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FINANCIAL LITERACY IN ROMANIA: A TEST OF ECONOMICS AND BUSINESS STUDENTS

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Abstract:

Romania is in a rather dishonorable position from the financial literacy perspective in the European Union, ranking last among countries. To increase the level of financial education of the Romanian population, public and private institutions, organizations, and companies have recently taken the initiative in this field, mostly after 2015. Our contribution builds on these recent developments and aims at testing the level of basic financial literacy of Romanian university students, enrolled in business and economics studies, using the OECD Financial literacy test. Data was collected through an online survey on a voluntary basis, and the responses were analyzed using statistical indicators. Results indicate a rather high level of financial literacy among students, but also significant differences among respondents that may be explained by several demographic characteristics and specific attributes. The most important characteristics that influence the degree of financial literacy of students are age, students' cycle of studies, the way the students live, property ownership and students' involvement in financial market transactions and contracts. We stress towards the need to act through concrete measures to improve young people financial literacy, as a necessary condition to navigate in an increasingly complex environment, where finance plays an essential role.

Key words: financial literacy, students, survey, Romania

1. Introduction

In the last 30 years, after the political regime change at the end of the '80s, the political, economic, and social transformations in Romania have engendered problems of social exclusion and poverty, and the country was always faced with the instability of

households' incomes and an increase in population' indebtedness level. In the absence of a national strategy on financial education, Romania is in a rather disgraceful position from this perspective. Thus, the Standard & Poor's Global Financial Literacy Survey (2014) ranked Romania last in the European Union (EU), with the lowest rate of financial education (22%), compared to an EU average of 52%. This position is highly concerning, given that a lack of people's understanding of even basic financial concepts and tools makes them incapable of making proper decisions relating to saving for retirement and/or other life objectives (such as buying a house, land, etc.), investing and borrowing, and, ultimately, of improving resource allocation. Moreover, the increased complexity of financial products coupled with their heightened availability on mobile platforms puts more pressure on financial knowledge as the basis for a more responsible and better planned life.

Several public authorities in Romania, jointly with private entities, have implemented initiatives directed towards increasing people's financial literacy level since 2015. Among the most important and visible were: (i) the "Fluent in Finance" program of the Bucharest Stock Exchange focused on capital market investments, which promoted educational workshops for students and the general public and offered an online platform for financial education; (ii) the "Money School" program of Romanian Commercial Bank, launched in 2019, proposing financial education workshops for children, teenagers and adults; (iii) financial education programs aimed at improving the understanding of financial concepts by middle school and high school students promoted by the Financial Supervisory Authority and the Ministry of National Education in 2016 within a project called "Vocational Training and Financial Education"; (iv) a collaboration agreement reached in 2020 between the Ministry of National Education, National Bank of Romania, Ministry of Public Finance, Financial Supervisory Authority and the Romanian Association of Banks for joint activities in the field of financial education and the preparation of the National Financial Education Strategy that would develop and deepen financial education at the level of primary, secondary, high school, university and adults.

It is not easy to determine the level of financial education of an individual and the most frequently tool used is the survey, which allows researchers to get closer to people's knowledge and behavior in relation to financial resources build-up and allocation, as well as to explore the relationship between literacy and specific attributes. We have pursued this line of research in this study to reveal for the first time the relationship between financial knowledge and demographic characteristics of students enrolled in undergraduate and graduate programs at the Bucharest University of Economic Studies, the largest business and economics higher education institution in the country. We have decided to address this study only to economics and business students building on the hypothesis that their level of financial literacy is high, given the specifics of their education.

The paper is organized as follows: Section 2 discusses the most important tenets in the existing literature about financial literacy; Section 3 presents the survey design and statistical tests we used to analyze the responses; Section 4 shows and discusses the main results; and Section 5 concludes, explains the limitations of our research and outlines a few directions for future research.

2. Literature review

Financial literacy and financial education are connected concepts that are used interchangeably to a high extent, although differences between them exist (Huston, 2010). Thus, financial literacy may be defined as the ability to manage financial resources to ensure financial security throughout life (Hastings et al., 2013), but also as people's skills aimed at acquiring and managing economic expertise (Lusardi and Mitchell, 2007). In 2005, OECD defined financial education as the process by which "consumers and investors understand financial products, concepts, and risks and, through objective information, training and/or advice, develop skills and confidence in becoming aware of financial risks, but also of the opportunities created, express their preferences knowingly, know where to turn for help and take the necessary measures to increase their financial well-being" (OECD, 2005). Since a discussion on differences between these definitions is not within the scope of this paper, we note just that various authors recognize the need to upgrade the definition of financial literacy in a more complex economy, so that consumers understand better and adapt easier to the particularities of such an environment (Remund, 2010).

The ignorance about financial decisions carries significant costs and researchers agree that financially illiterate individuals have higher chances of spending money unwisely, assuming elevated levels of debt and paying more as interest rates (Lusardi et al., 2010). Moreover, such individuals are less likely to actively participate in stock market transactions (Hastings and Mitchell, 2020), to plan and save for retirement (Behrman et al., 2012; van Rooij et al., 2012), and to reach optimal financial resource allocation through risk diversification (Abreu and Mendes, 2010). Lusardi and Mitchell (2014) stress on the importance of linking people's level of financial literacy to their characteristics such as gender, while other authors insist on the importance of early learning about financial and economic matters either in school and/or in the family (Grohmann et al., 2015). In the same vein, Belas et al. (2017) consider that individuals' socio-economic status plays an important role for financial literacy, while Jorgensen (2007) also found that low income and the lack of family properties hinder the accumulation of financial knowledge.

Knowing which demographic, living environment and early education characteristics may explain the financial literacy level but also how young people access and use financial information is a critical issue for policy makers and private actors. Atkinson and Messy (2012) advance two main reasons in this respect; the first is the increasing sophistication of financial services and products offered to consumers, in a multifaceted economic environment, and the second is linked to higher risks that the current young generations are expected to be exposed to in their future due to higher life expectancy coupled with heightened economic uncertainty. In this framework, several papers have addressed the case of students' level of financial literacy and education with rather mixed results, depending on various students' characteristics, but with the general conclusion that students' financial literacy level has increased over time.

By far, the United States (US) are the most researched country regarding financial literacy. Chen and Volpe (1998) surveyed students from 14 US universities and found high levels of financial literacy for students enrolled in business and economics departments;

their result is confirmed by Mandell (2008). Beal and Delpachitra (2003) identify a positive relation between Australian students' working experience and income, on the one hand, and financial literacy, on the other hand, while many others conclude that the family where students grow up has a significant impact on their financial behavior (see, for example, Mimura et al, 2015; Hanson and Olson, 2018). Louw et al. (2013) explore the financial literacy needs of South-African students and uncover that students fall behind in financial planning, investment, banking, and taxation, as well as in legal matters, and recommend universities to take responsibility in terms of teaching these topics. Recently, Ergün (2018) undertook a comparative analysis of financial literacy levels among students from eight European countries, using an online survey, and concluded that independent living highly supports financial education, and access to accurate information, including more advanced technological means, is also improving financial literacy. Quite significant, the author stresses the role of financial courses in the university for promoting financial literacy, which is found more important than social media.

Romania is less present in the literature in the field. The reference paper is Beckmann (2013), which finds differences in financial literacy levels between the regions, but mostly between urban and rural parts of the country. As a major conclusion of this study, we mention that older individuals (also more educated) that remember the turbulent economic period after 1990 have higher levels of financial literacy. Stanculescu (2010) implemented a survey commissioned by the World Bank in Romania and found that households' income levels are positively related to financial literacy, while education level, age, and living in urban areas are more supportive towards the population' achievement of financial goals. We also note the Mare et al. (2019) study, which shows that insurance literacy is positively correlated with the demand for life insurance, but this link is influenced by income and urbanization (positively), and unemployment (negatively). Overall, research on financial literacy and education in Romania remains to develop.

3. Data and research methodology

Our research was implemented through an online questionnaire administered to students enrolled in the undergraduate and graduate (Master) cycles of the Faculty of International Business and Economics of the Bucharest University of Economic Studies in the 2019-2020 academic year.

The questionnaire consisted of 23 questions, of which 8 were the ones included in the OECD Financial Literacy Test and the remaining 15 addressed the socio-demographic characteristics of the respondents and attributes that, in our opinion, can influence the degree of financial literacy. The demographic characteristics considered were gender, age, education cycle, marital status (whether or not the respondent was married), children (if the respondent has or does not have children), the environment in which the respondent has lived the most in his/her life (urban versus rural), the current way of living (where and with whom he/she lives) and income level. The attributes with potential influence on the degree of financial literacy were: respondents' employability (the respondent was/was not employed), the type of company where the respondent worked the most (in the financial and/or nonfinancial sector), the properties owned (type and number), the holding of a

driving licence, and the financial market presence through loans, investments on the capital market, or holding insurance (currently and/or in the past). The questionnaire was implemented in Google forms (available at <https://docs.google.com/forms/d/e/1FAIpQLSfN-TeXfIB-Te7aZh3SwVvik6YqBCrAHxVODWFWpEGf0yNQ/viewform>) and distributed to the students of the Faculty of International Business and Economics in the Bucharest University of Economic Studies in May and June 2020.

Our research hypotheses are explained in Table 1.

Table 1. Research hypotheses

No.	Variable	Type of relationship	Explanation
1	Age	Positive	Elder respondents (usually enrolled in graduate programs) have been exposed to more courses in economics and finance, but also benefit from more experience
2	Gender	n.a.	There is no significant difference between men and women in terms of FL
3	Cycle of study	Positive	Respondents enrolled in graduate programs have been exposed to more courses in economics and finance, but also benefit from more experience
4	Marital status	Positive	Married respondents have more responsibilities in the family, which encourages the use of financial market instruments to meet family's needs
5	Kids	Positive	Respondents with kids have more responsibilities and a higher need to use financial market instruments to support their families, so their FL level is higher
6	Living environment (urban versus rural)	n.a.	Respondents that have lived mostly in an urban environment have a higher FL level
7	Employability (the respondent is/has been employed)	n.a.	Respondents that are or have been employed have a higher FL level
8	Type of employment company	n.a.	Respondents that are or have been employed in companies in the financial sector have a higher FL level
9	Ownership of properties	n.a.	Respondents that own properties have higher responsibilities and have a higher degree of FL
10	Type of properties	n.a.	No clear relationship was hypothesized
11	Number of properties	Positive	The higher the number of properties, the higher respondents' exposure to financial markets, so the higher the level of FL
12	Respondents' involvement in financial market transactions or contracts (3 questions)	Positive	Respondents that hold loans, invest in the capital market, and hold insurance contracts have a higher exposure to financial market instruments, so their FL level is higher
13	Income level	Positive	Respondents with higher income levels have more opportunities and resources that allows them to participate in financial market contracts or transactions

Note: n.a. = not available.

The Organization for Economic Co-operation and Development (OECD) launched in 1997 the International Student Assessment Program (PISA), which aims to compare the level of education around the world and improve educational policies and outcomes. More than 60 participating countries are currently involved in the testing, and Romania participates since September 2000. In the PISA test, eight questions on the assessment of financial literacy are used, also employed in our questionnaire. They refer to the following aspects of financial literacy: (i) Recognition of a purpose of an invoice and its elements; (ii) Analysis of information in financial context; (iii) Identification of net salary on a pay slip; (iv) Recognition of potential financial fraud and reaction to it. Regarding the financial literacy level, the respondents are asked to identify and recognize the relevance of financial information, to analyze information in a financial context (through interpretation, comparison, contrast, synthesis, and extrapolation), and to evaluate the options presented and recognize which advice given in a financial context is good.

The total number of responses received was 417, of which 8 were eliminated due to lack of information provided by respondents; as a result, 409 responses have been included in the analysis. The number of respondents is related to a total number of 21,000 bachelor and master students from the Bucharest University of Economic Studies of 21,000 (estimated starting from the number of students enrolled in the academic year

2017-2018, mentioned in the Annual report of the Rector of the Bucharest University of Economic Studies regarding the state of the university for 2018 - available at https://www.ase.ro/2013_files/despre_ase/conducere/pdf/Raport_rector_2018.pdf), a degree of confidence of 95% and a margin of error of 4.8%. Responses have been analyzed using specific statistical indicators in Tibco Statistica 13.3.

We have used a series of widely known statistical tests to determine which of the respondents' demographic characteristics and attributes are significant discriminatory variables from the perspective of FL level. Thus, we have employed a t-test of statistical differences in means of independent samples – based on the F-test, ANOVA, and the Kruskal-Wallis (KW-H) test, a non-parametric alternative to ANOVA testing. The latter test is used to compare several samples (categories of respondents, in our case) and tests the null hypothesis that those samples (categories) are extracted from the same distribution or from distributions with the same median.

4. Results and discussion

We present the results of our survey in four steps, as follows: first, we analyze the number of correct and incorrect answers for each question and category of questions and assess the level of FL of our sample; second, we investigate the correlation between the level of FL of our respondents and their demographic characteristics; third, we explore the link between the respondents' level of FL and a series of behavioral attributes; fourth, we identify respondents' demographic characteristics and attributes that are significant discriminators from the perspective of FL level.

4.1. Assessing the level of financial literacy

Table 2 presents the number of correct and incorrect answers received for each question. Of all questions, the highest percentage of correct answers (90.71%) is found for question 7, which asked respondents to react to a message received by e-mail that has the attributes of a financial scam by contacting the bank to inquire about the message. Interestingly, the lowest number of correct answers is given for a question connected to the later, whereby the respondents were asked whether they would click on the link provided in the scam message and follow the instructions, if the address was identical to the bank's address (49.14% respond positively to this question). For the remaining questions, at least two-thirds of respondents offered a correct answer to each of them.

Table 2. Correct and incorrect answers to financial literacy questions

FL component	Question	Correct answers		Incorrect answers	
		Number	Percentage of respondents (%)	Number	Percentage of respondents (%)
Recognize the purpose of an invoice and its elements	1	366	84.49	43	10.51
	2	307	75.60	102	29.94
Analyze information in a financial context	3	331	80.93	78	19.07
	4	278	67.97	131	32.03
Identify the net salary on a pay slip	5	305	74.57	104	25.43
Evaluate a potential financial fraud and respond appropriately to a financial scam e-mail message	6	367	89.73	42	10.97
	7	371	90.71	38	9.29
	8	201	49.14	208	50.86

Analyzing all answers to the FL questions, very few respondents answered correctly to all – 69 respondents (16.87% of the total number of respondents - see Figure 1). Moreover, 48.4% of respondents respond correctly to at least 7 questions out of 8, which indicates a high level of FL. On the other hand, 13.4% of the respondents answered correctly to at most 4 questions. The responses are close to normally distributed, with a mean of 6.176, a median of 6.0, and a standard deviation of 1.442.

Fig. 1. Number of questions responded correctly (left) and histogram of correct responses (right)

Source: Authors' work

We show in Table 3 the correlations between the responses to the 8 FL questions. They are generally small and even negative, which suggests that respondents do not have consolidated financial knowledge. The highest correlations are found between Q6 and Q7 (0.391), and between Q3 and Q4 (0.387). At the opposite end, the lowest correlations are between Q4 and Q5 (-0.04), and between Q1 and Q5 (-0.017). The mean correlations between answers are below 0.2, which shows a low level of correlation.

Table 3. Correlations between responses to FL questions

Response number	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	1,000	0,042	0,138	0,055	-0,017	0,094	0,000	0,114
2	0,042	1,000	0,123	0,052	0,040	-0,009	-0,009	-0,078
3	0,138	0,123	1,000	0,387	0,045	0,205	0,123	0,141
4	0,055	0,052	0,387	1,000	-0,040	0,096	0,015	0,088
5	-0,017	0,040	0,045	-0,040	1,000	0,117	0,026	0,091
6	0,094	-0,009	0,205	0,096	0,117	1,000	0,391	0,252
7	0,000	-0,009	0,123	0,015	0,026	0,391	1,000	0,315
8	0,114	-0,078	0,141	0,088	0,091	0,252	0,315	1,000
Mean correlation	0,061	0,023	0,166	0,093	0,037	0,164	0,123	0,132

Note: bolded figures indicate statistically significant correlations at the 95% confidence level.

Source: Authors' work

Taking the number of correct answers to all questions, we considered that respondents with 7 or 8 correct answers have a high level of financial literacy, those with 5 or 6 correct answers have a medium level of financial literacy, and those with less than 5 correct answers have a low level of financial literacy (see Table 4). Thus, out of the 409 respondents, 198 (48.41%) have a high level of financial literacy, 156 respondents (38.41%) have an average level of financial literacy, and 55 respondents (13.45%) have a low level of financial literacy.

Table 4. The sample level of financial literacy

Financial literacy level	Number of responses	Percentage
Low	55	13.45%
Medium	156	38.14%
High	198	48.41%

4.2. Financial literacy level and respondents' demographic characteristics

We present in Table 5 the distribution of respondents depending on their demographic characteristics, as well as the link between the level of financial literacy – high, medium, and low – and these demographic characteristics.

Most respondents to our questionnaire were women (309, 73.84% of the total respondents), while the remaining 107 respondents (26.16%) were men. Women have a higher degree of financial literacy than men (48.64% compared to 47.66 % have a high FL level), but a higher percentage of women have a low level of FL compared to men (15.23% against 8.41%). 40.83% of our respondents were aged between 18 and 20 years (167 respondents), 54.03% (221) were aged between 21 and 30 years, 3.91% (16) were aged between 31 and 40 years, and the remaining 1.22% (5) were aged above 40 years. Most of those aged 18-20 and 21-30 years have an average or high FL level, while above 50% of those aged 31-40 and over 40 years have a high degree of financial literacy. This confirms our hypothesis that age is positively related to FL level.

Table 5. Demographic characteristics of respondents and the financial literacy level

Demographic characteristic of respondents	Demographic characteristics' description	Financial literacy level		
		Low	Medium	High
Gender	Female – 302 (73.84%)	46 (15.23%)	109 (36.09%)	147 (48.68%)
	Male – 107 (26.16%)	9 (8.41%)	47 (43.93%)	51 (47.66%)
Age	18-20 years – 167 (40.83%)	32 (19.16%)	74 (44.31%)	61 (36.53%)
	21-30 years – 221 (54.03%)	23 (10.41%)	73 (33.03%)	125 (56.56%)
	31-40 years – 16 (3.91%)	0 (0%)	7 (43.75%)	9 (56.25%)
	Above 40 years – 5 (1.22%)	0 (0%)	2 (40.00%)	3 (60.00%)
Cycle of studies	Bachelor/Undergraduate – 284 (69.44%)	49 (17.25%)	107 (37.68%)	128 (45.07%)
	Master/Graduate – 125 (30.56%)	6 (4.8%)	49 (39.20%)	70 (56.00%)
Marital status	Married – 16 (3.91%)	1 (6.25%)	4 (25.0%)	11 (68.75%)
	Unmarried – 393 (96.09%)	54 (13.74%)	152 (38.68%)	187 (47.58%)
Children	Have children – 8 (1.96%)	1 (12.5%)	2 (25.00%)	5 (62.50%)
	Do not have children – 401 (98.04%)	54 (13.47%)	154 (38.40%)	193 (48.13%)
Living environment	Urban – 322 (78.73%)	42 (13.04%)	124 (38.51%)	156 (48.45%)
	Rural – 87 (21.27%)	13 (14.94%)	32 (36.78%)	42 (48.27%)
How the respondent lives	Alone – 65 (15.89%)	7 (10.77%)	26 (40.00%)	32 (49.25%)
	With a friend – 26 (6.35%)	5 (19.23%)	11 (42.31%)	10 (38.46%)
	With a spouse – 16 (3.91%)	0 (0%)	4 (25%)	12 (75%)
	With a girlfriend/boyfriend – 57 (13.93%)	5 (8.77%)	23 (40.35%)	29 (50.88%)
	With more friends – 20 (4.90%)	2 (10%)	3 (15%)	15 (75%)
	With parents – 161 (52.08%)	23 (14.29%)	65 (40.37%)	73 (45.34%)
	In the university dorms – 52 (12.71%)	9 (17.31%)	20 (38.46%)	23 (44.23%)
	Other – 12 (2.93%)	4 (33.33%)	4 (33.33%)	4 (33.34%)
Monthly income level	1-1000 lei – 155 (37.89%)	22 (14.19%)	58 (37.42%)	75 (48.39%)
	1001-2000 lei – 86 (21.03%)	19 (22.09%)	31 (36.05%)	36 (41.86%)
	2001-3000 lei – 77 (18.82%)	5 (6.49%)	30 (38.96%)	42 (54.55%)
	3001-4000 lei – 50 (12.22%)	6 (12.0%)	19 (38.0%)	25 (50.0%)
	4001-5000 lei – 17 (4.16%)	0 (0%)	10 (58.82%)	7 (41.18%)
	Above 5000 lei – 24 (5.87%)	3 (12.50%)	8 (33.33%)	13 (54.17%)

Our sample is unequally split between undergraduate students (284 or 69.44% of the total) and graduate/master students (125 or 30.56% of respondents). Rather worryingly, 17.25% of undergraduate students have a low level of financial literacy, but 45.07% of them also have a high FL level. For graduate students, only 4.80% of them have a low FL level, while more than half (56%) have a high level of FL. A higher proportion of graduate than undergraduate students have high or medium levels of FL, which is clearly correlated with respondents' age, but also with graduate students' higher exposure to economics and business topics throughout the student life.

As expected, most respondents are unmarried (393 or 96.09%); only 16 students (3.91% of total) are married. Of the married respondents, 4 (25%) had a medium FL level and 11 (68.75%) had a high FL level. In the case of unmarried respondents, 187 (47.58%) have a high FL level and 152 (38.68%) have a medium FL level. Correlated with marital status and age, only 8 (1.96%) respondents declare of having children and 401 (98.04%) do not have children. 62.50% of respondents that have children (5) have a high FL level, but only 48.13% (193) of the respondents that do not have children have a high FL level. These results are correlated with respondents' age; elder respondents, married and with children, show a higher level of FL, given their more diverse life experiences and the need to access financial market instruments to manage various situations related to their studies and/or families.

The respondents' living environment is rather highly correlated with the FL level. Most of our respondents live in an urban environment (322 respondents or 78.73%) and

the rest (87 or 21.27%) have a rural residence. Overall, there seems to be no difference in terms of students' level of FL and their living environment, as we find very similar percentages for FL levels across urban versus rural environments. Moreover, respondents' ways of living are very varied, but most of them live with their parents (161 or 52.08%). 15.89% of the respondents live alone, 13.93% live with a girlfriend or boyfriend, and 12.71% live in university dorms. To a lower extent, students live with a friend (6.35%), with more friends (4.90%), and with a spouse (3.91%). Most students that live with a spouse (75%), with more friends (75%), and with a girlfriend/boyfriend (50.88%) have a high FL level, but not students that live with their parents (only 45.35% of them have a high FL level). For other ways of living, the percentage of respondents with a high FL level varies between 33.34% and 49.25%.

Most respondents (241 or 58.92%) have low income, below 2000 lei per month, 31.04% of them (127) have an average monthly income – 2000 to 4000 lei, and only 10.03% of respondents (41) have a high monthly income. Except for students with a monthly income level between 4001 and 5000 lei, in whose case 58.82% have a medium FL level, for the other categories of income, the highest proportion of students falls into the high FL level; the highest percentage of students with a high FL level is recorded for respondents with a monthly income level of 2001 and 3000 lei (54.55%), followed by respondents with a monthly income above 5000 lei (54.17%). At the other end, students with a monthly income level between 1001 and 2000 lei have the highest proportion of low FL level (22.09%).

4.3. Financial literacy level and respondents' attributes

Table 6 shows the link between respondents' attributes and the respondents' FL level. Four main types of attributes were included in the questionnaire: (i) employability and the main activity sector of the company where the student is/was employed – financial versus nonfinancial sector; (ii) property ownership, type of property, and number of properties owned; (iii) ownership of a driving license; (iv) an active presence of students on the financial market, through loans, insurance contracts and stock market investments.

Most students were or had been employed – 250 (61.12%) -, and this is a reality that shapes nowadays higher education in business and economics. The remaining 159 (38.88%) students were never employed, but a slightly higher percentage of them had a higher FL level compared to employed students, i.e., 49.06% against 48%. On the other hand, a higher proportion of employed students has a medium FL level – 40% against 35.22% for unemployed respondents -, and a lower proportion has a low FL level – 12% against 15.72% for unemployed students. 49.25% of the respondents that were employed only in companies in the financial sector, and 48.05% of students that were employed in both sectors (financial and non-financial) have a high FL level, but only 46.30% of the respondents that were employed in the non-financial sector exclusively have a high FL level. At the same time, respondents that were never employed had a higher proportion of high FL levels (49.68%), but also a higher proportion of low FL levels compared to the other categories.

Table 6. Respondents' attributes and the financial literacy level

Demographic characteristic of respondents	Attributes description	Financial literacy level		
		Low	Medium	High
Employability (the respondent is or has been employed)	Yes – 250 (61.12%)	30 (12%)	100 (40%)	120 (48%)
	No – 159 (38.88%)	25 (15.72%)	56 (35.22%)	78 (49.06%)
Type of company where the respondent is or has been employed	Never employed – 157 (38.39%)	25 (15.92%)	54 (34.39%)	78 (49.68%)
	Non-financial company – 108 (26.41%)	16 (14.81%)	42 (38.89%)	50 (46.30%)
	Financial company – 67 (16.38%)	7 (10.45%)	27 (40.30%)	33 (49.25%)
	Both types of companies – 77 (18.83%)	7 (9.09%)	33 (42.86%)	37 (48.05%)
Property ownership	Yes – 112 (27.38%)	19 (16.96%)	51 (45.54%)	42 (37.50%)
	No – 297 (72.62%)	36 (12.12%)	105 (35.35%)	156 (52.53%)
Type and number of properties	None – 297 (72.62%)	36 (12.12%)	105 (35.35%)	156 (52.53%)
	Only car – 16 (3.91%)	3 (18.75%)	7 (43.75%)	6 (37.50%)
	Only real estate – 31 (7.58%)	10 (32.26%)	12 (38.71%)	9 (29.03%)
	Only land – 2 (0.49%)	1 (50%)	0 (0%)	1 (50%)
	Only other type – 5 (1.22%)	0 (0%)	1 (80%)	4 (20%)
	Real estate and land – 8 (1.96%)	1 (12.5%)	5 (62.5%)	2 (25%)
	Real estate and car – 30 (7.33%)	1 (3.33%)	19 (63.33%)	10 (33.34%)
	Land and car – 2 (0.49%)	0 (0%)	1 (50%)	1 (50%)
	Car and other – 4 (0.98%)	0 (0%)	2 (50%)	2 (50%)
	Real estate, land, and car – 11 (2.69%)	2 (18.18%)	4 (36.36%)	5 (45.45%)
	Land, car, and other – 1 (0.24%)	1 (100%)	0 (0%)	0 (0%)
	Real estate, land, car, and other – 2 (0.49%)	0 (0%)	0 (0%)	1 (100%)
Driving license	Yes – 228 (55.74%)	31 (13.60%)	90 (39.74%)	107 (46.93%)
	No – 181 (44.26%)	24 (13.26%)	66 (35.46%)	91 (50.28%)
Taking out a loan	Yes – 39 (9.53%)	2 (5.13%)	16 (41.03%)	21 (53.85%)
	No – 370 (90.47%)	53 (14.32%)	140 (37.84%)	177 (47.84%)
Stock market investments	Yes – 37 (9.05%)	4 (10.81%)	18 (48.65%)	15 (40.54%)
	No – 372 (90.95%)	51 (13.71%)	138 (37.10%)	183 (49.19%)
Insurance contracts	Yes – 182 (44.50%)	17 (9.34%)	65 (35.71%)	100 (54.95%)
	No – 227 (55.50%)	38 (16.74%)	91 (40.09%)	98 (43.17%)

In terms of property ownership, 72.62% (297) of the respondents do not own any property, and only 112 (27.38%) own property. An expected result was that property ownership is positively related to FL level, but we do not confirm it. As observable in Table 6, respondents that do not own a property have a higher level of FL compared to the students that have property – 52.53% versus 37.50% -, and a lower percentage of respondents that do not own properties has a low FL level compared to respondents that own properties – 12.12% versus 16.96%. 20.05% of the respondents own real estate, 12.46% of them own a car, and only 3.67% of them own land. In addition, 13.2% of respondents have only one type of property (real estate, car, land, or other), 10.27% hold two properties, 2.93% hold three properties, and only a very small part of the students hold four properties (0.49%). No essential differences in terms of FL levels are observable across the various categories of students.

We included the existence of a driving license among the respondents' attributes that might be connected to the FL level due to the higher responsibilities brought by driving and the need to be present on the financial market through insurance contracts. Rather unexpected, the students that do not have a driving license (181, or 44.26% of the total) have a higher overall FL level than students that have a driving license, but the percentages of students with a low FL level do not vary significantly depending on the existence of a driving license.

The active presence of respondents on the financial market through contracts (loans, insurance, brokerage contracts) and/or through investments in the stock market should be an important driving factor for a higher FL level. As expected, our respondents show a rather low presence in the financial market in terms of loans and stock market investments – only 9.53% (39) of them have ever taken a loan and 9.05% (37) of them

have ever invested in the stock market -, but a higher involvement through insurance contracts (44.50% of them declare of having such a contract). Important differences based on the presence in the financial market are observable only for respondents that have taken loans and have insurance contracts – 53.85% and 54.95% of them, respectively, demonstrate a high FL level. Surprisingly, the percentage is much lower for students with investments in the stock market (40.54%), and students that do not have an active presence in the stock market through investments have a higher proportion of high FL level compared to the ones that invest in the stock market (49.19% versus 40.54%). At the other end, students with no participation in the financial market display higher percentages for the low level of FL.

4.4. Significant factors for students' financial literacy level

Figures 2 and 3 show the averages of the number of correct answers received to the FL questions depending on respondents' demographic characteristics and attributes. In Table 7 we also present the ANOVA testing for the presence of statistically significant differences in these means between respondents' categories.

Fig. 2. Average of number of correct answers depending on respondents' demographic characteristics

Source: Authors' work

Male respondents had a higher average of correct responses than female respondents (6.31 to 6.13), but they are not statistically significantly different. Therefore, gender is not a discriminatory variable in terms of financial literacy. The standard deviation of male responses is lower than the females', which means that male responses are slightly more homogeneous than females (but the number of male respondents is also higher).

The highest average of answers according to respondents' age is for category "Over 40 years" (6.80), followed by "31-40 years" (6.75), "21-30 years" (6.398), and "18 and 20 years" (5.81). Thus, there is a positive correlation between age and financial literacy. Moreover, the t-test shows that the means of correct answers are statistically significant different between the category "18-20 years", on the one hand, and the "21-30

years" and "31-40 years" categories, but the averages of responses for the other categories, taken in pairs, are not statistically significantly different. However, the fact that younger students have a significantly lower degree of mastery of basic financial knowledge than older students can be explained by the fact that younger students are in the first or second year of study and have not completed those subjects yet. At the same time, respondents in the "18-20 years" category have the highest standard deviation of responses among all age groups, and the hierarchy in terms of standard deviation shows that "elder" students have a greater homogeneity of the number of correct answers compared to the "younger" ones. The ANOVA and KW-H tests show statistically significant differences between the four categories of respondents according to age, which makes age a significant factor influencing the degree of financial literacy.

The mean and median of correct answers are lower (and statistically significantly lower, as shown by the t-test) in the case of undergraduate students compared to graduate students – 6.01 compared to 6.56 –, indicating that, as expected, graduate students have a higher level of financial knowledge than undergraduate students. In addition, the answers offered by graduate students are more homogeneous than those of undergraduate respondent. The ANOVA and KW-H tests show statistically significant differences between the two categories of respondents depending on the level of education, therefore the level of education (Bachelor versus Master) is a significant factor influencing the degree of financial literacy.

Fig. 3. Average of number of correct respondents depending on respondents' attributes

Source: Authors' work

The mean of correct answers for married students (6.81) is higher than the mean for unmarried students (6.15), but no statistically significant differences are shown by the t-test between these means. Thus, marital status is not a discriminatory variable in terms of financial literacy. Regarding respondents who have children, they have a higher average of correct answers than those who do not have children (6.50 compared to 6.17), accompanied by a lower standard deviation and a smaller range. However, the two means are not statistically significantly different, which means that the presence of children is not a discriminatory variable in terms of financial literacy.

The living environment - urban versus rural - is not a differentiating factor for respondents from the perspective of financial literacy. Although the mean of correct answers for respondents living in urban areas (6.19) is slightly higher than for respondents living in rural areas (6.14), the two are not statistically significantly different (t-test). The ANOVA and KW-H test also indicate no statistically significant differences between the categories of respondents, which makes the living environment an insignificant factor for financial literacy. However, the way the respondents live shows some interesting differences between them. The highest mean of correct answers appears for those living with a spouse (7.00), and the lowest for those living in other formats. The t-test indicates a statistically significant difference between averages only between a few categories. Therefore, the assumption that responsibilities arising from having a family and sharing a home with a spouse positively impact respondents' degree of financial literacy is validated. To a lesser extent, we can also include here sharing the home with your girlfriend, but also with more friends. The ANOVA and KW-H test for both characteristics also show statistically significant differences between the categories of respondents, which confirms that the way respondents live is a significant factor influencing the degree of financial literacy.

Table 7. Results of ANOVA testing

Demographic characteristics and attributes	SS	df	MS	SS	df	MS	F-test	p-value
Gender	2.539	1	2.539	846.786	407	2.081	1.220	0.270
Age	40.698	3	13.566	808.628	405	1.997	6.794	0.000
Cycle of studies	26.539	1	26.539	822.786	407	2.022	13.128	0.000
Marital status	6.745	1	6.745	842.580	407	2.070	3.258	0.072
Children	0.856	1	0.856	848.469	407	2.085	0.411	0.522
Living environment	0.160	1	0.160	849.165	407	2.086	0.077	0.782
How the respondent lives	29.905	7	4.272	819.420	401	2.043	2.091	0.044
Income level	12.220	5	2.444	837.106	403	2.077	1.177	0.320
Employability	0.657	1	0.657	848.668	407	2.085	0.315	0.575
Type of company	2.931	3	0.977	846.394	405	2.090	0.468	0.705
Properties	13.161	1	13.161	836.164	407	2.054	6.406	0.012
Number of properties	24.409	4	6.102	824.916	404	2.042	2.989	0.019
Driving license	0.373	1	0.373	848.952	407	2.086	0.179	0.673
Loans	8.321	1	8.321	841.004	407	2.066	4.027	0.045
Stock market investments	0.188	1	0.188	849.137	407	2.086	0.090	0.764
Insurance	16.610	1	16.610	832.715	407	2.046	8.118	0.005

Note: Bold figures indicate the presence of statistically significant differences between categories.

In general, the hierarchy of means of correct answers suggests the existence of a correlation between income level and financial literacy level, but the t-stat does not show statistically significant differences between the means. The highest average is found for respondents with a monthly income over 5000 lei (6.42), followed by those with an income between 4001 and 5000 lei (6.41), and the lowest mean belongs to students with a monthly income between 1001 and 2000 lei (5.91). The most homogeneous category in terms of correct answers is found for the students with an income between 4001-5000 lei, and at the opposite pole are those with monthly income between 1001-2000 lei. Thus, the

results suggest that income level is not a significant factor influencing the degree of financial literacy.

Employability – i.e., whether the respondents are or were employed – was the first tested attribute with a potential impact on respondents' level of FL. Although respondents who were/are employed have a slightly higher average of correct answers than those who are/were not employed – 6.21 to 6.13 –, they are not statistically significantly different. The ANOVA and KW-H test confirm that employability is not significantly linked to degree of financial literacy.

Regarding the type of company where respondents were/are employed, the highest average of responses is found for those who worked in both financial and nonfinancial companies (6.32), followed by those who worked only in financial companies (6.24), those who were never employed (6.13) and those who worked only in non-financial companies. The ANOVA and KW-H test did not indicate any statistically significant differences between respondents' categories, which means that the type of company in which the respondent was employed does not have a significant influence on the degree of financial literacy, compared to the situation where the respondent was never hired.

Regarding property ownership, respondents who do not have properties have a higher mean of correct answers (and statistically significantly higher, according to the t-test) than that of the respondents who have property – 6.30 against 5.88. Those who have properties slightly more heterogeneous correct answers across the respondents. The number of properties also leads to the differentiation of the number of correct answers. Thus, those who have the highest number of properties also have the highest mean of answers. They are followed, in terms of mean, by those who have no property (6.29), and the lowest mean belongs to those that have only one property (5.61). However, the statistical significance of these means does not lead to a clear conclusion regarding the relationship between the degree of financial literacy, measured by the number of correct answers, and the number of properties owned by respondents.

Respondents who drive a car have a lower mean of correct answers than those who do not drive a car (6.15 versus 6.21), but the two means are not statistically significantly different. The two categories of respondents do not show major differences either from the perspective of standard deviation or the range of answers, which makes us conclude that this characteristic of the respondents is not a significant factor influencing the degree of financial literacy.

The respondents' involvement in the financial market was considered through three attributes: loans, investments in the capital market and insurance contracts. Theoretically, the greater the respondents' involvement in financial market activities and operations, the higher the degree of financial literacy should be. Respondents who said they currently have or had a loan in the past have a higher average of correct answers than those who do not or did not have a loan (6.62 versus 6.13), and these means are statistically significantly different from each other (as indicated by the t-test). Curiously enough, respondents who say they have/had investments in the capital market have a lower mean of correct answers than those who did not have such investments (6.11 versus 6.18), but the means are not statistically significantly different. Although the standard deviations of the number of correct answers between categories are relatively close, those

who had invested in the capital market have a smaller range of correct responses than those who did not invest in the capital market (3 to 8, against 1 to 8). Insurance holders have higher mean correct answers than respondents with no insurance (6.40 to 6.00), and the two means are statistically significantly different from each other. The number of correct answers given by those without insurance is more heterogeneous than for those with insurance, and the answers of those in the first category vary more (1 to 8) than the answers of those in the second category (3 to 8). The ANOVA and KW-H tests indicate statistically significant differences between the categories of respondents for holding loans and insurance, but not for investments on the capital market. A possible explanation of this result might be the general low presence of investors on the Romanian capital market. Overall, involvement in the financial market is a positive factor influencing the degree of financial literacy, but how this involvement occurs is also important; as one may notice, students are mostly involved through insurance contracts and loans, and less through investments in the capital market, which means, in our opinion, that they do not access the more modern components of the market, most certainly due to the lack of knowledge and understanding of how these components function.

5. Conclusions

The role of a proper level of financial literacy and education among young persons and students cannot be denied for their ability to efficiently allocate their resources and navigate the waves of an increasingly complex economic environment. Our study contributes to the discussion on the development of financial decision-making skills through a quantitative study based on an online survey conducted in Spring 2020 on Romanian business and economics students.

We find that students have a rather high level of financial literacy, which is expected given that they are pursuing a curriculum that is focused on topics that are relevant for financial literacy. At the same time, there are significant differences among respondents that may be explained by several demographic characteristics and specific attributes. The most important characteristics that influence the degree of financial literacy of students are age, students' cycle of study, the way the students live, property ownership, and students' involvement in financial market transactions and contracts. Thus, elder students show a higher level of financial literacy, and this is correlated with the cycle of study where the student is enrolled – students in graduate programs have a higher level of financial literacy compared to undergraduate students. The living environment is not a significant discriminatory variable in terms of financial literacy, but the way students live (more specifically, whom do they live with) is. Thus, students living with their spouses have a higher degree of financial literacy compared to others, although, interestingly, being married is not, per se, a discriminatory factor. This may be explained by the higher responsibilities that persons having a family and a home separated from their parents are faced with, which impose more involvement in financial transactions such as insurance contracts, loans, and even financial investments. In fact, students' participation in financial market activities is positively related to their financial literacy level, as expected. On the other hand, this participation refers mostly to loans and insurance contracts and to a lower

extent to capital market investments, which might be explained by the small size (as market capitalization) of the stock exchange in Romania and the general lack of knowledge about its operations. The only result in whose case the hypothesized link to financial literacy was unconfirmed is property ownership, as the lack of any property is positively linked to the level of financial literacy. This result deserves, in our opinion, more investigation.

Certainly, the most important limitation of our study is its addressing of economics and business students. Nevertheless, this is the first study on economics and business students' financial literacy level in Romania and we hope it is not the last. We believe it is worth continuing this line of research in several directions, as follows: (i) Extending the set of questions related to the degree of financial literacy, to gain more insight into specific areas of this knowledge; (ii) Extending the sample of students enrolled in universities with different curricula and by including high school students, aiming at better understanding of how these skills are formed at earlier stages in life; (iii) Using more advanced econometric tools – i.e. logistic regression – to analyse the results.

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