Financial knowledge among university students and implications for personal debt and fraudulent investments*

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Abstract

The study is the first attempt to examine financial literacy, financial aptitude and behaviour among university students in Cyprus. The student survey covers 881 Cypriot students, aged mostly 18-24, across the five biggest universities in Cyprus. The financial knowledge scale used in the survey measures the understanding of basic concepts including interest rates, inflation, risk and diversification. Results show that 6.24% of students answered all questions correctly, with only 36.9% having a good financial knowledge proficiency level (answering at least 4 correct responses out of 6). While socio-demographic characteristics and students' soft skills and traits distinguish high financial knowledge students, strikingly, parental background and parental advice does not seem to play an important role for high financial knowledge. Financial knowledge is also seen to have a distinct channel of influence on students' understanding of managing their credit card debt and students' ability to deter themselves from fraudulent investments.

Keywords: Financial knowledge, financial literacy, university students, credit card debt, Ponzi schemes

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1. Introduction

In an era of financial digitalization, individuals even at a very young age begin being financially active citizens in the economy. The World Bank's 2014 Global Findex survey documents that a large proportion of young people aged 15-24 globally are actively engaged in making payments using the internet or making transactions using mobile phones (van Oudheusden, 2015). The Organisation for Economic Co-operation and Development (OECD) Programme for International Student Assessment (PISA) 2015 reports that around 64% of 15-year old students sampled globally are engaged in some form of employment, earning money from formal or informal work activities. The PISA programme correlates their financial literacy scores with whether they hold bank accounts and finds that a large proportion of students who hold bank accounts do not even reach the minimum threshold of the desired financial literacy proficiency level (OECD, 2017b). They are thus exposed to the risks associated with making financial mistakes. This also makes them vulnerable to financial fraud and mismanagement of their resources. As popularly referred to in the business world, 'you pay for what you don't know' can become a reality for students who do not understand the basic principles of financial literacy. It is therefore of policy interest to understand whether young people have financial capability and understanding of the financial world.

The OECD defines financial knowledge in terms of the understanding of financial concepts and risks that would provide the skills and motivation to make effective financial decisions (OECD, 2016). Previous studies find that knowledge of financial concepts along with the skills to use them is the cornerstone to making sound decisions, which are directly linked to the long-term financial well-being of citizens, and this knowledge makes consumers less vulnerable to being exploited or deceived (Campbell et al., 2011; Lusardi and Mitchell, 2011; Deevy et al., 2012; de Bassa Scheresberg, 2013; Balloch et al., 2015). In recent years, financial knowledge among young people has become a priority in the national strategies of many countries due to several reasons. First, since the rapid financial digitalization, there is a pressing need to protect young people and vulnerable groups from being prime targets for financial fraud. Second, there can be serious negative externalities from ill-formed financial decisions, affecting not only the students themselves, but also their families and the broader well-being of the economy. Third, young people are the future of a nation and sound decisions on financial matters will have positive externalities to wealth creation during the course of their lives, thereby enabling them to fulfil long-term goals such as attaining higher education, climbing up the property ladder and contributing towards their pension financing (Jorgensen and Savla, 2010; Lusardi et al., 2010; OECD, 2016, 2017b).

Many studies have been conducted to identify the determinants of financial literacy using survey data. Lusardi and Mitchell (2011) focus on various countries of the world, Chen and Volpe (1998) and Lusardi et al., (2010) concentrate on the US, Ergün (2018) on European countries, with Sarigül (2014) taking the case of Turkey as the focus and Philippas and Tzora (2018) the case of Greece. The empirical evidence suggests that there are differences in the level of financial knowledge across countries; however, there is a consensus that financial illiteracy is common even in countries with strong markets and high levels of schooling (Lusardi and Mitchell, 2011; Demirguc-Kunt et al., 2015; Ergün, 2018). The results of a global survey conducted by Standard and Poor's Rating Services show that only 33% of the world's population is financially literate, whereas this percentage increases to 50% for European countries (Demirguc-Kunt et al., 2015). The OECD (2017a) report on financial literacy reaches a similar conclusion: fewer than half the adults of the G20 countries are financially literate and the report suggests that national strategies must be adopted to expand the level of financial knowledge. Despite the differences in the levels of financial knowledge across countries, the empirical literature finds that males, students taking a Business or Finance course or students whose parents have high income have a higher probability of being financially knowledgeable.

This study contributes to the existing knowledge-base in two distinct ways. First, we examine the survey results for financial literacy among domestic students at universities in Cyprus and report, for the first time, their financial aptitude and behaviour. The survey is the first attempt to understand financial literacy among domestic students in Cyprus and aims to inform policy makers on devising appropriate interventions based on the models studied in the literature. Further, the research findings will form the 'pilot' evidence, informing the government agencies, who are keen to promote financial literacy and financial inclusion in the country, especially for young people. Second, the study sets out to study the implications of financial knowledge for students' ability to manage debt and investments. While previous literature alludes to the benefits of financial knowledge in terms of prudent financial behaviour, we contribute to this literature by examining the relationship between financial knowledge levels and (i)

students' understanding of managing credit card debt and (ii) students' abstinence from investing their money in fraudulent Ponzi schemes.

The survey was conducted with the aim of measuring the level of financial knowledge among Cypriot students of basic financial concepts related to simple interest and compound interest calculations, understanding of inflation, consequences of inflation, risk-return relationships, and the benefits of risk diversification. These dimensions have been shown to be important in measuring levels of financial knowledge in previous studies, follow the scales used by Lusardi and Mitchell (2011) and the OECD (2018) toolkit for measuring financial literacy. The survey questions utilized and the choices of responses are provided in Table A1 of the Appendix.

To summarize, the research study reveals low levels of financial knowledge among undergraduate university students in Cyprus, with freshman students showing lower levels of financial knowledge. Various socio-demographic factors, skills and traits play a significant role in explaining university students' financial knowledge, including gender, subject disciplines, income and soft skills; strikingly, parents' characteristics do not play an important role. Further, the study reveals that financial knowledge has a distinct channel of influence on students' understanding of managing credit card debt and students' ability to deter themselves from fraudulent investments or Ponzi schemes. Financial knowledge is observed to be the most significant factor of influence in explaining university students' financial behaviour, above various socio-demographics, skills and traits.

Overall, the findings of this study are in the spirit of other recent papers, such as that of Behrman et al. (2012) who find that improved financial literacy can make a significant difference for financial behaviour, above and beyond regular schooling. In this regard, this study reports critical evidence that could inform the Cyprus Ministry of Education and Culture and other policy stakeholders, while considering new initiatives for financial education.

2. Previous evidence in Cyprus

Investigating levels of financial knowledge in Cyprus given the recent financial crises is of extreme importance to policy-makers in the country. The Cyprus economy experienced turbulent times in 2008 with the global financial crisis and then faced the banking crisis between 2012 and 2014. Excessive lending and borrowing and overly problematic loans are some of the underlying characteristics of the financial and banking situations in Cyprus that contributed to the crisis (Clerides, 2014). These conditions are usually symptomatic of low levels of financially literacy, and thus enhancing financial knowledge within the economy can help mitigate such problems, with the population being more financially informed and making sound investments.

Contrary to the range and depth of studies already conducted in many developed countries, a similar effort is not observed in the case of Cyprus. There exist two prior surveys providing rudimentary evidence for Cyprus. First, a survey was conducted in 2010 by the Cyprus Securities and Exchange Commission. It covered citizens over 22 years old and only focuses on general knowledge and information issues related to the capital market, investments in securities and investment products. It is worth mentioning that the primary goal of the Securities and Exchange Commission's investigation was not the quantitative measurements of the financial literacy of the participants, but rather identifying the level of awareness and knowledge of participants on matters relating to the Securities and Exchange Commission's agenda. Second, Cyprus participated in the Standard and Poor's Ratings Services global survey in 2014 reporting the financial literacy levels in Cyprus, along with the global evidence. However, an in-depth country-specific analysis of the factors influencing the levels of financial literacy, as well as a scientific approach tracing the consequences of financial literacy on people's behaviour and choices, has not been conducted in the case of Cyprus.

In this regard, the empirical findings of this study gain more merit for the following reason. Based on the OECD PISA 2015 survey assessing performances in mathematics, reading, science and problem-solving for 15-year-olds, Cypriot students scored lower than the European average and much lower than other countries with similar levels of economic performance. However, as Cyprus was not part of the OECD PISA 2015 survey on students' financial literacy, the level of Cypriot students' experience and knowledge about managing money is unknown. The overall picture remains unexplored of 15-year-olds'

ability to apply their accumulated knowledge and skills to real-life situations involving financial issues and decisions. The current study is therefore the first attempt to measure the level of financial literacy among Cypriot students, in a framework of well-focused questions that are based on the recommendations and standards of the OECD and the scientific literature. Consequently, the financial literacy survey results documented in this study constitute a source of information that the government and their policy advisers could utilize while forming policies and strategizing initiatives for financial education.

Overall, given the notable lack of other empirical evidence for the case of Cyprus, undoubtedly, the results of this study could lead to significant conclusions, especially because the students who were surveyed are active citizens of the economy, whilst also being one of the most important vulnerable population segments that can be exposed to financial misconduct.

3. Cyprus student survey data

According to statistics released by the Department of Higher and Tertiary Education of the Ministry of Education and Culture, for the academic year 2016-2017 there were 19,301 domestic students attending Cypriot universities. Specifically, 13,463 (69.75%) were engaged in undergraduate programmes, 4,981 (25.81%) in non-doctoral postgraduate programmes and 857 (4.44%) in PhD programmes. The survey utilized in this study covers 881 domestic university students and effectively covers about 4.56% of the total population. Data were collected from the five biggest universities in Cyprus (two public and three private institutions), by using a paper-based self-administered survey instrument in the Greek language. The survey was conducted in the period April – May 2017, whereby participants were approached randomly at the university campuses and requested to participate in a cross-university research study of students' financial knowledge and attitudes. There were no restrictions on who could participate, though surveyors were instructed to administer the instrument: (i) only to domestic and not international students, and (ii) mostly to undergraduate students.[1] Hence, more than 94% of the surveyed students were aged between 18 and 24 and more than 97% of them were undertaking undergraduate courses.[2] The students were informed about a consent form that preceded the questionnaire, making explicit that participation was voluntary. The survey was filled out anonymously, and due to this the response rate was more than 90%. Following their consent and under the invigilation of a surveyor, participants were given the questionnaire to complete, allowing them as much time necessary, with most respondents taking approximately 20 minutes.

The questionnaire is divided into three sections. In the first section, the survey participants were asked to provide certain demographic items, such as gender, parents' education, family monthly income, type of high school, field of study at high school, field of study at the university, plans after finishing their degree, etc. Further, this section included some questions asking the students to assess their performance in maths, information technology and general knowledge, as well as their daily interaction with social media.

The second section included financial literacy questions, consisting of three recommended questions as per the OECD/INFE International Survey of Adult Financial Literacy Competencies (OECD, 2016), as well as the 'Big Three' questions created by Lusardi and Mitchell (2011) that to date have been used in surveys for more than 20 countries. The aim of these questions is to provide an overview of the students' basic financial knowledge and skills, and to enable to create different financial literacy scores to be used in our empirical analysis. As shown in Table A1 of the Appendix, these questions relate to the following financial concepts: 'simple interest calculation' (Q1), 'compound interest calculation' (Q2), 'understanding of inflation' (Q3), 'consequences of inflation' (Q4), 'risk and return' (Q5) and 'benefits of risk diversification' (Q6). Except for Q1, which is an open response question, all the others featured multiple-choice answers including a 'Don't Know' choice to dissuade students from guessing. The second section of the questionnaire also included items to measure the risk attitude of the students, to identify the sources from which they seek financial advice and to measure what respondents know with their self-assessed financial literacy. Risk attitude is an important trait that influences an individual's investment

[1] The survey was mostly conducted during morning and early afternoon hours, hence postgraduate students were much less likely to be sampled because postgraduate courses are usually delivered during late afternoon hours.

[2] In this respect, the survey includes 856 undergraduate students and effectively covers about 6.36% of the population of students who are engaged in undergraduate programmes.

behaviour, whilst the source of financial advice is instrumental in enabling people to make smart and informed choices of financial products. Further, the question pertaining to the self-assessed measure of financial knowledge is of great interest because economic behaviour may be affected by perceived rather than actual knowledge, so it is important to have both types of information to determine which has a stronger effect on observed behavioural patterns (Lusardi and Mitchell, 2011).

Finally, the third section of the questionnaire captured a large set of behavioural characteristics, such as in-depth thinking, discipline in paying bills on time, time preference and optimism, which are used as control variables in our regression analysis to distinguish the effects of financial literacy from other behavioural characteristics that may interplay with the students' financial behaviours and decisions.

In terms of gender, female participants account for about 53% of the sample and male participants 47%. The vast majority of the participants (90%) joined the university after finishing a public high school, while the largest proportion of the students (29%) are freshmen. Further, only about 15% of the participants are Business majors at their university, while the rest are non-Business majors. More information about the socio-demographics of the sample can be found in Table 1.

[Insert Table 1 about here]

4. Descriptive analysis

The pattern of responses to the financial knowledge questions (shown in Table A1 of the Appendix) are presented in Panel A of Table 2, showing that students scored relatively high in two of the questions (Q1: simple interest calculation, and Q5: risk and return), whilst scored relatively low in three of the questions (Q2: compound interest calculation, Q4: consequences of inflation, and Q6: benefits of risk diversification). Further, from Panel B it can be observed that only 6.24% of the Cypriot students surveyed were able to answer all the questions correctly. When considering at least 4 correct responses out of 6 (i.e., sum-up the percentages for four, five and six correct answers), which reflects a good financial knowledge proficiency level, we find only 36.9% of the students fall into this category. Male students have a higher percentage of achieving at least 4 correct responses out of 6 as well as all correct answers compared to female students, implying that male students are more knowledgeable financially.

[Insert Table 2 about here]

Going forward, the upper part of Table 3 reports statistics using two different continuous financial literacy variables (*FK_SCORE_1* and *FK_SCORE_2*), as well as a variable featuring the student's self-assessment of financial literacy level (*FK_SCORE_SELF*) (detailed definitions in Table A2 of the Appendix). The results show that Cypriot students have average financial knowledge scores which are below the baseline of 50% in all three variables. Although the financial knowledge scores cannot be strictly compared across countries due to dissimilarities in survey questions and survey designs, it can be observed that the Cypriot students' average financial knowledge scores are comparatively lower than those reported in similar studies from other countries (Demirguc-Kunt et al., 2015; OECD 2016; Philippas and Tzora 2017; Ergün, 2018).

[Insert Table 3 about here]

Table 3 also depicts the summary statistics of the variables used in the regression analysis over the entire sample, the sample of highly knowledgeable students (i.e., at least 4 correct answers, *FK_DUMMY* = 1), and the sample of less knowledgeable students (i.e., fewer than 4 correct answers, *FK_DUMMY* = 0). Results show that the number of males is higher in the sample of high financial knowledge than in the sample of low financial knowledge. The number of students concentrating on STEM subjects (science, technology, engineering, and mathematics) in high school, the number of students majoring in Business at the university level, and the number of students in public universities are higher in the sample of high financial knowledge, suggesting that these characteristics play a role for high financial knowledge. Conversely, the number of freshman students is higher in the sample of low financial knowledge. The number of students with parents having high income is greater in the sample of high

financial knowledge. The score of mathematical skills, information technology skills and general knowledge is higher in the sample of high financial knowledge. On the other hand, the average score for cognition in avoiding in-depth thinking and numbers is higher in the sample of low financial knowledge. The difference in the means of the two samples (high financial knowledge *vs*. low financial knowledge) is statistically significant for the variables mentioned above, providing evidence regarding which characteristics are associated with high levels of financial knowledge.

The Pearson and Spearman correlations between the financial knowledge scores and self-reported financial knowledge are reported in Table 4. The financial knowledge dummy variable (*FK_DUMMY*) and rest scores (*FK_SCORE_1* and *FK_SCORE_2*) are highly correlated as expected. The correlations between *FK_DUMMY* and self-reported financial knowledge (*FK_SCORE_SELF*) provide statistical evidence that students are aware of their financial knowledge capacity.

[Insert Table 4 about here]

5. Econometric analysis and results

This section reports results using regression analysis to estimate models of the determinants of financial literacy (Table 5), the factors influencing the students' understanding of managing credit card debt (Table 6), and the factors influencing their involvement in fraudulent investments (Table 7).

More precisely, the following multivariate regression model for the determinants of financial knowledge is estimated:

$$FK_i = a + \beta_k X_{i,k} + \varepsilon_i, \quad (1)$$

where the dependent variable *FK* denotes the three measures of financial knowledge, namely the binary variable *FK_DUMMY* and the two continuous variables *FK_SCORE_1* and *FK_SCORE_2*. Important variables explaining financial knowledge are included in the vector of explanatory variables, X_k, which captures self-reported financial knowledge, students' demographic characteristics, and parents' background. All regression models are estimated with standard errors clustered across academic institutions. The analysis primarily relies on the results of the logistic results using *FK_DUMMY* as dependent variable. The regression results using ordinary least squares with *FK_SCORE_1* and *FK_SCORE_2* as dependent variables are used as a robustness check.

The regression results on the determinants of financial knowledge are displayed in Table 5. Models (1) and (2) show the results using two different logistic regression specifications, where the dependent variable is *FK_DUMMY*. Models (3) and (4) show results using the ordinary least squares methodology for average financial literacy scores using respectively *FK_SCORE_1* and *FK_SCORE_2*. In general, results show that the financial knowledge levels of female students are lower than those of males; students originating from STEM subjects at the high-school level, students from public universities and students majoring in Business at the university level tend to have higher levels of financial knowledge, while freshman students have a significantly higher propensity to have lower financial knowledge. Additionally, parental income plays a key role in explaining financially knowledgeable students; however, it is striking that background in terms of parental educational background, parental savings and parental advice does not play a role for high financial knowledge, although a graduate father seems to play a marginally significant role for high financial knowledge. In terms of evaluating the statistical significance of students' soft skills and traits, we find that students who consider themselves good in mathematics and/or general knowledge have higher financial knowledge. On the other hand, students who avoid in-depth thinking tend to have lower financial knowledge, which indicates that students with high financial knowledge tend to possess high in-depth thinking skills. Self-reported financial knowledge is significantly and positively associated with the students' level of financial knowledge, suggesting that students are aware of their ability. These findings are robust to the alternative variables measuring financial knowledge in models (3) and (4).

[Insert Table 5 about here]

To gain more insight about the consequences of financial literacy, the study investigates students' understanding of credit card debt and their involvement in fraudulent investments. This allows to identify whether financial knowledge plays a role for the behaviour and decision-making of students in financial matters. More specifically, the following binary regression model is employed to estimate students' behaviour:

$$Y_i = \alpha + \beta FK_i + \gamma_k Z_{i,k} + \varepsilon_i,$$

where the dependent variable corresponds to (i) students' understanding of credit card debt and (ii) students' involvement in fraudulent investments, in different specifications. The key variable of interest is *FK*, which denotes the three alternative financial knowledge measures, namely *FK_DUMMY*, *FK_SCORE_1*, and *FK_SCORE_2*. Greater financial knowledge is expected to positively influence the students' understanding of managing credit card debt and discourage students from participating in fraudulent investments. The vector of explanatory variables Z_k captures students' and parents' characteristics. Logistic regressions are estimated with standard errors clustered across academic institutions.

Table 6 shows the factors that influence students' understanding of managing credit card debt. The dependent variable takes the value of 1 if the respondent correctly answers the question that relates to credit card debt shown in Panel A of Table 6. Particularly, as shown in Panel B, financial knowledge is found to be a strong and statistically significant influencing factor for students' understanding of credit card debt. This significant result holds for all different definitions of financial knowledge. Financially knowledgeable students have a significantly greater ability to prudently manage their credit card debt than their peers, evidence that agrees with the empirical literature (Chen and Volpe, 1998; Xiao et al., 2014; Ergün, 2017). This result remains robust to six alternative estimation techniques and after including a large set of socio-demographic factors, as well as controlling for skills and traits. Other factors that contribute to students' understanding of managing credit card debt are gender, soft skills and traits and social media use. Male students are significantly better at understanding managing credit card debt and this result remains robust to all estimations. Students with greater in-depth thinking skills and a conservative risk-taking attitude have a better understanding of credit card debt than their peers. Also, students using social media more intensely have a lower probability of understanding how to manage credit card debt. Such students may therefore be more prone to falling prey to social media pressure and envy.

[Insert Table 6 about here]

Table 7 shows the factors influencing students' involvement in fraudulent investments. The dependent variable takes the value of 1 if the respondent avoided the Ponzi scheme (question description appears in Panel A of Table 7). Particularly, as shown in Panel B, financial knowledge is the most significant and robust factor explaining university students' abstinence from engaging in fraudulent investment companies, after being approached to become members. Financially knowledgeable students have a higher propensity to decline the offer to engage in a Ponzi scheme than their peers. This relationship remains statistically significant when alternative definitions of financial knowledge are considered and remains robust with alternative estimation techniques. Other factors that contribute to students' involvement in fraudulent investments are gender, soft skills and traits and social media use. Female students are more prone than male students to be engaged by Ponzi schemes, as are students that tend to avoid in-depth thinking and students that use social media more frequently.

To summarise, the study reveals low levels of financial knowledge among undergraduate university students in Cyprus. The results broadly concur with the findings of other countries that find gender, parental income and the subject studied at university play an important role in explaining the students' level of financial knowledge (Chen and Volpe, 1998; Cole et al., 2009; Lusardi et al., 2010; Sarigül, 2014; Philippas and Tzora, 2017; Ergün, 2018). Furthermore, financial knowledge is observed to have a distinct and statistically significant channel of influence for sound financial behaviour among students and this channel is not substituted by socio-demographic factors or various skillsets.

[Insert Table 7 about here]

6. Discussion and Policy Implications

This paper examines the survey results for financial literacy among domestic students at five universities in Cyprus and reports for the first time their financial aptitude and behaviour. Additionally, it investigates the implications of financial knowledge on the students' ability to manage their credit card debt and investments. The aim of the survey is to measure the level of financial knowledge among Cypriot students about basic financial concepts: simple interest and compound interest calculations, the understanding of inflation and its consequences, risk-return relationships, and the benefits of risk diversification. These dimensions have been found to be important in previous studies in the literature and follow the OECD's assessment of financial literacy of students.

The results from the empirical analysis show that male students, those in Business majors, students from public universities, students who focused on STEM subjects in high school, students whose parents have high income, and students with strong skills in mathematics, information technology and general knowledge tend to be more knowledgeable financially. On the other hand, freshman students and students that avoid situations that require in-depth thinking tend to be less knowledgeable financially. Additionally, financial knowledge is found to have a significant association with the students' understanding of managing credit card debt and their abstinence from fraudulent investments.

One striking result is that Cypriot students show comparatively low levels of financial knowledge, with only 6.24% of the sample able to answer all the questions correctly. A good financial knowledge proficiency level is regarded as being able to answer 4 out of the 6 questions correctly, and as such only 36.9% of the students in the survey can be considered financially literate. The prevalent low levels of financial literacy among Cypriot students squares rather surprisingly with the numbers in Standard and Poor's Ratings Services Global Financial Literacy Survey, which reports that only 40% of Cypriot Millennials, and only 35% of Cypriot adults, are financially literate.

In general, other European countries demonstrate higher levels of financial literacy among young people. For example, financial literacy among Millennials is 72% in Germany, 71% in Sweden, 67% in the United Kingdom, 62% in Slovenia, 56% in Greece, 51% in Malta, 50% in Croatia, 46% in France, et cetera.[3] There are at least two plausible explanations for this inferior financial literacy performance of Cypriot students. First, the students don't receive proper and sufficient financial education during schooling, hence they enter university without possessing essential financial knowledge and skillsets. This claim is supported by the absence of a specialized "Personal Finance" course in the teaching curricula of the tertiary education that would have enabled the students to learn highly important finance concepts pertaining to consumer borrowing, saving and investing, planning for retirement, inflation and purchasing power, mortgage borrowing, et cetera.

Second, Cypriot students don't get enough "hands-on opportunities" on financial matters early on in life that could help them foster more awareness and valuable experience with everyday-life financial decisions.[4] This claim gains more credence by considering the results of this study, whereby tertiary education financing for the sample students is primarily shouldered by parents, either by running down their savings or taking out loans that the parents will repay (item D1 in Table 1). In contrast, students in other countries take out personal study loans and are responsible for the repayment. In many instances parental responsibility in Cyprus goes beyond financing and repayment of the loans to the disbursement of money. For example, the results of this study also show that Cypriot students heavily rely on their parents' advice when managing their everyday-life financial matters (item D3 in Table 1) and thus parents' financial (il)literacy also plays an important role. All in all, it seems that students are left with little, if any, control in making important money and budgeting decisions, which impairs their financial literacy.

The findings of this study stress the need for imminent reforms to tertiary education by introducing appropriate levels of financial education and training in the teaching curricula. Such a policy change is strongly supported by the results indicating that freshman students particularly possess lower levels of

[3] The Standard and Poor's Ratings Services Global Financial Literacy Survey in 2014 covered almost 150,000 participants in 143 economies, representing more than 97 percent of the world's population. The survey's data collection period for Cyprus was May 6 – June 27, 2014 using 1,000 people sampled form the entire civilian, noninstitutionalized population age 15 and above. For more information: http://gflec.org/initiatives/sp-global-finlit-survey/.

[4] We are grateful to an anonymous referee for pointing out this explanation.

financial knowledge. In this vein, the learning objectives of various degree programmes should include the development of financial skills and financial knowledge through practical applications of "Personal Finance" topics. Such training and skillsets will enable students to cultivate appropriate attitudes towards financial behaviour and to be able to make sound financial decisions to benefit their long-term well-being.

More broadly, as financial illiteracy among students has wider negative externalities also affecting the country's socio-economic dynamics, this study's findings likewise signal the need for implementing policy steps to educate the wider citizens by offering carefully designed financial literacy courses to the various population segments. Such initiatives can be systematically implemented by developing a national strategy for financial education and establishing a national agency with a specific mandate for enhancing financial literacy within the country. Although appropriate financial literacy is of key importance, such policy initiatives must also be supported by establishing an independent financial conduct agency, who will advise and safeguard the interest of the citizens.

While the results from the university student survey act as a pilot study in understanding the financial literacy levels in Cyprus, they are limited in drawing broader conclusions for the entire population. Therefore, a nationally representative household survey carried out as a policy step will allow for a comprehensive assessment of the level of financial knowledge in Cyprus. The outcome of such a survey will enable policy makers and social planners to identify the priority areas/population segments and initiate programmes for enhancing the financial capability of the country. The nationally representative survey results will also enable the country to benchmark its policy initiatives against other countries and coordinate its initiatives on the global front.

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Tables

Table 1: Respondent characteristics.
This table reports summary statistics regarding the frequency and proportion of the respondent characteristics tabulated across female students, male students and for the entire sample.

	Female students		Male students		Entire sample	
	Frequency	%	Frequency	%	Frequency	%
A. Demographics						
1. Gender	468	53.12	413	46.88	881	100
2. Years of age						
18 to 20	256	29.06	84	9.53	340	38.59
21 to 24	190	21.57	290	32.92	480	54.58
25 or above	22	2.50	39	4.43	61	6.92
B. Education						
1. High school type						
a) Public	420	47.67	376	42.68	796	90.35
b) Private	48	5.45	37	4.20	85	9.65
2. High school discipline						
a) STEM	326	37.00	335	38.02	661	75.03
b) Non-STEM	142	16.12	78	8.85	220	24.97
3. University type						
a) Public	211	23.95	207	23.50	418	47.45
b) Private	257	29.17	206	23.38	463	52.55
4. University class rank						
a) Freshman	131	14.87	126	14.30	257	29.17
b) Sophomore	131	14.87	90	10.22	221	25.09
c) Junior	95	10.78	99	11.24	194	22.02
d) Senior or beyond	97	11.01	87	9.88	184	20.89
e) Graduate level	14	1.59	11	1.25	25	2.84
5. University disciplines						
a) Business majors	84	9.53	52	5.90	136	15.44
b) Non-business majors	384	43.59	361	40.98	745	84.56
C. Parents' information						
1. Monthly income						
a) Under €1500	178	20.20	118	13.39	296	33.60
b) €1500 to €3000	224	25.43	203	23.04	427	48.47
c) €3001 to €5000	50	5.68	72	8.17	122	13.85
d) above €5000	16	1.82	20	2.27	36	4.09
2. Education						
a) No parent has high-school degree	36	4.09	30	3.41	66	7.49
b) One parent has high-school degree	55	6.24	50	5.68	105	11.92
c) Both parents have high-school degree	185	21.00	167	18.96	352	39.95
d) One parent has university degree	99	11.24	90	10.22	189	21.45
e) Both parents have university degree	93	10.56	76	8.63	169	19.18
D. Other						
1. Financing of studies						
a) Parents' savings	248	28.15	200	22.70	448	50.85
b) Loan that parents will repay	84	9.53	88	9.99	172	19.52
c) Other	136	15.44	125	14.19	261	29.63
2. Plans after finishing current degree						
a) Continue study	186	21.11	154	17.48	340	38.59
b) Find job	120	13.62	122	13.85	242	27.47
c) Not sure yet	162	18.39	137	15.55	299	33.94
3. Source of financial advice						
a) Parents	373	42.34	246	27.92	619	70.26
b) Friends	10	1.14	12	1.36	22	2.50
c) Professionals	7	0.79	12	1.36	19	2.16
d) Internet/Media	36	4.09	69	7.83	105	11.92
e) Other	42	4.77	74	8.40	116	13.17

Table 2: Patterns of responses to financial knowledge questions.

This table presents the patterns of responses to the six financial knowledge questions tabulated across female students, male students and the entire sample. Table A1 of the Appendix details the context of each question.

	Female students		Male students		Entire sample	
	Frequency	%	Frequency	%	Frequency	%
Panel A: Distribution of answers						
Q1. Simple interest calculation						
Correct	275	58.76	332	80.39	607	68.90
Wrong	56	11.97	34	8.23	90	10.22
Don't know	56	11.97	28	6.78	84	9.53
Refuse to answer	81	17.31	19	4.60	100	11.35
Q2. Compound interest calculation[1]						
Correct	117	25.00	208	50.36	325	36.89
Wrong	229	48.93	163	39.47	392	44.49
Don't know	91	19.44	28	6.78	119	13.51
Refuse to answer	31	6.62	14	3.39	45	5.11
Q3. Understanding of inflation						
Correct	253	54.06	228	55.21	481	54.60
Wrong	37	7.91	33	7.99	70	7.95
Don't know	156	33.33	135	32.69	291	33.03
Refuse to answer	22	4.70	17	4.12	39	4.43
Q4. Consequences of inflation						
Correct	117	25.00	127	30.75	244	27.70
Wrong	74	15.81	71	17.19	145	16.46
Don't know	238	50.85	192	46.49	430	48.81
Refuse to answer	39	8.33	23	5.57	62	7.04
Q5. Risk & Return						
Correct	368	78.63	333	80.63	701	79.57
Wrong	23	4.91	34	8.23	57	6.47
Don't know	63	13.46	33	7.99	96	10.90
Refuse to answer	14	2.99	13	3.15	27	3.06
Q6. Benefits of risk diversification						
Correct	132	28.21	142	34.38	274	31.10
Wrong	98	20.94	98	23.73	196	22.25
Don't know	223	47.65	161	38.98	384	43.59
Refuse to answer	15	3.21	12	2.91	27	3.06
Panel B: Distribution of correct answers						
No correct answers	32	6.84	11	2.66	43	4.88
One correct answer	80	17.09	38	9.20	118	13.39
Two correct answers	116	24.79	74	17.92	190	21.57
Three correct answers	102	21.79	103	24.94	205	23.27
Four correct answers	64	13.68	97	23.49	161	18.27
Five correct answers	56	11.97	53	12.83	109	12.37
All correct answers	18	3.85	37	8.96	55	6.24

Note:

[1] Following the OECD/INFE (2016) treatment, the response to Q2 is only considered to be correct if the respondent could also calculate simple interest as per Q1.

Table 3: Summary statistics.

Summary statistics of the variables used in the regression analysis. Columns (1) and (2) report the mean and standard deviation (S.D.) of the variables for the entire sample. Columns (3) and (4) report the mean and standard deviation of the variables for the subsample of students who answered at least four questions correctly (FK_DUMMY = 1), whereas columns (5) and (6) report the mean and standard deviation of the variables for the subsample of students who answered fewer than four questions correctly (FK_DUMMY = 0). Column (7) reports the *t*-statistics testing the difference of means between columns (3) and (5). All the variables are defined in Table A2 of the Appendix. * denotes *p*-value <0.1; ** denotes $p<0.05$; *** denotes $p<0.01$.

	Entire sample		At least 4 correct answers (FK_DUMMY = 1)		Fewer than 4 correct answers (FK_DUMMY = 0)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Diff. (3)-(5)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial Literacy							
FK_SCORE_1	0.498	0.260	0.779	0.125	0.334	0.157	0.445***
FK_SCORE_2	0.318	0.349	0.661	0.213	0.118	0.241	0.542***
FK_SCORE_SELF	3.147	1.382	3.600	1.350	2.881	1.332	0.719***
Demographics							
GENDER	0.469	0.499	0.575	0.495	0.406	0.492	0.169***
PRIVATE_SCHOOL	0.096	0.295	0.102	0.303	0.094	0.291	0.008
STEM_SUBJECT	0.750	0.433	0.833	0.373	0.701	0.458	0.132***
PUBLIC_UNI	0.474	0.499	0.633	0.482	0.381	0.486	0.253***
UNI_BUSINESS_MAJOR	0.154	0.362	0.262	0.440	0.092	0.289	0.170***
FRESHMEN	0.292	0.455	0.258	0.438	0.311	0.463	-0.053*
ABOVE_SENIOR	0.237	0.426	0.262	0.440	0.223	0.417	0.039
SEEK_JOB	0.275	0.447	0.265	0.442	0.281	0.450	-0.016
Parents' background							
PARENTS_INCOME	0.0409	0.198	0.071	0.257	0.023	0.151	0.048***
GRADUATE_FATHER	0.0806	0.272	0.086	0.281	0.077	0.267	0.009
GRADUATE_MOTHER	0.134	0.341	0.135	0.343	0.133	0.340	0.002
PARENTS_SAVINGS	0.509	0.500	0.511	0.501	0.507	0.500	0.004
ADVICE_PARENTS	0.703	0.457	0.680	0.467	0.716	0.451	-0.036
Skills and Traits							
MATHS_SKILLS	4.367	1.698	4.640	1.643	4.207	1.711	0.433***
IT_SKILLS	4.728	1.591	4.843	1.545	4.660	1.616	0.183*
GEN_KNOW	4.906	1.320	5.100	1.243	4.793	1.351	0.305***
AVOID_THINKING	2.899	1.633	2.650	1.650	3.045	1.606	-0.396***
AVOID_NUMBERS	3.079	1.592	2.871	1.597	3.201	1.578	-0.331***
PAY_BILLS_ON_TIME	5.555	1.659	5.742	1.572	5.446	1.700	0.296**
RISK_TAKING	4.527	1.449	4.628	1.438	4.468	1.453	0.160
LIVE_FOR_TODAY	3.860	1.974	3.680	2.030	3.964	1.936	-0.284
OPTIMISM	4.886	1.671	4.932	1.574	4.860	1.726	0.073
SOCIAL_MEDIA_USE	0.414	0.493	0.388	0.488	0.430	0.496	-0.042

Table 4: Correlation matrix for financial literacy variables.

Pearson (Spearman) correlations are reported in the upper (lower) diagonal. All the variables are defined in Table A2 of the Appendix.

	FK_DUMMY	FK_SCORE_1	FK_SCORE_2	FK_SCORE_SELF
FK_DUMMY		0.827	0.750	0.251
FK_SCORE_1	0.850		0.879	0.148
FK_SCORE_2	0.773	0.887		0.267
FK_SCORE_SELF	0.253	0.141	0.270	

Note: All the correlation coefficients are significant at the 1% level.

Table 5: Determinants of financial literacy.

Logistic and OLS regression results of factors influencing students' financial knowledge. The dependent variable in models (1) and (2) takes the value of 1 if the student correctly answers 4 or more questions, and 0 otherwise. The dependent variable in model (3) is the average score from the student responses, wherein each correct answer takes a score of 1, while all other answers take a score of 0. The dependent variable in model (4) is the average score from the student responses, wherein each correct answer takes a score of 1, each wrong answer takes a score of -1 and responses of "Don't Know" or "Refuse to Answer" take a score of 0. All the variables are defined in Table A2 of the Appendix. Model (1) reports results from a logistic regression with clustered standard errors across the academic institutions, whilst model (2) reports results from a logistic regression with random intercepts across the academic institutions. Models (3) and (4) report OLS regression results with clustered standard errors across the academic institutions. A constant term is always included in the regressions. Standard errors are displayed in parentheses. Critical values for models (1), (3) and (4) are 1.647 for *p*-value < 0.10, 1.963 for *p*-value < 0.05 and 2.581 for *p*-value <0.01. Critical values for model (2) are 2.132 for *p*-value < 0.10, 2.776 for *p*-value < 0.05 and 4.604 for *p*-value < 0.01. VIF diagnostics reveal no evidence for multicollinearity (all VIFs < 1.500). * denotes *p*-value <0.1; ** denotes *p*<0.05; *** denotes *p*<0.01.

	FK_DUMMY		FK_SCORE_1	FK_SCORE_2
	(1)	(2)	(3)	(4)
FK_SCORE_SELF	0.294***	0.293***	0.026**	0.010
	(0.090)	(0.066)	(0.012)	(0.011)
GENDER	0.570***	0.584**	0.070***	0.084***
	(0.110)	(0.175)	(0.006)	(0.006)
PRIVATE_SCHOOL	0.400***	0.361	0.025	0.024
	(0.118)	(0.276)	(0.018)	(0.032)
STEM_SUBJECT	0.417***	0.420	0.056***	0.061***
	(0.073)	(0.210)	(0.004)	(0.015)
PUBLIC_UNI	1.066***	1.086***	0.0132***	0.198***
	(0.176)	(0.170)	(0.015)	(0.011)
UNI_BUSINESS_MAJOR	1.156***	1.194***	0.0135***	0.138***
	(0.159)	(0.232)	(0.019)	(0.021)
FRESHMEN	-0.522**	-0.547**	-0.026*	-0.053***
	(0.206)	(0.195)	(0.016)	(0.010)
ABOVE_SENIOR	-0.054	-0.089	0.003	0.003
	(0.233)	(0.207)	(0.011)	(0.018)
SEEK_JOB	-0.034	-0.033	0.017*	0.013
	(0.068)	(0.187)	(0.010)	(0.022)
PARENTS_INCOME	1.347***	1.483**	0.077***	0.083**
	(0.262)	(0.406)	(0.016)	(0.039)
GRADUATE_FATHER	0.361*	0.382	0.035*	0.046
	(0.199)	(0.288)	(0.018)	(0.038)
GRADUATE_MOTHER	0.055	0.055	0.002	-0.008
	(0.074)	(0.233)	(0.011)	(0.019)
PARENTS_SAVINGS	-0.124	-0.130	0.013	0.015
	(0.230)	(0.161)	(0.015)	(0.027)
ADVICE_PARENTS	-0.003	0.002	-0.003	-0.004
	(0.084)	(0.182)	(0.006)	(0.014)
MATHS_SKILLS	0.061	0.058	0.014**	0.015***
	(0.060)	(0.053)	(0.006)	(0.005)
IT_SKILLS	-0.036	-0.037	-0.008	-0.006
	(0.045)	(0.054)	(0.005)	(0.006)
GEN_KNOW	0.089	0.083	0.016**	0.019***
	(0.074)	(0.064)	(0.007)	(0.006)
AVOID_THINKING	-0.143***	-0.145**	-0.018***	-0.022***
	(0.024)	(0.049)	(0.002)	(0.004)
SOCIAL_MEDIA_USE	-0.042	-0.045	-0.009	-0.023
	(0.159)	(0.167)	(0.022)	(0.024)
QIC/-2LogL/Rsq	1010.1	970.3	0.254	0.192

Table 6: Understanding of credit card debt.

Logistic regression results of factors influencing students' understanding of credit card debt. The dependent variable takes the value of 1 if the respondent correctly answers the question shown in Panel A, and 0 otherwise. Regression results are reported in Panel B. The definitions for independent variables appear in Table A2 of the Appendix. A constant term is included in the regressions. Standard errors are displayed in parentheses. Models (1), (3) and (5) report results from logistic regressions with clustered standard errors across the academic institutions. Models (2), (4) and (6) report results from logistic regressions with random intercepts across the academic institutions. Critical values for Models (1), (3) and (5) are 1.647 for *p*-value < 0.10, 1.963 for *p*-value < 0.05 and 2.581 for *p*-value <0.01. Critical values for Models (2), (4) and (6) are 2.132 for *p*-value < 0.10, 2.776 for *p*-value < 0.05 and 4.604 for *p*-value < 0.01. VIF diagnostics reveal no evidence for multicollinearity (all VIFs < 1.500). * denotes *p*-value <0.1; ** denotes *p*<0.05; *** denotes *p*<0.01.

Panel A

Question: Suppose you owe €3,000 on your credit card. You pay a minimum payment of €30 each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card debt if you made no additional new charges?

	Frequency	%
Less than 5 years	63	7.15
Between 5 and 10 years	238	27.01
Between 10 and 15 years	162	18.39
Never	110	12.49
Don't know	267	30.31
Refuse to answer	41	4.65

Panel B

	(1)	(2)	(3)	(4)	(5)	(6)
FK_DUMMY	1.042***	1.019**				
	(0.182)	(0.230)				
FK_SCORE_1			2.992***	2.932***		
			(0.490)	(0.490)		
FK_SCORE_2					2.173***	2.094***
					(0.453)	(0.359)
GENDER	0.958***	0.948**	0.946***	0.928***	0.943***	0.913**
	(0.166)	(0.241)	(0.216)	(0.245)	(0.174)	(0.244)
PARENTS_INCOME	-0.312	-0.339	-0.266	-0.280	-0.211	-0.216
	(0.277)	(0.532)	(0.316)	(0.536)	(0.330)	(0.533)
ADVICE_PARENTS	-0.232	-0.250	-0.179	-0.184	-0.220	-0.219
	(0.232)	(0.239)	(0.275)	(0.245)	(0.287)	(0.243)
AVOID_THINKING	-0.111***	-0.111	-0.086**	-0.085	-0.098**	-0.100
	(0.035)	(0.073)	(0.039)	(0.074)	(0.039)	(0.075)
AVOID_NUMBERS	-0.138***	-0.139	-0.131***	-0.132	-0.130**	-0.130
	(0.053)	(0.074)	(0.048)	(0.075)	(0.057)	(0.075)
PAY_BILLS_ON_TIME	-0.013	-0.008	-0.009	-0.005	-0.010	-0.008
	(0.032)	(0.068)	(0.030)	(0.070)	(0.038)	(0.070)
RISK_TAKING	-0.031***	-0.031	-0.050***	-0.047	-0.041**	-0.036
	(0.011)	(0.078)	(0.019)	(0.080)	(0.017)	(0.079)
LIVE_FOR_TODAY	0.060	0.059	0.063	0.062	0.062	0.062
	(0.044)	(0.057)	(0.050)	(0.058)	(0.053)	(0.058)
OPTIMISM	0.008	0.006	0.001	-0.001	-0.001	-0.002
	(0.042)	(0.067)	(0.050)	(0.068)	(0.051)	(0.067)
SOCIAL_MEDIA_USE	-0.338*	-0.335	-0.337*	-0.330	-0.340*	-0.332
	(0.204)	(0.232)	(0.200)	(0.235)	(0.206)	(0.235)
QIC/-2LogL	613.0	584.9	591.5	565.7	595.8	568.1

Table 7: Avoidance of fraudulent investments (ponzi schemes).

Logistic regression results of factors influencing students' involvement in fraudulent investments (Ponzi schemes). The sample for this question is comprised by the respondents who either became a member (N=58) or were approached but turned down the membership (N=233) as tabulated in Panel A. Hence, the dependent variable takes the value of 1 if the respondent avoided the Ponzi scheme, and 0 otherwise. Regression results are reported in Panel B. The definitions of independent variables appear in Table A2 of the Appendix. A constant term is included in the regressions. Standard errors are displayed in parentheses. Models (1), (3) and (5) report results from logistic regressions with clustered standard errors across the academic institutions. Models (2), (4) and (6) report results from logistic regressions with random intercepts across the academic institutions. Critical values for Models (1), (3) and (5) are 1.647 for p-value < 0.10, 1.963 for p-value < 0.05 and 2.581 for p-value <0.01. Critical values for Models (2), (4) and (6) are 2.132 for p-value < 0.10, 2.776 for p-value < 0.05 and 4.604 for p-value < 0.01. VIF diagnostics reveal no evidence for multicollinearity (all VIFs < 1.500). * denotes p-value <0.1; ** denotes p<0.05; *** denotes p<0.01.

Panel A

Question: Have you ever been a member of any of the following companies (three company names were provided)?

	Frequency	%
Yes, I have	58	6.58
I have been approached to become a member, but I wasn't interested	233	26.45
I have only heard of these companies	197	22.36
I do not know these companies	393	44.61

Panel B

	(1)	(2)	(3)	(4)	(5)	(6)
FK_DUMMY	0.964***	0.978**				
	(0.229)	(0.343)				
FK_SCORE_1			1.539**	1.590*		
			(0.688)	(0.685)		
FK_SCORE_2					1.021***	1.024*
					(0.355)	(0.453)
GENDER	-0.477*	-0.460	-0.488*	-0.478	-0.448*	-0.436
	(0.262)	(0.385)	(0.027)	(0.388)	(0.234)	(0.382)
PARENTS_INCOME	-0.754	-0.809	-0.587	-0.647	-0.520	-0.565
	(0.532)	(0.731)	(0.541)	(0.720)	(0.599)	(0.711)
ADVICE_PARENTS	0.238	0.260	0.272	0.291	0.221	0.232
	(0.344)	(0.343)	(0.325)	(0.341)	(0.359)	(0.338)
AVOID_THINKING	-0.145	-0.145	-0.143	-0.144	-0.154	-0.154
	(0.101)	(0.091)	(0.105)	(0.090)	(0.105)	(0.090)
AVOID_NUMBERS	-0.116*	-0.118	-0.105*	-0.106	-0.100*	-0.100
	(0.066)	(0.102)	(0.059)	(0.103)	(0.059)	(0.103)
PAY_BILLS_ON_TIME	0.035	0.031	0.042	0.039	0.039	0.037
	(0.090)	(0.092)	(0.089)	(0.092)	(0.095)	(0.091)
RISK_TAKING	-0.125	-0.130	-0.129	-0.136	-0.125	-0.131
	(0.091)	(0.116)	(0.093)	(0.115)	(0.090)	(0.114)
LIVE_FOR_TODAY	-0.007	-0.012	-0.005	-0.009	-0.004	-0.008
	(0.091)	(0.084)	(0.086)	(0.084)	(0.081)	(0.083)
OPTIMISM	-0.047	-0.048	-0.037	-0.037	-0.045	-0.045
	(0.138)	(0.102)	(0.143)	(0.102)	(0.151)	(0.102)
SOCIAL_MEDIA_USE	0.534**	0.533	0.518*	0.518	0.530*	0.522
	(0.270)	(0.349)	(0.276)	(0.348)	(0.276)	(0.348)
QIC/-2LogL	288.9	266.8	294.4	269.9	293.5	270.3

Appendices

Table A1: Financial knowledge questions.

This table lists the survey questions to capture the financial knowledge of respondents. The second column lists the question topic, the third column reports the question source, the fourth column provides the detailed wording of the question and the fifth column lists the available answer options per question.

No.	Question topic	Question source	Question wording	Answer options
Q1	Simple interest calculation	QK5 from OECD/INFE Survey – like Q1 in Lusardi and Mitchell (2011)	Suppose you put €100 into a (no fee, tax-free) savings account with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?	Open response Don't Know Refuse to Answer
Q2	Compound interest calculation	QK6 from OECD/INFE Survey	Suppose you put €100 into a (no fee, tax-free) savings account with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of five years?	More than €110 Exactly €110 Less than €110 Don't Know Refuse to Answer
Q3	Understanding of inflation	QK7b from OECD/INFE Survey	High inflation means that the cost of living is increasing rapidly.	True False Don't Know Refuse to Answer
Q4	Consequences of inflation	Q2 from Lusardi and Mitchell (2011)	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in the account?	More than today Exactly the same Less than today Don't Know Refuse to Answer
Q5	Risk and return	QK7a from OECD/INFE Survey	If someone offers you the chance to make a lot of money it is likely that there is also a chance that you will lose a lot of money.	True False Don't Know Refuse to Answer
Q6	Benefits of risk diversification	Q3 from Lusardi and Mitchell (2011)	Buying a stock of a single company is usually safer than buying a stock of a mutual fund.	True False Don't Know Refuse to Answer

Note: The sources include: OECD/INFE (2015) International Survey of Adult Financial Literacy Competencies *OECD Publishing, Paris*, and Lusardi, A. and Mitchell, O.S., 2011. Financial literacy around the world: an overview. Journal of Pension Economics & Finance, 10(4), pp.497-508.

Table A2: Dependent and independent variables definitions.

Variable name	Variable description
Financial Knowledge	
FK_DUMMY	1 if the student correctly answers 4 or more questions, 0 otherwise.
FK_SCORE_1	The average score from the student responses, whereby each correct answer takes a score of 1, whilst all other answers take a score of 0.
FK_SCORE_2	The average score from the student responses, whereby each correct answer takes a score of 1, each wrong answer takes a score -1 and responses of "Don't Know" or "Refuse to Answer" take a score of 0.
FK_SCORE_SELF[1]	Student self-assessment of his/her financial literacy level.
Demographics	
GENDER	1 if Male, 0 if female.
PRIVATE_SCHOOL	1 if high school is private, 0 otherwise.
STEM_SUBJECT	1 if high school curriculum is primarily concentrated on educating students in STEM disciplines (science, technology, engineering and mathematics), 0 otherwise.
PUBLIC_UNI	1 if university is public, 0 otherwise.
UNI_BUSINESS_MAJOR	1 if student's major at university is in business, 0 otherwise.
FRESHMEN	1 if the student is a freshman (Year 1 at Bachelor), 0 otherwise.
ABOVE_SENIOR	1 if senior (Year 4 or above at Bachelor) or graduate student, 0 otherwise.
SEEK_JOB	1 if the student intends to seek for a job after (s)he finishes current degree.
Parents' background	
PARENTS_INCOME	1 if the parents' monthly income is above €5,000, 0 otherwise.
GRADUATE_FATHER	1 if father has a university degree, 0 otherwise.
GRADUATE_MOTHER	1 if mother has a university degree, 0 otherwise.
PARENTS_SAVINGS	1 if the student's studies are financed using parents' savings, 0 otherwise.
ADVICE_PARENTS	1 if the student seeks financial advice from parents, 0 otherwise.
Skills and Traits	
MATHS_SKILLS[2]	Average score for skills in mathematics.
IT_SKILLS[2]	Average score for skills in using information technology.
GEN_KNOW[2]	Average score for breadth of general knowledge.
AVOID_THINKING[2]	Average score for cognition in avoiding thinking in depth.
AVOID_NUMBERS[2]	Average score for cognition in avoiding information involving numbers.
PAY_BILLS_ON_TIME[2]	Average score for discipline in paying bills on time.
LIVE_FOR_TODAY[2]	Average score for short-term attitude (tendency to live for today)
RISK_TAKING[2]	Average score for risk-taking attitude (tendency to take risks).
OPTIMISM[2]	Average score for optimism (tendency to expect more good things to happen).
SOCIAL_MEDIA_USE	1 if the student is using/accessing social media more than ten times per day, 0 otherwise.

Notes:

[1] On a scale of 1 to 7, where 1 means very poor and 7 means very high, how would you rate your overall financial knowledge?

[2] On a scale of 1 to 7, where 1 means totally disagree and 7 means totally agree, to what extent do you agree or disagree with the following statements (in order of appearance in the table):

- "I am very good at maths",
- "I am very good at information technology (computers)",
- "I am very good at general knowledge",
- "I try to avoid situations that require thinking in depth",
- "I prefer not to pay much attention to information that includes numbers",
- "I pay my bills on time",
- "I see myself as someone who takes risks, rather than avoiding risk.",
- "I live for today and let tomorrow take care of itself",
- "I expect more positive events to happen in my life than negative".