FINANCIAL LITERACY AND RATIONALITY OF YOUTH IN SLOVAKIA[1]

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ABSTRACT*. In recent years, the importance of issue of financial literacy of young people increases. Given view is evidenced by numerous research studies which aim to detect the factors that determine the financial literacy level of subjects of studies. The aim of presented study is to reveal relationship between financial literacy and rationality of students in Slovakia. We use questionnaire to detect rationality and financial literacy level of subjects. In regression we also control for control for age, gender, type of school and number of family members to detect possible variables that can influence financial literacy. Our findings suggest that males´ financial literacy is higher than females´ one. We also document that adolescents are less financially literate than 22+ years old students. Interesting is finding about relationship between financial literacy and number of family members. Students from families with more members are more financially literate than students from less membered families. The positive relationship between rationality and financial literacy is proven, despite being weaker than we expected.*

KEYWORDS*: rationality, financial literacy, Slovak republic.*

JEL classification*: A20, D14.*

Introduction

Financial literacy plays a key role and represents a basic and inevitable skill important for human existence in the developed countries in 21st century (Popov *et al.,* 2019; Sedziuviene, Vveinhardt, 2019; Volchik, Maslyukova, 2019; Bilan *et al.,* 2017; Higher

financial literacy of individuals has a strong impact on their financial well-being (Nguyen, Rozsa, 2019; Belás *et al.,* 2017), and is particularly important for university students who are just beginning to develop and apply their acquired financial habits (Aydin, Akben Selcuk, 2019; Belás *et al.,* 2016; Lusardi, 2008), Financial literacy is currently a significant but ignored skill that is essential for young people in many countries of the world (Jayaraman, Jambunathan, 2018), The advancement of innovative technologies and capabilities has been evident in recent years not only in the IT sphere but also in the banking sector. New financial products and services have been expanded in the financial market to attract consumers to overuse, spend and borrow money (Minh, Huu, 2016), Individuals face highly complex financial products without understanding the risks and whether the given product is suitable for them. Therefore, in view of the relatively high growth of investment products in online banking, consumer financial education is becoming a major research area (Rodrigues *et al.,* 2019), Indebtedness of the consumers has changed over few decades and the consumption with its consequent financial burden on individuals' increase. Loans are in globally widely used and may help in some undesirable life situations and thus make it easier to properly deal with the circumstances.

Unfortunately, money lending has become for many people a usual way of life and people use short-term loans as financial aid for acquiring things that they actually do not need either. However, such behaviour may lead to difficult life situations and financial problems. Insufficient financial literacy seems to have a significant economic and social impacts that appear in a short-term, but also long-term time horizon.

Author Shen (2014) dealt with the rationality of individuals within the meaning of consumer financial literacy in the credit card market. As a result, it was found that average individuals make rational decisions in terms of borrowing and using a credit card and bear with the high interest rates. But on the other hand, the majority of consumers make several mistakes in their individual financial decisions making. Also, the results of another study (Wonder *et al.,* 2008) show inconsistency with financial rationality and decision making of individuals. Shen (2014) concluded that level of financial literacy affected by cognitive ability or by financial skills and education can improve consumers' behaviour. Individuals constantly perform many regular transactions and makes decisions at certain risk levels. For example, prospect theory is an appropriate descriptive model of decision-making in terms of uncertainty. It describes real behaviour of people in a real world and its basic knowledge is that an assessment of various possibilities is more relative rather than absolute and simultaneously, there exists a strong aversion to a loss (Kahneman, 2012; Skapa, Vémola, 2012; Abdellaoui *et al.,* 2016), From another perspective, the main purpose of behavioural economics is an improvement in the decision making of individuals through financial education (Altman, 2012), This attitude supports the public policy initiatives which could lead to enhance financial literacy and thereby improve the quality of financial decision-making. On the contrary, conventional wisdom (Altman, 2012) shows pessimistic expectations about financial education improving financial decision making and consequently related socio-economic outcomes. Authors Wonder *et al.* (2008) observed that according to their research, consumer financial welfare is lower than it would be if decisions were made on a financially rational basis. They pointed out on dissimilarities where consumers with university education may fare better in their loan choices, in comparing to those with a lower level of education.

Individual self-control seems particularly as an important determinant of financial behaviour and decision-making. In the context of over-indebtedness and credits, Gathergood (2012) explored the relationship between financial literacy and consumer self-control in the

UK. Respondents of this survey were households and included consumer credit data in the analysis. The results of this study pointed to the interdependence of these factors, where the lack of self-control and low financial literacy were positively correlated with over-indebtedness and inability to repay consumer credit. Respondents achieved a relatively low level of financial literacy. Two-fifths of them reported a sense of confusion in their finances and were not even sufficiently financially oriented in their household budgets. Respondents with self-control problems were increasingly using fast-accessing and high-cost loans or products. For these consumers, the authors have demonstrated the existence of a greater likelihood of lending, unforeseen spending and consequent income shocks, exposing them to higher risks and instability in their financial well-being. One explanation for the relationship between impulsive financial behaviour of consumers, increased spending and over-indebtedness is that such consumers or households can also react impulsively to other areas of their lives, such as the labour market, where they may be more exposed to income irregularities or unexpected expenditures (Gathergood, 2012),

Rationality and pragmatic point of view in relation to financial literacy can be found in some studies. Consequently, higher financial knowledge helps individuals to monitor an optimal consumption and balanced portfolio of household with relation to finances (Romitiy, Rossiz, 2014), Also higher financial knowledge lead to higher probability of savings' creation and correct financial planning for pension (Fernández-López *et al.,* 2010; Hung *et al.,* 2009), After graduating from high school, students face increasingly complex financial decisions. The lower level and weaker results of student's financial literacy found also in Germany (Erner *et al.,* 2016), are one of the motives why it is important to fully research the level of financial literacy and raise awareness of financial skills among young people.

Different levels of financial literacy, especially with a more negative expression in poorer families (Yong, Tan, 2017), are also seen outside the EU. A survey of household financial literacy was also conducted in China. Feng *et al.* (2019) found in the survey unfavourable results where they discovered a low level of financial literacy, which in many ways affected the finances of these Chinese households. It is now an urgent need to increase the intensity of financial education and management, especially for parents, as their children are also most likely to experience their money management practices (Yong, Tan, 2017; Feng *et al.,* 2019; Jayaraman, Jambunathan, 2018), Parents play a key role in acquiring the knowledge and habits of managing the younger generations' finances, which can affect them in future financial behaviour and decision-making, especially when they become independent. As Atkinson, Messy (2012) claims in their study, parents with lower level of education, incomes or property have also lower potential to transfer their knowledge of financial literacy to their children, than those parents with the higher level of education and better financial skills. Authors Cameron *et al.* (2014) analysed the financial knowledge of high school students in New Zealand. Their results showed a lower level of financial literacy seen mainly by students from weaker social levels along with lower math proficiency. In this context, Jappelli, Padula (2013) concluded that improving mathematical skills in early life tend to increase and improve households' financial literacy as well as their wealth accumulation. The financial literacy and attitude towards money in college students in Turkey was examined by Aydin, Akben Selcuk (2019). Their results confirmed the positive link between the variables tested, which means that students with higher financial skills achieved more favourable attitudes towards money and showed more appropriate financial behaviour. In Italian universities (Cucinelli, Bongini, 2019) the motivation of students to save money for retirement or retirement planning options were explored. They found that the better

knowledge of the country's pension system functioning, the higher level of financial literacy and better personal financial management, had a positive impact on the students' intention to invest in the pension fund. Alarming results have shown that these young students believe that their state pensions will be sufficient to maintain their future standards of living and that the government will take full care of their pension income without reducing their welfare. Similar results were recorded in our previous study (Gavurova *et al.,* 2017), where the majority of Slovak students have not attempted to do a retirement saving calculation. Students do not look ahead and most of them do not calculate how much they need to save for retirement yet. Students rely on their workplace pension plan together with the governmental one.

Many other authors have reviewed the financial literacy of children and young people in literature (Afonso, Aubyn, 2005; Barro, Lee, 2001; Jorgensen, Savla, 2010; Warder *et al.,* 2018; 2019), One study in Spain (Cordero, Pedraja, 2019) was aimed at analysing financial education under the program at Spanish high schools. The authors have found a causal effect of financial education programs on students' knowledge when they are taught as part of other school subjects. However, according to the type of high school, the study (Mancebón *et al.,* 2019) did not show any significant impact on the achievement of financial literacy or mathematics. Understanding the level of financial literacy among the young generation and their financial decision-making is essential for the future development of effective financial education programs that positively affect young people's lives (Cameron *et al.,* 2014), It is universities or secondary schools that should contribute to the continued development of financial skills and student education (Montalto *et al.,* 2019; Jayaraman, Jambunathan, 2018), In spite of higher financial literacy in many countries, the majority of the world's population does not have any basic financial knowledge and skills. The given consequent facts represented a motivation for deeper research of this issue by research realization within chosen high schools in East of Slovakia. The essential aim of this research is to reveal possible existing link between rationality and financial literacy. In our analysis, we also study possible links between gender, type of school, age and number of persons within subject household and financial literacy.

1. Data and Methodology

Data were collected during fall semester 2018. We collected data by using questionnaire which contained components about respondents' rationality and respondents' financial literacy. We also collected data about respondents' gender, age, school, and number of household members. Rationality was measured by using Kahneman, Tversky (1973) questions about certainty, probability, and possibility. We proposed to subject ten lotteries with binary answers where was for every lottery only one rational response. Financial literacy was divided into two parts. We distinguish between hard financial literacy and soft (non-financial) financial literacy. Soft financial literacy involved ten questions about areas such as what is interest, what is the difference between credit and debit card, what is underinsurance, what is overdraft account etc. Hard financial literacy involved ten questions about areas as interest bearing, mutual funds profitability, comparison of loans etc. Here, in hard financial literacy part the mathematical skills of subjects were helpful. In all three domains, rationality, soft financial literacy and hard financial literacy ten questions were proposed, thus the maximum score was 30 points (subject which scored 10 points in rationality, 10 points in soft financial literacy and 10 points in hard financial literacy),

We collected in total 447, where 270 were females and 177 males. 169 respondents were in age interval 15−17 years, 238 were in age interval 18−21 years and 40 respondents were older. We distributed questionnaire in two faculties, one business school and one high school. 178 respondents were from Economic faculty of Technical University in Kosice, 102 were from Faculty of Management of University of Presov in Presov, 71 respondents were from business academy in Kosice city and 96 respondents were from high school in Spisska Nova Ves city.

2. Findings

Firstly, we focus our analysis on visual insight of rationality and financial literacy. We use boxplots, where the bottom of the box indicates the 25th percentile and top pf the box indicates 75th percentile. It means in case of 25th percentile that 25% of observations are situated below cut point and in case of 75th percentile that 25% of observations are above this line. Thus, 50% of observations should be situated within the boxes. T-bars that extend from the boxes should contain approximately 95% or the data, when dataset is normally distributed. Dark line in the boxes represents median.

Figure 1 depicts the situation in case of hard financial literacy and rationality. We can observe there is no significant difference in hard financial literacy between males and females in rationality interval score [2−6]. Here data are more or less equally distributed and the range of boxes and medians are not diverse. Above rationality level 7 we observe that rational males appear to be more financially literate than females. In case of hard financial literacy, *Figure 2*, we observe that threshold value in terms of financial literacy related to rationality is rationality score 5. Behind this value, males and females seems to attaint higher score in financial literacy, even though median value of financial literacy of remains below the males one.
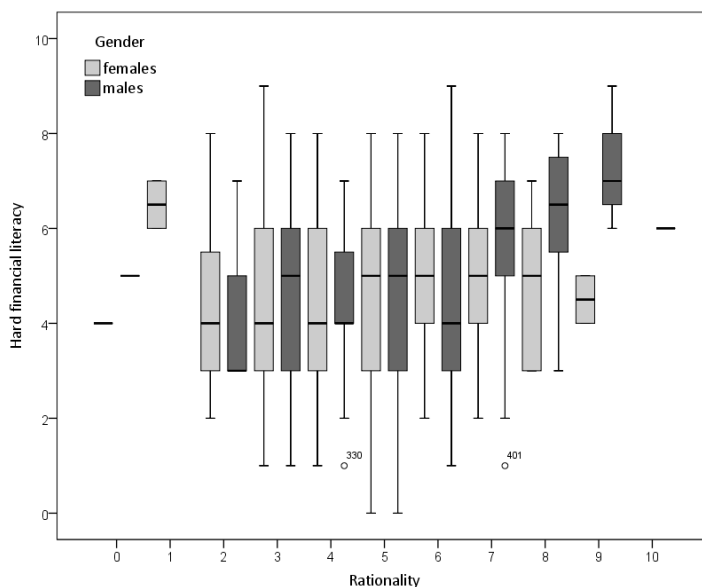
Source: created by the authors.
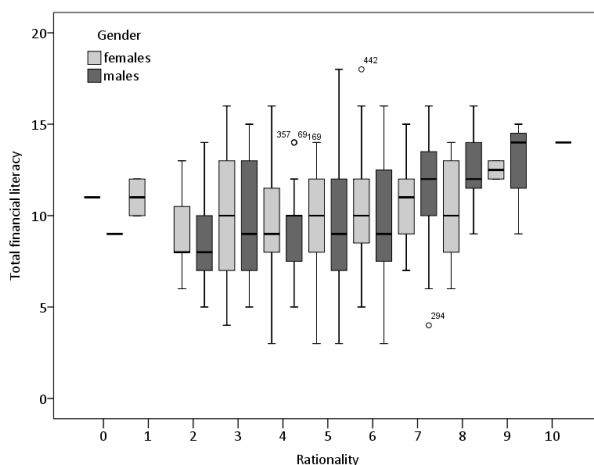
Figure 1. **Hard Financial Literacy and Rationality**
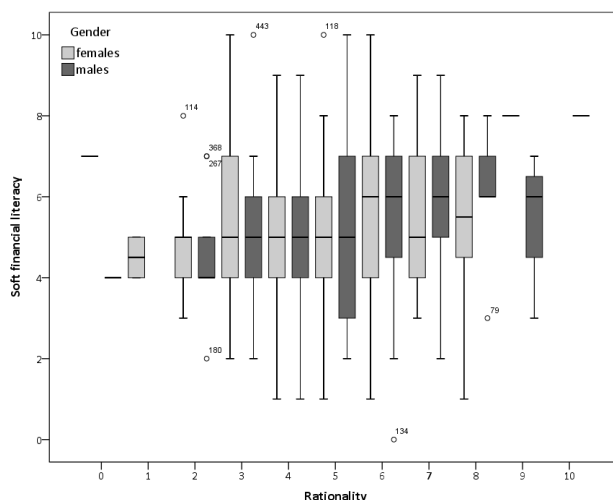
Source: created by the authors.

Figure 2: **Hard Financial Literacy and Rationality**

Figure 3 captures the sum of soft and hard financial literacies, again depending on rationality level. We see that overall financial literacy depending on rationality form some kind of U curve.

In general, we can observe pattern of rising total financial literacy score in relation to rising rationality. Here we see that from rationality score 5, the medians of total financial literacy score increase and the positions of boxes are also higher. Moreover, we can observe stronger mutual interconnection of rationality and overall financial literacy in case of males.

Source: created by the authors.

Figure 3. **Overall Financial Literacy and Rationality**

To ascertain more precisely what is the relationship between financial literacy and gender, school, age category, number of household members and rationality we run generalised linear model, where dependant variable is Total (overall) financial literacy, and explanatory variables are:

- Age − categorical variable with three possible values: age interval 15-17, age interval 18-21, age interval 22+

- School − categorical variable with four possible values: students from Economic Faculty of Technical University in Kosice (EKF-TUKE), students of Faculty of Management of University of Presov in Presov (FM-UNIPO), students of business academy in Kosice city (BUSINESS ACADEMY) and students of high school in Spisska Nova Ves city (HIGH SCHOOL)
- Gender − categorical variable with 2 possible values: females and males
- Household members – scale variable with range from living alone to 8 family members
- Rationality – scale variable with range 1-10

Table 1 contains regression analysis results. We can see that in case of age, statistically significant age interval is interval of 15-17 years. Here we see that students with age from 15-17 years have much bigger chance to have lower score of financial literacy than students with age 22+. *Figure 4* depicts relationship between age intervals and overall financial literacy. We see that most observations of financial literacy score of students aged 15-17 are below the majority of observations of other two age intervals.
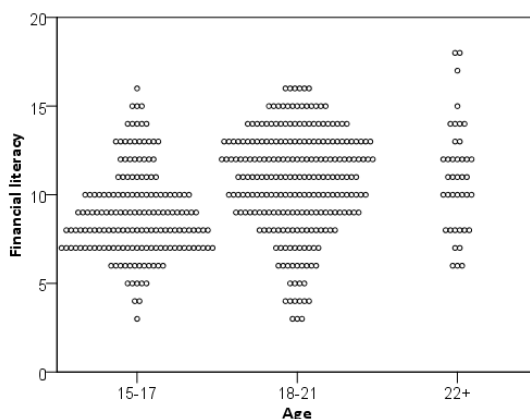
Source: created by the authors.

Figure 4. **Age/Overall Financial Literacy**

Table 1. Generalised linear model – Overall financial literacy

Parameter	B	Std. Error	Hypothesis Test		
			Wald Chi-Square	df	Sig.
(Intercept)	11,85	2,0785	32,503	1	,000
Age=15-17	-4,159	1,9827	4,401	1	,036
Age=18-21	-,311	,5426	,327	1	,567
Age=22+	0[a]	.	.	.	.
School=EKF-TUKE	-2,241	1,9601	1,308	1	,253
School=FM-UNIPO	-2,276	1,9604	1,347	1	,246
School=BUSINESS ACADEMY	-,089	,4274	,043	1	,835
School=HIGH SCHOOL	0[a]	.	.	.	.
Gender=females	-,431	,2673	2,598	1	,107
Gender=males	0[a]	.	.	.	.
Household members	,169	,0967	3,072	1	,080
Rationality	,182	,0775	5,530	1	,019
(Scale)	7,351[b]	,4917			

Dependent Variable: Financial literacy
Model: (Intercept), Age, School, Gender, Household members, Rationality
a. Set to zero because this parameter is redundant.
b. Maximum likelihood estimate.

Source: created by the authors.

Another statistically significant regresor is gender. We see that females have bigger chance to have inferior score in overall financial literacy than males have.

Interesting is finding one about relationship between number of household members and financial literacy. Here we find that financial literacy of students from households with more members is higher than financial literacy of students from less numerous households. Exception here are students which are self-living – their financial literacy is the highest one. Regression tells us that with increasing number of household members the financial literacy score has tendency to increase.
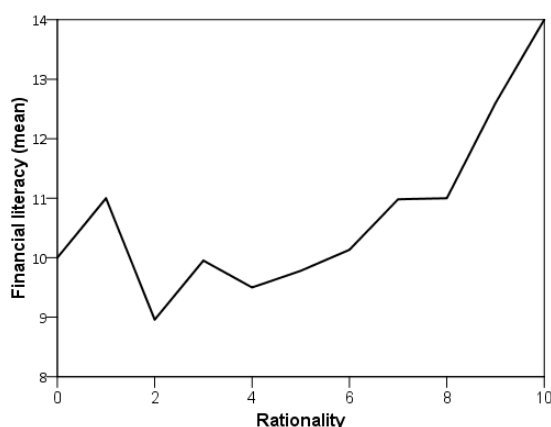
Source: created by the authors.

Figure 5. **Overall Financial Literacy and Rationality**

Finally, we look closer on relation between rationality and financial literacy. Regression indicates that increases in rationality induce higher score in financial literacy. The course of evolution of overall financial literacy depending on rationality is captured on the figure 5.

Here we can observe apparent pattern of relationship between rationality and overall financial literacy. We see that average score of overall financial literacy increase with increase of rationality.

Conclusions

Nowadays, financial literacy and knowledge belong to the essential skills and qualities of an individual helping to adequate financial decision-making in regular financial situations. Financial literacy and its development improve among the younger generation, but its quality varies from country to country. Education has become an important determinant in the growth of the productivity of modern economies where the support of financial education from policymakers plays a key role. The principal aim of this research is to reveal possible existing link between rationality and financial literacy. In our analysis, we also study possible links between gender, type of school, age and number of persons within subject household and financial literacy. Our results show a pattern of rising total financial literacy score in relation to rising rationality and their weak, but positive correlation. At the same time, we observe stronger mutual interconnection of rationality and overall financial literacy in case of males. We also find that the financial literacy of students from households with more members is higher than the financial literacy of students from less numerous households. However,

students who are self-living have financial literacy the highest one. We conclude that increases in rationality induce higher score in financial literacy what could provide important information for policymakers to develop support for efficient concepts of financial education in many countries.

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FINANSINIS JAUNIMO RAŠTINGUMAS IR RACIONALUMAS SLOVAKIJOJE

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SANTRAUKA

Straipsnyje nagrinėjama tarpusavyje susijusių finansinio raštingumo ir žmonių racionalumo samprata. Tyrimo objektas yra 15–23 metų studentai. Pastebėtina, kad vyrai yra labiau finansiškai raštingesni nei moterys. Tyrimo rezultatai atskleidžia, kad 15–17 metų jaunimas yra finansiškai mažiau raštingas nei 22 metų ir vyresni jaunuoliai, o studentai iš namų ūkių, turinčių daugiau narių, yra finansiškai raštingesni nei studentai iš mažiau narių turinčių namų ūkių. Tyrimu buvo įrodytas silpnesnis nei būtų galima tikėtis teigiamas racionalumo ir finansinio raštingumo santykis.

REIKŠMINIAI ŽODŽIAI: racionalumas, finansinis raštingumas, Slovakijos Respublika.