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Development and Determinants of Students' Financial Literacy. A Case of Slovakia.

Marián TÓTH¹

Drahošlav LANČARIČ²

Andrea PITERKOVÁ¹

Radovan SAVOV²

Miroslav PRÍSTAVKA³

Abstract:

The dynamic and rapidly changing development on the financial markets, coupled with the global economic crisis's impact in recent years, makes the financial decisions and personal money management more challenging than ever before. The more complex the financial markets are, the more confused the consumers become, in order to detect the threats and opportunities, which the markets offer. Many times, we are the victims of wrong financial decisions of households and disability to use the finance in proper way. For this reason the attention has been paid to the financial literacy and necessity of financial education, as a tool for improvement the welfare through better decision-making.

The financial literacy idea has been spread worldwide and consequently implemented into the national policy programmes in the majority of countries, as well as in Slovak republic. Numbers of studies highlight the importance of financial education as one of the most appropriate tools for avoiding the negative decision's consequences. The authors proved that people with low level of financial literacy are less likely to report regular saving, pay bills on time, maintain a budget, or diversify investments (Hilgert et al., 2003). Moreover, their poor financial education leads to negative credit behaviour resulting into the higher indebtedness and debt accumulation problems (Stango and Zinman, 2009), high-cost borrowings and loans (Lusardi and Tufano, 2009), and wrong choices of mortgages and other financial products (Moore, 2003). Oppositely, the high level of financial literacy refers to the actions of people such as appropriate financial planning for retirement, wealth accumulation and savings (Lusardi and Mitchell, 2007; Hung et al., 2009; Behrman et al., 2001), or the finance investing and participation on the stock markets (Graham et al., 2009).

This paper examines the development of financial literacy and its selected determinants. The main objective of the paper is to evaluate the level of financial literacy on a sample of students in Slovak Republic, in order to compare the results with the results of the survey conducted by Slovak Banking Association in 2007. We also focus on the selected determinants affecting the level of financial literacy (gender, age, education level and education focus). Using Index of financial literacy and Mann-Whitney U test techniques we find that age, gender and education level are relevant determinants of financial literacy level while education focus is not. We conclude that the overall level of financial literacy in 2012 has risen in comparison to 2007.

¹ Department of Finance, Faculty of Economics and Management, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 949 76 Nitra, marian.toth@uniag.sk, andreapiterkova@gmail.com,

² Department of Management, Faculty of Economics and Management, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 949 76 Nitra, drahošlav.lancaric@uniag.sk, radovan.savov@uniag.sk,

³ Department of Quality and Engineering Technologies, Technical Faculty, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 949 76 Nitra, miroslav.pristavka@uniag.sk

Key words:

Financial literacy, index of financial literacy, determinants, age, gender, education.

Introduction

The dynamic and rapidly changing development on the financial markets, coupled with the global economic crisis's impact in recent years, makes the financial decisions and personal money management more challenging than ever before. The more complex the financial markets are, the more confused the consumers become, in order to detect the threats and opportunities, which the markets offer. Many times, we are the victims of wrong financial decisions of households and disability to use the finance in proper way. For this reason the attention has been paid to the financial literacy and necessity of financial education, as a tool for improvement the welfare through better decision-making (Habschick et al., 2007).

The concept of "Financial literacy" was firstly used by the Jump\$tart Coalition for Personal Financial Literacy in 1997, although, the first political initiative to improve the quality of personal finance through financial education goes back to the 1950s and 1960s (Bernheim et al., 2001). In the study, Jump\$tart defined the financial literacy as "the ability to use knowledge and skills to manage one's financial resources effectively for lifetime financial security." Since that time a plenty of studies proved the correlation between the financial education and financial behaviour outcomes, as summarises (Hastings et al., 2012). People with low level of financial literacy are less likely to report regular saving, pay bills on time, maintain a budget, or diversify investments (Hilgert et al., 2003). Moreover, their poor financial education leads to negative credit behaviour resulting into the higher indebtedness and debt accumulation problems (Stango and Zinman, 2009), high-cost borrowings and loans (Lusardi and Tufano, 2009), and wrong choices of mortgages and other financial products (Moore, 2003). Oppositely, the high level of financial literacy refers to the actions of people such as appropriate financial planning for retirement, wealth accumulation and savings (Hung et al., 2009; Behrman et al., 2010), or the finance investing and participation on the stock markets (Graham et al., 2009; Choi et al., 2011). Many other studies, which highlight the importance of financial education, proved that it is one of the most appropriate tools for avoiding the negative decision's consequences (Christelis et al., 2010; Gerardi et al., 2013; Banks and Oldfield, 2007; Lusardi et al., 2010). In the recent years, several authors in their studies examined the links between the level of financial literacy and savings, investment behaviour (Kimball and Shumway, 2006), acquisition of resources and indebtedness (Moore, 2003; Gerardi et al., 2010), or preparation for retirement (Lusardi and Mitchell, 2007; Behrman et al., 2010). Their studies only empower the importance and necessity for higher level of financial literacy. Generally can be claimed that financially literate consumers make better financial decisions, do more invest and participate on the stock markets, use diversification for risk elimination (Graham et al., 2009), are able to choose mortgages and loans with lower fees (Choi et al., 2011), avoid indebtedness (Hastings and Tejeda-Ashton, 2008), manage their wealth more effectively (Stango and Zinman, 2009), plan for retirement and accumulate more retirement savings. The financially illiterate people have mainly the opposite financial behaviour and according to Jappelly and Padula (2013) are the less financially informed individuals found in countries with more generous Social Security benefits. The authors argue that there exists the fewer incentive to save and accumulate wealth and, in fact, less reason to invest in financial literacy.

The financial literacy idea has been spread worldwide and consequently implemented into the national policy programmes in the majority of countries. The Slovak republic's political situation before 1989, characterised by the centralised economy, when only one commercial bank and insurance company had existed, made the financial decision making and need for the financial literacy absolutely meaningless. After 1989, the transformation into the market economy brought the competitiveness and diversity of financial instruments, for which the households of Slovak republic had not been prepared enough. The low financial

literacy and level of education reflected into many mistakes and wrong investing decisions made by the households, as well as politicians on the national level in the process of privatisation (Morvay et al., 2005). The Ministry of Education of the Slovak republic emphasised the importance of financial literacy development by formulating the National Standard of Financial Literacy in 2008. According to the article no. 447 from the 2nd June 2008 part 5.1 the government considers the education of Slovak society as fundamental tool for the further development and the decisive factor for its successful adaptation in the integrated European area (Ministry of Education of Slovak republic and Ministry of Finance of Slovak republic, 2008). The Slovak Bank Association (SBA) created the index for measuring the level of financial literacy, and provided the study in 2007 to monitor financial education of Slovak consumers. The results are rather insufficient, with the average representative's successfulness of 56 % (Slovak Banking Association, 2007). Later on, in the 2012, the average financial literacy resulted into 68 %, however, the evaluation can be considered as misleading, taking into account that the monitoring was done as the voluntary online questionnaire (Slovak Banking Association, 2012). The study published in 2012 indicated the poor financial literacy of the Slovak republic and put it on the 9th place from 11 selected European countries (ING, 2012). To the other Slovak authors dealing with the level of financial education belong Baláž, (2012); Piovarčiová, (2010); Szarková, (2010) etc.

The main objective of the paper is to evaluate the level of financial literacy on a sample of students in Slovak Republic and to compare the results with the results of the survey conducted by Slovak Banking Association in 2007. We also focus on the selected determinants affecting the level of financial literacy (gender, age and education).

Data and Methods

To be able to compare the results of our survey with the survey conducted in 2007 we had to collect our own data. As a tool of data collecting we used the same test already used by The Slovak Bank Association focusing on financial literacy linked to bank products. It is a reason why the validity and reliability was not evaluated again.

The test consisted of ten questions which can be divided into four major areas: basics of interest rates (questions 1, 2), investments (question 4, 5), loan as a bank product (question 6, 7, 8) and general economic knowledge (question 3, 9, 10). The sample of students allowed us to evaluate the impact of selected determinants. The sample consisted of 440 students. For the sample's structure see table 1.

Tab. 1 Sample structure

		Frequency	Percentage
Age	18-24	320	72.7
	over 24	119	27.0
Gender	Men	172	39.1
	Women	268	60.9
Education level	secondary school	168	38.2
	Bachelor	272	61.8
Education focus	not economic	154	35.0
	Economic	286	65.0

The main source for processing the paper is the methodology and index of financial literacy (I-FiG) created by the SBA (1). It is an average score of correct answers of respondents. The highest possible I-FiG value can be 100%, the lowest 0%. Since we used the same test as SBA in 2007 we were partially able to compare the results achieved by respondents in the initial research with the results of our sample.

$$I - FiG = \frac{\text{Number of correct answers of all respondents}}{\text{Number of respondents}} \times 100 \quad (1)$$

To measure whether the results are influenced by the selected determinants (age, gender, education level and education focus) non-parametric statistical methods were used. To verify the existence of statistically significant differences between the individual groups of respondents (depending on a particular factor) the Mann-Whitney U test was used. A null statistical hypothesis with parity of all the medians is tested. If the p-value is lower than the chosen level of significance (0.05), the null hypothesis is rejected. This means that the difference between at least one pair of the medians calculated from the sample is too big to be a result of only random selection, i.e. it is statistically significant – there is a relationship between the variables. If the p-value is equal or higher than the chosen level of significance, the null hypothesis cannot be rejected. This means that the difference between each pair of the medians calculated from the sample can only be a result of random selection, i.e. it is not statistically significant – there is no statistically significant difference between the variables.

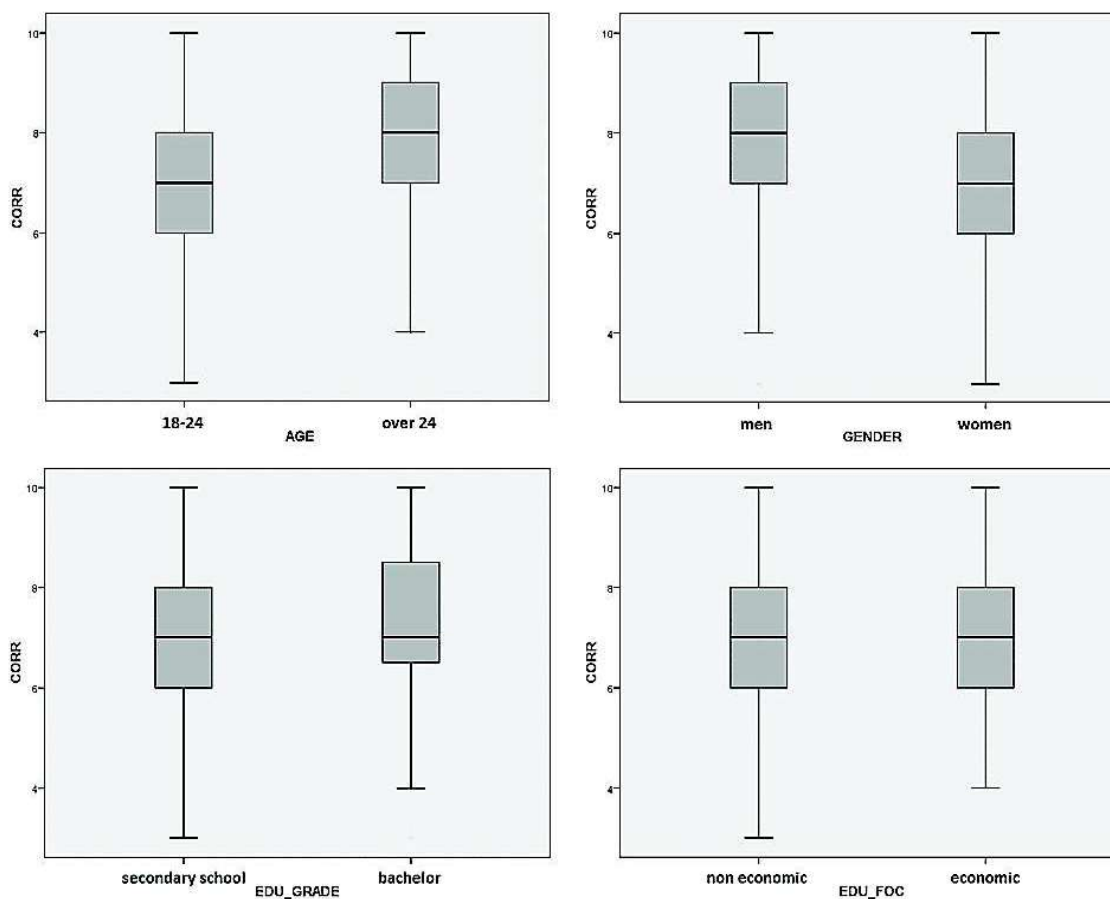
Results and Discussion

The overall performance of our sample measured by I-FiG was 71.8%, meaning on average each respondent answered correctly more than 7 answers out of 10. It is a better result by far in comparison with 2007 results (the 2007 I-FiG was 56%). However, 2007 sample was in accordance with the demographic structure of Slovak Republic and the achieved results can be considered representative. The 2012 sample was not but our goal was not to evaluate the overall performance of Slovak Republic as whole but we focused on respondents with completed secondary grammar school and bachelor education. If we want to compare the results of 2007 survey and our survey we have to focus on the results of these two groups. According to 2007 results the I-FiG of the respondents with secondary grammar school education level was 61% while in 2012 it was 68%. The I-FiG of the respondents with bachelor level was 66% in 2007 and 74% in 2012. The rest of I-FiGs according to age, gender and education focus as well as 95% confidence level can be seen in table 2 and figure 1.

Table 2: The I-FiGs according to the selected determinants (in %)

Age		Gender		Education level		Education focus		Total
18-24	over 24	Men	Women	secondary school	Bachelor	non economic	economic	
69.7	77.5	75.6	69.3	67.7	74.3	70.6	72.4	71.8

As can be seen from table 2 and figure 1 the main differences in I-FiGs based on the selected determinants are in age, gender and education level.



Pic. 1 The mean values of correct answers with 95% confidence level (age, gender, level and focus of education)

The percentage of correct and wrong answers of 2012 sample respondents is in table 2. It contains the miniature 2x2 contingency tables for every question and every determinant. As can be seen from the percentage of correct respectively wrong answers some questions (2, 9) were simpler than others (7, 8). Based on the findings the most problematic area of the test (and the financial literacy in general) is linked to the loans, specifically to annual percentage rate (APR).

Tab. 3 Respondents' answers overview

		Age		Gender		Education level		Education focus	
		18-24	over 24	men	women	secondary school	bachelor	Non-econ.	Econ.
1	Wrong	41.7%	12.5%	17.5%	36.8%	24.3%	30.0%	17.5%	36.8%
	Correct	31.2%	14.6%	21.6%	24.1%	13.9%	31.8%	17.5%	28.2%
2	Wrong	3.4%	0.2%	1.4%	2.3%	2.0%	1.6%	1.8%	1.8%
	Correct	69.5%	26.9%	37.7%	58.6%	36.1%	60.2%	33.2%	63.2%
3	Wrong	17.8%	4.6%	6.8%	15.5%	9.1%	13.2%	8.9%	13.4%
	Correct	55.1%	22.6%	32.3%	45.5%	29.1%	48.6%	26.1%	51.6%
4	Wrong	22.6%	6.4%	8.9%	20.0%	12.3%	16.6%	10.5%	18.4%
	Correct	50.3%	20.7%	30.2%	40.9%	25.9%	45.2%	24.5%	46.6%
5	Wrong	17.3%	4.3%	8.4%	13.4%	10.0%	11.8%	6.6%	15.2%
	Correct	55.6%	22.8%	30.7%	47.5%	28.2%	50.0%	28.4%	49.8%

6	wrong	12.5%	4.8%	5.0%	12.3%	6.8%	10.5%	6.4%	10.9%
	Correct	60.4%	22.3%	34.1%	48.6%	31.4%	51.4%	28.6%	54.1%
7	wrong	49.9%	14.6%	22.7%	41.6%	26.6%	37.7%	22.5%	41.8%
	Correct	23.0%	12.5%	16.4%	19.3%	11.6%	24.1%	12.5%	23.2%
8	wrong	40.3%	12.3%	19.8%	33.0%	21.4%	31.4%	21.6%	31.1%
	Correct	32.6%	14.8%	19.3%	28.0%	16.8%	30.5%	13.4%	33.9%
9	wrong	5.0%	0.5%	2.0%	3.4%	3.9%	1.6%	2.0%	3.4%
	Correct	67.9%	26.7%	37.0%	57.5%	34.3%	60.2%	33.0%	61.6%
10	wrong	10.5%	0.9%	2.7%	8.6%	7.0%	4.3%	5.2%	6.1%
	Correct	62.4%	26.2%	36.4%	52.3%	31.1%	57.5%	29.8%	58.9%

As it is obvious from figure 1 and table 2 there were differences in the answers of respondents according to age, gender, education level and education focus. However the statistical significance of these differences remained to be evaluated. To evaluate it we used the I-FiG of each respondent as test variable and the selected determinant (age, gender etc.) as grouping variable. Since the grouping variables were all two dimensional it was possible to use Mann-Whitney U test as a mean of evaluation of the statistical significance of the differences in the respondents` answers. For the results of Mann-Whitney U test (p-values) see table 3.

Tab. 4 Differences in answers according to the selected determinants.

Determinant	Age	Gender	Education level	Education focus
Value	0.000*	0.000*	0.000*	0.198

*indicates statistical significance

Based on the results of Mann-Whitney U test (see table 3) we conclude that as statistically significant determinants of the financial literacy level can be considered age, gender and education level (secondary grammar school or bachelor level). The focus of education (whether it is economic one or not) has no statistically significant influence on the correctness of the respondents`answers. To put it in other words, there is no statistically significant difference in the answers of respondents according to their education focus.

Discussion

The level of financial literacy is affected by various determinants. Based on the results of previous research mainly age, gender, education and income have significant impact on financial literacy. Hung et al. (2009) in their study claim that the level of financial literacy increases with the level of education and income. The factors, as gender and age do not have significant impact on the level of financial literacy. Murphy (2013) agrees with the assumption that the level of education has the highest correlation with financial literacy, but also the other factors such as age, race, gender and earnings are of influence. Lusardi and Mitchell (2011) emphasise the importance of age, as the determining factor, and state that middle age people have the highest level of financial literacy, whereas Bhushan et al. (2013) showed that financially literacy is not affected by age.

Based on the results of our research three determinants of the financial literacy level can be confirmed: age, gender and education level. Age is a natural factor of financial literacy and this determinant caused the biggest difference in the results (I-FiG is 7.8% higher in the age group "over 24 years"). Gained experiences contribute to the increase in financial literacy. The relevance of age as a determinant form financial literacy was statistically confirmed. On the other hand gender as a factor of financial literacy level has to be examined more deeply. Hung et al. (2009) argue, that gender has no significant impact on the level of financial literacy. Based on our results, men on average answered correctly 0.63 questions more than women.

As stated by Murphy (2013) the level of education is also a relevant determinant of financial literacy. We can confirm this statement by the difference in I-FiG between secondary school and bachelor university degree (I-FiG is 6.6% higher in favour of respondents with bachelor level). However, further research should be focused on the elimination of the impact of age on the determinant education, as in our sample the age is positively correlated with education.

The last examined factor – education focus has no impact according to our sample.

Conclusion

Improving financial literacy of the population is beneficial for the whole society. Households benefit in making rational and sustainable decisions resulting in their ability to pay all liabilities on time and on the other hand to earn adequate return on investments (financial or real). The public administration benefits in form of lower public expenditures related to financial assistance and social security net. Financial intermediaries take advantage of lower risk (once again, the households are able to pay all liabilities) and of their ability to communicate the advantages of selected products to customers since they are capable to evaluate the products by themselves.

In this context we have to perceive the results positively. The level of financial literacy increased in 2012 in comparison with 2007 (2007 I-FiG 56%, 2012 I-FiG 71.8%). The 2012 I-FiG of respondents with secondary grammar school education level was higher than 2007 I-FiG of respondents with bachelor education level (68% to 66%). For objectivity's sake it would be beneficial to compare the level of financial literacy measured by I-FiG across countries with common historical background like Visegrad countries (Slovakia, Czech Republic, Poland and Hungary) have.

In the second part of paper we analysed the influence of selected factors (age, gender, level and focus of education) on the level of financial literacy. Based on our results we conclude that the level of financial literacy is determined by age, gender and education level. In our sample the determinant education focus was not confirmed.

To further improve the financial literacy of the population we suggest to implement the personal finance as a part of learning objectives (curriculums) at the secondary grammar schools or as an optional course of the bachelor degree at universities. We already discussed the reasons why and how the society benefits from the high financial literacy. We also think that a high financial literacy can eliminate bad households' decisions potentially resulting in individual bankruptcy.

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