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AN ASSESSMENT OF FINANCIAL LITERACY IN A LOCAL AREA BY MEANS OF BEHAVIORAL INTERPRETATIONS

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Abstract

In this paper, we investigate the effects of the gender gap on financial literacy, paying attention to the presence of these aspects in a local area. To this end, we take into account some heuristics, such as overconfidence and the herd effect, in order to make an assessment from a behavioral point of view.

Keywords

Financial Literacy, Gender Gap, Investment Choices, Behavioral Finance, Heuristics

AMS Classifications: 62C99, 91B05, 97M30
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Introduction

The concept of "financial literacy" has changed over time. An initial definition is given by Noctor *et al*. (1992) as "the ability of the individual to express informed judgments and make effective decisions about the use and management of money". It is well known that the OECD's International Network on Financial Education (OECD/INFE) supports policymakers and public authorities in designing and implementing strategies to measure and improve financial literacy in partner countries. It includes 282 public institutions, such as central banks, finance ministries, and education ministries (www.oecd.org). Recently, the OECD/INFE (2018, 2020, 2023) defined financial literacy as "a combination of skills, awareness, knowledge, attitude and behavior necessary to enable the individual to make wise financial choices and, ultimately, to enable the same to achieve individual financial well-being". Moreso, to measure people's financial literacy, this organization has developed an indicator resulting from the sum of the scores obtained from the following subcategories: "financial knowledge", whose score varies from 0 to 7, which expresses the ability to understand essential financial concepts (interest rate, risk diversification, etc.); "financial behavior", with a score from 0 to 9, which represents the subject's ability to set short-term and long-term financial goals (for example, planning the distribution of resources to be used for consumption and those to be allocated to savings); "financial attitude", with a score from 1 to 5, relating to individuals' tendency to save (OECD, 2018). This concerns the aptitude for so-called "precautionary saving", focused on maximizing people's well-being in a long-term perspective (Giovanni *et al.*, 2020; Lamboglia *et al.*, 2023). In line with the OECD/INFE methodology, in 2020, the Bank of Italy conducted the "Survey on Italians' Financial Literacy and Skills (IACOFI)" (Salvatore *et al*., 2018; Giovanni *et al.*, 2020; Lamboglia *et al.*, 2023). It found that, compared to 2017, Italians have improved their financial knowledge while behaviors and attitudes remain more or less stable (Salvatore *et al.*, 2018; Giovanni *et al.*, 2020; Lamboglia *et al.*, 2023). However, in 2020, according to the financial literacy index, from an international perspective, Italy ranks 25th out of the 26 countries considered, surpassing only Malta. The first positions are occupied by Hong Kong, Slovenia, and Austria, respectively, which have an average financial literacy value higher than 14.0 (OECD, 2020). The Bank of Italy's survey was conducted by interviewing a sample of approximately 2,000 individuals aged between 18 and 79. The results reveal an average level of financial literacy of the Italian population equal to 11.2, on a scale ranging from 1 to 21, a value similar to that obtained in 2017 with the previous survey. The most recent Bank of Italy survey is that of 2023 (with an addition on competencies in the field of digital finance), which was undertaken on a larger sample of 5,000 individuals within the same age range (Lamboglia *et al.*, 2023). If the results of 2020, which were between 0 and 21, are converted into the range used in 2023, between 0 and 20, and compared to these two surveys, it can be noted that Italians have slightly improved their financial literacy score, going from 10.2 in 2020 to 10.7 in 2023. This growth is a consequence of an increase in terms of financial behavior (which rose from 4.2 to 4.7) and attitude (which increased from 2.0 to 2.3 in 2023). However, unfortunately, the knowledge component has slightly decreased (from 3.9 to 3.7). It should be observed, from the international OECD 2023 survey, in which the number of countries analyzed has become 39, that Italy is in 35th position, with Germany, Hong Kong, and Ireland in the top three (OECD, 2023). Unfortunately, it is obvious that Italy has not improved after three years; in fact, in a larger sample, it is even further down on the scale. Financial literacy differs among individuals based on the following socio-demographic factors: level of education, age, gender, and geographical location. The Bank of Italy's results show that graduates have a higher level of financial literacy than those with a lower level of education. Additionally, financial literacy is higher among individuals aged from 35 to 44. Furthermore, a higher level of financial literacy is recorded in men than in women. In particular, the results show a substantial difference in the first two subcategories mentioned above (*i.e.* financial knowledge and financial behavior) depending on the gender (male or female) taken into consideration. Men show higher values in knowledge and behavior; however, financial attitude is quite similar for both genders. This is true even if only financial knowledge in relation to the educational qualification and geographical location of the interviewees is considered. For male graduates, a higher level of financial knowledge is detected than for female graduates (this result remains valid also for lower and upper secondary education). If the geographical area of the individuals is considered, residents of the Center-North possess a higher level of financial literacy than those of the South and the Islands (Giovanni D. *et al.*, 2020; Lamboglia *et al.*, 2023). It is important now to underline the positive link between financial literacy and "financial well-being" (Rinaldi, 2022b), defined by the Consumer Financial Protection Bureau (CFPB, a major consumer protection body in the United States; CFPB, 2015), as "the state in which an individual is able to fully meet his or her current and recurring financial obligations, feels secure about his or her financial future, and is able to make choices that allow him or her to enjoy his or her life". More specifically, the CFPB indicates the elements that define financial well-being, and among these there is the ability of the individual to regularly control their monetary "outgoings" and "incomings", as well as absorb a sudden "financial shock" (*i.e.* an event that could jeopardize the financial stability of the individual, Rinaldi 2022b). The individuals then feel in a position to achieve their financial goals and has the so-called "financial freedom", that allows them to live in serenity from an economic-financial point of view. Furthermore, it is important to mention the factors that contribute to achieving this well-being. In addition to social and external factors, such as family resources and the macroeconomic context, the following individual characteristics of the person assume particular importance (these factors are similar to those used to measure the level of financial literacy of individuals previously discussed): "financial knowledge", "financial behaviors", and "personality traits". The first characteristic refers to the "informative" knowledge of some basic notions or principles in the financial field and to the "transversal skills", which include the individual's ability to find information based on their financial objectives and process it to make appropriate investment choices. "Financial behaviors" refers to the routine management of monetary resources, the careful search for reliable financial information, the planning of short, medium, and long-term financial objectives (the ideal situation would be to set S.M.A.R.T. objectives - *i.e.* Specific, Measurable, Attainable, Realistic and Time-bound; Doran, 1981, and Rinaldi, 2022b) and, finally, the concrete implementation of the financial decision (to quote Rinaldi (2022b) "it is not enough to say that you want to save more, you have to do it!"). Lastly, "personality traits" include perseverance, self-=pontrol, financial self-efficacy (that is, believing in one's own ability to influence financial results), and the individual's predisposition to have an internal frame of reference, or the tendency to compare oneself to one's own standards rather than those of others (in other words, to not conform to the "herd", because subjects who envy others less tend to have a better level of financial well-being, Rinaldi, 2022b). In particular, regarding self-control and how people act and decide in a world characterized by uncertainty, we let us postpone to very interesting analyses made by Simon, 1982 and 1990, Gigerenzer and Gaissmaier, 2011, Viale, 2018, Coricelli and Martelli, 2020, Thaler and Sunstein, 2022, Viale, 2022, Ranaldi, 2024. Then, the question arises spontaneously: "Does financial well-being lead people to happiness?" The studies of Easterlin (starting in 1973; Easterlin, 1973, 1974, 1995, and Easterlin *et al.*, 2010) lead to a not-always affirmative answer to this question. He notes an interesting paradox – which, in literature, is now known as "the Easterlin paradox", or "happiness paradox" – according to which the average well-being of a nation, measured subjectively, tends to remain constant in the long term, despite economic growth. This paradox has been observed in the United States, where, despite the growth of income per capita over the last decades, subjective well-being seems actually to be decreasing and it has been revisited too (for details see the above-mentioned Easterlin's papers, and Pugno, 2023; while we refer to Easterlin *et al.*, 2010), for the paradox revisited). Clark *et al.* (2008) point out that, in reality, there is a positive correlation between income and subjective well-being (a synonym of happiness in other works, Rinaldi, 2022b), but it is highly influenced by two fundamental aspects, "social comparison" and "income adaptation" (the latter known as income adjustment too), which can also be useful in explaining "the Easterlin paradox". The first aspect refers to the importance given by the individual to what others are (in terms of social positioning) and what they possess (in terms of economic positioning). The more importance given to comparison with others, the greater the probability that the subject may feel envy (Ranaldi, 2024) and a sense of frustration towards those who constitute their reference group. In addition to envy, materialism is also negatively linked to happiness, in the sense that the more materialistic one is, the less happy one feels. In fact, as demonstrated by some studies, the pleasure derived from buying a much-desired new car is destined to fade with the passage of time (for details, Kahneman, *et al.*, 1999, Muñiz-Velázquez *et al.*, 2017, Yu *et al.*, 2020, and Rinaldi, 2022a, and 2022b). On the other hand, "income adaptation" is the phenomenon by which individuals adapt quite quickly to new favorable economic situations, *e.g.* an increase in income, which generates a transitory increase in happiness. A separate discussion must be held if income decreases, as individuals tend to have more difficulty in adapting to these types of changes. Thus, a strong asymmetry occurs with respect to the presence of growth or decrease in income (Rinaldi, 2022b, and Ranaldi, 2024). The explanations for this phenomenon are the following: first of all, more money allows one to satisfy new pleasures but makes other existing ones less stimulating. For example, driving a luxury car can be enjoyable if you have never had the opportunity to do so, but if you are (already) rich and drive one every day, it assumes a different value. Getting used to new standards of living, then, leads some individuals to have increasingly higher aspirations, even if they have already achieved their goals (it is as if they are never satisfied with what they have, Inglehart and Rabier, 1986). In particular, in certain studies on the Adaptation Theory, the term "treadmill effect" is used to indicate the phenomenon by which people are constantly looking for something better. More specifically, even though an individual sees his income increase, the level of his subjective happiness tends to remain constant. Scholars distinguish three types of treadmill effect: the "hedonic treadmill", "the satisfaction treadmill", and "the positional treadmill". The first effect represents a mechanism by which the satisfaction derived from the purchase or consumption of a new good tends to decrease quickly. Instead, "the satisfaction treadmill" refers to a process by which the level of "aspiration to consume" increases with the increase in income. Consider, for example, the possibility of wearing designer clothes. After a short time, some of these individuals tend to lose interest in these items and will go in search of more expensive clothes. Finally, "the positional treadmill", refers to the well-being that the subject derives from consumption, depending on the comparison with others. Therefore, based on what has been said so far, financial well-being does not necessarily lead individuals to happiness (for all these considerations, we refer to Easterlin, 1973, Diener and Oishi, 2000, Diener and Biswas-Diener, 2002, Garđarsdóttir *et al.*, 2009, Iannello *et al.*, 2021). This last interpretation is reiterated by some authors (Lea and Webley, 2006), who state that for some people, money is a kind of drug: it creates dependency and insatiability. It is certainly important, but what also counts are social relationships, emotional relationships, and - more generally - the "social capital" that allows individuals to live peacefully, both from a mental and economic point of view. Our contribution to these kinds of research is to focus attention on a limited area, chosen appropriately since it constitutes the main geographical zone from which our university draws its students. This is done with the aim of evaluating the effects of the gender gap in the management of financial risk. Furthermore, a careful evaluation of the level of financial knowledge was undertaken. This study contributes to analyzing the degree of financial literacy at a provincial level and can constitute a starting point for the future work of other students.

Heuristics; Over-Confidence, Herd Effect Distortion

"Heuristics" (or "distortion") is defined as any behavior of a human being that tends to use "simple or simplistic rules" and/or to make associations/connections that are not always justified or truthful. This derives from various factors, which can be "emotional", "psychological", "anthropological", "social", "neurological", etc., that weigh on individuals' investment choices and lead people to manage risk incorrectly (Kahneman and Tversky, 1979, Kahneman and Riepe, 1998, Kahneman, 2012, Thaler, 2018, Costa, 2024a and 2024b). Precisely two of these have been used in the survey of this study: the "overconfidence", also called "excess of confidence," or "self-assurance", or even "cognitive boldness", and the "herd effect distortion" or "cow effect distortion". The first refers to the fact that individuals tend to overestimate their own abilities or knowledge, with an accentuation of this phenomenon in males and young people. The herd effect distortion is the attitude whereby one tends to follow "trends", possibly out of laziness, or to do "what everyone else does", slavishly mimicking trends. This also happens because one wants to be accepted "by the group" and because doubt arises that if a trend of choice is taken by many, then it will be the right one (Kahneman, 2012, and Costa, 2024a, and 2024b). For the purpose of this study, the distortion just indicated is referred to as the "herd effect". In fact, as already noted with a fanciful observation (Costa, 2024a, and 2024b), in Italian, there is a very important cultural and linguistic reference which gives an expression that plastically realizes the image of someone who repeats what others do, without any other reflection. It is present in "La Divina Commedia" ("The Divine Comedy"), by Dante, in which The Poet writes: "Come le pecorelle escon del chiuso/ a una, a due, a tre, e l'altre stanno/ timidette atterrando l'occhio e 'l muso;/ e ciò che fa la prima, e l'altre fanno", which means; "As the sheep come out of the pen / one by one, two by three, and the others stand / timidly lowering their eyes and their muzzles; / and what the first does, the others do" (Dante 1321, and Trovato *et al.*, 2022).

Financial Literacy And Investment Choices

The effects of the gender gap: As demonstrated by numerous studies, another factor that has an impact on the daily investment decisions that are made is also the "gender gap". These studies, also conducted in Italy, show that, compared to women, men tend to attribute greater importance to money as a means to achieve goals such as success and happiness. Furthermore, men often associate money with positive connotations, such as respect and prestige (for example, Prince, 1993, Powell and Ansic, 1997, Sunden and Surette, 1998, Olsen and Cox, 2001, Gysler *et al.*, 2002, Besozzi, 2003, Deutsch *et al.*, 2003, Rinaldi, 2017, Giovanni *et al.*, 2020, Barber and Odean, 2021, Lamboglia *et al.*, 2023). Therefore, it is more likely that men are more willing to invest resources (time and money) to increase their knowledge in the economic-financial field. This may also explain why they have a higher level of financial literacy than women (Prince, 1993, Zelizer, 1994, Deutsch *et al.*, 2003, Rinaldi, 2017). In the Italian context, the gender gap regarding financial literacy and economic choices begins to manifest itself from adolescence. One of the main causes is that parents, in the use of money, tend to make girls less autonomous than boys. Some studies, in fact, show that the amount of "pocket money" that they receive is lower and less frequent in time compared to that received by boys (Besozzi, 2003, and Rinaldi, 2022b). About this point, already in 1999, in one of his essays, Thaler (1999) highlights how the way in which money is earned significantly influences its use, the emotions connected to it, as well as the risk propensity of individuals. In the financial field, it is now established that women are more risk-averse than men. In fact, Sapienza *et al.* (2009) tested the gender gap in financial choices, relating it to the level of testosterone in males and females, confirming this. More recently, the potential role of this hormone in promoting pride-related behaviors has been highlighted, mainly in competitive contexts. For example, Carré *et al.* (2013) showed that competition causes an increase in salivary testosterone levels in men, pushing them to act more aggressively. The function of this hormone in social contexts is associated with behaviors aimed at achieving and maintaining a better social status. Numerous studies also highlight the fact that testosterone increases resistance to stress and reduces fear, but also induces subjects to act more impulsively, consequently generating irrational behaviors. Furthermore, gender differences in levels of this hormone have an impact on competitive behavior and risk aversion. In fact, several works show that women seek competition less than men and have less need for it to improve themselves (Coricelli and Martelli, 2020).

In particular, a higher salivary concentration of testosterone is associated with more aggressive behavior, but also with greater propensity for risk in financial choices. Moreover, it can be implicitly deduced that a lower concentration of testosterone in women's saliva corresponds to a “reduction of risk” in their financial behavior (Sapienza *et al.*, 2009). Cortisol levels (a hormone that regulates the degree of physical and psychological stress, Coricelli and Martelli, 2020) are also associated with “risk propensity” and “price instability” in financial markets. In an experiment, Cueva *et al.* (2015) subjected a group of participants to the simulation of financial markets. During it, for male participants, it was found that higher levels of testosterone and cortisol (measured by the concentration in participants’ saliva) were associated with greater price instability in financial markets and a riskier choice of assets. On the contrary, this result was not recorded for female participants. This confirms the significant gender gap in investment choices and stress management (Cueva *et al.*, 2015, and Coricelli and Martelli, 2020). In another experiment (Cueva *et al.*, 2015), doses of cortisol and testosterone were administered to a group of male participants, before they made their investment choices between two financial assets with different risks. From the results obtained, it was found that the decisions seem to be conditioned by an increase in optimism about future prices. This could explain the so-called phenomenon of “riding speculative bubbles”, in the sense that excessive pride and competitive behavior can lead investors to make very risky choices, causing catastrophic consequences in the financial markets (Coricelli and Martelli, 2020, and Ranaldi, 2024). The perception of the risk associated with an investment, therefore, is very different depending on whether it is a man or a woman who makes it (as verified by Linciano and her équipe, Linciano *et al.*, 2021 and 2022). Some studies show that women, regarding financial choices, adopt a more “conservative” behavior than men and, thus, receive investment proposals from brokers for (financial) products with a lower risk. Among other things, in their investment choices, women resort more frequently than men to the assistance of a professional (Lewellen *et al.*, 1977 and Linciano *et al.*, 2022). In addition to risk aversion and a lower “financial culture”, this also seems to derive from the fact that, in Italy, women are less overconfident than men (Costa, 2024a, and 2024b, and Kahneman, 2012, for general considerations on this point). That is, they tend to underestimate their financial knowledge. In contrast, in Germany and the United Kingdom, women are more overconfident than men (Gysler *et al.*, 2002). We underline that the link between gender and overconfidence is very important in the financial field. For example, overconfident individuals are more likely to borrow money because they are convinced that they will obtain a positive return on the investment. However, it should be specified that the IACOFI data (Giovanni *et al.*, 2020 and Lamboglia *et al.*, 2023) actually show that overconfident people are more exposed to specific forms of risk such as, for example, investing in something that turns out to be worthless or accidentally providing personal financial information (Giovanni *et al.*, 2020 and Lamboglia *et al.*, 2023). Barber and Odean have shown that men are more active in financial markets and more optimistic too about stock returns than women (Barber and Odean, 2001). Olsen and Cox (2001) found that women tend to evaluate investments with a high possibility of incurring a loss as riskier, unlike men, who instead evaluate as riskier those in which the fluctuation of the value of the stock is more significant. According to some scholars (Schubert, R. *et al.*, 1999, and Kruse and Thompson, 2003), the gender gap tends to disappear when investment choices are characterized by a low degree of risk. In such situations, significant gender differences seem to be associated with the so-called “tolerance to ambiguity”, which tends to be lower in women. We specify that, sometimes, people speak of “aversion to ambiguity” and, here, it is obviously higher for women. This is, although both categories are not very capable of tolerating new (uncertain) situations compared to those already familiar with them (Powell, 1997). By the way, gender differences are also present in the world of work, especially if it is connected to everything related to those in finance. Numerous studies, in fact, highlight how the majority of investors are men, who are more likely to choose jobs with a higher risk, such as precisely that of the broker. This is always due to the potential role of testosterone in the choices of individuals. In fact, a higher concentration of this hormone is connected to a greater possibility of undertaking careers in the financial sectors (Sapienza *et al.*, 2009, and Coricelli and Martelli, 2020).

Why do individuals not save enough? Classical Economic Theory starts from the assumption that individuals, as Thaler (2018) says, “save exactly the right amount”. It assumes the existence of *homo œconomicus* which is called “Econ”, *i.e.* a person capable of making decisions under conditions of uncertainty without any difficulty, managing to find the optimal solution that allow them to reach equilibrium, and with the possibility of recourse to a representative agent, who operates in the most advantageous way on behalf of everyone. This happens despite an “Econ” neglecting several factors defined as “supposedly irrelevant” by Thaler (2018). This category is opposed to that of the “Human”, which is more realistic given that it takes into account emotions and the distortions that derive from them

(Thaler, 2018, Costa, 2024a, and 2024b). Moreover, Econs are also capable of managing highly volatile situations, such as those called “Black Swans” (defined by Taleb, 2004, and 2010. For a correct classification of events that are or are not Black Swans, including gray and white ones, it is also useful to refer to Costa and Raviele, 2023). Yet, there are some fundamental problems that lead people not to save enough. First of all, it is not possible to establish exactly how sensitive they are to changes implemented by the state to encourage them to save. For example, the state could change the return on savings by creating related pension plans without making individuals pay taxes (Linciano, 2010, and Thaler, 2018). Other reasons why people do not save enough are due to behavioral factors, including: “inertia”, “self-control”, and “loss aversion”. Firstly, “inertia” leads individuals to procrastinate or not to make changes to their savings choices. Employees, for example, could be lulled by the fact that it is the government that forces them to save by taking a sum from their paycheck for pension purposes. According to Thaler (2018), it is necessary to devise a way that does not make people perceive any forced reduction in their salary, bringing them to save more (Costa, 2024a, and 2024b). In this context, “self-control” expresses the ability of individuals to save. The results of some research show that subjects have more of it when they are asked to save in the future rather than doing so in the present (Shefrin and Thaler, 1992, Laibson *et al.*, 1998, Nyhus and Webley, 2015). In the authors’ opinion, this aspect could be linked to inertia. Lastly, “loss aversion” (also known as “myopia” by Alemanni, 2020), is attributable to the tendency of individuals to assiduously control their investments, reacting accordingly, and to give too much weight to short-term results of the financial choices made (Linciano *et al.*, 2021, and 2022). Thaler (2018) suggests the following proposals for savings policies: those concerning the so-called “Individual Retirement Account (IRA)”, that is, the creation of that individual pension account, built for insurance purposes, provided with a preferential tax treatment (tax shelter); and the one that makes joining the pension plan the default choice for individuals. With regard to this second proposal, however, it should be underlined that the so-called “default options” can have a negative impact on individuals’ savings, as they involve the choice of a default savings rate and an investment portfolio, perhaps too prudent or “defensive” (Madrian and Shea, 2001). Additionally, Thaler (2018) defines a third proposal as “Save More Tomorrow”, referring to the idea of offering people the possibility of choosing today to increase their savings rates in a future moment, for example, when they receive a salary increase. This last proposal would allow for breaking down some “decision barriers” of investors, in particular inertia and aversion to losses (Thaler, 2018, Viale, 2018, and 2022, Thaler and Sunstein, 2022, Costa, 2024a, and 2024b). Thaler, in fact, believes that “[by] asking the interested parties to make a decision that will take effect at a future time, the orientation to the present is weakened”. This is also for the effects of the so-called “present bias” and the consequent concrete way of “discounting” the amounts of money, over time, applied by individuals (Thaler, 2018, Costa, 2024a, and 2024b). Rinaldi (2022b) provides a useful suggestion on saving, with a project defined as “the economy cake”, through which she intends to educate individuals on the use of money and saving it. It is a piggy bank divided into four parts (or “slices”), each of which has different savings objectives. More specifically, the first intends to satisfy short-term savings goals (*e.g.* buying a dress, a smartphone, etc.); the second is aimed at achieving long-term savings goals (*e.g.* buying a house, a car, etc.); the third allows you to make a gift to an acquaintance or family member; the fourth, called “slice of solidarity”, allows you to make a gift to unknown people (*e.g.* a charity). In a certain sense, “the cake takes up the principle of diversification (through the slices)”, which is useful for reducing the risks of the investment (Rinaldi, 2022b). In fact, to limit the risks of a financial portfolio, it is good to invest capital in shares of different companies operating in different sectors of the economy, applying the idea of diversification. In this case, the aim is to save not only to achieve short-term and long-term investment goals, but also to “cultivate” the “social capital” that is essential for achieving happiness (Rinaldi, 2024). Among other things, the attitude to diversify one’s financial portfolio seems to be more frequent among wealthy individuals and among those with greater financial knowledge (Linciano *et al.*, 2021, and 2022). Besides, individuals who have been active in the financial markets for a longer time (the so-called “expert investors”) own more managed savings products, compared to “new investors”. More specifically, individuals with more than ten years of investment experience tend to own bank bonds more frequently (Linciano *et al.*, 2021, and 2022). Among the factors that can influence investors' behaviors, the so-called “financial anxiety” assumes particular importance, referring to the perception of not being able to achieve the financial goals set. It is more frequent in women and in families with a low income (Linciano *et al.*, 2021, and 2022). In Italy, this perception of complexity in managing one’s finances is attributable to the following causes: “uncertainty of the context”, expressed more by women; “inadequacy of financial knowledge”, mentioned in particular by women, by the most anxious individuals, and by those who are more averse to risk; “fear of running into scams”, more frequent in subjects who have little trust in the financial or judicial system. However, for some individuals, managing their finances is not a complex operation. These are mainly men, older people, those with greater financial stability, as well as investors who are less prone to anxiety. They place greater trust in the financial system and consider themselves more satisfied with their financial, investment, and income situation. The tolerance to suffering losses in the short term seems to be higher among wealthier individuals and among those who believe they have greater self-efficacy in achieving their investment goals. This tolerance tends to decrease with age and among married individuals. The data, on this point, shows that, compared to previous years, there has been an increase in the so-called "fragile families", *i.e.* those who find it difficult to meet their current and recurring economic-financial commitments. On the other hand, the percentage of the so-called "exposed families", *i.e.* those who are unable to face unexpected expenses of an amount equal to or greater than €1,000, remains unchanged. In this regard, in order to measure the financial difficulty of Italian families, a risk indicator called "saver at risk" is used. It assumes higher values among young people, subjects with little financial knowledge, and among those who are characterized by low levels of self-control (Linciano *et al.*, 2022). Regarding "digitalized finance", the use of the Internet in relation to individuals' financial choices tends to be more widespread for activities connected to online banking, while it remains more limited for investment services (Lambroglia *et al.*, 2023). Besides, digitalized financial activities and services still seem to be little known today, particularly in the chosen local geographic area. Interest in "cryptocurrencies" tends to be higher in men and younger individuals and is positively correlated with their attitude to be over-confident. As regards online trading, it is less widespread among older subjects and among those with a lower level of education (Linciano *et al.*, 2021, and 2022). However, about this subject, we refer to the relevant part present in Lambroglia *et al.*, 2023, and let us postpone other analyses to future studies, also with the goal to evaluate the effects of the recent information sheet published by ESMA (and CONSOB, at the Italian level) on the use of Artificial Intelligence in financial decisions (ESMA-CONSOB, 2025 and CONSOB, 2025).

The Case Study: Evaluation Of Financial Literacy In A Local Area

The motivation of the study. The main motivation of our study was to evaluate the financial knowledge, behavior, and attitude of a sample of 100 adult individuals, residing in a local area, the Province of Frosinone, in the Latium Region (Italy). The objective of our analysis is to verify whether the level of financial literacy is actually conditioned by a series of factors, in particular, the gender of the sample subjects. The ultimate aim is to confirm or deny what has been highlighted in the literature. The survey carried out was conducted to satisfy the following research objectives:

– examine the financial knowledge of the interviewees, and whether it is greater in men or in women;
– verify the attitude to short-term and long-term savings, and whether it is stronger in men or women;
– observe the risk profile of individuals and how it changes with the gender of the interviewees;
– test the over-confidence of the subjects, as well as evaluate how it changes in terms of gender;
– verify the presence of the "herd effect" and whether it is stronger in men or women;
– detect the existence of the phenomenon of "income adaptation/adjustment" and whether it is more marked in male or female individuals.

Description of the reference sample and Methods of data collection. The survey in question was conducted by interviewing a sample of 100 individuals residing in the Province of Frosinone, of which 50% were men and 50% were women, aged between 18 and 79 years old. The interviewees were divided into the following age groups: 18-34; 35-44; 45-54; 55-64; 65-79. The data was collected by interviewing the subjects of the reference sample, providing them with a questionnaire created within the University of Cassino and Southern Latium and entitled "Evaluation of financial literacy". This questionnaire was structured into 11 multiple-choice questions (see Appendix for more details) and distributed to the interviewees in digital or paper format. In the latter case, the marked answers were entered (online) by the authors. The questionnaire was filled out anonymously by the participants, in order to obtain greater reliability of responses.

The results of the survey. The first four questions of the survey were elaborated based on the literature (Lusardi and Mitchell, 2011). In particular, with these questions, the financial knowledge of the participants was "tested", proposing questions regarding the knowledge of the following "basic" financial concepts in this order: inflation rate, interest rate, investment risk, and risk diversification. 84% of the participants answered correctly to the first question, 5% answered incorrectly, and the remaining part (11%) marked the option "I do not know how to answer". For the second one, 8% answered incorrectly, 81% answered correctly, 11% did not know how to answer. Regarding the third, concerning knowledge of risk, the answers were as follows: 59% of the interviewees indicated the answer "true", that is, that an investment with a high return involves high risk, 28% marked the alternative "false", 11% the "I don't know how to answer". According to 56% of the participants, it is possible to buy shares of different companies operating in different sectors of the economy to reduce the risk of an investment, while 18% stated it was false, and 26% did not know the answer. From the fifth to the seventh question, the interviewees' attitude to saving was verified (see the Appendix). In particular: to the fifth, 83% of them answered "Yes", therefore believing that it is necessary to carefully plan the distribution of resources to be allocated to consumption and savings. The remaining part of the participants (17%) indicated the answer "No". In the sixth item, they were asked to specify, on a scale of 1 to 5, their attitude to saving in order to meet short-term financial goals. The results were as follows: 3% marked the value 1, 10% indicated 2, the majority of participants, that is, 45%, chose 3, 24% marked 4, and for 18% it was 5. In the seventh, they were asked to indicate, on a scale of 1 to 5, their attitude to saving in order to obtain long-term financial goals. The results were as follows: 11% of the interviewees declared themselves to have a very poor attitude, marking the value 1, 9% indicated 2, 33% the value 3, 30% selected 4, 17% marked 5. To the eighth question, the interviewees indicated their risk profile: 76% of them declared to be "risk averse", that is, to prefer a "certain" return rather than face uncertainty to achieve a higher one; 13% declared to be "risk-prone" and, therefore, to accept/prefer to face uncertainty to achieve a higher return. The remaining part, 11% of the interviewees, declared to be "risk neutral." In the ninth, it was asked whether the interviewees believe they have financial knowledge suitable for making investment decisions appropriate according to their risk profile. The majority of them answered "No" (70%), while a lower percentage (30%) answered "Yes". In the second last question, 88% of the participants claimed to make decisions based on their own reference schemes, without being influenced by others. A lower percentage of the interviewees (12%), however, stated they conform to others in the decisions they make. In the final question, respondents were asked whether they tend to settle or whether they are constantly looking for something better. The results were quite balanced: in fact, 48% of them said they settle, while 52% said they are constantly looking for something better.

Data analysis Sufficient "financial culture" requires correctly answering the first four questions, as they refer to essential concepts for managing and moving money. The results obtained show greater financial knowledge for individuals aged between 18 and 44, compared to those between 45 and 79. In fact, for the first age group, 28.88% of the interviewees answered the first four questions correctly, compared to 25.45% of the second. Moreover, if we analyze the existing gender gap, what is highlighted in the literature is substantially reiterated, that is, men possess greater financial knowledge compared to women. In fact, of the latter's total, only 20% of them answered the first four questions correctly, compared to 34% of the total of men (see Fig. 1).

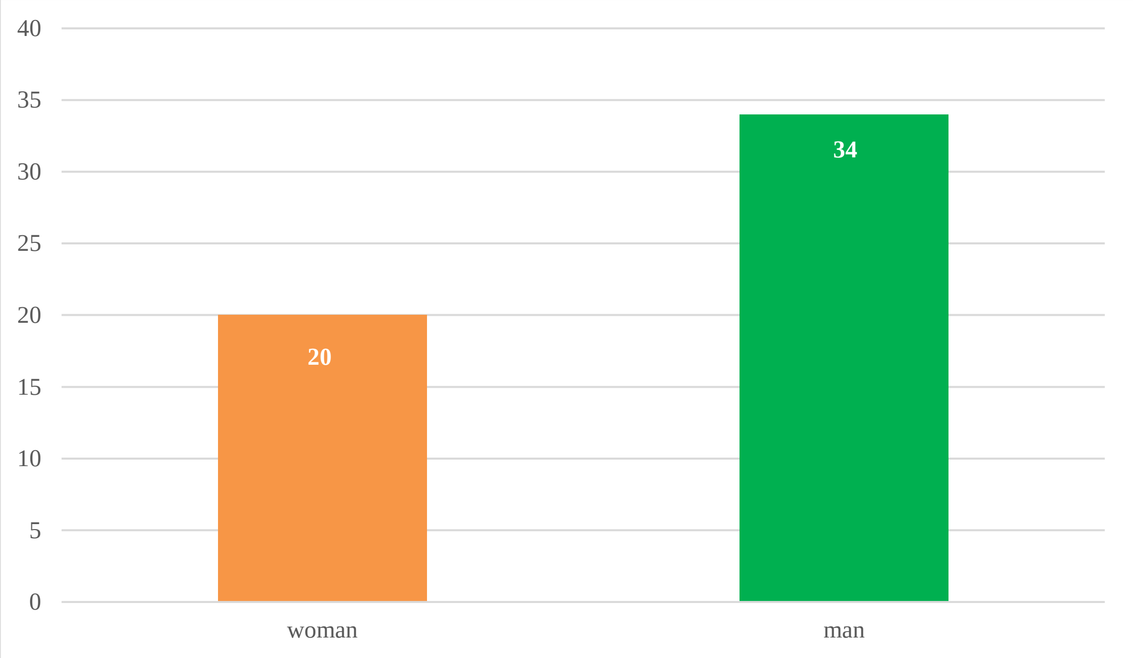

Fig. 1: Financial knowledge: gender gap (values in percentage)

From the results of the fifth to the seventh question, it is found that a good portion of the participants (83%) carefully divided the resources to be allocated to consumption and savings. If we consider gender, the values are similar for both sexes. In fact, of the total number of individuals who carefully ration their monetary resources, approximately 49.4% are women, and approximately 50.6% are men. If we go into detail, however, a difference was found in the attitude of individuals to short- and long-term savings. If we consider only the values of scale 4 and 5, a greater propensity to save is detected for male individuals (see Fig. 2). By the way, two equal numerical results over different time horizons are a rare but still possible outcome). As can be seen from this graph, in fact, the percentage of men who save enough to meet financial goals, both short- and long-term, is higher than that of women in both cases.

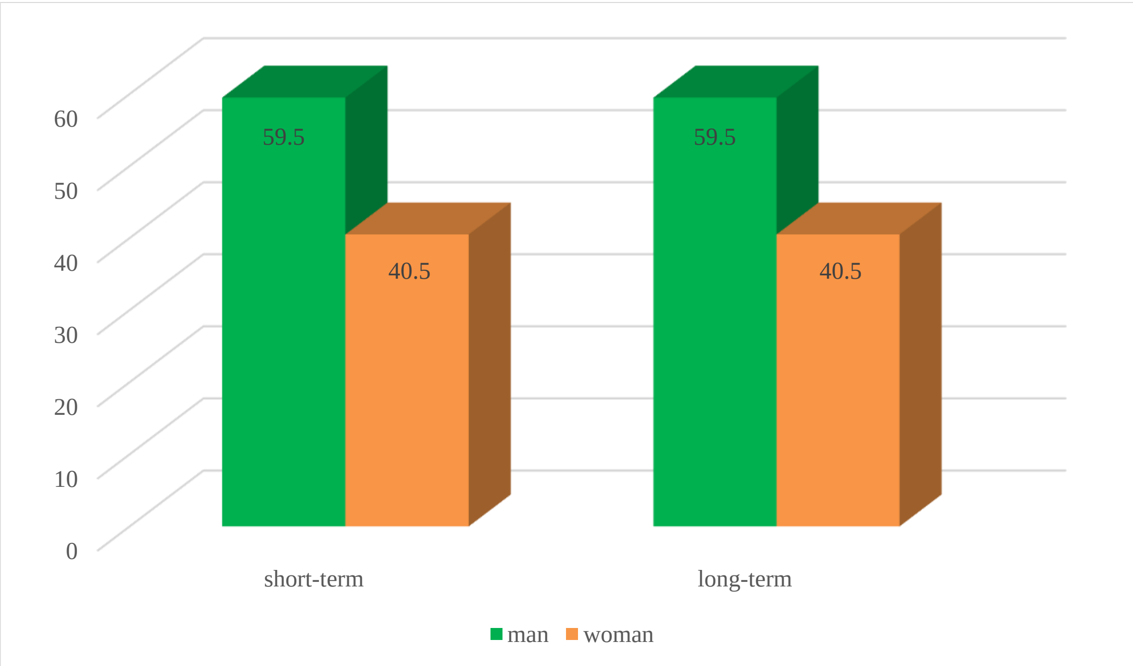

Fig. 2: Financial aptitude to saving: gender gap (values in percentage)

Furthermore, in line with what is stated in the literature, regarding the risk profile of the interviewees, a more significant risk aversion is found in women and a higher risk propensity in men (see Fig. 3). More specifically, the values obtained are the following: 86% of women declared to be risk averse, 6% risk-prone, 8% risk-neutral; instead, 66% of men declared to be risk averse, 14% risk-prone, 20% risk-neutral.

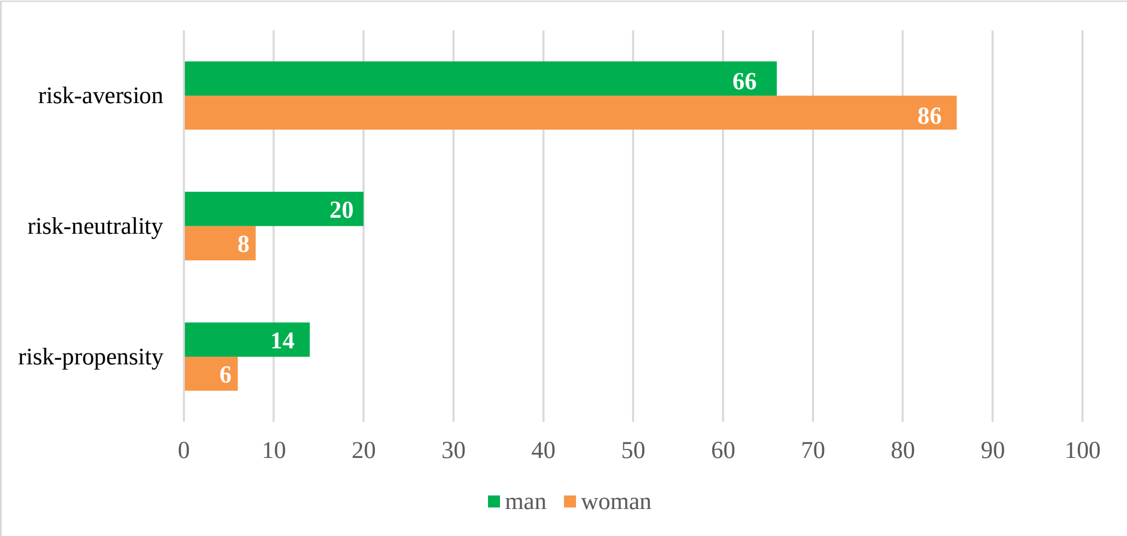

Fig. 3: Risk aversion, propensity, and neutrality: gender gap (values in percentage)

Once the interviewees indicated their risk profile, they were asked to specify whether they believed they had financial knowledge suitable for making investment decisions appropriate to the selected risk profile that concerns them. 30% of the sample answered affirmatively. However, of the total of the remainder, only 37% (the blue "slice" in Fig. 4) answered correctly to the questions relating to the knowledge of "basic" financial concepts. This means that the remaining part of the group (63%) tends to overestimate their financial knowledge and, therefore, to be over-confident. More specifically, 40% of the participants who were over-confident were men, while only 23% were women (see Fig. 3). In this case, too, it confirms that, in male individuals, there is a greater tendency to overestimate their financial knowledge and, consequently, to incorrectly manage risk (see Fig. 4).

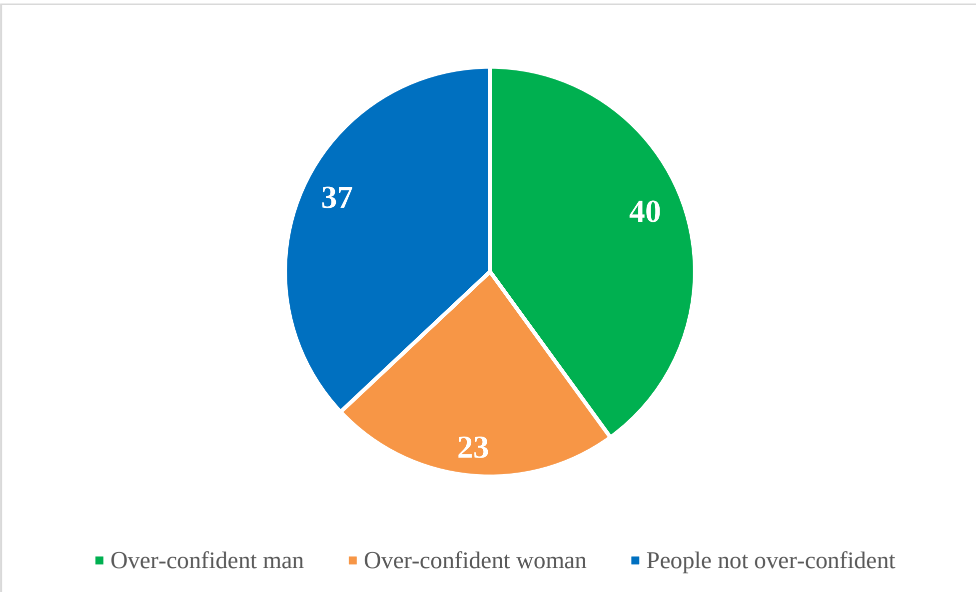

Fig. 4: Overconfidence: gender differences (percentage values)

The survey concludes by asking the interviewees two questions aimed at verifying the existence of the “herd effect” and the phenomenon of “income adaptation/adjustment.” As regards the first point, only 12% of the participants stated that they tend to conform to what others do. Of the remainder, approximately 67% are men, while approximately 33% are women (Fig. 5). This result can be associated with a low tendency of individuals to conform to fashion. However, there may be the possibility that, even though the questionnaire was filled out anonymously, the interviewees preferred not to answer with maximum transparency on this point, or had some unconscious fear of doing so, perhaps because they did not accept feeling part of the “herd” (see Fig. 5).

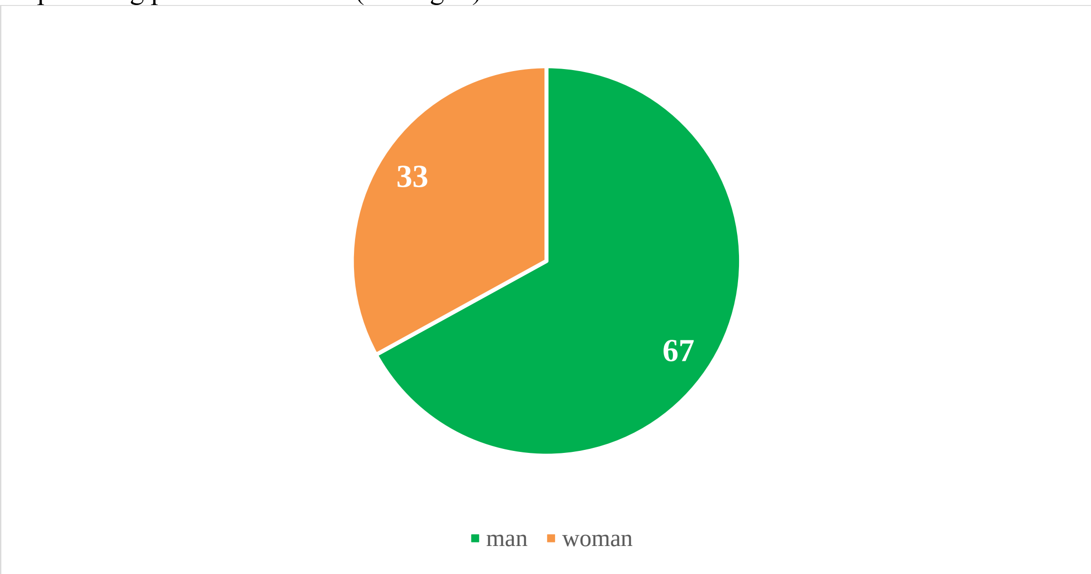

Fig. 5: The “herd” effect: gender gap (percentage values)

Regarding income adaptation/adjustment, however, 52% of the interviewees stated that they are constantly looking for something better and, therefore, they are unsatisfied. In particular, about 60% of them are men, while 40% are women (see Fig. 6).

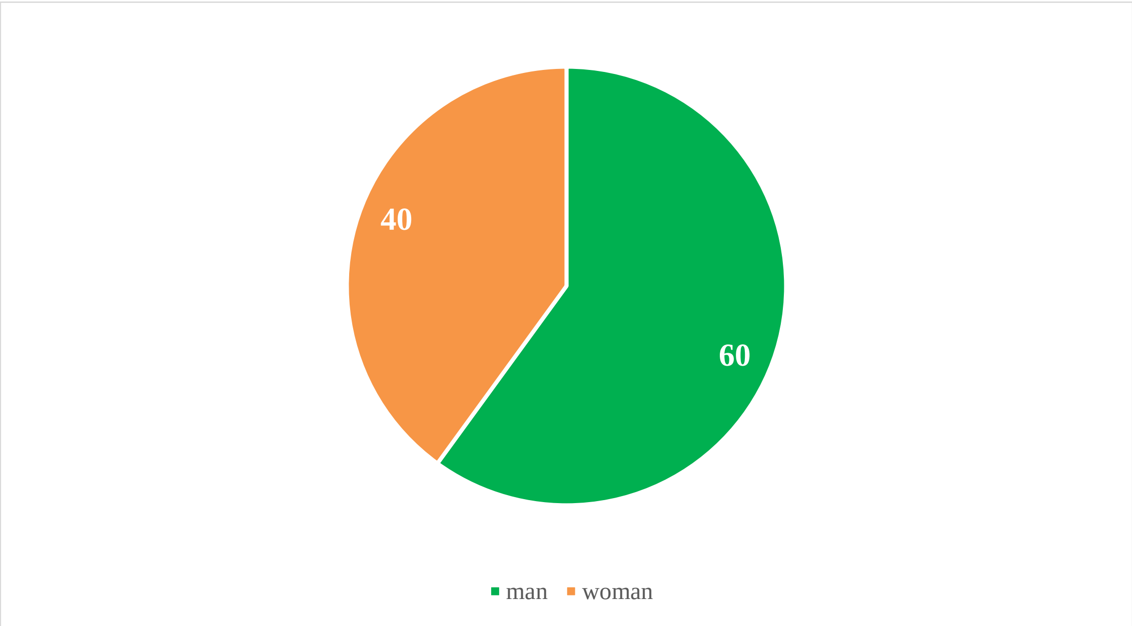

Fig. 6: Phenomenon of “income adjustment”: gender differences (values in percentage)

Conclusions

As verified by this survey, it has been seen how some individuals do not have adequate knowledge of "basic" financial concepts and how, in making their own economic-financial decisions, they tend to make risk management errors, with a significant influence of gender on choices. The "5 basic principles" selected by the "Committee for the Planning and Coordination of Financial Education Activities" are interesting. This body was established in 2017 with the aim of promoting and coordinating initiatives aimed at increasing the financial, insurance, and pension knowledge and skills of the population, as well as improving people's ability to make choices suited to their investment objectives and their economic-financial conditions (https://www.quellocheconta.gov.it). Regarding the 5 principles, it should be emphasized that "financial education" (or investor education) is distinct from "financial literacy". In fact, through the first, individuals can improve their financial literacy and, therefore, the knowledge, behavior, and attitude in the financial field necessary to make informed investment choices, suited to their economic and financial needs (De Bonis *et al.*, 2022). Therefore, it also tries to indicate possible paths for choices in the financial field. For example, this Committee offers some useful advice for managing one's monetary resources in a responsible and informed way, recommending individuals to: 1. regularly note their monetary inflows and outflows; 2. obtain correct information on financial products only from reliable sources; 3. compare financial products before making an investment choice; 4. sign an investment contract only if you have fully understood the riskiness of the financial product or service being proposed to you; 5. pay attention to the investment proposals made, in the sense that we must keep in mind the following basic rule: "Higher interest rates also represent a greater risk". Financial education is a topic that has an increasing interest in public and private institutions. As De Bonis et al. (2022) reported, it "also has positive effects on the community". In fact, it allows individuals to make responsible financial decisions, promotes inclusion, reduces social inequalities, and helps individuals better understand the economic policies of governments and the social environment in which they live. Investor education can also be effective in making individuals understand how behavioral distortions can influence their decisions. Financial education, in conclusion, is an excellent investment to increase one's human capital (Pugno, 2023). Therefore, even schools, starting from childhood, should encourage the teaching of "basic" financial concepts in order to possess, once they reach adulthood, the ability to make informed economic-financial choices (De Bonis, R. *et al.*, 2022, and Rinaldi, 2022b).

Appendix

Financial literacy assessment: this questionnaire is intended to assess the financial knowledge, behavior and attitude of individuals aged between 18 and 79 living in the province of Frosinone. Here are the specifications of our survey:

Gender: Male; Female; I prefer not to specify.

Age: 18-34; 35-44; 45-54; 55-64; 65-79 years.

Question 1: Imagine buying a kilo of bread today with 2 €. Now, suppose that after a year there is a fixed inflation rate of 3%. In a year, with 2 € you can buy:
- less bread than you can buy today
- more bread than you can buy today
- I don't know the answer

Question 2: Suppose you deposit the sum of 100 € in a savings account that earns a fixed interest rate of 2% per year. Assuming you don't make any withdrawals or deposits, what is the sum that will be in the same account at the end of the year?
- €100
- €102
- I don't know the answer

Question 3: It is possible to say that an investment with a high return involves a high risk.
- True
- False

- I don't know the answer

Question 4: As a rule, to reduce the risk of an investment, it is possible to buy shares of different companies operating in different sectors of the economy.
- True
- False
- I don't know the answer

Question 5: Do you tend to carefully plan the distribution of resources to be allocated to consumption and savings?
- Yes
- No

Question 6: On a scale of 1 to 5, what is your attitude towards saving to meet short-term financial goals (e.g. buying a dress, a smartphone, etc.)? (A value of 1 indicates a low attitude towards saving; a value of 5 indicates a high attitude towards saving)
- 1
- 2
- 3
- 4
- 5

Question 7: On a scale of 1 to 5, what is your attitude towards saving to meet long-term financial goals (e.g. buying a house, a car, etc.)? (value 1 indicates a low attitude towards saving; value 5 indicates a high attitude towards saving)
- 1
- 2
- 3
- 4
- 5

Question 8: Indicate your risk profile:
- risk averse (I prefer the certain to the uncertain)
- risk inclined (I prefer to face uncertainty to obtain a higher return)
- risk-neutral (I am indifferent to risk)

Question 9: Do you think you have the financial knowledge needed to make investment choices that are appropriate to your risk profile?
- Yes
- No

Question 10: Do you tend to conform to what others do or make decisions based on your own reference schemes?
- I tend to conform to what others do
- I tend to make decisions without being influenced by others

Question 11: Do you tend to be satisfied with what you have or are you constantly looking for something better?
- I tend to settle
- I am constantly looking for something better

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