences inconsistency across domains	dummy variable equal to 1 when respondents either prefer 'fixed remuneration' or mainly 'fixed remuneration' and high risky products or prefer variable remuneration and safe products
reflection effect	dummy variable equal to 1 when respondents are risk averse in the gain domain (i.e. prefer sure pay-offs) and risk seeker in the loss domain
disposition effect	dummy variable equal to 1 when respondents preferring to immediately sell winning stocks to make profits choose to maintain their investment if stocks are losers
medium high financial wealth	dummy variable which is equal to 1, when the level of financial wealth is above its sample median
real asset ownership	dummy variable equal to 1 when the respondents own at least one real asset
medium high monthly family income	dummy variable which is equal to 1, when the level of monthly income is above its sample median
education	four dummies for primary, intermediate, high school, at least university degree
age	respondents' age (ranging from 25 to 74)
gender	dummy variable (Woman =1)
occupational status	dummy variables corresponding to the following positions: unemployed, retired, employee, manual worker, self-employed, other
place of residence	dummy variables corresponding to the macro-area of residence (North, Centre, South-Islands)
risk aversion	<i>Risk aversion</i> : dummy variable equal to 1 when the respondents perceive risk mainly as something to avoid rather than as an opportunity <i>Loss aversion</i> : dummy variable equal to 1 when the respondents cannot accept a loss even lower or equal to 1/4 of the invested capital
worsened household economic conditions	dummy variable equal to 1 when households' economic conditions have worsened over the last 12 months
debts exposure (mortgage or consumer credit)	dummy variable equal to 1 when respondents carry on debts (mortgages and/or consumer credit for durable goods' purchase)
not capable to save	dummy variable equal to 1 when respondents declare not to be able to save part of the monthly income (based of the answers to the following question 'Does your income cover your monthly family expenses? No we fall into debt; no use our savings; yes, income just balances expenses, yes we are able to save something, yes we are able to save sufficiently')
having a pension plan	dummy variable equal to 1 when respondents have a pension plan
trust (as a driver of willingness to invest)	trust in financial intermediaries: dummy variable equal to 1 if respondents consider trust in financial intermediation as an important factor driving their willingness to invest trust in rules: dummy variable equal to 1 if respondents consider trust in investor protection rules as an important factor driving the willingness to invest
perceived familiarity with financial products	number of financial products respondents declare to know (among Italian bank bonds, Italian corporate bonds, foreign bonds, Italian listed stocks, Italian non listed stocks, foreign stocks, Italian Treasury bonds, foreign Treasury bonds, bank deposits, repurchase agreements, interest-bearing bonds issued by Poste Italiane, certificates of deposit, mutual funds asset management)
financial experience	number of financial products held
optimism regarding financial market trends	dummy variable equal to 1 when respondents expect to realize a gain at the end of the year if they invest today in Ftse Mib stocks

Source: our computations on GfK Eurosko data – Observatory on 'The approach to finance and investments of Italian households'. The group 'other' includes housewives, students and unemployed.

First, we take into account socio-demographic variables such as education, age and gender. As mentioned in Section 2, age should be positively correlated with advice seeking. On the other hand, gender and education expected signs are ambiguous. In particular, men may be less willing to delegate their portfolio decisions (Bluethgen et al., 2008; Calcagno and Monticone, 2013; Guiso and Japelli, 2006; Hackethal et al., 2012), either because they feel more confident than women do in financial matters (Barber and Odean, 2001) or because they are more literate than women are (Van Rooij et al., 2007).¹⁸

Second, we check whether advice seeking can be correlated with some personal traits, such as risk attitude by including variables catching, respectively, individuals' loss aversion, consideration of risk (i.e. as something to be avoided or rather as an opportunity) and differences in risk preferences across contexts. Optimism, i.e. individuals' positive expectations about market trends, is also included. Moreover, in order to account for distortions in risk perceptions prompted by behavioural biases other than overconfidence, we enter variables accounting for individuals' attitude towards the reflection effect and the disposition effect as defined in Section 2.¹⁹

We also consider among the control variables the place of residence, captured through the regional macro-areas (North, Centre, South and Islands), and economic variables, i.e. financial wealth, ownership of real assets, disposable income and occupational status. Wealth and income are commonly found to be positively correlated with the demand for advisory services, as they might proxy the opportunity cost of time (Guiso and Jappelli, 2006; Bluethgen et al., 2008; Bhattacharya et al., 2012; Bachmann and Hens, 2014; Kramer, 2014; Calcagno and Monticone, 2013), whereas employment status is either insignificant (Kramer, 2012) or not clearly related to advice seeking (Elmerick et al., 2002; Hackethal et al., 2012). In addition, we enter some proxies accounting for households' financial vulnerability, as measured by self-assessed developments in their economic conditions in the last 12 months, the exposure to debt (mortgages and/or consumer credits) and the ability to save. The enrolment in a pension plan of the decision maker is included as a proxy of individuals' ability to plan for the future and is therefore expected to have a positive sign.

Finally, we test the significance of some variables accounting for individual's declared drivers of market participation. In detail, we include two dummies, one referred to individuals regarding trust in financial intermediaries among the relevant factors prompting their decision to invest, the other referred to individuals declaring that trust in investor protection rules is among the drivers of the willingness to invest. Perceived familiarity with financial products, measured as the number of products which households declare to know, and financial experience, as gauged by the

18 However, some authors find the opposite result (Bhattacharya et al., 2012; Hackethal et al., 2012).

19 Recall that the inconsistency of risk preferences across domains capture respondents' inclination to prefer fixed (or mainly fixed) remuneration in a job context and, at the same time, high risky financial products or, vice versa, respondents' preference for variable remuneration but safe financial products. The so-called reflection effect marks out interviewees who change their preferences for sure pay-offs when moving from the gain domain towards the loss domain. Finally, the disposition effect stands for the attitude to sell quickly winning stocks to make profits and to maintain stocks when they are losing.

number of financial products held in households' portfolio, are the last two variables entered among controls.

5 Model specification

Our empirical model of the demand for advice is based on two assumptions. The first is that advice seeking is affected both by financial knowledge and (excessive) self-confidence as measured by one of the three indicators discussed in the previous Section (i.e. high self-assessment of own capability, overconfidence and self-confidence). The second is that self-confidence depends on financial knowledge.

We do not have an *a priori* on the significance and the direction of these relations, given that results in the literature are not univocal.

As discussed in Section 2, financial knowledge and advice have been found to be either complements²⁰ or substitutes²¹ or unrelated. This indeterminateness might be partly due to the fact that the ways financial literacy is gauged are not comparable across studies. In the present paper, we try to overcome this issue by using alternative financial literacy indicators, which should provide a robustness check.

In principle, the interaction between knowledge and overconfidence/self-assessment could also go both ways. Higher levels of knowledge may improve one's own perception of his/her abilities, possibly raising overconfidence by exacerbating the gap between self-assessed and actual competencies. On the other hand, higher levels of knowledge may reduce the attitude to overstate one's own competencies, thus decreasing overconfidence. While as far as we know no evidence is available for the Italian market, the empirical evidence from other countries is ambiguous (Hung and Yoong, 2010, Kramer, 2014, finding a positive relation; Tekçe et al., 2016, finding a negative relation). Again, this indeterminateness might be driven by differences in the measures used to gauge self-confidence, misspecification and omitted variables problems, which we try to control by simultaneously estimating the determinants of overconfidence and financial literacy and by relying on an ample set of controls.²²

To sum up, given the hypotheses on the determinants of the demand for financial advice and depending on the significance of the relation among advice seek-

20 Knowledge may prompt the demand for advice because investors anticipate that only high literate customers receive valuable information from consultants. Advisors may have incentives to reveal their information only to investors with a relatively precise information (knowledge) either because of conflicts of interests (i.e. they can sell the riskiest securities only to less knowledgeable customers but not to high knowledgeable ones; Calcagno and Monticone, 2013) or because they anticipate that high literate investors are willing to invest autonomously, after having received and understood their advice, unless they put more effort in providing better investment alternatives (Bucher-Koenen and Koenen, 2015).

21 This may occur when individuals' financial capability is sufficiently low and their trust in the advisor is sufficiently high (Georgarakos and Inderst, 2011).

22 As mentioned in Section 2, some studies investigate the determinants of overconfidence through a univariate econometric approach, which does not control for potential endogeneity of financial literacy; moreover, poor data set on individuals' characteristics and personal traits may raise omitted variables problems.

ing, self-confidence and financial knowledge, financial knowledge may alternatively affect individuals' propensity to ask for professional help via:

- a) direct and indirect channels, with the indirect channel acting via the effect on self-assessment;
- b) only a direct channel, if financial knowledge is a significant determinant of advice seeking but not a significant determinant of one's self-confidence;
- c) only an indirect channel, if financial knowledge significantly affects only individual self-assessment and self-assessment is in turn a significant determinant of the demand for advice.

As it has long been acknowledged in the literature, financial knowledge can be endogenous with respect to advice seeking. The same holds for self-confidence, given that the causality relation can go from advice seeking to self-evaluation (individuals' perception of their own abilities may have been shaped by their interaction with an expert) rather than the other way round. Moreover, financial literacy may be endogenous to self-assessment, given that the effort put in financial education may be driven by one's appreciation of his/her own abilities.

In order to control and correct for endogeneity issues, we estimated a multivariate probit model, simultaneously running three equations referring, respectively, to the determinants of high financial literacy (HFL), the determinants of high self-assessment (i.e., the better-than-average attitude, HSA) and the demand for financial advice (FAD).

We preferred to treat endogeneity by estimating a multivariate model rather than an instrumental variable model, as it is common in the literature, because the identification of instruments can be arbitrary, discretionary and difficult to validate. In our multivariate framework, instead, endogeneity can be easily detected by testing the statistical significance of the correlation between equations and can be consequently treated through the simultaneous estimation of the equations themselves. If correlation is not significant, the null hypothesis of endogeneity can be rejected and either a bivariate or a univariate model can be estimated. Indeed, as it will be better specified in the following, we estimated a bivariate probit when either HFL or HSA resulted exogenous, and a univariate probit when both HFL and HSA (or the overconfidence) resulted exogenous.

The model is therefore specified as follows:²³

$$HFL_i^k = \mathbf{1}(\alpha_1 + X'_{1i}\gamma_1 + \varepsilon_{1i} > 0)$$

$$HSA_i = \mathbf{1}(\alpha_2 + \beta_1 HFL_i^k + X'_{1i}\gamma_2 + \varepsilon_{2i} > 0)$$

23 The application of a multivariate model is justified only when the correlation among equations (ρ) is significant. Whenever correlation has resulted to be significant only between two equations, we have applied bivariate probit and, in case of insignificant correlation between two equations, univariate specifications.

$$FAD_i = \mathbf{1}(\alpha_3 + \beta_2 HSA_i + \beta_3 HFL_i^k + X'_{2i} \gamma_3 + \varepsilon_{3i} > 0)$$

$$\text{with } \begin{pmatrix} \varepsilon_{1i} \\ \varepsilon_{2i} \\ \varepsilon_{3i} \end{pmatrix} | X_{1i}, X_{2i} \sim N \left[\begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho & \rho \\ \rho & 1 & \rho \\ \rho & \rho & 1 \end{pmatrix} \right] \quad (3),$$

where HSA, HFL are defined as above; FAD (financial advice demand) is a dummy equal to 1 if individual is willing to ask for financial advice; $\mathbf{1}(\cdot)$ is the indicator function taking value 1 if the statement in the brackets is true; i indicates the interviewee; X_1 is the matrix of independent variable observations in the HFL and HSA equations and X_2 the matrix of the independent variable observations in the FAD equation, including a set of control variables; k stands for the financial literacy indicator applied among NCA, WACA, FA; ρ is the correlation among equations, which is significant when self-assessment and financial literacy are endogenous.²⁴

As an alternative to the specification reported above, we investigated the impact on advice seeking of the overconfidence (OVC), defined on the basis of the discrete proxies described in the previous Section, by running the following bivariate probit model:

$$OVC_i^k = \mathbf{1}(\alpha_1 + X'_{1i} \gamma_1 + \varepsilon_{1i} > 0)$$

$$FAD_i = \mathbf{1}(\alpha_2 + \beta_2 OVC_i^k + X'_{2i} \gamma_2 + \varepsilon_{2i} > 0)$$

$$\text{with } \begin{pmatrix} \varepsilon_{1i} \\ \varepsilon_{2i} \end{pmatrix} | X_{1i}, X_{2i} \sim N \left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right] \quad (4),$$

where $\mathbf{1}(\cdot)$ is the indicator function taking value 1 if the statement in the brackets is true; i indicates the interviewee; X_1 is the matrix of independent variable observations in the OVC equation and X_2 the matrix of the independent variable observations in the FAD equation; k and ρ are defined as mentioned in model (3).

To test the robustness of the results we also estimated the impact of self-confidence on financial advice demand through the following bivariate probit model:

$$SC_i = \mathbf{1}(\alpha_1 + X'_{1i} \gamma_1 + \varepsilon_{1i} > 0)$$

$$FAD_i = \mathbf{1}(\alpha_2 + \beta_1 SC_i + X'_{2i} \gamma_2 + \varepsilon_{2i} > 0)$$

$$\text{with } \begin{pmatrix} \varepsilon_{1i} \\ \varepsilon_{2i} \end{pmatrix} | X_{1i}, X_{2i} \sim N \left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right] \quad (5),$$

24 In order to avoid identification issues, the HFL equation does not include all the controls included in the FAD and the HSA equations. In details, we excluded from the second and the third equation the variables accounting for the exposure to debt and the population density (whose impact on FAD and HAS was never found to be significant by running different univariate specifications).

where the self-confidence indicator may be seen as a different proxy of overconfidence and is estimated by applying factor analysis on the 'do not know' answers, measuring the propensity of the interviewees to admit their own limits in terms of financial competencies.

6 Estimation results

6.1 The determinants of financial knowledge

The estimation results of model (3) are overall in line with the empirical findings returned by domestic and international studies (Table 4).²⁵

Financial knowledge turns out to be lower for women, thus confirming the so-called gender gap frequently reported in previous work (Hung, Meijer et al., 2009; Lusardi et al., 2012; Monticone, 2010; Caratelli and Ricci, 2011; Van Rooij et al., 2007; Kramer, 2014; Bucher-Koenen *et al.*, 2014; Balloch *et al.*, 2015). The substantially negative correlation with age is not surprising either, given that the sample average age is over 50 (see Caratelli and Ricci, 2011; Lusardi et al., 2012). Additionally, in line with previous empirical findings, education and wealth significantly and positively affect financial knowledge. The area of residence is not significant (in line with Monticone, 2010, relative to the Italian case).

A higher degree of familiarity with financial products and a higher level of financial experience correspond to higher degrees of financial education, which might be regarded as a signal of positive spillovers in terms of a learning-by-doing process prompted by participation in financial markets (Anderson et al., 2015; Bongini et al., 2014; Monticone, 2010; Debbich, 2015).

Turning to the impact of personal traits, financial knowledge is estimated to be positively related to risk aversion, as gauged by loss aversion. Moreover, in one out of the three specifications, it is also positively associated with the propensity to show a different attitude towards risk across contexts. Contrary to some empirical papers (Caratelli and Ricci, 2011; Beal and Delpachitra, 2003; Frederick, 2005) our evidence points to a direct relation between risk aversion and knowledge.²⁶

Among the remaining personal traits included in the model, being optimistic is more frequently associated with a high level of knowledge. This is not surprising, given that in our sample optimism is positively correlated with wealth, income and familiarity with financial products, which in turn are (almost all) positively associated to knowledge. Behavioural biases do not seem to play a role, which instead is significant when it comes to self-assessed competence, as it will be detailed later on.

25 For a full comparison of our results to previous work, see Table a.6.

26 In principle, the causality relationship may also be reversed given that risk perception and therefore risk attitude may be driven by knowledge and understanding (Wang et al., 2008).

Table 4 – Determinants of financial literacy, self-assessment and demand for advice

<i>explicative variables</i>	<i>NCA</i> ¹			<i>WACA</i> ²			<i>FA</i> ¹		
	<i>HFL</i>	<i>HSA</i>	<i>FAD</i>	<i>HFL</i>	<i>HSA</i>	<i>FAD</i>	<i>HFL</i>	<i>HSA</i>	<i>FAD</i>
HSA	-	-	-0.404*	-	-	-0.180	-	-	-0.370*
HFL	-	-0.513**	0.221	-0.221**	-	-	-	-0.112	0.469**
education	0.158**	0.012	0.047	0.094	-0.008	0.059	0.173***	-0.003	0.031
woman	-0.303**	-0.109	0.208*	-0.085	-0.071	0.199*	-0.252**	-0.072	0.217*
age	-0.023	0.064*	0.107***	-0.059*	0.063*	0.099**	-0.071**	0.066*	0.112***
age squared	0.000	-0.001**	-0.001***	0.001	-0.001**	-0.001**	0.001**	-0.001**	-0.001***
risk perception	0.098	-0.124	0.156	0.035	-0.138	0.172*	0.066	-0.136	0.143
loss aversion	0.106	-0.037	-0.185	0.185	-0.058	-0.178	0.242*	-0.054	-0.204
risk preferences inconsistency across domains	0.041	0.322***	0.156	0.036	0.318***	0.139	0.070*	0.319***	0.139
optimism	0.266***	0.000	0.082	0.276***	-0.014	0.102	0.276***	-0.028	0.055
reflection effect	0.047	0.242**	0.030	-0.023	0.246**	0.014	-0.029	0.239**	0.032
disposition effect	0.134	0.123	-0.015	0.107	0.110	-0.013	0.165	0.109	-0.029
center	-0.062	0.149	-0.226*	-0.081	0.152	-0.240*	-0.056	0.157	-0.215
south island	-0.111	-0.068	-0.092	-0.103	-0.068	-0.093	-0.152	-0.062	-0.067
small place of residence ³	-0.119	-0.143	-	-0.038	-0.123	-	-0.034	-0.127	-
high wealth	0.349***	0.208*	0.391***	0.492***	0.192*	0.415***	0.230*	0.161	0.345***
real asset ownership	0.234	0.214	-0.071	0.135	0.197	-0.067	0.137	0.193	-0.070
high income	0.102	-0.069	-0.057	0.226*	-0.076	-0.040	0.067	-0.093	-0.048
employee	0.043	-0.349*	-0.259	0.152	-0.345*	-0.235	0.255	-0.349*	-0.266
self-employed	-0.241	-0.049	-0.295	0.070	0.018	-0.318	0.016	-0.002	-0.295
manual worker	0.123	-0.305	-0.199	0.005	-0.325*	-0.172	0.123	-0.317	-0.196
unemployed	-0.422	-0.301	-0.370	-0.305	-0.254	-0.384	0.007	-0.241	-0.355
other	-0.074	-0.592**	-0.457*	-0.135	-0.590**	-0.438*	0.146	-0.568**	-0.449
not able to save	-0.112	-0.093	-0.112	0.044	-0.074	-0.109	-0.036	-0.083	-0.115
in debt ³	-0.020	-0.133	-	0.030	-0.137	-	0.157	-0.135	-
worse economic conditions	0.102	0.050	-0.046	0.031	0.031	-0.044	0.084	0.036	-0.049
pension plan	-0.142	-0.008	0.188*	-0.193**	0.000	0.176*	-0.080	0.014	0.178*
trust in intermediaries as a driver for investment	0.224**	0.030	0.281**	0.171	0.002	0.295**	0.204	0.002	0.266**
trust in rules as a driver for investment	-0.049	-0.036	0.023	-0.150	-0.021	0.021	-0.127	-0.028	0.022
familiarity with financial products	0.125***	0.018	-0.016	0.140	0.008	-0.008	0.134***	0.002	-0.025
financial experience	0.113	0.046	0.140***	0.094*	0.024	0.146***	0.511***	0.032	0.124**
constant	-1.303*	-2.003**	-3.765***	0.217	-1.926	-3.671***	-0.378	-2.041**	-3.847***
ρ		7.0*			-			6.6*	
Pseudo R ²		-		0.25	0.05	0.11		-	

Source: authors' computations on GfK Eurisko data – Observatory on 'The approach to finance and investments of Italian households'. For a description of dependent and explicative variables see Table a.2. (*) indicates that the parameter is significant at the 10% level; (**) indicates that the parameter is significant at the 5% level; (***) indicates that the parameter is significant at the 1% level. ¹ A three equation multivariate probit has been applied. ² Univariate probit models have been applied, given that the correlation among probit equations is not significant. ³ Explicative variables not included in the bivariate model to avoid identification issues. 'NCA' is the financial literacy index computed as number of correct answers. 'WACA' is the financial literacy index computed as the weighted average of correct answers by the easiness of questions. 'FA' is the financial literacy index computed by applying factor analysis on variables rescaled on the basis of the easiness of questions. To avoid collinearity issues, we have excluded 'north' from the place of residence group of variables and 'retired' from the occupational status group of variables.

Interestingly, financial literacy is positively correlated with trust in financial intermediaries (as a driver of the willingness to invest), but not with trust in investor protection rules. This finding is consistent with the sample positive correlation between trust in intermediaries and familiarity with financial products (recall that the latter is positively associated to high financial knowledge).

As mentioned above, our results are overall consistent with the available previous evidence from the Italian market (Caratelli and Ricci, 2011; Monticone, 2010). Discrepancies in the significance of some variables (e.g. employment status, which is almost always insignificant in our model contrary to the findings in Caratelli and Ricci, 2011) are also due to differences in the samples and the set of variables used. While our paper relies on a representative sample of Italian retail decision makers and collects data on several aspects potentially relevant to financial choices, previous work is based on a sample of one bank's customers, whose characteristics (e.g. knowledge, experience, trust) can be far from the population average.

6.2 The determinants of self-confidence

Our estimation outcomes are only partially in line with the evidence of previous work. As for the relation between perceived and actual knowledge, high self-assessment (HSA) turns out to be significantly and negatively associated with high levels of financial knowledge (as in Tekçe et al., 2016; Table 4). This evidence can be deemed quite robust, given that it holds for two out of the three financial knowledge indicators used, that is NCA and WACA scores. Therefore, the higher the financial knowledge the lower the individuals' propensity to rate themselves as better-than-average in dealing with financial matters. This finding contradicts the arguments against financial education, whose main fallacy would be to fuel confidence without improving competence, thus leading to worse decisions (Willis, 2008).

Contrary to the common finding highlighting that men are more overconfident than women are, our results do not significantly differ between genders (Table 4 reporting the estimates of model (3) and Table 5 as for the estimation results of model (4)). However, this might be due to the low sample frequency of the overconfidence trait as gauged through the variables HSA and OVC. Indeed model (5), regressing SC which captures another side of self-confidence (i.e. the attitude to report 'do not know' answers), returns an outcome in line with the literature, with women more prone to low self-confidence compared to men (Anderson et al., 2015; Lusardi and Mitchell, 2007; Tekçe et al. 2016; Table 5).

Older and wealthier individuals are more likely to be overconfident, whereas (consistently with the impact of wealth) employees, housewives, students and unemployed are less prone to perceive themselves as better than average. These results are robust to alternative specifications of self-confidence, given that they hold across models (3), (4) and (5) (Table 4 and Table 5).

Table 5 – Determinants of overconfidence, self-confidence and demand for advice

<i>explicative variables</i>	<i>NCA¹</i>		<i>WACA²</i>		<i>FA²</i>		<i>FA – self-confidence¹</i>	
	<i>OVC</i>	<i>FAD</i>	<i>OVC</i>	<i>FAD</i>	<i>OVC</i>	<i>FAD</i>	<i>SC</i>	<i>FAD</i>
self-confidence	-	-	-	-	-	-	-	-1.125***
OVC	-	-1.711***	-	-0.350**	-	-0.417**	-	-
education	-0.060	0.015	-0.019	0.057	-0.084	0.054	-0.226***	-0.020
woman	0.020	0.161	-0.036	0.200*	-0.033	0.200*	0.311***	0.267**
age	0.090***	0.116***	0.135***	0.103***	0.108**	0.104***	0.114***	0.118***
age squared	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001**	-0.001***	-0.001***
risk perception	-0.059	0.061	-0.145	0.168	-0.135	0.170	-0.078	0.111
loss aversion	-0.252*	-0.222*	-0.187	-0.189	-0.236	-0.197	-0.062	-0.186
risk preferences inconsistency across domains	0.448***	0.280***	0.306***	0.136	0.258**	0.137	-0.053	0.074
optimism	-0.247**	-0.056	-0.120	0.090	-0.136	0.091	-0.326***	-0.015
reflection effect	0.166*	0.079	0.104	0.007	0.192*	0.014	-0.036	-0.006
disposition effect	0.101	0.069	0.203*	-0.009	0.093	-0.016	-0.024	-0.018
center	0.061	-0.043	0.099	-0.245*	0.195	-0.239*	-0.048	-0.205
south island	-0.154	-0.127	-0.150	-0.096	-0.154	-0.095	0.010	-0.062
small place of residence ³	-0.037	-	-0.181	-	-0.122	-	0.132	-
high wealth	0.018	0.236**	-0.162	0.395***	-0.041	0.400***	-0.318***	0.156
real asset ownership	0.030	-0.064	-0.103	-0.081	0.006	-0.079	-0.007	-0.069
high income	-0.281**	-0.145	-0.172	-0.045	-0.158	-0.044	-0.163	-0.083
employee	-0.378*	-0.365**	-0.477**	-0.244	-0.380	-0.245	-0.392**	-0.281
self-employed	-0.028	-0.186	-0.084	-0.322	-0.031	-0.318	-0.115	-0.281
manual worker	-0.510**	-0.368**	-0.312	-0.174	-0.396*	-0.181	-0.160	-0.170
unemployed	-0.243	-0.385*	-0.327	-0.399	-0.378	-0.404	-0.170	-0.319
other	-0.270	-0.517**	-0.215	-0.422	-0.323	-0.431	-0.106	-0.299
not able to save	-0.095	-0.116	-0.191	-0.118	-0.151	-0.118	0.017	-0.109
in debt ³	-0.054	-	-0.075	-	-0.036	-	-0.243**	-
worse economic conditions	0.027	-0.010	0.083	-0.043	0.040	-0.046	-0.095	-0.058
pension plan	0.155	0.146*	0.136	0.185*	0.075	0.182*	0.085	0.178*
trust in intermediaries as a driver for investment	0.021	0.201*	0.008	0.302**	-0.218	0.291**	-0.175	0.214*
trust in rules as a driver for investment	0.040	0.016	0.058	0.025	-0.103	0.015	0.231	0.030
familiarity with financial products	-0.027	-0.023*	-0.040**	-0.010	-0.043**	-0.010	-0.119***	-0.044***
financial experience	-0.184***	0.101**	-0.140*	0.141***	-0.201**	0.140***	-0.520***	0.083*
constant	-2.346	-3.015***	-3.642***	-3.728***	-2.475**	-3.689***	-0.513	-2.784***
ρ	79.9***						8.5***	
Pseudo R ²	-		0.09	0.11	0.09	0.11	-	

Source: our computations on GfK Eurisko data – Observatory on 'The approach to finance and investments of Italian households'. For a description of dependent and explicative variables see Table a.2. (*) indicates that the parameter is significant at the 10% level; (**) indicates that the parameter is significant at the 5% level; (***) indicates that the parameter is significant at the 1% level.¹ A bivariate probit has been applied. ²Two univariate probit models have been applied given that the correlation among probit equations is not significant. ³Explicative variables not included in the bivariate model to avoid identification issues. 'NCA' is the financial literacy index computed as number of correct answers. 'WACA' is the financial literacy index computed as the weighted average of correct answers by the easiness of questions. 'FA' is the financial literacy index computed by applying factor analysis on variables rescaled on the basis of the easiness of questions. To avoid collinearity issues, we have excluded 'north' from the place of residence group of variables and 'retired' from the occupational status group of variables.

Additionally, high self-assessment of one's own financial capabilities is positively related to the tendency to show different attitudes across contexts (risk inconsistency), and to the propensity towards some behavioural biases in investment practice, i.e. the reflection effect (Table 4 and Table 5, as for the estimation results of model (4)).

Interestingly, having familiarity with financial products as well as financial experience are negatively correlated with overconfidence (Table 5). This finding is consistent with the hypothesis of a learning-by-doing process associated with market participation. Given that (as detailed below) these factors are positively associated with advice seeking, this correlation might be regarded as an indirect evidence of the positive role that advice may play in hindering overconfident behaviours.

6.3 The determinants of the demand for financial advice

According to our estimation results, the propensity for advice seeking is positively related to financial knowledge and negatively related to self-assessment.

The impact of financial literacy is estimated to be both direct and/or indirect depending on the indicator of financial literacy, with the indirect effect acting through the overconfidence indicators (i.e. HSA, OVC or SC, depending on the specification used; Table 5). Both the direct and the indirect effects of financial knowledge on the demand for financial advice are positive. Therefore, financial advice results to be a complement rather than a substitute of financial literacy.

In particular, in model (3) the indirect effect is positive given that financial knowledge is estimated to be negatively associated to high self-assessment (HSA), which in turn is a negative determinant of the demand for financial advice. In other words, investors that tend to rate themselves as better-than-average and people whose self-assessment overestimates their actual capability as inferable from their actual financial knowledge are predicted to be significantly less willing to seek for the support of professionals, probably because they prefer to rely on their own judgment (as in Calcagno and Monticone, 2013). These results hold independently of the financial knowledge indicator applied.

As for the direct impact of other control variables, *ceteris paribus* women turn out to be more likely to seek for advice than men are. This attitude could be driven by women's propensity to underscore their ability in financial matters (which, as mentioned above, is confirmed only by the estimation results of model (5)), although their lower level of knowledge compared to men could partly (or totally) compensate this effect.

Older and wealthier individuals are more willing to demand for professional advice, possibly because of a higher opportunity cost of time (as in Calcagno and Monticone, 2013; Hackethal et al., 2012). Not surprisingly, financial experienced investors are more likely to seek for an expert help. Trust as the main driver of market participation is another factor positively related to advice seeking. Indeed, the vast majority of individuals pointing out the role of trust in their decision making process

exhibits a level of financial literacy higher than average (61%), while being less overconfident (93%). The willingness to demand professional support is not related with trust in investor protection rules, probably because individuals are not aware of their rights. This hypothesis claims for education programmes encompassing information on actual investor protection regulation.

Having a pension plan positively correlates with the propensity to look for advice. This finding is not surprising considering that in our sample a large part of the respondents with a pension plan exhibit a high level of wealth, financial experience and familiarity with financial products, and are therefore likely to be used to financial planning.

To conclude, we estimated the magnitude impact of some explicative variables on the propensity to seek for advice. We computed marginal effects, i.e. the change in predicted probabilities to ask for advice due to a one-unit-variation in the independent variables (Table 6).

As for the impact of financial knowledge, the likelihood to seek for professional help almost doubles (+169%) if effective knowledge (as measured by FA) increases from the low to the high level.²⁷ The indirect effect of financial literacy, as stemming from its impact on self-assessment and overconfidence, is quite relevant too. Raising financial knowledge reduces the probability of individuals' assessing themselves as better than average by 30 percentage points, which in turn induces a positive impact on advice demand up to 60 percentage points. Being woman raises the probability of advice seeking by 36%, a figure declining to 5% for low literate women.

Financial wealth effect on advice seeking is also significant: moving from the low to the high wealth class increases the likelihood of asking for professional advice by 62%.

The propensity to rely on an expert's support increases with trust in intermediaries (as a driver of the willingness to invest) by 30%.

Behavioural biases are not significantly correlated to advice seeking, while the attitude towards both the reflection effect and the risk inconsistency increases the probability of a high self-assessment respectively by 34 and 44%.

Overall, our empirical findings prompt two considerations on policy grounds. First, investor education initiatives are worthwhile not only for their direct effect in terms of enhancement of individuals' knowledge but also for their indirect effect on investors' awareness of their actual financial capabilities. In principle, awareness should help individuals to acknowledge their limits and possibly to ask for adequate support in order to improve their choices. Second, given that cognitive limits may co-exist with financial literacy, investor education programmes need to be attuned also

27 Depending on model specification, the predicted probability of demanding for advice at the sample mean of independent variables rises approximately from 21 to 34 per cent when the knowledge indicator changes from low to high.

as debiasing programmes, in order to remove cognitive shortfalls, or at least to raise awareness of such limits and of the investment mistakes that may prompt.

Table 6 – Direct marginal effects
(percentage points)

explicative variables	investing after receiving advice from an expert	high financial literacy	high self-assessment	overconfidence ^e
HFL (factor index)	^a 169***	-	not significant	-
HFL (weighted average index)	not significant	-	^c -30**	-
overconfidence (factor index)	^b -9**	-	-	-
overconfidence (score index)	ⁱ -60***			
education	not significant	^a 15***	not significant	not significant
woman	^a 36**	^f -31**	not significant	not significant
risk perception	not significant	not significant	not significant	not significant
loss aversion	not significant	^a 23**	not significant	not significant
optimism	not significant	^a 24***	not significant	not significant
reflection effect	not significant	not significant	^c 34**	^e 10*
disposition effect	not significant	^a 15*	not significant	not significant
risk inconsistency	not significant	not significant	^c 44***	^e 15**
high wealth	^d 62***	^a 18*	^c 26*	not significant
manual worker	not significant	not significant	^c -44*	^e -13*
pension plan	^a 27*	not significant	not significant	not significant
trust in intermediaries as a driver for investment	^a 30*	^f 25*	not significant	not significant
financial experience ^g	^a 11*	^a 34***	not significant	^e -40**
familiarity with financial products ^h	^a -7***	^a 12***	not significant	^e -40**

Marginal effects measure percentage variation of the probability to look for professional advice corresponding to unit change of each explicative variable (for dummy variables change from zero to one) putting the other control variables of the model equal to their average values. ^a Marginal effects estimated by applying a bivariate probit model (financial advice demand - HFL factor index). ^b Marginal effect estimated by applying an univariate probit (financial advice demand - overconfidence factor index). ^c Marginal effects estimated by applying a bivariate probit model (self-assessment - HFL weighted average index). ^d Marginal effect estimated by applying an univariate probit (financial advice demand - HFL weighted average index). ^e Marginal effects estimated by applying an overconfidence discrete factor indicator. ^f Marginal effect estimated by applying univariate probit model (HFL score indicator). ^g Changes of the dependent variable are measured by considering financial experience going from one (III° quartile) to two. ^h Changes of the dependent variable are measured by considering familiarity with financial products going from four (sample average) to five. ⁱ Marginal effect estimated by applying a bivariate probit (financial advice demand - overconfidence score index).

7 Concluding remarks

In recent years, financial advice as a tool for investor protection has increasingly gained momentum among regulators and supervisors. In the European framework, MiFID legislation and MiFID2 rules (due to come into force from January 2017) have refined the regulation of conflicts of interests and identified the characteristics of independent advice.²⁸ ESMA issued guidelines and opinions dealing with several

28 In Italy, the Stability Law for 2016 (Law 208/2015) has recently established a Register of financial advisors identifying independent financial advisers who are natural persons, but at the moment perspectives on independent advice development in Italy are yet to be explored. According to the Report on Investment Choices of Italian Households,

features relevant to the relationship between intermediaries and customers.²⁹ These initiatives endeavour to promote unbiased advice, minimum standards of advisors' knowledge and competence, greater transparency of the nature and cost of the service. In the end, the quality of professional advice should increase, to the benefit of retail investors and especially of low literate investors.

However, such a result cannot be taken for granted. First, investors' reactions to apparently welfare enhancing provisions may be very far from what expected. As a way of example, the UK Retail Distribution Review (RDR), enacted in 2006 along the lines sketched by the European legislation, although prompting a decline in both product prices and biased recommendations, has also gone along with a drop in the demand for financial advice. Some observers argue that such drop might have also been driven by the clearer disclosure of the cost of the advice and the subsequent customers' perception that the service they received did not represent value for money (Financial Conduct Authority, 2014).³⁰ This circumstance points to the low willingness to pay for financial advice, which is widespread also in Italy (Linciano, Gentile, Soccorso, 2015).

Second, less knowledgeable individuals may not benefit of unbiased advice if they are not willing to consult an expert. This is the main finding of the present study, showing that financial advice acts as a complement rather than as a substitute of financial literacy. Additionally, this paper sheds light on the role of overconfidence in reducing the propensity to ask for advice and on its negative association with financial knowledge.

On policy grounds, our results confirm the concerns about regulation of financial advice being not enough to protect investors who need it most. This is particularly worrying in the Italian framework, where the vast majority of consumers exhibits a very low degree of financial knowledge and competency and a strong attitude towards informal advice (i.e. consulting relatives, friends and colleagues). Even more worrying is that, as shown by a preliminary inspection of the data to be developed in future work, the propensity to rely on informal advice is more frequent among men, individuals with lower financial knowledge and higher self-confidence, declaring to have experienced a worsening of their economic conditions and to have difficulties in saving.

In the light of our results, financial education is key to the investors' correct access and use of the tools envisaged to support them in making good financial

published by Consob in June 2015 (Linciano, Gentile and Soccorso, 2015), at the end of 2014, the percentage of Italian families receiving tailored recommendations remains below 10% and willingness to pay for financial advice is very low across all investors.

29 See the 2012 Guidelines on certain aspects of the MiFID suitability requirements; the 2014 opinion on MiFID practices for firms selling complex products; the Guidelines for the assessment of knowledge and competence of individuals in investment firms providing investment advice or information about financial instruments, investment services or ancillary services to clients on behalf of the investment firm.

30 Indeed, costumers are willing to spend money on services that are perceived to provide value, whereas the quality of financial advice may be hard to assess (Cruciani et al., 2015).

choices, as it is the understanding of '*where to go for help*' (OECD, 2005).³¹ Targeted public investor education programmes may be beneficial to retail investors not only directly, i.e. by raising their financial literacy, but also indirectly, i.e. by weakening biases such as overconfidence, negatively affecting individuals' propensity to seek for advice.

Investor education programmes may best address consumers' needs and behavioural biases if they are designed according to an evidence based approach. As a way of example, Italian investors are generally unaware of the correct approach to investment choices (based on the clear identification of goals, time horizon and risk attitude), nor do they rightly appreciate the interaction with advisors (e.g., the need to provide information to intermediaries to be used for the suitability assessment; Linciano, Gentile and Soccorso, 2015). An evidence based education programme would therefore focus also on the investment decision process, the relationship with the subjects involved (first of all, intermediaries) and the rules envisaged to protect investors in every step of such process. Special attention should be also devoted to the control of overconfidence, in order to prevent undesirable reactions potentially hindering the effectiveness of investor protection policies.³² To this respect, exploring to what extent advisors themselves are prone to overconfidence and whether they can help customers become more aware of their own actual capability might shed lights on the need for debiasing education initiatives designed also for professionals.³³

Our study can be extended in several directions. A first line of future work encompasses the analysis of individuals' attitude to follow the advice they received. A second line is exploring attitudes towards advice across needs to be satisfied and goals pursued. The relationship between participation in financial markets and advice seeking is a further topic. Finally, as mentioned above, the analysis of advisors' ability in educating and debiasing their clients through an objective service could also provide useful clues for the advisors' education and training.

31 Financial education as defined by the OECD in 2005 is 'the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being'. Financial education thus goes beyond the provision of financial information and advice, which should be regulated, as is already often the case, in particular for the protection of financial clients (i.e. consumers in contractual relationships)'.
32 The evidence gathered by the Financial Conduct Authority (2014) on the impact of RDR stresses the critical need to educate investors also with respect to the disclosure of costs and conflicts of interests in advice. Both are expected to improve customers' decision making process as well as trust in financial advisors, but on-field and experimental evidence highlights that in fact they may have a counterproductive effect (e.g. the disclosure of conflicts of interest may induce a 'knee-jerk loss of trust in advice that may not be in consumers' best interest'; European Commission, 2010).
33 Overconfidence is not the only bias that could affect financial advisors. For instance, Roszkowski and Snelbecker (1990) show that professionals might be influenced also by framing effect. In other words, also financial experts' decisions may vary depending on how information is delivered (about framing effect see Gentile, Linciano, Lucarelli and Soccorso, 2015).

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Appendix

Table a.1 – Perceived familiarity and past experience with financial products

perceived familiarity	percentage of households declaring to know financial products
Italian government bonds	67
bank bonds	48
Italian listed stocks	45
stock funds	43
deposits	43
bond funds	40
real estate	40
foreign government bonds	28
foreign stocks	24
foreign bonds	23
portfolio management	20
corporate bonds	17
Italian unlisted stocks	15
other	12
derivatives and structured bonds	11
none of these products is known	18

past experience	percentage of households declaring to hold financial products
none	45
deposits	12
real estate	11
banks bonds	10
listed Italian stocks	8
Italian government bonds	8
bond funds	8
stock funds	6
other	3
asset management	2
foreign stocks	2
foreign bonds	1
corporate bonds	1
unlisted Italian stocks	1
foreign government bonds	1
derivatives and structured bonds	0

Source: our computations on GfK Eurosko data – Observatory on 'The approach to finance and investments of Italian households'.

Table a.2 – Behavioural attitudes and personal traits
(percentage points)

variable	items	
behavioural bias exposure	inconsistencies of risk attitudes across domains (reflection effect)	31
	disposition effect (behaviour after losses and gains)	37
self-assessed financial capabilities (people judging themselves as better-than-average)	avoiding useless expenses	83
	monitoring household budget	83
	saving	82
	understanding basic products	70
	saving for retirement	65
	making good investment decisions	63
risk perception and attitude	risk as an uncertain event to be avoided	51
	risk dimensions perceived as relevant	
	<i>capital losses</i>	50
	<i>exposure to market trends</i>	29
	<i>returns lower than expected</i>	28
	<i>variability of return¹</i>	25
	loss aversion	55
	inconsistencies of risk attitudes across different contexts	34
personal traits	optimism	35
	economic satisfaction	30

¹ Among other risk dimensions elicited in the survey, fraud, inability to disinvest, difficulties in monitoring investments, misunderstanding financial information, insufficient legal protection, expensive compensation schemes were mentioned by a percentage of respondents ranging from 11% to 3%. Source: our computations on GfK Eurisko data – Observatory on 'The approach to finance and investments of Italian households'.

Table a.3 – Financial literacy indexes sample statistics

financial knowledge indicator	mean	st. dev.	min	max
NCA	2.0	1.5	0	5
WACA	0.4	0.3	0	1
FA	0.0	1.3	-1.6	2.3

sample percentile	NCA	WACA	FA
	number of correct answers	average percentage of correct answers	values
5	0	0	-1.69
10	0	0	-1.69
15	0	0	-1.36
20	0	0	-1.04
25	1	0.16	-0.99
50	2	0.37	0.09
75	3	0.60	0.90
95	5	1	1.54

Source: our computations on GfK Eurisko data – Observatory on 'The approach to finance and investments of Italian households'. 'NCA' is the number of correct answers. 'WACA' is computed as the weighted average of correct answers by the easiness of questions. 'FA' is computed by applying factor analysis on variables rescaled on the basis of the easiness of questions and on the 'do not know' answers.

Table a.4 – Factor loadings of the FA financial literacy

question	answer	factor loadings	easiness of question ¹
Suppose you win € 1,000 euro at the lottery and that you receive it after one year time (during that period your winning is not invested). If the inflation rate is equal to 2%, in one year's time you will be able to buy: 1) More things than those you can buy today; 2) The same things you can buy today; 3) Less things than those you can buy today; 4) Don't know	correct	0.6	52
	don't know	-0.7	
Diversifying investments means investing...: 1) in a large number of stocks; 2) with a long investment horizon; 3) in uncorrelated assets; 4) in mixed assets as long as they are characterized by the same type of risk	correct	0.6	46
	don't know	-0.7	
What kind of relationship exists between investment risk and return? 1) Direct: the higher the risk, the higher the return; 2) Indirect: the higher the risk, the lower the return; 3) None; 4) Don't know	correct	0.7	46
	don't know	-0.8	
Which of the two following investment options would you prefer? Investment 1 delivers either 7 euros or 4 euros or 3 euros or 2 euros each with a probability of 25%; Investment 2 delivers either 3 euros or 8 euros or 4 euros or 5 euros each with a probability of 25%; it is possible to give an answer on the basis of the available information; I do not know	correct	0	28
	don't know	-0.6	
Suppose you have 100 euros in a current account delivering a 2% annual interest rate (zero costs). Suppose you will make neither withdrawals nor deposits during the coming year. How many euros will be in your current account at the end of the year after interest is paid? ___ euros; I can't answer given the available information; Don't know	correct	0.6	33
	don't know	-0.7	

Source: our computations on GfK Eurisko data – Observatory on 'The approach to finance and investments of Italian households'. ¹ Sample percentage of correct answers which are used as a proxy of the 'easiness of the question' in the computation of the WACA indicator.

Table a.5 – Overconfidence indexes sample statistics

overconfidence indicator	mean	st. dev.	min	max
overconfidence NCA based indicator	-1.16	0.64	-1	1
overconfidence WACA based indicator	-0.30	0.66	-1	1
overconfidence FA based indicator	-0.27	0.65	-1	1

sample percentile	overconfidence NCA based indicator	sample percentile	overconfidence WACA based indicator	percentile	overconfidence FA based indicator
5	-1	5	-1	5	-1
10	-1	10	-1	10	-1
15	-1	15	-1	15	-1
20	-1	20	-1	20	-1
25	-1	25	-1	25	-1
50	0	50	0	50	0
75	0	75	0	75	0
95	1	95	1	95	1

Source: our computations on GfK Eurisko data – Observatory on 'The approach to finance and investments of Italian households'. 'NCA' is the financial literacy index computed as number of correct answers. 'WACA' is the financial literacy index computed as the weighted average of correct answers by the easiness of questions. 'FA' is the financial literacy index computed by applying factor analysis on variables rescaled on the basis of the easiness of questions.

Table a.6 – Comparison between our findings on financial advice seeking determinants and previous empirical evidence

explicative variables	our results	findings in the empirical literature
financial literacy	significant and positive	Significant and positive (Bachmann and Hens, 2014; Bucher-Koenen and Koenen, 2015; Calcagno and Monticone, 2013; Collins, 2012; Debbich, 2015; Hackethal et al., 2012; Battacharya, 2012; Lusardi and Mitchell, 2011; Stolper and Walter, 2014; Van Rooij et al., 2007). Significant and negative/not significant (Disney et al., 2014; Hung and Yoong, 2010; Kramer, 2014; Monticone, 2010; Von Gaudecker, 2015).
overconfidence	significant and negative	Significant and negative (Barber and Odean, 2008; Calcagno and Monticone, 2013; Georgarakos and Inderst, 2011; Guiso and Jappelli, 2006; Hackethal et al., 2012; Karabulut, 2013; Kramer, 2014; Monticone, 2010; Van Rooij et al., 2011; Von Gaudecker, 2015).
woman	significant and positive	Significant and positive (Bluethgen et al., 2008; Calcagno and Monticone, 2013; Collins, 2012; Debbich, 2015; Guiso and Jappelli, 2006; Hackethal et al., 2012; Karabulut, 2013; Kelly, 1995; Monticone, 2010). Significant and negative/not significant (Bachmann and Hens, 2014; Bhattacharya et al., 2012; Hackethal et al., 2012).
age	significant and positive even if hump shaped	Significant and positive (Bachmann and Hens, 2014; Bhattacharya et al., 2012; Bluethgen et al., 2008; Hackethal et al., 2012; Kelly, 1995; Kramer, 2014). Not significant (Calcagno and Monticone, 2013; Debbich, 2015; Monticone, 2010).
real asset ownership	not significant	Not significant (Bachmann and Hens, 2014).
financial experience	significant and positive	Significant and positive (Hackethal et al., 2012; Debbich, 2015). Not significant (Calcagno and Monticone, 2013; Monticone, 2010).
financial wealth	significant and positive	Significant and positive (Bachmann and Hens, 2014; Battacharya et al., 2012; Bluethgen et al., 2008; Calcagno and Monticone, 2013; Debbich, 2015; Guiso and Jappelli, 2006; Hackethal et al., 2012; Kramer, 2014). Significant and negative (Calcagno and Monticone, 2013). Not significant (Monticone, 2010).
family monthly income	not significant	Not significant (Bachmann and Hens, 2014; Debbich, 2015; Calcagno and Monticone, 2013). Significant and positive (Collins, 2012). Significant and negative (Karabulut, 2013).
education	not significant	Not significant (Bachmann and Hens, 2014; Debbich, 2015). Significant and positive (Collins, 2012; Kramer, 2014; Calcagno and Monticone, 2013).
trust in financial intermediaries	significant and positive	Significant and positive (Calcagno and Monticone, 2013; Georgarakos and Inderst, 2011; Hackethal et al., 2012; Kramer, 2014; Monticone, 2010).
risk perceived as something to avoid (risk aversion)	significant and negative	Significant and positive (Monticone, 2010; Kramer, 2014).

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