Quaderni di finanza
(Working papers)

Who intends to become financially literate?

Insights from the Theory of Planned Behaviour

F.C. Billari, M. Gentile, N. Linciano, F. Saita

88

November 2019

CONSOB
COMMISSIONE NAZIONALE
PER LE SOCIETÀ E LA BORSA

L'attività di ricerca e analisi della Consob intende promuovere la riflessione e stimolare il dibattito su temi relativi all'economia e alla regolamentazione del sistema finanziario.

I **Quaderni di finanza** accolgono lavori di ricerca volti a contribuire al dibattito accademico su questioni di economia e finanza. Le opinioni espresse nei lavori sono attribuibili esclusivamente agli autori e non rappresentano posizioni ufficiali della Consob, né impegnano in alcun modo la responsabilità dell'Istituto. Nel citare i lavori della collana, non è pertanto corretto attribuire le argomentazioni ivi espresse alla Consob o ai suoi Vertici.

I **Discussion papers** ospitano analisi di carattere generale sulle dinamiche del sistema finanziario rilevanti per l'attività istituzionale.

I **Quaderni giuridici** accolgono lavori di ricerca volti a contribuire al dibattito accademico su questioni di diritto. Le opinioni espresse nei lavori sono attribuibili esclusivamente agli autori e non rappresentano posizioni ufficiali della Consob, né impegnano in alcun modo la responsabilità dell'Istituto. Nel citare i lavori della collana, non è pertanto corretto attribuire le argomentazioni ivi espresse alla Consob o ai suoi Vertici.

I **Position papers,** curati dalla Consob anche in collaborazione con altre istituzioni, illustrano ipotesi di modifiche del quadro regolamentare o degli approcci di vigilanza e ricognizioni di aspetti applicativi della normativa vigente.

Stampa e allestimento
Tiburtini s.r.l. (Roma)
www.tiburtini.it

Consob
00198 Roma – Via G.B. Martini, 3
t 06.8477.1
f 06.8477612
e studi_analisi@consob.it

ISSN 2281-1915 (online)
ISSN 1121-3795 (stampa)

La propensione ad accrescere la propria cultura finanziaria

Un'applicazione della Teoria del comportamento pianificato

F.C. Billari, M. Gentile**, N. Linciano**, F. Saita****

Sintesi del lavoro

Lo studio analizza le motivazioni della domanda di cultura finanziaria nel contesto domestico. Nonostante i numerosi programmi lanciati negli ultimi anni per favorire il miglioramento del livello generale di cultura finanziaria, è ancora marginale l'analisi dei fattori che possono stimolare l'attenzione al tema da parte dei destinatari delle iniziative. È quindi importante approfondire le leve utilizzabili per motivare i singoli individui ad accrescere le proprie conoscenze in materia di risparmio e investimenti. Questo studio analizza le motivazioni della domanda di cultura finanziaria, utilizzando l'impostazione socio-psicologica della Teoria del comportamento pianificato (Theory of Planned Behaviour) per valutare il ruolo di profili attitudinali personali, contesto sociale e percezione della propria capacità di controllo del processo di apprendimento, oltre a quello di vari fattori quali età, genere, livello di istruzione, fiducia e caratteristiche psicologiche individuali. L'analisi si basa sui dati originali relativi a 1.601 individui intervistati nell'ambito delle rilevazioni per il 2018 dell'Osservatorio Consob sulle scelte di investimento delle famiglie italiane. I risultati ottenuti mostrano che l'intenzione di migliorare la propria cultura in materia di risparmio e investimenti dipende da fattori attitudinali e norme sociali ed evidenzia i segmenti della popolazione potenzialmente più motivati ad accrescere le proprie conoscenze. Lo studio pertanto fornisce elementi utili per la definizione delle iniziative di educazione finanziaria, offrendo indicazioni sui criteri di segmentazione del pubblico di riferimento, e in particolare degli adulti la cui partecipazione avviene su base volontaria, anche in funzione delle leve psicologiche che ne possono determinare interesse e impegno.

* Dipartimento di Scienze Politiche e Social e Carlo F. Dondena Center for Research on Social Dynamics and Public Policy, Università Bocconi. ** Consob, Divisione Studi, Ufficio Studi Economici. *** Dipartimento di Finanza e Baffi Carefin Center, Università Bocconi.

Si ringrazia un anonimo *referee* per gli utili commenti. Le opinioni espresse, eventuali errori e imprecisioni sono imputabili esclusivamente agli autori. Nel citare il presente lavoro, pertanto, non è corretto attribuire le argomentazioni ivi espresse alla Consob o ai suoi Vertici.

Who intends to become financially literate?

Insights from the Theory of Planned Behaviour

F.C. Billari, M. Gentile**, N. Linciano**, F. Saita****

Abstract

Despite the importance that policy-makers acknowledge to financial education, little is known about the demand for financial literacy (especially among the least literate individuals). We here build on the social-psychological framework of the Theory of Planned Behaviour (TPB) to study the intention to learn more about savings and investments as a function of attitudes, subjective norms, and perceived behavioural control, also controlling for individual background factors, including psychological traits. We develop a novel TPB-based module for the CONSOB 2018 Survey on financial investments by Italian households, administered to 1,601 individuals. Analyses of this module, also through structural equation models, show that attitudes, subjective norms and perceived behavioural control are significant determinants of intentions to learn more about savings and investments, as predicted by TPB. Differences in attitudes, subjective norms, and perceived behavioural control contribute to financial literacy gaps for women and less literate individuals in general. In analogy to other fields, interventions in the area of financial literacy should also target the determinants of individuals' intentions, especially for adults that are generally involved in financial education programs on a voluntary basis.

JEL Classifications: G40, G41, G53.

Keywords: financial literacy; Theory of Planned Behaviour; financial education; financial knowledge.

* Department of Social and Political Sciences and Carlo F. Dondena Center for Research on Social Dynamics and Public Policy, Bocconi University. ** Consob, Research Department, Economic Research Unit. *** Department of Finance and Baffi Carefin Center, Bocconi University.

We thank an anonymous referee for useful comments. Any mistake remains, of course, our sole responsibility. Opinions expressed in this paper are exclusively the authors' and do not necessarily reflect those of Consob.

Contents

1 Introduction and motivation

The ability of the average individual to make conscious and well-informed decisions over savings, expenditures, borrowing and retirement planning has become more and more important over time, also as a consequence of the increasing complexity of the economic and financial system (Hastings, Madrian and Skimmyhorn 2013, Lusardi and Mitchell, 2014). The responsibility for long-term investment decisions increasingly rests on individuals, given the structural changes in pension systems that tend to become less generous also with rising life expectancy.

Stricter regulation on product transparency and intermediaries' rules of conduct aimed at improving the quality of interactions between financial institutions and clients may help, along with the creation of simple default products. It is however unquestionable that raising the level of financial literacy, or knowledge[1], of the population is a key goal for the good functioning of markets and the achievement of desirable social outcomes. The 2007-2008 financial crisis has shown that individuals who are educated to make more conscious and long-term oriented saving, borrowing and investment decisions can contribute to reducing financial risks, both at the individual level and the systemic level. In addition, it is important to fill the financial knowledge gaps among groups within the population, which penalise the relatively poorer and weaker segments of the population, particularly vulnerable to economic downturn, as this could also help to reduce economic inequalities (Hung, Yoong and Brown 2012). Finally, improving financial knowledge is an essential component of the toolbox of financial regulators and supervisors, as it may be a precondition for the effectiveness of regulation.

There is in fact abundant evidence that financial literacy is with desirable financial behaviours. Individuals with higher level of knowledge tend to have higher stock market participation (Christelis, Jappelli, and Padula 2010; van Rooij, Lusardi, and Alessie 2011; Arrondel, Debbich, and Savignac 2012). Financial literacy is also correlated with retirement planning, as it has been shown by evidence both from the US (see in particular Lusardi and Mitchell 2007a, Lusardi and Mitchell 2007b) and from other countries (see for instance Almenberg and Säve-Söderbergh 2011, Klapper and Panos 2011, Fornero and Monticone 2015). Symmetrically, individuals with low financial knowledge may engage in more costly borrowing (Moore 2003, Mottola 2013, Lusardi and Tufano 2015).

While financial literacy is undoubtedly desirable, actual knowledge tends to be low and to vary substantially by gender, age, and other markers of social stratification (see in particular Lusardi and Mitchell 2014 for a thorough review of existing evidence and Hung, Yoong and Brown 2012 for a specific focus on gender differences in financial literacy). The evidence of these gaps has prompted policy-makers around the world to engage in the enhancement of financial literacy, also through the definition of nationwide strategies (OECD, 2015).

1 In what follows we use 'financial knowledge' and 'financial literacy' as synonyms.

Generally, the discussion about how to enhance financial literacy is focused on how to *offer* financial education programs. Less attention has been devoted so far to the *demand* for financial education by individuals and to the elements that may influence their intentions to increase financial knowledge. This issue is however gaining momentum in the policy debate, as institutions engaged in financial education are becoming increasingly aware that one of the biggest challenges is to transform knowledge into behaviour, and that this transformation rests on individuals' motivation. Understanding the factors that may trigger personal engagement in the learning process is therefore key. The aim of this paper is precisely to investigate the determinants of the intention to become more financially literate, which can be considered as the measure of an individual's demand for financial education.

From a policy perspective, studying the intentions to become (more) financially literate is important, first because (as already mentioned) the effectiveness of any financial education policy is intertwined with the willingness of the beneficiary individuals and groups to actively engage in their education. Secondly, given that these intentions may depend on different factors, it is important to identify the elements that matter the most in shaping them. Finally, understanding intentions is relevant in order to appreciate whether differences in the levels of financial literacy among population subgroups are also with a different intensity of the intention to learn about finance. If disadvantaged subgroups are less interested in becoming financially literate, then part of the effort should be devoted not only to offer them chances for financial education but also to increase their willingness to take full advantage of these chances.

In order to identify the determinants of the intention to increase one's own financial literacy, we make use of the framework of the Theory of Planned Behaviour (Ajzen, 1988, 1991). The Theory of Planned Behaviour (TPB from now onwards) has been developed in the field of social psychology and subsequently extensively applied in several domains to predict behaviours that depend on purposive, intentional actions. To our knowledge, only a few papers apply this conceptual framework to analyse the intention to make certain financial decisions (East, 1993, Lau *et al.*, 2001, Shih and Fang, 2004, Cucinelli et al., 2017, Nosi *et al.*, 2017), but none has specifically dealt with the intention to learn more about finance and with potential differences across population subgroups. According to the TPB, the intention to perform a given behaviour (in our case, learning more about finance and investments) is the main trigger of a behaviour. This behavioural intention is essentially driven by attitudes (i.e, the perceived costs and benefits associated with the behaviour), subjective norms (i.e., the perception of the social pressure to perform, or not to perform, a behaviour deriving from the opinions of 'important others'), and perceived behavioural control (i.e., the perceived ease or difficulty of performing a behaviour). The background characteristics of an individual may in turn affect attitudes, subjective norms, and perceived behavioural control, and at times directly behavioural intentions.

We build on the conceptual framework of the TPB to develop a specific module within the 2018 wave of the CONSOB Survey on financial investments of Italian households (also CONSOB 2018 Survey from now onwards). The Survey provides data on a representative sample of 1,601 individual decision-makers, i.e. the higher income earner in the family, and the background factors – such as gender, age, trust and other psychological traits – that can influence individuals' attitudes, norms and behavioural control, which are found to be associated with households' level of debt and assets (Brown and Taylor 2014), stock market participation (Conlin et al. 2015) and propensity to save and borrow (Roa, Garron and Barboza, forthcoming).

As a preview of our findings, analyses suggest that the TPB can be a powerful model to explain individuals' intentions to learn more about finance and investments. Attitudes, norms and perceived behavioural control result to be statistically and substantially significant in explaining behavioural intentions, even after controlling for education and a number of background factors, including gender, age, trust, psychological traits. With the exception of perceived behavioural control, this holds true even when the analysis is replicated separately across gender subsamples. Secondly, despite the survey is targeted to the higher income earner in the family who is also likely to have a larger influence on household finance and investment decisions, the full sample model shows that women tend to display a lower intention to learn about finance and investments than men. In addition, there are clear differences in attitudes, subjective norms and perceived behavioural control among individuals with different levels of financial literacy.

Based on our approach that allows to distinguish the role of (non-modifiable) background factors and the role of attitudes, subjective norms and behavioural control, we discuss the directions that can be followed to influence individual intentions to increase financial literacy. Our results also suggest that policy efforts aimed not only at providing opportunities to learn but also at strengthening the intention to learn are equally important when trying to fill the gender gap in financial literacy. Overall, we believe that our methodological approach can help shedding light on a crucial component (individuals' *demand* for financial education) that has received so far limited attention.

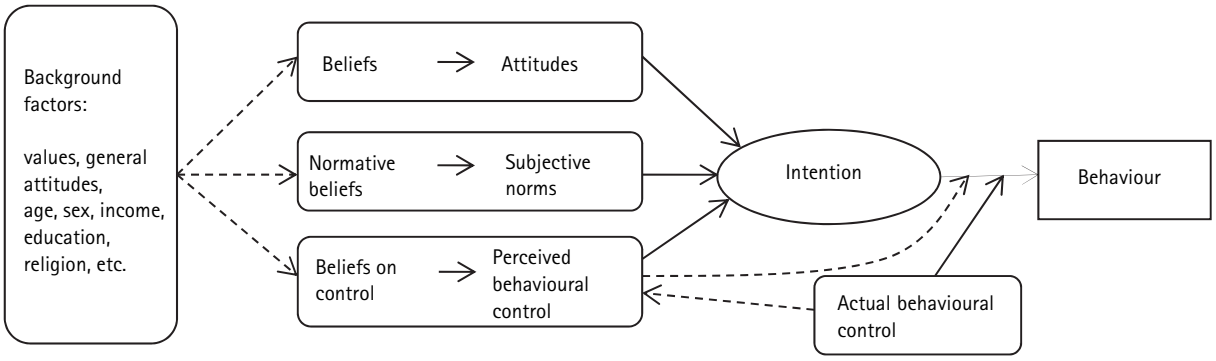
The remainder of this paper is structured as follows. Section 2 briefly reviews the Theory of Planned Behaviour. Section 3 describes our data and methods. Section 4 presents the estimation results on the determinants of the intention to learn more about finance and investments. Section 5 concludes.

2 The Theory of Planned Behaviour

The Theory of Planned Behaviour was introduced by the social psychologist Icek Ajzen (Ajzen, 1988, 1991) as an extension of the earlier 'Theory of Reasoned Action' by Fishbein and Ajzen (1975). According to the TPB, the performance of a

specific behaviour is jointly determined by the intention to perform the behaviour and actual behavioural control, i.e. the actual ability to perform the behaviour. First, TPB extends the earlier Theory of Reasoned Action by assuming that not only a behavioural intention is the key antecedent of a behaviour, but that the actual performance of a specific behaviour can also depend on the individual's perceived and actual behavioural control. Intuitively, the relative role of behavioural intentions and behavioural control can vary depending on the behaviour (consider for instance the difference between the ordering a soft drink and ceasing to smoke). Secondly, according to the TPB framework, the determinants of behavioural intentions can be identified in attitudes (i.e. perceived costs and benefits), subjective norms (i.e. the perception of the degree to which 'important others' approve or disapprove the specific behaviour), and perceived behavioural control. In turn, these factors can be influenced by background factors. Figure 1 sketches a simplified representation of the TPB.

Figure 1 – A schematic presentation of the Theory of Planned Behaviour



Source: Fishbein and Ajzen, 2005, p. 194.

The TPB framework has been tested extensively since its early years and has proved to perform well in a number of applications (see for instance the early meta-analytic review by Armitage and Conner, 2001). The TPB has only rarely been applied (and often on small samples) to financial behaviour and decisions, for instance in modelling the decision to apply for shares in cases of privatization (East, 1993), the intention of using either Internet banking or online trading (Lau, Yen and Chau 2001, Shih and Fang 2004), the intention of retail investors to apply for medium- or high-risk financial products (Cucinelli, Gandolfi and Soana 2016), and the intention to become an entrepreneur (von Graevenitz, Harhoff and Weber 2010). Yet, to our knowledge, the TPB has never been applied to the intention to increase the level of one's own financial literacy.

In what follows, we build on the TPB approach to assess the determinants of an individual's intention to improve his or her financial literacy, i.e. attitudes, subjective norms and perceived control. Following Ajzen (1991), we evaluate attitudes by combining two elements: the subjective probability that the behaviour

will produce a certain outcome (a benefit or a cost), and the perceived desirability of that outcome (outcome evaluation). Similarly, subjective norms, i.e. the social pressure that an individual may (or may not) perceive in learning more about savings and investments, result from the combination of the strength of normative beliefs (which are linked with the likelihood that 'important others' may approve or disapprove a given behaviour) and the importance attributed to the evaluation of each 'important other' (i.e., the motivation to comply to others' expectations and opinions). Perceived behavioural control is measured here directly and aims at capturing the individual perceived ability to perform the behaviour (i.e., learning more about finance and investments).

3 Data and methods

3.1 The CONSOB 2018 Survey

We draw our data from the CONSOB 2018 Survey (formally 'The approach to finance and investment of Italian households'), administered by GfK Italia to a representative sample of Italian retail financial decision-makers. For the purpose of the Survey, a 'financial decision-maker' is defined as the primary family income earner (or the oldest male member, when nobody works, or the oldest female member, when there are no male family members), aged between 18 and 74 (bank employees, insurance company employees and financial advisors are not included). The definition of the financial decision-maker may not capture the actual decision-making process within the households, as financial choices may result from the interaction among household members (e.g., among the spouses). However, there is empirical evidence supporting the relation between personal earnings and the role in household financial decision-making (Johnston, Kassenboehmer and Shields 2016). Sample descriptive statistics are reported in Table 1.

One the basis of our descriptive statistics, Italian financial decision-makers are mainly middle-aged men, living in the North. Their level of education is generally under the bachelor's degree (82%). Indeed, 42% of respondents attended either only the primary or also the secondary school ('less than high school' dummy variable), 40% declare to hold the high school diploma ('high school' dummy variable), while 18% hold at least a bachelor's degree ('at least bachelor's degree' dummy variable). As for financial wealth, 52% of the sample declare to hold no more than 10,000 euros, while more than 80% declare to earn a monthly income up to 3,000 euros.[2]

The Survey also gathers information on psychological traits (the so-called 'Big five') and generalized trust. 'Big five' personality traits were elicited following a validated, 10-item questionnaire by Rammstedt and John (2007). Respondents were asked to state their opinion according to a 5-point Likert scale (from 1 - 'strongly agree' to 5 - 'strongly disagree') on the following ten statements: 'I perceive myself as…: Reserved; Generally trusting other people; Lazy; Easy-going; With few artistic

2 Financial wealth and earnings data could be affected, however, by under-reporting.

interests; Extroverted; Trying to find shortcomings in the others; Diligent in the working activity; Easily getting nervous; With a great imagination'. Table 1 reports sample frequencies for each psychological trait. Generalised trust was measured through the following question, drawn from the European Social survey 2012: 'In general, do you think that it is possible to trust people or that it is better to be wary? Give an answer on a 1 to 10 scale, where 1 means that it is necessary to be wary while 10 means that it is possible to trust people'.

Table 1 – Sample descriptive statistics
(frequencies in percentage values)

variable	percentage
Gender	
men	74.0
women	26.0
Education	
less than high school	42.0
high school	40.0
at least bachelor degree	18.0
Area of residence	
North	49.0
Centre	20.0
South and islands	31.0
Marital status	
single	11.3
cohabitant	8.4
married	66.2
widow/widower	5.9
separated	3.1
divorced	5.3
Age	
<=35	8.8
35<age <=45	21.9
45<age <=55	28.2
55<age <=65	22.3
age > 65	18.8

variable	percentage
Financial wealth	
<=10,000 euros	52.0
10,001 – 50,000 euros	27.0
50,001 – 250,000 euros	18.0
> 250,000 euros	3.0
Monthly family income	
< 1,200 euros	22.0
1,201 - 3,000 euros	60.0
3,001 - 5,000 euros	15.0
> 5,000 euros	3.0
Generalised low trust	49.0
Psychological traits[1]	
extroversion	33.0
agreeableness	41.0
openness	33.0
conscientiousness	66.0

Source: own elaborations on CONSOB 2018 survey data. The sample does not include bank employees, insurance company employees and financial advisors. As for 'employment status' group, 'out of labour' includes housewives, students and unemployed. Frequencies are adjusted by sample weights (provided by GfK Eurisko), i.e. the inverse of the probability to be included in the sample. The accuracy of the estimates of the average values has been tested by computing the corresponding confidence intervals based on the Jackknife variance estimator (the estimates of the confidence intervals are available on request). Income and wealth missing values are imputed by using GfK Eurisko methodology. Income and wealth could be under-reported. Generalised trust is considered 'low' if the trust score is lower than 6. [1] Frequencies refer to the scores of psychological traits higher than 6.

The 2018 Survey also measures respondents' financial knowledge with respect to seven items, including the so-called 'financial literacy big five' by Lusardi (risk-return trade-off, inflation, compound interest, diversification, mortgage), as well as two more sophisticated questions (the relation between price and interest of bonds and riskiness of stocks; Table 2). Respondents are classified as low or high financially literate on the basis of an overall score based on the number of correct answers. The level of financial literacy is evaluated to be high (low) if the number of correct answers is above (below or equal to) the sample median score (i.e., 3 correct answers out of a total of 7 questions).

Table 2 – Financial literacy questionnaire

financial literacy item	question wording
risk-return trade off	Q1) In general, riskier investments tend to provide higher returns over time than safer investments: 1 = true; 2 = false ; 3 = do not know ; 4 = refusal
inflation	Q2) Imagine that the interest rate on your savings account was 1 percent per year and inflation was 2 percent per year. After 1 year, would you be able to buy with the money in this account: 1 = more than today; 2 = exactly the same as today; 3 = less than today; 4 = do not know; 5 = refusal
compound interest	Q3) Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? 1 = more than € 102; 2 = exactly € 102; 3 = less than € 102; 4 = do not know; 5 = refusal
portfolio diversification	Q4) Investing 1000 euro in one stock of one firm is generally less risky than investing 100 euro in 10 stocks of different firms. 1 = true; 2 = false; 3 = do not know; 4 = refusal
mortgage	Q5) A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less. 1 = true; 2 = false; 3 = do not know ; 4 = refusal
relationship between interest rate and price of bonds	Q6) If the interest rate falls, what should happen to bond prices? 1 = rise; 2 = fall; 3 = stay the same; 4 = none of the above; 5 = do not know; 6 = refusal
risk of stocks	Q7) Unlisted stocks are normally riskier than listed stocks. 1= true; 2 = false; 3 = do not know; 4 = refusal

Table 3 compares financial decision-makers by level of financial literacy and gender. Respondents in the high financial literacy group tend to be more educated, (being their level of education equal or above high school degree in 83% of the cases against 66% in the low financial literacy group, and married in 83.4% of the cases if they are male decision-makers, against female decision-makers who are either single (28.1%) or widow (20.3%) or divorced (17.0%) in the majority of the cases and live alone (35.6%) more frequently than male financial decision-makers (5.2%).

Table 3 – Sample descriptive statistics by gender and financial literacy groups
(frequencies in percentage)

variable	women	men	low financial literacy	high financial literacy
Marital status				
single	28.1	5.7	10.0	12.7
cohabitant	11.9	7.2	8.3	8.5
married	13.7	83.4	66.3	66.1
widow/widower	20.3	1.2	6.2	5.5
separated	9.1	1.1	3.6	2.5
divorced	17.0	1.4	5.7	4.8
Age				
24<=35	7.6	12.6	9.8	7.7
35< age <=45	22.2	21.2	20.6	23.4
45< age <=55	29.0	25.5	28.8	27.5
55< age <=65	22.3	22.2	21.6	23.1
age >65	18.9	18.4	19.2	18.4
Education				
primary school	5.3	3.2	5.9	1.3
secondary school	16.7	23.7	27.6	15.7
high school	53.0	52.8	50.2	55.7
at least bachelor degree	25.0	20.2	16.2	27.2
Life Cycle				
live with parents	3.0	1.2	2.0	1.2
live alone	35.6	5.2	11.7	13.9
young couple without children	7.8	6.8	6.2	8.1
live with children <=15	12.4	24.6	20.7	22.6
live with children > 15	27.8	34.9	34.8	31.2
couple who does not live with sons/daughters	3.5	18.3	13.4	16.0
couple without children	5.3	5.8	5.8	5.5
live with the family of sons/daughter	1.5	1.3	2.0	0.7
live with other people	3.0	1.9	3.3	0.9

Source: own elaborations on CONSOB 2018 survey data.

3.2 The intention to learn more about savings and investments: item design and descriptive statistics

In CONSOB 2018 questionnaire, we designed a module on the intention to learn more about personal finance, with specific reference to savings and investments. This intention is elicited in a time-specific format, i.e. with respect to a 12 month horizon[3], with the following question: 'I intend to learn more about savings and investments right now or within 12 months at latest'. Answers are expressed on a 5-point Likert scale (from 1 - 'strongly agree' to 5 - 'strongly disagree').

Following the TPB approach, intentions are regarded as dependent on three latent variables: attitudes (i.e. one's own overall evaluation of the behaviour), subjective norms (expressing the perceived social pressure in favour or against the behaviour) and perceived behavioural control (i.e. perception of one's own ability to enact the behaviour). Attitudes are gathered through two components: beliefs about the consequences of learning more (behavioural beliefs) and judgments about these consequences (outcome evaluation).

Subjective norms are measured with both the individual perception about how other people would like the person to behave, and the individual consideration of other people's opinion, where proximal people may be the partner, relatives, friends and colleagues. Finally, perceived behavioural control is measured by gathering control beliefs regarding learning more about savings and investments. The above-mentioned constructs are elicited through multiple answer questions, requiring respondents to score their own preferences on a 5-point Likert scale (Table 4). For each of the psychological constructs (attitudes, subjective norms and perceived behavioural control) items were presented to respondents in a random order.

Let us turn now to some descriptive statistics. As for the components of the 'attitude' towards learning more about savings and investments, the item related to behavioural beliefs recording the highest percentage of agreement is a sort of need for cognition (i.e., 'learning more about savings and investments would be a way to learn new things'), while the outcome evaluation gathering the highest agreement is 'saving', along with 'avoiding unnecessary expenses' (Figure 2).

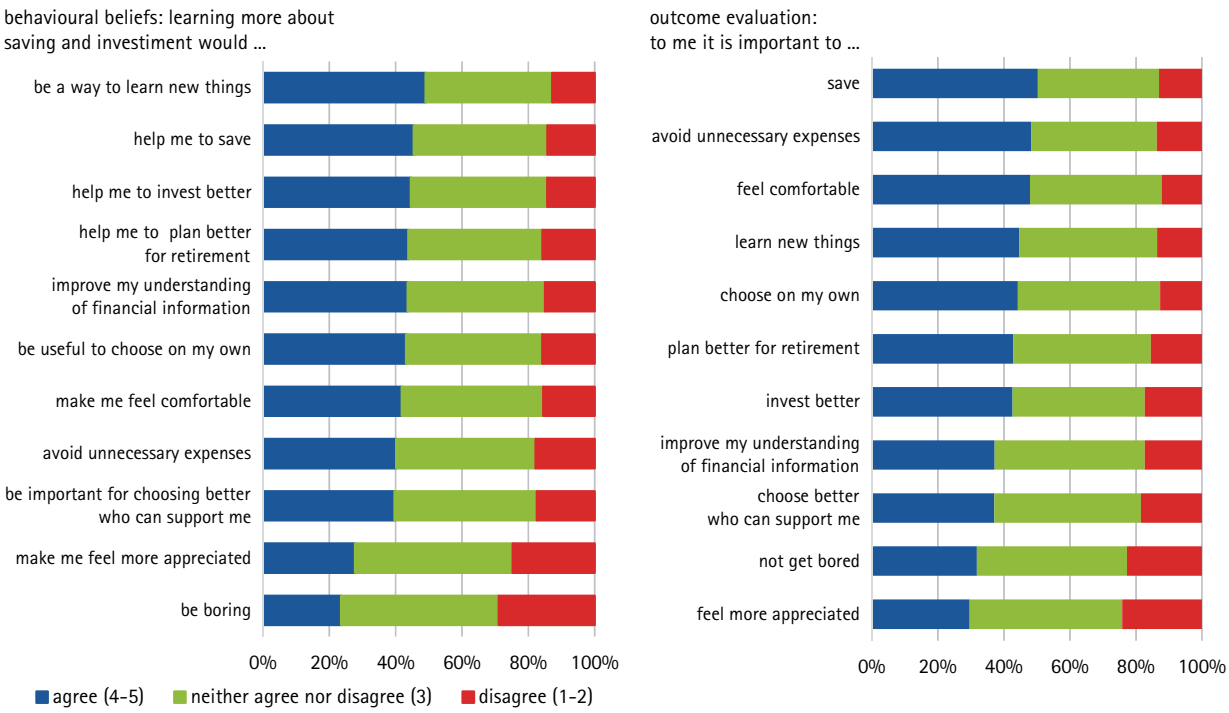
As for subjective norms, the strongest individual source of pressure appears to be the 'partner' for both components (i.e., the individual perception about how people would like the person to behave and the individual consideration of people's opinion; Figure 3).

3 The Survey also elicited intention in a generalized format, i.e. without specifying any time horizon, with the following question: 'I intend to learn more about savings and investments'. We verified that using the generic intention as dependent variable does not significantly change the econometric results (estimates available upon request).

Table 4 – Survey questions collecting information on attitudes, subjective norms and perceived behavioural control

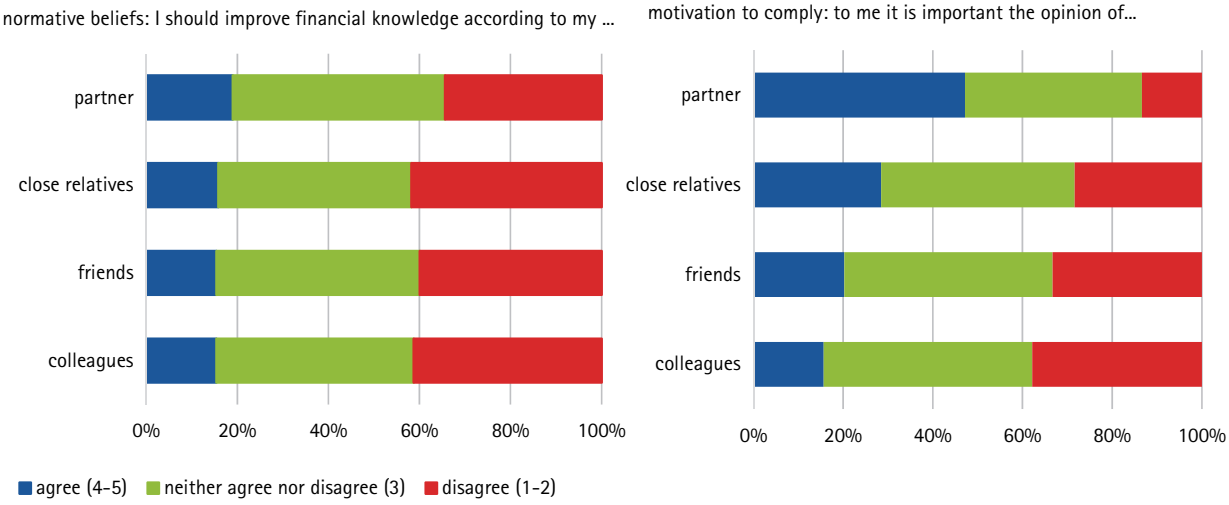
psychological constructs	items
Attitudes	
behavioural beliefs	For each of the following statements, choose the answer which best describes your attitude (scale from 1- strongly agree to 5-strongly disagree): Learning more about savings and investments would... a) help me to save b) make me feel more comfortable c) avoid unnecessary expenses d) be boring e) be a way to learn new things f) be useful to choose on my own g) be important for choosing better who can support me h) help me to invest better i) improve my understanding of financial information j) help me to plan better for retirement k) make me feel more appreciated
outcome evaluation	For each of the following statements, choose the answer which best describes your attitude (scale from 1- strongly agree to 5-strongly disagree): To me it is important to.... a) save b) feel more comfortable c) avoid unnecessary expenses d) not get bored e) learn new things f) choose on my own g) choose better who can support me h) invest better i) improve my understanding of financial information j) plan better for retirement k) feel more appreciated
Subjective norms	
normative beliefs	For each of the following statements, choose the answer which best describes your attitude (scale from 1- strongly agree to 5-strongly disagree): I should learn more about savings and investments according to my: a) partner b) close relatives c) friends d) colleagues
motivation to comply	For each of the following statements, choose the answer which best describes your attitude (scale from 1- strongly agree to 5-strongly disagree): I value the opinion of my... a) partner b) close relatives c) friends d) colleagues
Perceived behavioural control	
	For each of the following statements, choose the answer which best describes your attitude (scale from 1- strongly agree to 5-strongly disagree): Learning more about savings and investments is difficult because... a) topics are too complex b) I don't know who can help me or where I can find financial information c) people who can help me are not on my side d) it takes too long

Figure 2 – Attitude towards learning more about savings and investment



Source: own elaborations on CONSOB 2018 survey data. Figures refer to respondents' opinion on the reported statements (5-point Likert scale, from 1 – 'strongly disagree' to 5 – 'strongly agree'). Average values are adjusted by sample weights.

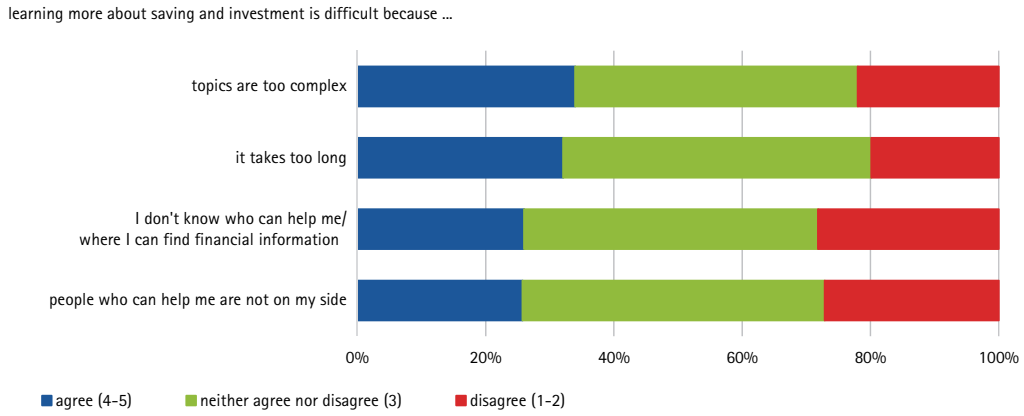
Figure 3 – Subjective norms towards learning more about savings and investments



Source: own elaborations on CONSOB 2018 survey data. Figures refer to respondents' opinion on the reported statements (5-point Likert scale, from 1 – 'strongly disagree' to 5 – 'strongly agree'). Average values are adjusted by sample weights.

Finally, as for perceived control, more than one third of respondents agrees that savings and investments topics are too complex and that learning takes too long (Figure 4).

Figure 4 - Perceived behavioural control relative to learning more about savings and investments



Source: own elaborations on CONSOB 2018 survey data. Figures refer to respondents' opinion on the reported statements (5-point Likert scale, from 1 – 'strongly disagree' to 5 – 'strongly agree'). Average values are adjusted by sample weights.

Table 5 reports the distribution of the TPB constructs (i.e., attitude, subjective norms and perceived control) by their score levels. The score is a weighted and normalised sum of the items of the construct. For example, the score for 'attitude' is computed by multiplying each behavioural belief by the corresponding outcome evaluation and by summing the resulting weighted scores (with the scale of the last item 'learning about savings and investments would be boring' inverted). Subsequently, the score is normalized between 0 and 1 and categorised into the following classes: 'very low' between 0 and 0.2; 'low' between 0.2 and 0.4, 'medium' between 0.4 and 0.6, 'high' between 0.6 and 0.8, 'very high' between 0.8 and 1. These steps were followed also to compute subjective norms and perceived behavioural control indicators. As shown in Table 5, the proportions of individuals showing a high and a very high score for attitude, subjective norms and perceived behavioural control are, respectively, 19%, 6.4% and 22.4%.

Table 6 displays the distribution of the scores by gender and financial knowledge. Women tend to show a higher attitude towards learning finance as the proportion of those exhibiting a high or a very high score is significantly greater than that of men, while the opposite holds true for perceived behavioural control. Differences across levels of financial knowledge are more remarkable, as financial decision-makers with a higher level of financial literacy show, on average, stronger attitude and perceived behavioural control and feel lower social pressure.

Table 5 – Distribution of attitudes, subjective norms and perceived behavioural control
(in percentage)

class	attitudes	subjective norms	perceived behavioural control
very low	9.8	30.6	7.0
low	39.9	49.5	22.5
medium	31.2	13.6	48.2
high	14.2	4.9	14.4
very high	4.8	1.5	8.0

Source: own elaborations on CONSOB 2018 Survey data. The internal consistency of the indicators was tested through the Cronbach's alpha statistic. The overall scores reported in the Table are normalised between 0 and 1 and categorised into the following classes 'very low' between 0 and 0.2; 'low' between 0.2 and 0.4, 'medium' between 0.4 and 0.6, 'high' between 0.6 and 0.8, 'very high' between 0.8 and 1. Average values are adjusted by sample weights.

Table 6 – Attitudes, subjective norms and perceived behavioural control by gender and level of financial literacy
(in percentage)

psychological construct[1]	gender		financial literacy	
	men (a)	women (b)	low (c)	high (d)
Attitudes				
very low	9.2	11.5	13.4	5.2
low	42.2	33.5	45.3	33.1
medium	30.8	32.4	25.9	38.0
high	13.3	17.0	11.6	18.0
very high	4.5	5.6	3.7	6.2
t-test (a)-(b)	-2.2**			
t test (c)-(d)			-8.4***	
Subjective norms				
very low	29.0	35.3	28.4	33.4
low	51.0	45.3	51.2	47.2
medium	13.5	13.9	13.0	14.3
high	4.9	4.8	5.5	4.0
very high	1.7	0.7	1.9	1.0
t-test (a)-(b)	0.5			
t-test (c)-(d)			3.1***	
Perceived behavioural control				
very low	6.8	7.0	7.2	6.5
low	20.3	29.0	23.7	21.0
medium	50.8	40.8	51.2	43.7
high	14.3	14.6	9.9	20.1
very high	7.8	8.4	7.4	8.7
t-test (a)-(b)	1.4*			
t-test (c)-(d)			-4.3***	

Source: own elaborations on CONSOB 2018 survey data. [1]The overall scores are normalised between 0 and 1 and categorised into the following classes 'very low' between 0 and 0.2; 'low' between 0.2 and 0.4, 'medium' between 0.4 and 0.6, 'high' between 0.6 and 0.8, 'very high' between 0.8 and 1. Reported frequencies are adjusted by sample weights. T-test verifies if the reported difference is significantly different from zero. * indicates significance at 10%; ** indicates significance at 5%; *** indicates significance at 1%.

Finally, Table 7 reports the outcomes of the question on the intention to learn finance within 12 months at latest by categories of agreement, gender and financial literacy level.

Table 7 – Distribution of intention to learn more about savings and investments by gender and financial literacy level
(in percentage)

agreement categories	all sample	gender		financial literacy	
		men (a)	women (b)	low (c)	high (d)
strongly disagree	13.2	12.0	16.5	15.5	10.4
disagree	16.7	15.5	19.9	14.7	19.2
neither agree nor disagree	46.8	48.0	43.3	50.0	43.0
agree	19.3	20.7	15.4	16.2	23.3
strongly agree	4.0	3.7	4.9	4.0	4.2
t-test (a)-(b)		1.9*			
t-test (c)-(d)				-2.7***	

Source: own elaborations on CONSOB 2018 Survey data. T-test verifies if the reported difference is significantly different from zero. Reported frequencies are adjusted by sample weights. * indicates significance at 10%; *** indicates significance at 1%.

3.3 Background factors

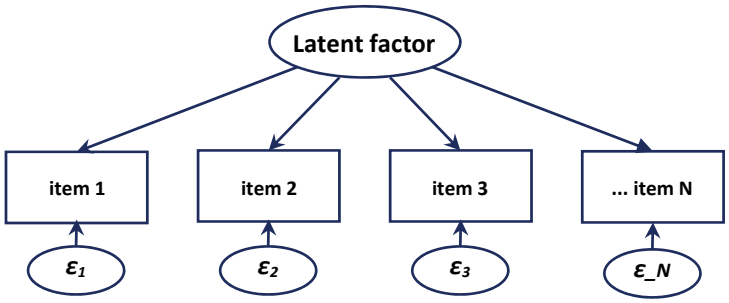
According to the TPB, several background factors may underpin the constructs leading the intention to perform a behaviour, i.e. psychological traits, socio-economic and demographic features, and financial literacy. As mentioned above, the CONSOB 2018 Survey includes psychological traits (such as personality traits, risk aversion, loss aversion, generalized trust, etc.), socio-economic and demographic factors (such as education, age, gender and income), and financial literacy. In empirical analyses, we strongly restrict the set of background factors to avoid endogeneity issues. In particular, among personal traits, we select the classic 'big five' psychological traits (agreeableness, conscientiousness, emotional stability, extroversion, openness) and the level of generalized trust, while as for social factors we consider only gender, age and education.

3.4 Analytical strategy: confirmatory factor analysis (CFA) and structural equation models (SEM)

In the previous section, attitudes, subjective norms and perceived behavioural control were approximated as weighted scores for descriptive statistical purposes. According to the TPB, however, they are psychological constructs and should be more accurately considered as latent factors, which can be measured through a set of items measured, in turn, through multiple answer questions.

The so-called confirmatory factor analysis (CFA analysis) allows to treat attitudes, subjective norms and perceived behavioural control as latent factors, which influence the answers to multiple item questions (Figure 5).

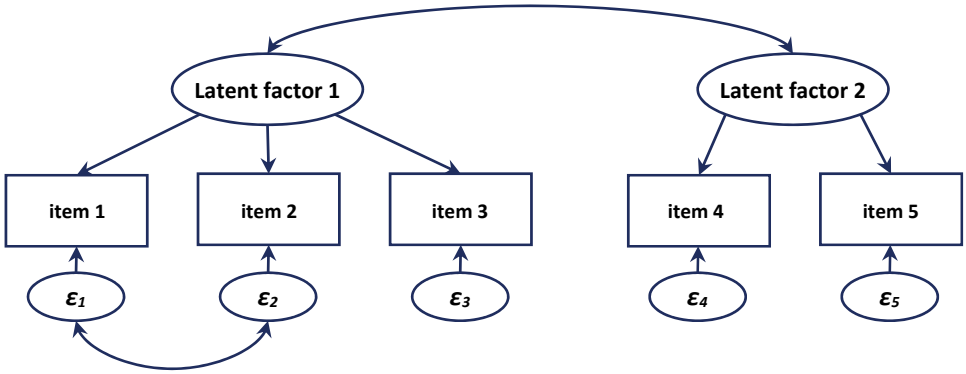
Figure 5 – Confirmatory factor analysis (CFA) graphical representation



Following conventional signs, ovals indicate latent factors, while rectangles observable variables; 'ε_i' is an idiosyncratic error. The graph represents the relation between the latent factor and the items of the question used for measurement.

When multiple latent factors are considered, CFA allows to account for both the possible correlation among the latent factors and the possible correlation among the measurement errors of the items due to noise in survey responses (Figure 6).

Figure 6 – Two factor CFA



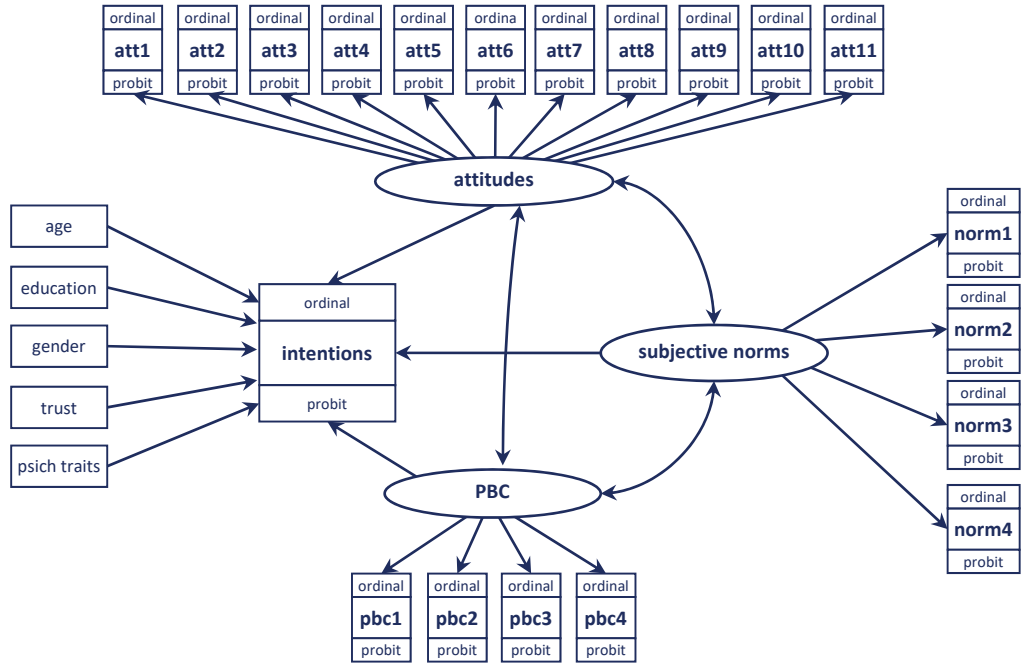
Following conventional signs, ovals indicate latent factors, while rectangles observable variables; 'ε_i' is an idiosyncratic error. Arrows signal that: a) covariance between the two latent factors is significant; b) item1, item2, item3 are used to measure the first latent factor; c) item 4 and item 5 are used to measure the second latent factor; d) covariance between the idiosyncratic errors ε_1 and ε_2 is significantly different from zero.

In addition, the CFA enables to treat the non-linearity of the causal relationship among latent factors and respondents' answers. Indeed, given that, as already mentioned in Table 4, answers are given on a Likert scale ranging from 1 to 5 (i.e., from 'strongly disagree' to 'strongly agree'), response variables are discrete categorical variables that can be best analysed through an ordinal probit model.

Finally, the CFA analysis can be included in a more general model of the intention to perform a given behaviour by simultaneously estimating the causal relationships between latent factors and the corresponding item responses on one side, and the relationship among intentions and latent factors on the other side. To simultaneously model these relationships, we apply the CFA to move, as a second step, to a more general structural equation modelling (Generalized Structural Equation Model - GSEM), where the non-linear links between attitudes, subjective

norms, perceived behavioural control and intentions are also estimated through an ordered probit model as they are elicited on a Likert scale (Figure 7).

Figure 7 – Generalized structural equation model with a latent component



Following conventional graphical signs, ovals indicate latent factors, while rectangles observable variables. 'psych traits' (psychological traits) refer to the Big five personal traits. 'att1' – 'att11' are the product between behavioural beliefs and outcome evaluation elicited by attitude measurement questions; 'norm1'-'norm4' are the product between normative beliefs and motivation to comply elicited by social pressure measurement questions; 'pbc1-pbc4' are perceived behavioural control items. The variables 'att1-att11' and 'norm1-norm4' range from 1 to 25, while 'pbc1-pbc4' range from 1 to 5. The variable 'education' is measured by 2 dummy variables ('high school' and 'at least university degree'). The variable 'gender' is a dummy variable equal to 1 if the decision-maker is male. The dependent variable 'intentions' ranges from 1 to 5 (5-point Likert scale). Arrows represent: a) relations among latent factors and measurement items; b) covariances among latent factors; c) relations between intentions and explicative variables/latent factors. Models applied are: 1) ordinal probit between latent factors and measurement items; 2) ordinal probit between the independent variable 'intentions' and latent factors /explicative variables.

As shown in the next section, the empirical analysis first tested the degree of coherence and correlations among the answers referring to the same latent factor (i.e., 11 items for attitude, 4 items for perceived social pressure and 4 items for perceived behavioural control); secondly, it applied the CFA; finally, it estimated a generalized structural equation model, for both the full sample and for subsamples drawn for gender and financial literacy level.

4 Results

The theoretical specification of the determinants of the intention to learn more about finance rests on the hypothesis that the latent factor 'attitude' can be related to the product between 'behavioural beliefs' and 'outcome evaluations' (11 items, also att1-att11 henceforth); the latent factor 'subjective norms' can be related

to the interaction between 'normative beliefs' of 'important others' and 'motivation to comply' (4 items, also norm1-norm4 henceforth); the latent factor 'perceived behavioural control' relates to 'control beliefs' (4 items; pbc1-pbc4).

In particular, given that all the items are measured on a 5-point Likert scale, the observable variables att1 – att11 and norm1-norm4 range from 1 to 25 while pbc1-pbc4 range from 1 to 5. As already mentioned, they are all self-reported scores, that increase with the degree of respondent's agreement.

Table 8 – Level of coherence among psychological construct components

	factor loadings first principal component	Cronbach's α
Attitudes		
att1	0.90	0.94
att2	0.91	0.94
att3	0.85	0.94
att4	0.37	0.96
att5	0.84	0.94
att6	0.81	0.94
att7	0.84	0.94
att8	0.87	0.94
att9	0.88	0.94
att10	0.87	0.94
att11	0.73	0.94
Variance explained (%)	*67*	
Total α		*0.95*

	factor loadings first principal component	Cronbach's α
Subjective norms		
norm1 (partner)	0.80	0.93
norm2 (relatives)	0.91	0.88
norm3 (friends)	0.93	0.87
norm4 (colleagues)	0.92	0.88
Variance explained (%)	*80*	
Total α		*0.91*
Perceived behavioural control		
pbc1	0.87	0.78
pbc2	0.84	0.81
pbc3	0.78	0.84
pbc4	0.83	0.81
Variance explained (%)	*70*	
Total α		*0.85*

Source: own elaborations on CONSOB 2018 survey data. For each row, the reported α is computed without taking into account the correspondent item in the same row; 'att1'-'att11' are the product of behavioural belief and outcome evaluation; 'norm1'-'norm4' are the product between normative beliefs and motivation to comply; 'pbc1'-'pbc4' are perceived behavioural control items.

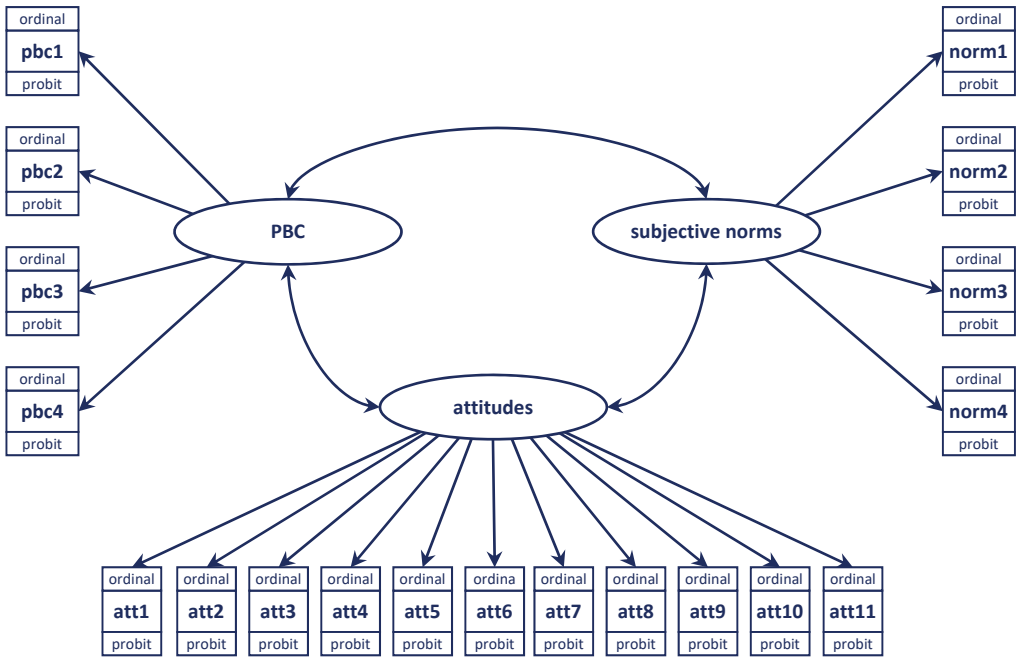
Before the application of the CFA, preliminary analyses were carried out to test the degree of coherence and commonality among the answers referring to the same latent factor (i.e., through Cronbach's α and principal component analysis; see Table 8 for more details). The levels of correlation among responses justifies the application of the confirmatory factor analysis along the lines already detailed in section 4. Indeed, Cronbach's α among the items related to attitude, social pressure and perceived behavioural control is equal to 0.95, 0.91 and 0.85 respectively, while the first principal component explains 67%, 80% and 70% of the sample variance respectively[4].

4 There are items, however, which are less correlated than others: a) 'learning more about savings and investments would be boring' in the attitude group of responses; b) 'partner' in the subjective norm group of variables; c) 'learning more about savings and investments is difficult because people who can help me are not on my side' in the perceived behavioral group of responses.

4.1 Attitudes, subjective norms and perceived behavioural control: results from the CFA

This section reports estimate results referring to the measurement component of the generalised structural equation model described in section 4 (Figure 8).

Figure 8 – Joint CFA of attitudes, perceived social pressure and perceived behavioural control



Following conventional graphical signs, ovals indicate latent factors, while rectangles observable variables. 'Psych traits' (psychological traits) refer to the Big five personal traits. 'att1'–'att11' are the product between behavioural beliefs and outcome evaluation elicited by attitude measurement questions; 'norm1'-'norm4' are the product between normative beliefs and motivation to comply elicited by social pressure measurement questions; 'pbc1-pbc4' are perceived behavioural control items. The variables 'att1-att11' and 'norm1-norm4' range from 1 to 25, while 'pbc1-pbc4' range from 1 to 5. Arrows signal: a) relations among latent factors and measurement items; b) significant covariance among latent factors. The model applied is an ordinal probit between latent factors and measurement items.

As already mentioned, the discrete, ordinal nature of each variable justifies the application of the ordered probit estimation method. In particular, we estimate 11 ordered probit models for the latent factor attitude, 4 in the case of subjective norm and 4 with respect to the latent factor perceived behavioural control. As an example, for the observable variable 'att1', we estimate the following probabilities:

$$Prob(att_1 = i|Attitude) = Prob(c_{i-1} < Attitude * \beta_1 + \varepsilon_{1i} < c_i)$$

where i=1,...,25, $\varepsilon_{1i} \sim N(0,1)$, $c_0 = -\infty$ and $c_{25} = +\infty$. Therefore, the domain of a Normal distribution with mean zero and 1 standard deviation is divided in 24 cut-off points and the score ($Attitude * \beta_1 + \varepsilon_{1i}$) is used along with the cut-off points to

obtain the probabilities that each respondent shows a specific degree of agreement (from 1='strongly disagree at all' to 5='strongly agree').[5]

Table 9 reports estimates of the parameters representing the strength of the causal relationship between each latent factor and correspondent multiple answer items. For identification purposes we constrain to 1 respectively the observable variables att2 (*make me feel comfortable*), norm1 (*friends*) and pbc1 (*financial knowledge topics too complex*), as these variables record the highest factor loadings in the principal component analysis (see Table 8 for more details). All the coefficients are significant at 1% level.

Table 9 – Confirmatory factor analysis estimates

Psychological constructs	estimates
Attitudes: learning more about savings and investments would...	
att2: make me feel comfortable	1.00
att1: help me to save	0.99***
att3: avoid unnecessary expenses	0.68***
att4: be boring (reverse coded)	0.17***
att5: be a way to learn new things	0.65***
att6: be useful to choose on my own	0.53***
att7: be important to choose on my own	0.64***
att8: help me to invest better	0.74***
att9: improve my understanding of financial information	0.75***
att10: help me to plan better for retirement	0.74***
att11: make me feel more appreciated	0.44***
Subjective norms: I should improve my knowledge regarding savings and investments according to my...	
norm3: friends	1.00
norm1: partner	0.34***
norm2: close relatives	0.63***
norm4: colleagues	0.86***
Perceived behavioural control: learning more about savings and investments is difficult because...	
pbc1: topics are too complex (reverse coded)	1.00
pbc2: I do not know who can help me /source of information (reverse coded)	0.80***
pbc3: people who can help me are not on my side (reverse coded)	0.57***
pbc4: it takes too long (reverse coded)	0.72***
Covariances among latent factors	
attitude and subjective norms	3.6***
attitude and perceived behavioural control	-1.5***
subjective norms and perceived behavioural control	-2.4***

Source: own elaborations on CONSOB 2018 survey data. *** indicates significance at 1%.

5 For robustness purposes, a linear representation of the relation between latent factor and item responses was estimated as well, by applying the Asymptotic Distribution Free (ADF) estimation method. Results (available on request to the authors) are in line with the order probit estimates reported in the paper.

Estimation results allow us to rank the items according to the strength of their linkage with latent factors. In details, the main contributor to the attitude towards improvement of one's own financial knowledge is att1 ('help me to save') while the least relevant is att4 ('learning would be boring' reverse coded). As for subjective norms and perceived control, norm4 ('colleagues') and pbc2 ('I don't know who can help me/the source of information') are respectively the most relevant items.

Lastly, while the covariance, between attitudes and subjective norms is significant and positive, covariances between perceived behavioural control and the other two psychological constructs are significantly negative (all at 1% level)[6]. One possible interpretation of this empirical evidence is that more overconfident individuals are more likely to display both less positive attitudes towards learning and higher perceived behavioural control. Analyses using simple *t-tests* provide empirical support to this interpretation. Following Broihanne *et al.* (2014), we define individuals as *overconfident* (*underconfident*) if the sign of the difference between the self-reported number of correct answers to financial literacy questions and the number of actual correct answers is positive (negative). Based on this definition, the attitude towards learning of overconfident respondents is on average lower (at a 1% significance level) than that of underconfident ones. On the other hand, perceived behavioural control of overconfident respondents is on average higher (at a 10% significance level) than that of underconfident ones.

4.2 Intentions to learn more about savings and investments: results from the SEM

Let us now turn to the joint estimation of the relationship among the intention to improve one's own financial knowledge in a time-specific horizon and attitudes, subjective norms and perceived behavioural control) (Figure 7). The GSEM allows to jointly estimate both the structural part and the latent building block of our model with a high level of flexibility. The specification of the model also includes some background factors, added on the basis of the already underlined exogeneity criterion: age, education, gender, generalized trust and psychological traits such as extroversion, openness, consciousness, agreeableness and emotional stability[7].

Given that the intention to learn about savings and investments is a discrete variable which ranges from 1 to 5, we apply anordered probit model.

In particular, the structural component of the model is formalized through the equation:

$$Prob(intention = i|Y) = Prob(c_{i-1} < Y * \gamma + \eta < c_i)$$

6 This result is confirmed when we take into account deterministic scores.

7 We build up for gender a dummy variable that is equal to 1 when the financial decision-maker is a man; education is presented by 2 dummy variables: 'high school' and 'at least bachelor degree'; psychological traits are considered in the model on 5-point Likert scale, while generalized trust on 10-point Likert scale.

where i=1,...,5, $\eta \sim N(0,1)$, $c_0 = -\infty$ and $c_5 = +\infty$, γ is a vector of coefficients, the matrix Y includes the latent and the background factors. Therefore, the domain of a Normal distribution with mean zero and 1 standard deviation is divided in 4 cut-off points and the score $(Y * \gamma + \eta)$ is used along with the cut-off points to obtain the probabilities that each respondent shows a specific degree of agreement (from 1='do not agree at all' to 5='strongly agree') [8,9] .The model does not raise any identification issues as it is totally recursive.

Estimates of the determinants of intention are reported in Table 10. Attitudes, subjective norms and perceived behavioural control are significant determinants of the intention to learn more about savings and investments. However, the incidence of the attitudes is higher than the influence of subjective norms and, above all, than the impact of perceived behavioural control. Among the background factors, psychological traits and gender tend to have a significant influence on the willingness to learn finance. The effect of gender and financial knowledge will be deeply analysed in the following section through a group comparison analysis.

Table 10 – Determinants of the intention to learn more about savings and investments (GSEM)

variable	estimates	variable	estimates
attitudes	0.32***	trust	0.00
subjective norms	0.16***	extroversion	-0.05**
perceived behavioural control	0.10***	openness	0.07***
woman	0.22***	conscientiousness	-0.06**
age	-0.01	agreeableness	0.02
age squared	0.00	emotional stability	0.01
high school	-0.06		
at least bachelor degree	0.13		

Source: own elaborations on CONSOB 2018 survey data. ** indicates significance at 5%; *** indicates significance at 1%.

4.3 Group comparisons by gender and financial literacy level

Group comparison by gender shows that the intention to learn about savings and investments differs significantly among men and women. Being man (woman) increases (decreases) the probability of being willing to learn more about finance. The difference is especially remarkable given that the sample female group refers to financial decision-makers, that is to the highest income earner, who is also

8 For robustness purposes, a linear representation of the relation between latent factor and item responses has been estimated as well by applying ADF estimation method. Results, available on request, are in line with the order probit estimates reported in this section.

9 In the linear specification we tested also a model of the determinants of attitudes, subjective norms and perceived behavioural control through the following equations:
$Attitudes = \alpha_0 + \alpha_1 age + \alpha_2 age^2 + \alpha_3 man + \alpha_4 dummy_{high\ school} + \alpha_5\ dummy_{bachelor} + \varepsilon_1$ (1)
$Norms = \gamma_0 + \gamma_1 age + \gamma_2 age^2 + \gamma_3 man + \gamma_4 dummy_{high\ school} + \gamma_5 dummy_{bachelor} + \varepsilon_2$ (2)
$PBC = \theta_0 + \theta_1 age + \theta_2 age^2 + \theta_3 man + \theta_4\ dummy_{high\ school} + \theta_5\ dummy_{bachelor} + \varepsilon_3$ (3)
Given that all the R^2 related to these equations are not greater than 0.05 (results available on request), we decided to represent them as correlations among explicative variables rather than through causal relations.

likely to have a greater role in household financial decision-making. As a consequence, one may suspect that this gender difference could be even larger in the overall population including also non decision-makers. At the same time, this difference suggests that trying to reinforce women's intention to learn more about finance could be a relevant part of a financial education strategy aimed at reducing the financial literacy gender gap.

To analyse this issue further, we applied the model over the two gender groups by segmenting also on the basis of financial knowledge level (Table 11). As already mentioned, the level of financial knowledge is high (low) if the number of correct answers is above (below or equal to) the sample median score (3 correct answers out of a total of 7 questions).

Table 11 – Determinants of the intention to learn more about savings and investments by group comparison (GSEM)

	all the sample	gender		financial literacy	
		men	women	low	high
attitudes	0.32***	0.33***	0.31***	0.37***	0.27***
subjective norms	0.16***	0.16***	0.16***	0.23***	0.11***
perceived behavioural control	0.10***	0.12***	0.05	0.12***	0.07**
woman	-0.22***	...	...	-0.34***	-0.07
age	-0.01	-0.03	0.03	0.03	-0.04
age squared	0.00004	0.0002	-0.0003	0.00	0.00
high school	-0.06	-0.09	0.01	-0.12	0.00
at least bachelor degree	0.13	0.1	0.24	0.00	0.19
trust	0.002	0.02	-0.05*	-0.02	0.02
extroversion	-0.05**	-0.04	-0.08*	-0.03	-0.06
openness	0.07***	0.08***	0.02	0.04	0.07**
conscientiousness	-0.06**	-0.08***	0.002	-0.08***	-0.01
agreeableness	0.02	0.01	0.03	0.02	0.01
emotional stability	0.01	-0.0004	0.05	0.01	0.00
number of observations	1,601	1,205	396	844	757

Source: own elaborations on CONSOB 2018 survey data. ** indicates significance at 5%; *** indicates significance at 1%. Respondents are classified as having low or high financial literacy on the basis of an overall score resulting from the number of correct answers. The level of financial literacy is evaluated to be high (low) if the number of correct answers is above (below or equal to) the sample median score (3 correct answers over a total of 7 questions).

Despite the smaller size of the female subsample (396 individuals), which has to be taken into account when interpreting results, attitudes and subjective norms are still statistically significant, with coefficients being very similar across subsamples. Instead, perceived behavioural control and trust are significant only for male financial decision makers. In addition, the gender gap seems to be even stronger in the low financial literate subsample.

5 Conclusions

Policy-makers over the world are increasingly engaged in the delivery of financial education, in the attempt to trigger sound financial choices that can ultimately enhance individual wellbeing. Raising the level of financial literacy is extremely important to help individuals, and especially the least literate ones, managing their budget more consciously, avoiding painful mistakes due to inappropriate borrowing or investment decisions, and elaborating a proper and timely pension planning.

Financial education initiatives may target both beneficiaries that can be reached regardless of their will (this is the case of school students as the decision to join the program is typically made by the single teacher or by the school/institution) and groups, such as adults, that may decide whether to engage or not.

In this paper we argue that the potential effectiveness of the delivery of financial education is also linked to demand-side factors, and in particular individuals' intentions to learn more about finance, which is a prerequisite in order to be able to transpose new knowledge into habits and hence behaviour. Understanding what lies behind intentions to become financially literate is therefore a precondition to consider how to increase these intentions, as a first key step. This is especially true with respect to adults, who are more difficult to target and to reach (unless specific initiatives are undertaken, particularly in the work place). Despite the fact that intentions to learn more about finance can be a crucial element influencing the commitment of individuals when offered a financial education program at school, and even more in deciding to participate or not in voluntary programs as adults, the determinants of the intention to become financially literate has received very little attention so far. Much more attention has been paid on how to structure the supply of financial education program (which clearly is a key issue from a policy-making perspective) rather than on the determinants of (and the potential interventions on) the demand for financial education.

The key focus of this paper is therefore understanding the intention to become more financially literate. We implement a module building on Ajzen's (1988, 1991) Theory of Planned Behaviour in the CONSOB 2018 survey and subsequently analyse data on a stratified sample of 1,601 financial decision-makers in Italy.

Our findings support the view that the TPB can be a powerful model to explain individuals' intentions to learn more about finance and investments. In fact, attitudes, norms and perceived behavioural control are important determinants of intentions, even when controlling for psychological traits, trust, age, gender and education. In addition, TPB-based constructs continue to be statistically significant also when analysing gender subsamples, with the exception of perceived behavioural control in the women subsample.

Our paper also delves deeper in the problem of women's lower financial literacy, which is noteworthy in many countries and particularly strong in Italy (see Consob's Report and, among the others, Hasler and Lusardi 2017; Bottazzi and

Lusardi 2016 show that a strong gender gap is highlighted by OECD PISA data even at the age of 15). In fact, according to our analyses women display (everything else being equal) a significantly lower intention to learn about finance and investments than men. This gap in intentions is particularly remarkable if we consider (i) that our interviewees are the primary income earners in the family (and in more than two-thirds these are men), and (ii) that about 75% of the 396 women in the sample are single decision-makers, and should therefore be more motivated to gain a greater control on personal finance than other female non-primary income earners. This difference is even stronger when considering only women with financial literacy equal to or lower than the median. When comparing attitudes and perceived behavioural control between men and women, women show a slightly more positive attitude towards becoming more financially literate, but they also show a lower level of perceived behavioural control.

We also compared the total impact on intentions of attitudes, subjective norms, perceived behavioural control and background factors across individuals with lower-than-median and higher-than-median financial literacy. The subgroup with lower financial literacy show a higher sensitivity to subjective norms relative to the higher financial literacy subgroup, i.e. they feel a stronger social pressure to improve their level of literacy. However, the less literate also record lower levels of attitude and perceived behavioural control, i.e. in relative terms they perceive less the benefits of becoming financially literate, and they are less confident about their ability to become more literate.

On policy grounds, it is clearly important to understand which levers could be used to increase the intention to learn about finance and investment for the whole population and more so for the less literate and therefore weaker groups. Based on our results, possible interventions could ideally be focused on attitudes, subjective norms and perceived behavioural control. Here, we could learn from other fields in which interventions have been informed by the Theory of Planned Behaviour, such as health. Such levers include for example the provision of information, increasing skills and persuading individuals on the possibility of performing a specific behaviour, encouraging planning, providing social support for a behaviour. These interventions might affect attitudes, subjective norms, and perceived behavioural control, intentions and finally behaviour, as documented by recent meta-analyses by Sheeran et al. (2016) and Steinmetz et al. (2016).

Broadly speaking, differences in attitudes, norms, perceived behavioural control across subgroups suggest that in order to reduce financial literacy gaps (as policy-makers try to do) addressing intention gaps first can be important. This is of course particularly important when the target is represented by adults, who cannot be forced to participate to financial education programs, and whose intention to become more financially literate is therefore crucial to make sure that especially the least literate individuals may participate.

References

Ajzen, I. (1988), Attitudes, Personality and Behavior, Milton Keynes: Open University Press

Ajzen, I. (1991), The Theory of Planned Behavior, Organizational Behavior and Human Decision Processes, 50, 179-211

Armitage, C.J. and M. Conner (2001), Efficacy of the Theory of Planned Behaviour: A Meta-Analytic Review, British Journal of Social Psychology, 40, 471-499.

Arrondel, L., M. Debbich and F. Savignac (2013), Financial Literacy and Financial Planning in France, Numeracy 6(2)

Bottazzi, L. and A. Lusardi (2016), Gender Difference in Financial Literacy: Evidence from PISA Data in Italy, https://institute.eib.org/wp-content/uploads/2016/10/gender-diff.pdf

Broihanne, M.H., M. Merli and P. Roger (2014), Overconfidence, Risk Perception and the Risk-taking Behavior of Finance Professionals, Finance Research Letters, 11(2), 64-73

Brown, S. and K. Taylor (2014), Household Finances and the 'Big Five' Personality Traits, Journal of Economic Psychology 45, 197–212

Christelis, D., T. Jappelli and M. Padula (2010), Cognitive Abilities and Portfolio Choice, European Economic Review 54(1), 18–38

Conlin, A., P. Kyröläinen, M. Kaakinenc, M.R. Järvelin, J. Perttunen and R. Sventog, 2015, Personality Traits and Stock Market Participation, Journal of Empirical Finance

CONSOB (2018), Report on financial investments of Italian households

Cucinelli, D., G. Gandolfi and M.G. Soana (2016), Customer and Advisor Financial Decisions: the Theory of Planned Behavior Perspective, International Journal of Business and Social Science, 7(12)

Cucinelli, D., G. Gandolfi and M.G. Soana (2017), La teoria del comportamento pianificato e le scelte finanziarie degli investitori italiani, Bancaria, 2, 14-31

East, Robert (1993), Investment Decisions and the Theory of Planned Behavior, Journal of Economic Psychology, 13, 337-375

Fishbein, M. and I. Ajzen (1975), Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research, Reading, MA: Addison-Wesley

Fornero, E. and C. Monticone (2011), Financial Literacy and Pension Plan Participation in Italy, Journal of Pension Economics and Finance, 10(4), 547-564

Hasler, A. and A. Lusardi (2017), The Gender Gap in Financial Literacy: A Global Perspective, GFLEC Working paper, July

Hastings, J.S., B.C. Madrian and W.L. Skimmyhorn (2013), Financial Literacy, Financial Education, and Economic Outcomes, Annual Review of Economics, 5(1), 347-373

Hung, A., J. Yoong and E. Brown (2012), Empowering Women through Financial Awareness and Education, OECD Working Papers on Finance, Insurance and Private Pensions, 14, March

Klapper, L.F. and G.A. Panos (2011), Financial Literacy and Retirement Planning: The Russian Case Journal of Pension Economics and Finance, 10(4), 599–618

Johnston, D.W., S.C. Kassenboehmer and M.A. Shields (2016), Financial decision-making in the household: Exploring the importance of survey respondent, health, cognitive ability and personality, Journal of Economic Behavior & Organization 132, 42–61

Lau, A., J. Yen and P.Y.K. Chau (2001), Adoption of on-line trading in the Hong Kong financial market, Journal of Electronic Commerce research, 2(2), 58-65

Lusardi, A. and O.S. Mitchell (2007a), Baby Boomer Retirement Security: The Roles of Planning, Financial Literacy, and Housing Wealth, Journal of Monetary Economics 54(1), 205–24.

Lusardi, A. and O.S. Mitchell (2007b), Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education, Business Economics 42(1), 35–44

Lusardi, A. and O.S. Mitchell (2014), The Economic Importance of Financial Literacy: Theory and Evidence, Journal of Economic Literature, 52(1), 5–44

Lusardi, A. and P. Tufano (2015), Debt literacy, financial experiences, and overindebtedness, Journal of Pension Economics and Finance, 14(4), 332-368.

Mottola, G.R. (2013), In Our Best Interest: Women, Financial Literacy, and Credit Card Behavior, Numeracy 6(2)

Nosi C., A. D'Agostino, M. Pagliuca and C.A. Pratesi (2017), Securing retirement at a young age. Exploring the intention to buy longevity annuities through an extended version of the Theory of Planned Behavior, Sustainability, vol. 9, 1069

OECD (2015), National Strategies for Financial Education, OECD-INFE Policy Handbook, https://www.oecd.org/daf/fin/financial-education/national-strategies-for-financial-education-policy-handbook.htm

Rammstedt, B. and O.P. John (2007), Measuring Big Five in one minute or less: A 10-item short version of the Big Five Inventory in English and German, Journal of Research in Personality, 41(1), 203–212

Roa M.J., I. Garron and J. Barboza (2019), Financial decisions and financial capabilities in the Andean Region, Journal of Consumer Affairs, 53(2), 296-323

Sheeran, P., A. Maki, E. Montanaro, A.Y. Aya, A. Bryan, W.M.P. Klein, E. Miles and A.J. Rothman (2016), The Impact of Changing Attitudes, Norms, and Self-Efficacy on Health-Related Intentions and Behavior: A Meta-Analysis, Health Psychology, 35(11), 1178-1188

Shih, Y.Y. and F. Kwoting (2004), The use of a decomposed theory of planned behavior to study Internet banking in Taiwan, Internet Research, 14(3), 213-223

Steinmetz, H., M. Knappstein, I. Ajzen, P. Schmidt and R. Kabst (2016), How Effective are Behavior Change Interventions Based on the Theory of Planned Behavior?, Zeitschrift für Psychologie, 224(3), 216-233

van Rooij, M., A. Lusardi and R. Alessie (2011), Financial Literacy and Stock Market Participation, Journal of Financial Economics 101(2), 449–72

Von Graevenitz, G., D. Harhoff and R. Weber (2010), The effects of entrepreneurship education, Journal of Economic Behavior & Organization, 76(1), 90-112

Recenti pubblicazioni

88 – novembre 2019
Quaderni di finanza

Who intends to become financially literate?
Insights from the Theory of Planned Behaviour
F.C. Billari, M. Gentile, N. Linciano, F. Saita

21 – settembre 2019
Quaderni giuridici

A 20 anni dal TUF (1998-2018): verso la disciplina della *Capital Market Union*?
Atti del convegno Banca d'Italia – Consob
Roma, Banca d'Italia, 6 novembre 2018

20 – gennaio 2019
Quaderni giuridici

La nuova via della seta e gli investimenti esteri diretti in settori ad alta intensità tecnologica
Il *golden power* dello Stato italiano e le infrastrutture finanziarie
S. Alvaro, M. Lamandini, A. Police, I. Tarola

19 – gennaio 2019
Quaderni giuridici

Investitori istituzionali, governo societario e codici di *stewardship*:
Problemi e prospettive
S. Alvaro, M. Maugeri, G. Strampelli

18 – dicembre 2018
Quaderni giuridici

Nuovi strumenti di politica industriale
per lo sviluppo e la quotazione delle PMI
S. Alvaro, S. Caselli, D. D'Eramo

7 – ottobre 2018
Position papers

La mappatura delle sedi di negoziazione in Italia
dopo l'entrata in vigore di MiFID II/MiFIR
Divisione Mercati, Ufficio Vigilanza Infrastrutture di Mercato

17 – settembre 2018
Quaderni giuridici

Le partecipazioni dei fondi alternativi riservati
in società quotate e in altri fondi
S. Alvaro, F. Annunziata; con prefazione a cura di M. Stella Richter jr

87 – settembre 2018
Quaderni di finanza

Boardroom gender diversity and performance
of listed companies in Italy
G.S.F. Bruno, A. Ciavarella, N. Linciano

16 – febbraio 2018
Quaderni giuridici

Tutela degli investitori e dei clienti degli intermediari e ADRs
Atti del convegno Consob - Arbitro per le Controversie Finanziarie - Università Luigi Bocconi
Milano, Università Bocconi, 11 luglio 2017

8 – gennaio 2018
Discussion papers
Il costo dei fondi comuni in Italia.
Evoluzione temporale e confronto internazionale
G. Finiguerra, G. Frati, R. Grasso

86 – gennaio 2018
Quaderni di finanza
Non-bank institutional investors' ownership in non-financial companies listed in major European countries
F. Fancello, N. Linciano, L. Gasbarri, T. Giulianelli

15 – dicembre 2017
Quaderni giuridici
The marketing of MREL securities after BRRD. Interactions between prudential and transparency requirements and the challenges which lie ahead
S. Alvaro, M. Lamandini, D. Ramos Muñoz, E. Ghibellini, F. Pellegrini

85 – dicembre 2017
Quaderni di finanza
Board diversity and firm performance across Europe
A. Ciavarella

14 – novembre 2017
Quaderni giuridici
Effetti dei tassi di interesse negativi su mutui e obbligazioni a tasso variabile
Un'analisi dei profili giuridici e finanziari
S. Alvaro, A. Gentili, C. Mottura

84 – ottobre 2017
Quaderni di finanza
Challenges in ensuring financial competencies. Essays on how to measure financial knowledge, target beneficiaries and deliver educational programmes
N. Linciano and P. Soccorso Editors

7 – settembre 2017
Discussion papers
Implicazioni e possibili motivazioni della scelta di non quotarsi da parte delle medie imprese italiane
L. Giordano, M. Modena

13 – settembre 2017
Quaderni giuridici
Autorità Indipendenti e anticorruzione
Atti del convegno Consob - Università degli Studi di Roma 'Tor Vergata'
Roma Auditorium Consob 4 aprile 2017

12 – settembre 2017
Quaderni giuridici
I nuovi assetti istituzionali della vigilanza europea sul mercato finanziario e sul sistema bancario. Quadro di sintesi e problemi aperti
G. Gasparri

11 – novembre 2016
Quaderni giuridici
Business judgement rule e mercati finanziari. Efficienza economica e tutela degli investitori
S. Alvaro, E. Cappariello, V. Gentile, E.R. Iannaccone, G. Mollo, S. Nocella, M. Ventoruzzo; con prefazione a cura di P. Marchetti

6 – agosto 2016
Position papers
L'equity-crowdfunding. Analisi sintetica della normativa e aspetti operativi.
Gruppo di lavoro sulla finanza innovativa
CONSOB – CNDCEC