Portuguese Youth Saving Determinants and Financial Literacy

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ABSTRACT

This study aims to characterise the saving behaviour of Portuguese people, by analysing factors that influence financial decisions, such as the socio-economic and behavioural variables that determine saving and the impact of financial literacy on their willingness to save. We conclude that individuals with 31 or more years of age, with high levels of education, higher income, average financial knowledge and who get specialized information show a higher probability of saving. In terms of behaviour, those who consider the cost before making financial decisions and underconfident individuals, regardless of their risk appetite or aversion, also have a greater propensity to save. In contrast, for individuals in the 18 to 30 age range, everything else constant, there are no significant differences in youth attitudes toward saving. Young women tend to be more likely to save than young men. The estimated models also support the relevance of schooling to explain saving in this age group. The source of information on which the financial decision is based does not seem to be important to young people, but under- and overconfidence does have a marginal impact. Furthermore, low-income levels are a common obstacle to saving, both for young people and the general population.

Keywords: Youth; Financial literacy; Portugal, Savings.
JEL Codes: B26, C12, C13, C15, D14.

I. Introduction

This study aims to characterise the willingness of Portuguese youth to save by identifying the degree of importance given to the probability of saving by analysing the main classical determinants of saving, such as income, age, gender, education, household characteristics, employment situation, and the relevance of financial literacy. It also identifies profiles and behavioural patterns that have a relevant impact on saving, namely individual risk appetite, participation in the financial market and overconfidence.

This study aims to answer two questions: Does saving by young people respond to factors that differ from those that influence saving by the general population? Is the

level of financial literacy a relevant determining factor for young people to save?

The study is based on a statistical analysis of data from the European Commission (EC)/Portuguese Securities Market Commission (CMVM) survey entitled, "Financial literacy for investors in the securities market in Portugal REFORM/SC2020/017", dated March 2021, and Probit models estimated on a sample of 2,102 individuals, 305 of whom are young. Willingness to save is explained by a vector of socio-economic variables, the level of financial literacy and behavioural variables.

Section II discusses the relationship between savings, financial literacy, and individual financial behaviours. After estimating the models for the sample and for the youth sub-sample in Section III, we discuss the results obtained in Section IV and draw conclusions about the previously established hypotheses in Section V.

II. Savings, financial literacy and financial behaviour

There is no consensus amongst the academic community about concepts of saving and financial literacy. Definitions are characterised by constant reformulation over time due to the evolving financial market and the knowledge and perception of economic agents.

According to Heckman and Hanna (2015), saving is a behaviour that enables balanced consumption throughout an individual's life cycle. It enables individuals to maintain purchasing power regardless of income shocks resulting from unemployment, disability, etc. Bernanke et al. (2014) define saving as a key factor for promoting economic growth and better and higher standards of living, as people have to save and accumulate resources to meet future, sometimes unexpected, needs. For Eze and Okpala (2014), saving is one of the main components of investment and, consequently, fundamental for economic growth, given that mobilising domestic savings plays a role in strengthening the savings-investment growth chain in developing economies.

With regard to household savings, the decision to save is closely linked to financial education and socio-demographic factors (Callen & Thimann, 1997).

The EC (2005) identified financial literacy as the ability of individuals to understand financial products and make informed decisions. In the same year, Kempson et al. (2006) stated that financial literacy refers not only to individuals' knowledge and understanding of financial matters, but should also include their attitudes, preferences, and behaviours.

Abreu and Mendes (2010) identify three dimensions of financial literacy: investors' financial knowledge, their academic level (which influences their ability to use the information gathered) and the sources of information used by investors. The first dimension concerns individual knowledge about financial markets, existing financial products and their characteristics. Investors who are more literate and aware of financial opportunities, as well as the horizon of choices and their consequences, make better decisions and are more likely to become financially autonomous. Investor competence is also relevant in this field (Graham et al., 2009), particularly in the context of crisis and uncertainty, as it has the capacity to affect their future disposable income and that of their families.

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Huston (2010) states, in turn, that financial literacy implies not only understanding financial matters, but also the ease with which an individual applies them to everyday decisions. Huston (2010) four different areas of financial literacy, namely, basic concepts of personal finance - including issues such as the time value of money, purchasing power, inflation, etc.; borrowing - financing in anticipation of future income; savings/investment – investing current income in financial products to obtain future income; protecting resources – through risk management and insurance. The National Council of Financial Supervisors (2011) also defined financial literacy as the ability of an individual to act and make informed decisions about how to manage their income.

Financial education boosts financial literacy. Brochado and Mendes (2021) defined financial education as the process by which each individual develops their knowledge about financial products, key concepts, risks and mental shortcuts that facilitate decision-making and management of personal finance.

According to Lusardi (2009), there is a high correlation between financial literacy and the ability to cope with emergency expenses and income shocks. The level of literacy of individuals is an important indicator of household savings (Lusardi, 2008). Bucher-Koenen and Lusardi (2011) suggest that individuals with higher levels of financial literacy are more inclined to enrol in a savings plan. In this sense, the concepts of financial literacy and saving are related.[1] Likewise, Bernheim (1995, 1996) emphasized that most people lack basic financial knowledge and are therefore likely to make mistakes. Landerretche and Martinez (2013) and Adetunji and David-West (2019) claim that financial literacy has a positive association with financial savings. Henager and Mauldin (2015) show that subjective financial knowledge is a strong indicator of saving behaviour. Other academic research has concluded that undersaving is frequent in many advanced economies and that individuals tend to save in inefficient ways (e.g., Choi et al., 2011; Lusardi & Mitchell, 2011; Van Rooij et al., 2012).

The influence of financial literacy on saving behaviour is closely related to age. According to Nilesh et al. (2022), younger individuals consider themselves as only slightly knowledgeable or as having less understanding of financial products and markets. Brown and Taylor (2005) stress that the population in this age group has less wealth and is therefore more prone to vulnerabilities and adverse changes in their financial condition. Agarwal et al. (2007) also conclude that the age of the population has an influence on the level of financial knowledge and skills. Lusardi et. al. (2010) claim that young adults display low knowledge. This leads to more frequent financial errors that interfere with saving, especially amongst young people and the elderly, who have less financial knowledge and lower cognitive abilities. However, Scheresberg (2013) concludes that young adults are more likely to plan for retirement or have set aside savings for emergencies[2] and Henager and Cude (2016) report that subjective financial

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[1] Interestingly, Kaiser and Menkhoff (2017) conclude that borrowing behaviour is more difficult to impact by conventional financial education that saving behaviour.

[2] More recently, Kaiser et al. (2022) establish a causal effect between financial knowledge and financial outcomes (including saving behavior).

knowledge was more strongly related to long- and short-term financial behaviour than objective financial knowledge in the younger age groups.[3]

There is also literature relating to financial literacy, savings, and gender. Lusardi (2009) argues that there is a greater chance of men's savings being higher than women's due to the higher financial literacy of the former. Nilesh et al. (2022) support this view by maintaining that the male population is more knowledgeable about financial products and markets compared to women, and thus gender is one of the determining factors of saving. Hung et al. (2009) argue that the highest levels of financial literacy are found in men and older individuals, and also in people with higher levels of education and income. Some authors state that in areas where women have a strong presence in higher education, financial literacy levels for women are higher. Women's life expectancy is also related to level of financial literacy, as the longer a woman's life expectancy, the more she will invest in her financial education, anticipating future responsibility for her personal finances (Cupák et al., 2018).

Individuals with low levels of financial literacy are more likely to follow financial advice from friends and family; while more financially literate individuals are more likely to rely on newspapers, books, and the Internet (Van Rooij et al., 2011). Occupation also affects saving behaviour; Yuh and Hanna (2010), for example, concluded that self-employed individuals were more likely to save than were those not self-employed.

In the case of women and related to stereotypes, focusing on their families is of overwhelming importance when making financial decisions (Correll et al., 2007), and gender impacts saving behaviour (Kim & Yuh, 2018). Yuh & Hanna (2010) unveil a positive relation between educational attainment and saving, while economic factors, including income, determine saving decisions (Henager & Mauldin, 2015; Yuh & Hanna, 2010).

Jain & Sehgal (2022) reinforce the role of the economic cycle and economic crises in household savings and spending. During the 2007-2009 financial crisis and the sovereign debt crisis of 2010-2014, household disposable income fell significantly, and consumption and saving behaviours were adjusted accordingly.

Thus, the literature has confirmed that people's level of financial literacy is an important determinant of saving behaviour, in addition to traditional socio-economic determinants such as age, gender, demography, education, household characteristics and income.

Apart from financial literacy, an individual's propensity to save can also be determined by behavioural factors (Korniotis & Kumar, 2011; Saraiva, 2010). Overconfidence and appetite for risk stand out in terms of influence on individual savings.

Overconfidence is the most important behavioural bias that can affect an individual's propensity to save. Chen (2005) defines overconfidence as overestimating one's own abilities, which may be related to people's optimism, that is, unrealistic beliefs about the return on investments. Investor overconfidence tends to make them prefer decision-making based on their own insights rather than relying on factual or specialist

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[3] Kim et al. (2019) also conclude that financial knowledge is positively associated with performing positive short-term financial behaviours (including saving).

information or expert advice. Odean (1998) states that overconfident investors tend to trade more than rational investors and that, the more overconfident they are, the greater the number of transactions and the lower the expected return on investment.

Overconfidence seems to be strongly associated with gender. According to Chen (2005) and Saraiva (2010), men are more overconfident than women. This translates into a higher level of participation by men in financial markets, with female individuals being more risk averse. Most empirical studies show that, on average, women tend to have less knowledge than men, but, on the other hand, tend to underestimate their knowledge. Combined with a tendency to weigh financial decisions more, this makes them tend to make fewer wrong financial decisions. There are several studies that demonstrate the greater tendency of men to feel above average or more competent in the financial domain than they actually are (Beyer & Bowden, 1997; Deaux & Emswiller, 1974; Lenney, 1977; Prince, 1993).

However, Nilesh et al. (2022) and Lusardi and Mitchell (2011) argue that women are the most overconfident. Other authors, such as Berggren and Rumualdo (2010), defend the importance of context in identifying over- or under-confident individuals. The authors argue, for example, that differences in the volume of transactions carried out and the returns on these are more significant in people who are single, regardless of gender. Lenney (1977) states that, in the workplace, the differences in overconfidence observed between men and women are often related to insufficient feedback from employers. When the feedback is insufficient or ambiguous, women tend to underestimate their abilities compared to men.

Risk tolerance is also associated with individual saving. Individuals who are more risk-averse are supposed to be more cautious about the future and exhibit a greater propensity to save in the present. Eckel & Grossman (2008) maintain that the appetite for risk, which influences overconfidence, is determined by variables such as knowledge, wealth, marital status, among other demographic factors, while Saraiva (2010) states that differences in appetite for risk are related to discrimination or to differences in individual preferences.

In short, sociodemographic household characteristics and behavioural factors impact saving, in addition to financial literacy (objective and subjective).

III. Methodology

This study is based on responses to the questionnaire "Financial literacy for investors in the securities market in PORTUGAL - DG REFORM/SC2020/017", hereinafter referred to as the CMVM/EC questionnaire, in which the data collection method is based on stratified sampling. Two samples were constructed: a parent sample of 2102 individuals, to which specific treatments were applied; and a sub-sample of 305 young people, aged between 18 and 30.[4]

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[4] One should note that this survey was run during the pandemic crises caused by Covid.

To study the factors that best explain people's saving in general, and that of youth in particular, we considered the following hypotheses, which result from the literature reviewed in the previous section:

Hypothesis 1: Age is relevant to explain the respondents' probability of saving (for example, Nilesh et al., 2022; Lusardi et al., 2010);

Hypothesis 2: Gender is relevant to explain the respondents' probability of saving (for example, Nilesh et al., 2022; Kim & Yuh, 2018);

Hypothesis 3: Schooling is relevant to explain the respondents' probability of saving (for example, Yuh & Hanna, 2010);

Hypothesis 4: Employment situation is relevant to explain the respondents' probability of saving (for example, Yuh & Hanna, 2010);

Hypothesis 5: The respondents' area of residence, urban (Lisbon and Porto) versus non-urban, is relevant to explain their probability of saving (for example, Berggren & Gonzalez, 2010);

Hypothesis 6: Household income is relevant to explain the respondents' probability of saving for example, Henager & Mauldin, 2015);

Hypothesis 7: Financial literacy is relevant to explain the probability of saving (for example, Adetunji & David-West, 2019; Lusardi, 2008);

Hypothesis 8: Overconfidence is relevant to explain the probability of saving (for example, Saraiva, 2010, Korniotis & Kumar, 2011);

Hypothesis 9: The risk appetite of individuals is relevant in explaining their probability of saving (for example, Saraiva, 2010, Korniotis & Kumar, 2011);

Hypothesis 10: Prior consideration of the costs associated with a purchase is relevant to explain individuals' probability of saving (for example, Saraiva, 2010, Korniotis & Kumar, 2011);

Hypothesis 11: The quality of the sources of information that serve as the basis for financial decisions is relevant to explain individuals' probability of saving (for example, Rooij et al., 2009).

To test these hypotheses and identify the determinants of individuals' probability of saving — and that of youth in particular — we developed and estimated the Probit model (1). In this case, the dependent variable (Y) is a binary variable (saves or does not save), and it is assumed that it is a function of explanatory variables (X1, ..., X18) and the random disturbance term (ε). This model was estimated for the entire sample and for a sub-sample of youth, in order to analyse whether the significance of the determinants of saving differs between each sample.

$$Y_i = \beta_0 + \sum \beta_j X_{ji} + \varepsilon_i \ (i = 1, \dots , n; j = 1, \dots, 17) \tag{1}$$

with:
β_0 – Constant
β_j – Regression coefficient of the j variable X_j
ε – random disturbance term.

Dependent variable

The dependent variable is the binary variable saves/does not save, designated as POUPA. This variable was constructed based on the question "In the last year did you save money in any of the following ways?" and the answer "I did not save". The "value "0" was attributed to the answer "I did not save", and the other answers (which correspond to the act of saving in the last year) were codified as "1".

Explanatory variables[5]

The variable IDADE represents the age in years of the respondent on the date they answered the questionnaire.

In relation to gender, a binary variable designated HOMEM is considered, with the value "1" indicating the male gender and "0" the female gender.

With regard to education, we created a binary variable, ENSINOSUP, which takes the value "1" if the respondent has a level of education between having completed secondary education and the top level of higher education, inclusive, and "0" in other cases.

Regarding employment situation, we created a binary variable called SITLAB, in which the value "1" refers to economically active individuals, and the value "0" covers all other cases, that is, individuals who are not economically active.

To differentiate between urban and non-urban areas, a binary variable called URBANO was created, in which the value "1" refers to individuals whose area of residence is in the districts of Lisbon or Porto. The value "0" represents the remaining districts in the country.

To consider the household income of respondents, three dummies were constructed, corresponding to the following categories: up to €1,000 (INC_LOW), between €1,000 and €2,500 (INC_AVERAGE) and more than €2,500 (INC_HIGH).[6]

To assess financial knowledge, several financial literacy questions that are common to both investors and non-investors are considered in the CMVM/EC questionnaire. However, to avoid losing a considerable number of observations, given the high number of respondents who chose "not to answer" some of these questions, the five with the least "no answers" were chosen, as detailed below:

i)   Suppose that 5 brothers receive 1,000 euros and that this amount is distributed equally among all of them. How much money do they each receive? (open response). **A.: €200**.

ii) Now suppose that the 5 brothers have to wait a year to receive their share of the 1000 euros and that the inflation rate is about 2%. In a year's time they will be able to buy… (multiple choice). **A.: Less good than today**.

iii) True or false question: An investment with a high return is generally associated with a high level of risk. **A.: True**.

iv) True or false question: As a general rule, it is possible to reduce the risk of investing in the capital markets by buying a diversified set of shares. **A.: True**.

[5] A complete list of the variable definitions is in the Annex.
[6] *INC_AVERAGE* is the base category.

v)   What is the value of a €1000 investment in shares if the price of those shares drops by 50% in the first six months and then increases by 80% after those six months? (multiple choice). **A.: Less than €1,000**.

To assess the level of financial literacy of the respondents, we created the binary variable designated "LITFIN_HIGH", which takes the value "1" if the individual answered 4 or 5 of the selected questions correctly. Similarly, if the respondent answered 2 or less questions correctly then it shows a low level of financial literacy. Thus, "LITFIN_LOW" is equal to 1 if the number of correct answers is 2 or less.

The variable related to the respondent's overconfidence indicator ("OVERCONFIDENT") was elaborated based on the difference between an individual's self-assessment, on a scale from 1 to 5, of their knowledge (compared to the average for the Portuguese population) of markets and financial products, (from 1 – poor knowledge - to 5 – high level of knowledge), and their "real" knowledge, inferred by counting the number of correct answers to the previous questions.[7] Thus, a dummy variable was created that classifies overconfident individuals as "1", that is, whose difference referred to above is equal to 1, 2, 3 and 4. "UNDERCONFIDENT" equals 1 for individuals with that difference equal to -1, -2, -3 and -4.[8]

Regarding risk appetite, the respondents rated themselves on a scale from 1 (loves to take on risk) to 7 (does not love risk at all), and this self-assessment was used to construct two variables. "RISK_AVERSE" is 1 for individuals who rated themselves as 6 or 7; "RISK_LOVER" is 1 for respondents who rated themselves as 1 or 2.

We also created a binary variable, "CONSIDER", based on the question "Before I buy something, I carefully consider whether I can afford it", to which respondents chose one of the 5 available options, with "1" meaning they strongly disagree with the statement and "5" that they strongly agree. CONSIDER is 1 for individuals who rated themselves as 5 (strongly agree with the sentence).

Based on the question, "Which of the following sources of information do you feel influences your [financial] decisions?", two dummy variables were created, "INF_SPECIAL" and "INF_FAM". The first is assigned the value "1" if the respondent based their answer on the opinion of experts, financial advisers or banking institution staff, while the variable "INF_FAM" is equal to "1" if the decision is supported by advice from family or friends.

IV. Results

This section presents and analyses the results obtained by estimating models for the sample of older adults and for the youth sample. In order to test the robustness of the models and the estimated coefficients for the explanatory variables, the model was first

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[7] Cases where the number of correct answers was 0 or 1 were considered similar.
[8] Abreu and Mendes (2012) use a similar approach.

estimated using (only) the sociodemographic variables. Next, we estimate the model with the behavioural variables, and finally we use all the explanatory variables.[9]

A. *Analysis of the results obtained for the full sample*

This section presents the results obtained for the older adults' sample. From Table 1, last few rows, we conclude that the models are statistically significant, thus rejecting the hypothesis that all the coefficients of the explanatory variables are simultaneously null.

Table 1 – Estimated coefficients - older adults' sample.

Notes: 1) Robust (Huber-White) standard-deviations in parenthesis; 2) significant at the 1% (***); 5% (**) and 10% (*) level.

	[1]	[2]	[3]
Const.	-1.811	0.875 ***	-1.688
	(4.41)	(0.27)	(4.62)
AGE	0.204		0.245
	(0.36)		(0.39)
*AGE*AGE*	-0.005		-0.007
	(0.01)		(0.01)
MALE	-0.429 **		-0.542 ***
	(0.18)		(0.20)
HIGH_EDUC	0.821 ***		0.806 ***
	(0.21)		(0.22)
SITLAB	0.189		0.379 *
	(0.21)		(0.23)
URBAN	0.276		0.184
	(0.23)		(0.24)
INC_LOW	0.105		0.051
	(0.34)		(0.35)
INC_HIGH	0.751 ***		0.743 ***
	(0.19)		(0.20)
LITFIN_LOW	0.063		0.158
	(0.19)		(0.21)
LIFTIN HIGH	-0.187		-0.114
	(0.23)		(0.26)
INF_SPECIAL	0.371		0.337
	(0.27)		(0.29)
INF_FAM	0.022		0.019
	(0.21)		(0.22)
OVERCONFIDENT		-0.658 ***	-0.673 **
		(0.21)	(0.27)
UNDERCONFIDENT		-0.668 ***	-0.725 ***
		(0.22)	(0.27)
RISK_AVERSE		-0.282	-0.285
		(0.25)	(0.28)
RISK_LOVER		-0.038	-0.078
		(0.37)	(0.42)

[9] We also estimate stepwise regressions, where the independent variables are progressively introduced one by one. Results (not reported) are similar.

CONSIDER		0.512 ***	0.453 **
		(0.16)	(0.18)
# obs. with Y=1	218	218	218
# obs.	305	305	305
McFadden R2	0.189	0.075	0.253
LR stat	68.8	27.4	92.3
Prob (LR stat)	0.000	0.000	0.000

We also conclude that our results are robust. In fact, apart from the over- (and under) confidence variables, all the remaining independent variables retain their sign and significance in columns [1] to [3] of Table 1.[10]

Turning now to our testable hypotheses, the evidence supports hypothesis 1 since the variables "AGE" and "AGE*AGE" are statistically significant. Thus, it can be stated, *coeteris paribus*, that age exerts a non-linear influence on an individual's probability of saving. This result is in line with Agarwal et al. (2007), who argue that the age of an individual influences its level of knowledge and financial capacities. In the case of youth and old people in particular, this frequently causes them to make mistakes that hinder saving.

The "MALE" variable is not significant (at the usual significance levels), thus not corroborating hypothesis 2. Although there is a negative relationship with the variable "SAVE", its lack of statistical significance means that adult men are equally likely to save as adult women, which is not aligned with the literature reviewed in the previous section (namely Lusardi, 2009, and Nilesh et al., 2022).

With regard to education, we conclude that higher education "HIGH_EDUC" is statistically significant at 10% to explain saving by respondents – in keeping with hypothesis 3 – and positively influences it. Thus, individuals in higher education (or who have completed higher education) have a higher probability of saving than individuals with less schooling. This result is in line with Yuh and Hanna (2010), who report a positive association between education attainment and saving.

The "SITLAB" and "URBAN" variables are not statistically significant, thus hypotheses 4 and 5 are rejected. In the latter case, this could be explained by several factors, including the fact that the lifestyle in urban areas entails higher costs — for example, in terms of housing — even though there are more employment opportunities offering higher salaries. This contrasts with the reality in non-urban areas where costs may be lower, and salaries are generally lower. As to the former, it could be related to the fact that (part of) the survey was run during the confinement period of the sanitary crisis, which may have led individuals to adjust their saving behaviour given the uncertainty related to any possible future change of the occupation status.

Income, as expressed in the model by "INC_LOW" and "INC_HIGH", is highly relevant, thus confirming hypothesis 6. Respondents with lower income — up to €1,000 — are less likely to save than individuals with income between €1,000 and €2,500. This contrasts with the case of individuals with income above €2,500, who show a greater

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[10] Although the sign of two coefficients changes from columns [1] and [2] to column [3], these two cases correspond to statistically non-significant variables.

likelihood of saving. All in all, this result is aligned with the existing literature, which shows a positive association between saving and income.

On the other hand, we conclude that financial literacy matters, rendering support to hypothesis 7. In fact, our results clearly show that individuals with lower levels of literacy have lower probability of saving (compared with individuals with average financial literacy scores), and this is consistent with the financial literacy literature (for example, Adetunji & David-West, 2019; Lusardi, 2019). Nevertheless, an unexpected result is obtained for individuals with higher (than the average) levels of financial literacy: these exhibit a negative association with saving, something that seems hard to explain, but is consistent with Hechman and Hanna (2015) who found that a higher level of literacy was not associated with the likelihood of saving (particularly in low-income households).

As regards the sources of information used by respondents, the "INF_SPECIAL" variable is significant (thus, supporting hypothesis 11), which means that looking for information from specialized sources does tend to have a significant influence on saving. This is consistent with the idea that specialized sources of information, although sometimes more formal, are considered reliable sources, even in times of crises. Finally, asking family and friends for advice when making financial decisions "INF_FAM" is not significant at the usual confidence levels.

Regarding behavioural variables, our results for the older adults' sample show that confidence does indeed matter: consistent with our predictions, overconfident individuals have a lower probability of exhibiting saving behaviour (the coefficient of "OVERCONFIDENT" is negative and statistically significant in column [2], and is negative, although it lacks statistical significance, in column [3]). Also, underconfident individuals have higher probability of saving: the coefficient of "UNDERCONFIDENT" is positive in columns [2] and [3], and significant in column [3]). This set of results supports hypothesis 8. Furthermore, the "CONSIDER" variable is also highly significant and thus relevant to explain people's saving behaviour, as proposed in hypothesis 10. Thus, individuals who carefully consider the cost before making purchasing decisions are more likely to save than the others. On the contrary, there does not seem to exist a significant impact of risk considerations on saving behaviour, neither for respondents with appetite for risk nor for those who are risk averse. This allows us to reject hypothesis 9 and could be explained by the (already mentioned) fact that the survey was run during the covid crisis period, where uncertainty was at a peak and people really did not know what to expect in the near future.

B. Youth sample

The results obtained with the youth sample are presented in Table 2. The estimated model is globally significant, and our results are robust. However, compared to the results obtained for the older adults' sample, there is a smaller number of statistically significant variables.

Analysing Table 2, the estimates for the coefficients of the variables "AGE" and "AGE*AGE" do not support hypothesis 1, contrary to what occurs in the older adults' sample. Thus, we can state that the specific age of individuals, between 18 and 30 years old, does not significantly influence their probability of saving. So, age wise and

everything else constant, this generation of individuals seems to have a homogeneous saving behaviour.

On the other hand, the variable "MALE" is statistically significant, thus explaining the saving behaviour of youth and corroborating hypothesis 2. This is also different from our findings for the older adults' sample. For respondents aged 18 to 30 years old, we observe a negative relationship with the variable "SAVE", showing that young men have, on average, a lower probability of saving than young women. This is not consistent with the studies by Nilesh et al. (2022) and Lusardi (2009), which state that men tend to save more than women but is aligned with Kim and Yuh (2018).

In terms of schooling, we conclude that attending or having completed higher education "HIGH_EDUC" is highly significant. Thus, young people with a higher education are, on average, more likely to save compared to others. The effect of schooling on the probability of saving is more noticeable in young people than in the older adults' population.

Table 2 – Estimated coefficients – youth sample.

Notes: 1) Robust (Huber-White) standard-deviations in parenthesis; 2) significant at the 1% (***); 5% (**) and 10% (*) level.

	[1]	[2]	[3]
Const.	1.627 ***	0.128	1.332
	(0.50)	(0.11)	(0.52)
AGE	-0.07 ***		-0.064
	(0.02)		(0.02)
*AGE*AGE*	0.001 ***		0.001
	(0.00)		(0.00)
MALE	-0.008		-0.016 ***
	(0.06)		(0.07)
HIGH_EDUC	0.187 *		0.191 ***
	(0.10)		(0.10)
SITLAB	0.132		0.137 *
	(0.09)		(0.09)
URBAN	0.014		-0.027
	(0.08)		(0.08)
INC_LOW	-0.276 **		-0.248
	(0.13)		(0.14)
INC_HIGH	0.696 ***		0.693 ***
	(0.08)		(0.08)
LITFIN_LOW	-0.258 ***		-0.218
	(0.07)		(0.08)
LIFTIN HIGH	-0.279 ***		-0.398
	(0.08)		(0.09)
INF_SPECIAL	0.445 ***		0.429
	(0.08)		(0.08)
INF_FAM	0.013		0.012
	(0.08)		(0.08)
OVERCONFIDENT		-0.172 **	-0.017 **
		(0.08)	(0.09)
UNDERCONFIDENT		0.029	0.216

		(0.07)	(0.08)
RISK_AVERSE		-0.027	-0.071
		(0.11)	(0.11)
RISK_LOVER		0.068	-0.044
		(0.16)	(0.17)
CONSIDER		0.199 ***	0.177 **
		(0.06)	(0.07)
# obs. with Y=1	1122	1122	1122
# obs.	1797	1797	1797
McFadden R2	0.109	0.022	0.122
LR stat	258.5	52.7	291.1
Prob (LR stat)	0.000	0.000	0.000

Contrary to the older adults' sample, we have signs that there is some differentiation between economically active and non-active young people to explain their saving behaviour. In the case of youth, the "SITLAB" variable is statistically significant (at the 10% level) in regression [3], in line with hypothesis 4. It should be noted that, of the 305 young people who make up the sample, 32.8% are students and 58.7% are working or enrolled in intern programmes. So, even if young adults enrolled in intern programmes earn very low (or even zero) wages when entering the labour market, they seem to have a slightly higher likelihood to save that those who are not economically active.

The area of residence and the sources of information are not statistically significant variables. In the latter case, it means that looking for specialist information does not tend to significantly influence the probability of saving. This may be due to a distrust of experts and their ability to beat the market, the fact that quality financial advice is expensive, or the phase of the economic cycle. It may also be due to the fact that the population in this age group is less familiar with these institutions and mainly asks family and friends for advice. However, advice from family and friends proves not to be statistically significant.

Regarding income, "INC_HIGH" is highly significant and a strong determinant of saving, as in the older adults' case. This reveals that individuals below the age of 30 who earn more than €2,500 a month are more likely to save than other individuals, a result which is similar to the one found for older adults. However, as regards financial literacy, the results for both samples are different. In fact, financial literacy (high or low) does not have an impact on young adults' likelihood of saving. It could be the case that, for young individuals, the subjective level of financial knowledge is a stronger indicator of saving behaviour than objective literacy, as pointed out by Henager and Mauldin (2015).

As regards the behavioural variables, there are similarities and differences between the youth and the older adults' samples. In terms of similarities, "CONSIDER" is significant, and it has a positive association with the likelihood of saving in both samples, and the appetite for risk and risk aversion are not significant. Likewise, overconfident individuals (all ages) are less likely to save, as Odean (1998) concluded regarding the transversality of age groups. However, underconfident young people are also less likely to save. This is an unexpected result, and dissimilar from the adults' sample.

V. Conclusions

For the adults' sample (individuals with 31 or more years of age), the results obtained confirm that individuals with high levels of education, higher income, average financial knowledge and who get specialized information show a higher probability of saving. In terms of behaviour, those who consider the cost before making financial decisions and underconfident individuals, regardless of their risk appetite or aversion, also have a greater propensity to save.

Assessing the model for the youth sub-sample, the results obtained contrast with the studies by Agarwal et al. (2007). In the 18 to 30 age range, everything else constant, there are no significant differences in youth attitudes toward saving. A possible explanation for the loss of significance concerning age (vis-à-vis the adults' sample) in the estimated model for young people relates to the reduced variability of the responses, since the age factor means individuals are subject to more similar conditions (understanding of the time horizon, degree of independence and socio-economic circumstances).

In contrast, the results reveal that young women tend to be more likely to save than young men. This counters Lusardi's thesis (2009), but an explanation can be found in Berggren and Romualdo (2010), which emphasises that men are much more financially active than women. The estimated model also supports the relevance of schooling to explain saving in this age group, as mentioned by the above authors. The source of information on which the financial decision is based does not seem to be important to young people, but under- and overconfidence does have a marginal impact. Furthermore, low-income levels are a common obstacle to saving, both for young people and the general population.

Finally, financial literacy does not prove to be significant in the saving behaviour of youth. This result may be associated with the construction of the explanatory variables "LITFIN_HIGH", "OVERCONFIDENT" and "UNDERCONFIDENT" and the correlation between these variables, which deserve more in-depth analysis. Failure to answer several questions about financial literacy, and eliminating respondents who gave the answer "Don't know" or that did not respond, may also have resulted in losses of variability and bias, thus influencing the overall significance of the model and variables.

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ANNEX I – List of variables

Variable	Definition
SAVE	Binary (Y=1, if the respondent has saved money in the last 12 months)
AGE	Age of the respondent
MALE	Binary (1, if male)
HIGH_EDUC	Binary (1, if 12 or more years of education)
SITLAB	Binary (1, if economically active)
URBAN	Binary (1, if living in Lisbon or Oporto regions)
INC_LOW	Binary (1, if income below €1,000€)
INC_HIGH	Binary (1, if income higher than €2,500)
LITFIN_LOW	Binary (1, if the number of correct answers to financial literacy questions is 2 or less)
LITFIN_HIGH	Binary (1, if the number of correct answers to financial literacy questions is 4 or 5)
INF_SPECIAL	Binary (1, if financial decisions are influenced by the opinion of experts, financial advisors, or bank staff)
INF_FAM	Binary (1, if financial decisions are influenced by the opinion of family or friends)
OVERCONFIDENT	Binary (1, if overconfident individual)
UNDERCONFIDENT	Binary (1, if underconfident individual)
RISK_AVERSE	Binary (1, if respondent does not like to take risks)
RISK_LOVER	Binary (1, if respondent loves to take risks)
CONSIDER	Binary (1, if before buying something the respondent carefully considers whether he can afford it)