

FINANCIAL LITERACY OF STUDENTS IN CHOSEN UNIVERSITIES – RESEARCH PLATFORM FOR REGULATORY PROCESSES OF EDUCATIONAL SYSTEM IN SLOVAKIA

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Introduction

Financial literacy (FL) represents a basic and inevitable skill that is important for human existence in the 21st century. In recent years, there are evident activities in a support of financial education especially from the European Commission (EC) side. The EC issued “The Communication on Financial Education” report. This report explicitly states economic and social advantages of a higher level of FL as well as fundamental principles of financial education control according to the chosen procedures (European Commission, 2007). The EC support led to implementation of various tools in a more complex financial world in order to increase FL of students. The FL standards represent one of those tools that are implemented in institutions of all levels of educational system, thus students may obtain higher financial skills (as for instance in the Czech Republic, where the National Strategy for Financial Literacy was issued in 2010). The primary platform is formed by economical categories, such as money and transactions, financial planning and management, risks and rewards, economic terms, consumer rights and responsibilities, etc. in spite of the differences in a content of educational standards in the individual countries (OECD, 2016). In Slovakia, the National Standard of FL (Version 1.0) was formed by the Ministry of Education, Science, Research and Sport of the Slovak Republic (MESRS) and actualized in 2013. Bank of financial literacy, Open-book of Financial Literacy, etc. were active in obtaining other resources (MESRS, 2014). The financial standards had a dual role – they determined necessary knowledge, skills and experiences for educational staff and students,

as well. Financial services and products have been facing constant changes for the past years. Development of credit market causes an increase of households’ indebtedness in a given economy (Androniceanu, 2017). As a consequence of financial crisis, the increasing rate of indebtedness is connected to increasing credit risk in a form of, so-called failed credits. The increasing rate of failed credits influences a quality of credit portfolio and also an efficiency of individual banks and a whole bank sector. The primary evidence of these statements are reflected in many studies’ results that had shown an existence of inverse relationship between banks’ efficiency and NPL indicator (ratio of failed credits per total credits’ volume) in the V4 countries, and also within the American banking market (Kočišová, 2016). However, there still prevails that part of world’s population which does not have any basic financial knowledge and also no access to education, despite a high FL of selected groups of population.

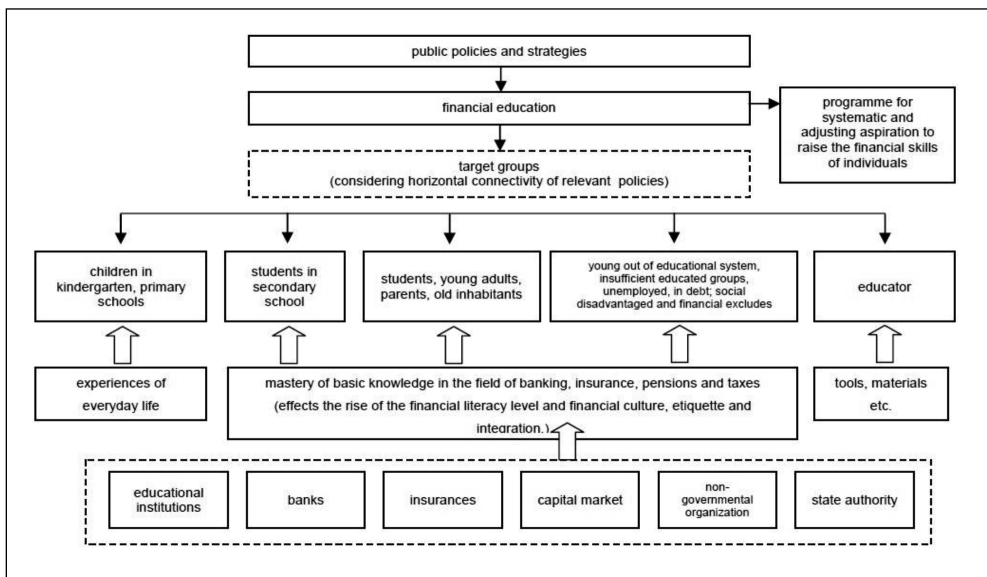
Also, the financial sector has been constantly changing; there are many new financial possibilities and consequently financial responsibilities and risks, despite a sufficient financial knowledge of a population that is a result of globalization processes, economic crisis and its multi-dimensional impacts (OECD, 2014; Andrei et al., 2016). Many countries attach importance especially to FL of younger population that led to a collection of relevant data, which reflect a real FL state of the individual groups of population and their potentials to improve it (McGraw Hill Financial, 2015). Consequently, numerous research studies from abroad focus on process and result trajectories in the FL regulation within particular

countries in recent years (Klapper et al., 2015; Rasoaisi & Kalebe, 2015; Kozina & Ponikvar, 2015; Nano & Cani, 2016; Dirzytė et al., 2016; Njaramba et al., 2015; Tvaronavičienė, 2016; Alonso et al., 2016). In Slovakia, there are absent complex research and expert studies within given issue in spite of their importance in strategic concepts' formation, planning of educational processes, and also creating of relevant policies (Gavurova et al., 2016). The existing studies of a given issue usually focus on FL issue within a small group of respondents just partially (e.g. Vravec, 2014; Slovenská banková asociácia, 2007; Nadácia PARTNERS, 2016). The given consequent fact represented a motivation for deeper research of this issue by research realization within chosen faculties in Slovakia. The principal aim of this research was a comparison of FL "input" (first-year students at Bachelor level) and "output" (last-year students at Master level), comparison between students of relevant study programs and a research of causal links, which provide a list of differences in horizontal (researched universities) and vertical (other categories) FL dimensions. The next chapters provide a detailed description of methodology and research results.

1. Overview of Research within Given Issue

In 2007, EC drew up a concept of financial education that was based on lifelong perspective (Fig. 1). Some authors (e.g. Starček & Trunk, 2013) rely on this concept as a platform for lifelong learning process, while emphasizing particular target groups (the elderly, unemployed, socially disadvantaged and financially excluded target groups, etc.). The financial education should be involved in the system of public policies that deal with a program of development and stability, education and qualification, protection and security of consumers, social inclusion, etc. from procedural point of view (Rutledge, 2010). Consequently, financial education cannot be a separate, one-off activity that focuses only on a specific group of population in a specific time horizon, but it represents a complex system that requires application of demanding concepts, methodologies, means and tools from both long-term and short-term perspective. As Fig. 1 illustrates, the process and institutionalized dimension, causal links and evaluation components are very important in this system.

Fig. 1: Conceptual scheme of financial education (European Commission, 2007)



Source: Starček and Trunk (2013)

Platform for adaptability and development of financial education which also reflects its different levels of accessibility has not been formed by all countries.

There prevail regional disparities in terms of financial education accessibility (Gavurova et al., 2017). In some developed countries, the present generation becomes the first generation which has an access to financial products (OECD, 2014). Socio-economic status of an individual and consequently, family environment and education play an important role in this process (Belas et al., 2017). As Atkinson and Messy (2012) claims in their study, parents with lower level of education, incomes or property have also lower potential to transfer their knowledge of FL to their children, rather than parents who have higher level of education. Similar findings were found in the studies of such authors as Vracec (2014) and other (Jorgensen, 2007; Clarke et al., 2005; Jorgensen & Savla, 2010). Trunk and Dermol (2015) emphasize a necessity and importance of FL for individuals in order to manage a family budget optimally, or to create monetary reserves (Popescu et al., 2016). The appropriate financial education may eliminate inequalities in social-economic status of students. China was the first in FL, then Belgium in terms of the international level of FL comparison within countries from all over the world presented in the PISA study (2012). However, Slovakia obtained an average score and thus reached one of the last places within a group of evaluated countries. Similarly, Slovakia remains below the average of the OECD countries in FL evaluation and its average FL score is lower than in the Czech Republic, Poland, the USA, Croatia or Israel (OECD, 2012a). PISA determined the level 2 of FL as the primary level of knowledge and skills. In Slovakia, 77.2% of students reach this level. On the other hand, it means that each fifth Slovak student has no basic knowledge of finances (NN Group, 2015). This negative consequent fact highlights a necessity of resolving the FL issues and its availability in elementary and high schools, while providing an appropriate implementation of FL topics into educational system at schools with regard to socio-economic situation. If gender differentiation is taken into consideration in evaluating PISA results for 2012, there will not be confirmed any significant statistical differences in average results of FL between male and female sex (OECD, 2012b).

The results of GFLEC survey that was done at Washington university in the U.S. prove that the male respondents frequently occupy the highest, but also the lowest levels of FL evaluation, while on the other hand, female respondents reached average results (Lusardi, 2014). Other research studies observed a significant difference in FL of both sexes, while women obtained much lower financial knowledge than men (e.g. Atkinson & Messy, 2012; Bucher-Koenen & Lusardi, 2011). The FL research in a context of age differentiation is more definite; it also represents present issue in many countries, while the aspect of age differentiation in terms of FL influences conceptualization of education as well as its procedural realization. The newest studies' results are being reviewed at present (e.g. McGraw Hill Financial, 2015; Klapper et al., 2015). McGraw Hill Financial concluded in their study that 33% of adults out of 148 countries are financially literate. It means that approximately 3.5 billion of adults absent the perception of fundamental financial terms, while most of them come from developed economies (Klapper et al., 2015). McGraw Hill Financial also shows significant disparities of FL levels within the EU countries. For instance, in Romania, only 22% of its inhabitants are financially literate as opposed to 71% of inhabitants in Denmark and Sweden. In Europe, there are 69% of adults with academic degree whose financial literacy is significantly higher than of 54% of adults with secondary education and of 28% of citizens with elementary education (Klapper et al., 2015). Insufficient FL has significant economic and social impacts that appear in a short-term, but also long-term time horizon (Laudan et al., 2016). At present, good examples may be the Slovak households in debt as a result of short-term and also long-term credits by commercial banks (Szovics, 2012; Lusardi, 2008). According to the data of the European Central Bank, in 2015 each Slovak adult borrowed from banks in average 5,510 EUR. Compared to 2014, this amount increased by 600 EUR. Generally in this context, the average amount in the euro area achieved 19,761 EUR. For instance, Polish and Hungarian households reported lower indebtedness towards banks and from this point of view, together with Romania and Bulgaria present the lowest indebted countries in Europe. In 2015 average loans of adult in Hungary was only 2,407 EUR and the lowest credit amount in the

Europe is indicated between Romanian adults (1,450 EUR). In contrary, the highest average loan per inhabitant (21,403 EUR) exists in Austria. If we take a deeper look on structure of loans, there prevail real-estate credit. Slovak have borrowed in total 23.3 billion EUR from banks and other financial institutions and up to three quarters of this volume was related to the housing loans. More than 3.6 billion (15.5% of all loans) were provided by banks in the form of consumer credit. Compared to the same period of the 2014, the total credit advanced increased by 12.6% (Ondrová, 2015).

Similarly, from macro-economic point of view, the insufficient FL contributes to financial crisis, people have difficulties to focus on products offered by financial institutions, their financial decision-makings are risky and frequently lead to existential issues (Vravec, 2014; Rutledge, 2010; Androniceanu, 2015). A person constantly performs many regular transactions and makes decisions at certain risk levels. Prospect theory is an appropriate descriptive model of decision-making in terms of uncertainty. It is not normative, because it describes real behavior 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). Prospect theory is one of the most cited paper ever published in prestigious economic journal *Econometrica*. The Nobel Memorial Prize in Economics Sciences was awarded to authors in 2002 for their contribution to psychology of judgment, decision-making and behavioural economics. Prospect theory is a counterpart to Expected utility theory. Basic principles of

Prospect theory are risk aversion, reference point, principle of diminishing sensitivity and loss aversion. Kahneman and Tversky (1979) empirically showed, that people overweight outcomes that are less probable in comparison with outcomes that are certain. Authors also showed that people generally discard components that are shared by all prospects under consideration. Prospect theory is seen as a base stone of behavioral economics. In many foreign studies, there dominate such approaches that prefer rationality and pragmatic point of views in relation to FL. Consequently, higher financial knowledge helps individuals to monitor an optimal consumption and balanced portfolio of household with relation to finances (Romitiy & Rossiz, 2014; Androniceanu & Ohanyan, 2016). Also they lead to higher probability of savings' creation and correct financial planning for pension (Fernández-López et al., 2010; Hung et al., 2009).

2. Methodology Framework

The survey of FL level was realized during the following period, December 2015 until March 2016. There participated 496 students from three selected universities in Slovakia: Faculty of Economics, Technical University of Košice (EKF TUKE), Faculty of Management of University of Prešov in Prešov (FM PU) and Faculty of National Economy of the University of Economics in Bratislava (NHF EUBA). These Slovak universities have been active for many years and they provide various economically oriented study programs. They also realize research activities besides those educational ones. Tab. 1 shows a structure of research sample.

One can see that there is a majority of female respondents. This fact only reflects the

Tab. 1: Research sample according to sex and university level of respondents

Faculty / University	Frequency of survey respondents						Overall Frequency
	1st year of Bachelor study			2nd year of Master study			
	Men	Women	Total	Men	Women	Total	
EKF TUKE	46	89	135	33	60	93	228
FM PU	18	39	57	11	25	36	93
NHF EUBA	47	81	128	21	26	47	175
Total	111	209	320	65	111	176	496

Source: own

actual state of number of university students on faculties with economic orientation. On faculties participating in our survey we can find following share of female students: EKf TUKE: 59.5%, FM PU: 71.14%, NHF EUBA: 67.68%. In our survey 64.51% of total number of participants were female. This is in line with above mentioned trend that prevail in economic field of study.

The written form of survey by means of structured questionnaire that consisted of 54 questions was used in order to collect the necessary data. Questionnaire structure was divided into three types of questions so it also considered key categories of a given issue. The first type of questions focused on demographic data of respondents and it included 6 questions in total, which focused on sex, age, place of residence, the highest educational attainment, present level of university degree and working condition. The second type of questions was related to practical tasks which focused on verifying the level of FL and confirming, and/or rejecting the hypothesis that emerges from prospect theory. The last type of questions consisted of those that concentrated on financial situation and financial behavior of a respondent. The survey questionnaire included closed questions that had either a character of multiple choice questions or questions with rating scales (7-10), when respondents could convey their attitudes. Rating questions were related to financial behavior of respondents, while focusing on their self-perception. The targets as well as character of a survey were determined by a form of questionnaire and questions' concept.

The primary aim was FL comparison between both the chosen faculties and their students at "input" (first-year students at Bachelor level) and "output" (last-year students at Master level).

The students' FL was evaluated by 7 specific and practical (mathematical) tasks with multiple choices and one correct answer on the basis of content point of view. In the research, there was applied a verified and internationally respected procedure, which has also been used by the Global Financial Literacy Excellence Center (GFLEC) at the Washington university in the U.S. (e.g. Lusardi & Tufano, 2009; Lusardi & Mitchell, 2014). Financial literate person is that kind of respondent who answered correctly at least 4 practical queries,

i.e. an absolute majority of these tasks, while evaluating FL. The following differentiation aspects were taken into consideration when researching students' FL dependencies: sex, type of high school and study program. The confrontation of results with research studies' outputs provided in Chapter 1 was a principal aim of this study. Respondents and behavior of respondents on the basis of particular expected utilities of the prospect theory were also a part of this research, while focusing on given economic and social impacts and also risk of financial decisions made by individuals, which are connected with insufficient FL. Principles of prospect theory belong to the basic sources that influence financial skills and behavior of individuals. Therefore, the research also focused on a connection of individual's FL and his/her responds to corresponding principles of prospect theory. Inspiration was drawn from the methodology of Skapa and Vémola (2012) in the concept of research questions. Respondents answered 9 questions that were formed by the founders of the prospect theory, Kahneman and Tversky. Similarly, the research focused on various age categories of respondents.

Research line was defined by four hypotheses:

H1: Level of respondents' FL connected to respondents' sex.

The primary source of this hypothesis was a research made by an international study, PISA (2012, in cooperation with GFLEC). This research made a conclusion that male respondents are more frequently ranked at higher, but also lower levels of FL evaluation (wide variance of achieved FL level). Female respondents reached average results in this research. Our research primarily focused on a possibility of such differentiation between sexes in terms of FL in students of specific economic faculties in Slovakia.

H2: Level of respondents' FL defined as input students, which is connected to high school type.

Many high school study programs offer different knowledge of FL. On the other hand, FL is inevitable in daily life of each individual who becomes a client, customer, debtor, creditor, etc. In this context, each individual should have a certain level of FL. The differences presumed by this hypothesis are of main interest of this research, while accepting a fact that only a part of population continues in the university studies.

H3: Level of FL is increased by completing economic study programs at the university.

The individuals achieve the highest level of education by completing the university study programs also in economic field. It is estimated that those individuals who did not complete any economic study programs, or are at the beginning of such studies have significantly lower level of FL than those respondents who are about to complete their economic studies.

H4: Level of respondents' FL is connected to their financial decisions in risky and uncertain conditions.

The prospect theory explains behavior of people in decision-making process when risk and uncertainty occur. People give a different weight of probability to individual facts in opposition to objective facts that result in applying the theory of expected utility. The formulated hypothesis examines rational and/or prospect choice in financial decision-making process of respondents, i.e. if financially literate students make decisions according to the principles of prospect theory or rationally according to expected utility theory in risky conditions, and their connection with FL.

Pearson's Chi-square test and the Phi coefficients associated with Cramer's coefficient that define mutual dependency on individual categorical variables and power of their dependency were used in analytical data process. However, they do not explain their causality, which may be a subject to other research. Pearson's Chi-square test was used in order to verify if the differences of real (observed) O_{ij} and expected (theoretical) frequencies E_{ij} may be random (variables are definite) or statistically significant (variables are dependent) (Hudec, 2008). Theoretical frequency was obtained on the basis of following relation:

$$E_{ij} = \frac{R_j * C_i}{n}, \quad (1)$$

and the following relation was used as a testing characteristics

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(E_{ij} - O_{ij})^2}{E_{ij}}, \quad (2)$$

which also involves asymptotical χ^2 division with a number of flexibility degrees $(r-1)(c-1)$.

Conditions of test use: $E_{ij} > 5$, $n > 30$. Zero hypothesis H_0 assumes that there is no dependency among the researched categorical

variables. This hypothesis H_0 is rejected in favor of alternative hypothesis H_1 that proves connections in case value of testing characteristics fulfills disparity as follows:

$$\chi^2 > ((r-1)(c-1)) \quad (3)$$

It is required for theoretical frequencies to meet the condition > 5 in order to confirm compliance with limited division. It means that test results depend on sample size (Hudec, 2008). Power of dependency among variables may be determined by Phi coefficient with Cramer's coefficient. These coefficients of association may have values from 0 to 1, where values closer to 1 indicate higher level of dependency (Lyócsa et al., 2013).

3. Results

Practical tasks used in survey questionnaire which enabled to evaluate the level of students' FL in selected economical faculties were thematically-oriented to financial skills and abilities of respondents in simple and complex interest rate, inflation, influence of interest rates on particular types of investments. The results were divided into four analogical parts with given hypotheses. Basic descriptive statistics of our sample are presented in Tab. 2.

3.1 Financial Literacy and Respondents' Sex

The first hypothesis H_1 examined a presence of statistically significant dependency between achieved level of financial skills of respondents with regard to male and female sex. In two tested cases out of three (at the Faculties of Economy in Košice and Bratislava) was observed statistically significant dependency of FL level on respondents' sex. Phi coefficient and Cramer's coefficient reached value 0.232 in EKF TUKE and 0.246 in NHF EUBA in this research. It means that there is a certain dependency between the students' level of FL of these faculties and their sex. However, male respondents have higher financial knowledge than female respondents both at EKF TUKE and NHF EUBA. The survey also revealed that only 10.13% of male respondents are financially illiterate, while this number is in female respondents much higher, 30.87%. The percentage of financially illiterate men at NHF EUBA (those who could not answer at least 4 questions of financial field) was 26.47%,

Tab. 2: Descriptive statistics, distribution of financial literacy

	Financial illiterate	Financial literate
Gender		
Men	81	95
Women	111	209
Year of study		
First year of Bachelor study	144	176
Last year of Master study	48	128
Highest level of education attained		
Grammar School	86	119
Business Secondary School	43	48
Hotel academy	6	4
Secondary vocational school	9	5

Source: own processing

while percentage of financially illiterate women was 51.40%. It may be assumed that there exists a correlation of LF level depending on respondents' sex and thus a statistically significant difference between financial knowledge of men and women is formed. However, there was a significant difference in FM PU in comparison to EKF TUKE and NHF EUBA, which means that in case of FM PU there was not notified any statistically significant dependency between FL level of these students and their sex (p-value of testing characteristics was higher as a level of significance, 0.05, and Phi coefficient and Cramer's coefficient reached low values, 0.064). The percentage of financially literate students at FM PU, male respondents, was 34.48%, while in women's case the result was similar, 28.13%. The remaining part of respondents could not answer FL-related questions correctly, almost 65.52% of men and 71.87% of women.

3.2 Financial Literacy and the Highest Level of Education Attained

The FL was also examined in terms of the highest level of education attained. Hypothesis H2 examined if there is any mutual dependency between FL level of respondents and a type of high schools attended by respondents. Potential connection of financially skilled students of the first-year students at university and type of high schools they attended was

tested. The input students have knowledge obtained at high schools. Business Secondary School (*Obchodná akadémia*) in comparison to Grammar School (*Gymnázium*), or other types of high schools (Hotel academy as *Hotelová akadémia* and Secondary vocational school as *Stredná odborná škola*) teach many subjects of economy and they provide primary or broadened knowledge of finances and economy for their students. Therefore, it was supposed that respondents who attended Business Secondary School would reach a higher level of FL.

The frequency of individual variables and quantitatively comparable percentage of financially literate respondents at EKF TUKE who attended Grammar School was 52% and those who attended Business Secondary School 40%. Present first-year students (95.31%) at NHF EUBA attended Grammar School or Business Secondary School. Similar results were found at FM PU, which did not indicate any significant statistical difference in respondents' knowledge related to FL. The assumption provided in hypothesis H2 that the first-year students at Bachelor level who attended Business Secondary School should reach higher level of FL due to broadened knowledge of finances and economy than other first-year students at Bachelor level was not confirmed in any of researched faculties (by means of Pearson's Chi-squared test the

p-value of testing characteristics was higher, but level of significance was 0.05, while Phi coefficient with Cramer's coefficient did not confirm any connection, while taking into consideration these two variables and their values, 0.073-0.076). In conclusion, testing at EKF TUKE, FM PU and NHF EUBA did not confirm any existence of statistical dependency of financial knowledge on type of a high school.

3.3 Financial Literacy and the Level of Study

The third part of this research focuses on FL evaluation of the first-year students and their present knowledge of FL obtained from high school, and students in their last year who already completed larger part of their university studies with focus on economy. Consequently, it was assumed that better results would be observed in the case of the last-year students as opposed to the first-year students. The level of FL is increased by completing economic study programs at the universities, which is a result of hypothesis H3.

From results is evident that a frequency rate of financially illiterate students from EKF TUKE was lower at the end of their studies (9.68%) as at the beginning of their studies (33.33%). Similar connection was found out at NHF EUBA, where a rate of financially literate students of the first year (53.13%) was lower than in students of the last year at particular faculty (72.34%). Logical connection was found in two universities, in Košice and Bratislava, while analyzing the relation between FL level of respondents and level of their studies at the university. In the statistical outputs, the testing characteristics was lower than the selected level of significance, 0.05 that supports the H3 assumption; and the Phi coefficient together with Cramer's coefficient reach values of 0.273 and 0.173. In both cases, the statistically significant dependency was confirmed, which means that financial knowledge depends on completed level of study at particular university. The abovementioned statement also confirms the hypothesis H3. However, hypothesis H3 validity was not confirmed at FM PU, where p-value by means of Pearson's Chi-squared test got higher value than selected level of significance 0.05. The rate of financially literate first-year students at FM PU forms 31.58%, while 27.78% of the last year students are financially literate.

3.4 Financial Literacy and the Prospect Theory

The last hypothesis concentrates on the FL level by means of practical tasks that focus on a confirmation, or rejection of this hypothesis which emerges from prospect theory. Prospect principles of individuals' behavior in uncertain conditions influence their financial skills and financial decision-making. Responds and behavior of respondents according to expected utilities was primarily evaluated when formulating questions of prospect theory. Consequently, Pearson's Chi-squared test was used in order to verify dependency between FL and respondent's decision-making according to rational strategy. Hypothesis H4 was formulated in order to verify possible connection between FL and rational and/or prospect choice in financial decision-making of respondents, i.e. if financially literate students make decisions rationally in uncertain conditions according to expected utility theory. The absolute majority of all respondents (56.86%) chose the second, less advantageous alternative that is related to principles of prospect theory. The prospect theory states that people choose those alternatives which mean a change of their wealth from relative point of view, i.e. rational strategy was not taken into consideration.

Testing characteristics gets higher p-value than selected level of significance 0.05. Thus, it may be supposed that there is no dependency between the level of FL and financial decision-making process of respondents according to rational strategy. It is also confirmed by Phi and Cramer's coefficients' association with low value of 0.082. Test showed a correlation of FL with decision-making process based on prospect theory and thus the hypothesis H4 assumption was confirmed. Totally, only 141 financially literate respondents (out of 304 financially skillful) applied rational strategy in answering questions during risky and uncertain conditions.

3.5 Aggregate Results – Logistic Regression

In this subchapter we present results of Logistic regression. Dependent variable is financial literacy, or financial illiteracy of students. Dependant variable takes value 1 in case when subject is financially literate and value 0 in case, when subject is financially illiterate. The level of students' FL was evaluated

by 7 specific and practical (mathematical) tasks with multiple choices and one correct answer intent on basic financial skills. Financial literate subject is person who answered correctly at least 4 practical queries. Explanatory variables are all variables that were treated separately in four hypothesis presented above. Explanatory variables are:

Gender	nominal variable reaching two categories: males and females;
Education	categorical variable acquiring six categories: high school, business academy, hotel academy, secondary technical school, conservatory, bachelor degree;
Year of study	categorical variable acquiring two values: first year of study and fifth (final) year on study at the university;
University	categorical variable indicating in which institution one is studying. Here we consider three faculties: The Faculty of Economics at the Technical University of Kosice, The Faculty of National Economy at the University of Economics in Bratislava and The Faculty of Management of University of Prešov in Prešov.

Prospect Theory – scale variables indicating the number of rationally answered questions possible range is from 0 to 9.

Tab. 3 contains results of logistic regression. Model as a whole is statistically

significant and correctly predicts 62.3% of cases. Tab. 3 indicates, that expect variables Gender and Prospect theory, no other variable has a statistically significant impact on financial literacy. Concerning Gender we can conclude that being a male increase the odds of being financially literate by 63.7% compared to females, and while controlling for other variables in the regression. On significance level $\alpha = 0.1$, we can consider Prospect theory as a statistically significant variable. Here the conclusion is following: one-unit increase in Prospect theory score increase the odds of being financially literate by 1 percent.

As it was already mentioned, the research material made by Skapa and Vémola was used in researching respondents' behavior in conditions of uncertainty and risk, while 3 identical questions formulated by prof. Lusardi were applied in devising research FL questions. Comparison of evaluations (Tab. 4) was realized due to availability of other researches' evaluations that use identical research material. The evaluation results for Slovakia represent the total evaluation of all faculties that participated in the research. In Tab. 4 we compare our findings with surveys from USA and Germany. Here we have to make a point, that subjects of USA and German surveys were not only students of economic faculties but random adults. Moreover, surveys in USA and Germany were done in 2009 and 2011 and from this time a lot of effort was made to improve the awareness about financial literacy

Tab. 3: Logistic regression

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Gender(1)	.493	.197	6.258	1	.012	1.637
	School			2.174	4	.704	
	Grammar School(1)	21.762	40,194.847	.000	1	1.000	2.826E9
	Business Secondary School(2)	22.147	40,194.847	.000	1	1.000	4.152E9
	Hotel academy(3)	22.013	40,194.847	.000	1	1.000	3.632E9
	Secondary vocational school(4)	21.622	40,194.847	.000	1	1.000	2.456E9
	Year(1)	21.531	40,194.847	.000	1	1.000	2.243E9
	Prospect Theory	.089	.054	2.673	1	.102	1.093
Constant	6.559	12,058.454	.000	1	1.000	705.910	

Source: own processing

Tab. 4: Research Questions of FL

Selected Resarch FL Questions (authors Lusardi et al., 2009; Bucher-Koenen & Lusardi, 2011)	Evaluation Results of FL in %*		
	USA**	DE***	SR****
Suppose you had €100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow: more than €102, exactly €102, less than €102?	80.0	82.0	90.5
Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?	54.0	78.0	81.65
Do you think that the following statement is true or false? Buying a single company stock usually provides a safer return than a stock mutual fund.	47.0	62.0	58.67

Source: own processing

Note: * Percentage rate of correctly answered questions; ** Lusardi et al. (2009). Sample of 7,138 respondents in USA; *** Bucher-Koenen and Lusardi (2011). Sample of 1,117 respondents in Germany; **** own research, total evaluation per three faculties (EKF TUKE, FM PU, NHF EUBA).

by authorities. Thus, we are not able to state, whether better results in Slovak Republic are caused by fact that our survey was done on sample of economic students, or due the time span.

Tab. 4 provides positive results of this research (from SR specifically). In two cases, these results exceed research assessments from the USA and DE. Despite significant interpretation limitations (determined by heterogeneity of research sample, different frequencies of respondents, periods of research realization, etc.) this comparable output is significant for initiatives that lead to formation of internationally comparable platform of efficient benchmark in FL, improvement or research methods, search for new tools, means and monitoring, and/or evaluation mechanisms. Ultimately, it supports cooperation among international research teams and creation of a qualitative database for further development of scientific research in this area.

It is also very important to present limitations of the Slovak survey besides the given comparable limitations of the research. One of research limits was uneven representation of respondents at researched faculties. Three selected faculties of economy were examined due to procedural and technical difficulties of a given survey. This focus limits the outputs' generalization of the whole Slovak population. Respondents could react differently in real life

when solving financial issues (decision-making) as in research in terms of research questions, which focus on prospect theory. This could be considered as the main issue of this research. Also all respondents had available only hypothetical options that were connected with high profit, not real funds. In this context, there is a high probability that respondents could risk more than in real life.

4. Discussion

This study deals with analysis and evaluation of current FL level of students at economic faculties. The FL was researched from the following point of views: different sex, the highest level of present attained education, completion of given study program and difference in behavior in risky and uncertain conditions. These factors represented a core of this research also in other authors from different countries. In two (EKF TUKE and NHF EUBA) out of three chosen faculties, there was evident statistically significant dependency in researching FL of students in terms of sex. This dependency proved that male respondents had higher financial knowledge than female respondents. Similar difference in FL, in terms of sex, where a probability that women answered the questions of FL correctly was lower, was presented by authors of foreign studies (Lusardi et al., 2010; Rooij et al., 2007; Bucher-Koenen et al., 2014). However, this connection was not

confirmed in testing FM PU, and also statistical significant difference between students' sexes and FL level was not found that supports results of studies, such as Bongini et al. (2015) and others (Bucher-Koenen & Lusardi, 2011; Atkinson & Messy, 2012).

In this research, the respondents who attended Grammar School and Business Secondary School, i.e. students of the first-year reached a comparable level of FL without any obvious deviations. Hypothesis rejection is supported by present Slovak high school assessments, while first places are occupied by Grammar School. Grammar School reached higher score than Business Secondary School in the last few years (INEKO, 2015). It may be stated that a present assumption of high-quality education in terms of economy and finances may not be always true.

Statistically significant dependency was evident in students of EKF TUKE and NHF EUBA. It means that financial knowledge depends on attained level of study at the university. This fact confirms hypothesis H3. Similarly, it confirmed that students in their last year of studies that focus on economy, or financial processes have significantly higher level of FL than those students who did not complete these kinds of studies, or they are at the beginning of their studies. It also may be presumed that EKF TUKE and NHF EUBA give appropriate economic education for their students that improves their financial skills and knowledge after its attainment. On the other hand, this hypothesis was not confirmed at FM PU. Statistically significant dependency was not confirmed among categorical variables, i.e. between attained level of FL and level of study, but according to the results, the first-year students reached higher FL than students in their last year of studies. Probably, it is related to many facts, especially to subjects' profiles of given study programs that focus more on non-financial aspects, and also students' approach to obtaining information of financial processes from different external sources, as well. It is estimated that a low rate of subjects that focus on finances decreases students' motivation of financial processes. This discrepancy may be explained by insufficient sample that is related to respondents of the last year in comparison to respondents of the first-year, as well as its low return (there were only 36 questionnaires returned out of total 100). In conclusion,

hypothesis H4 assumptions is confirmed when FL level of students is connected to their financial decision-making in terms of risk and uncertainty. Most of all tested students chose less advantageous option in prospect theory questions. It may be assumed that students were making decisions on the basis of prospect theory principles which presume that people choose those alternatives that evoke change of their wealth in relative terms. These choices reject rational theory. This theory presumes that people make decisions based on maximization of expected utility, in this case absolute terms. The findings are also supported by Kahneman and Tversky (1979) studies, which states that people are willing to settle for reasonable value for profit even they would be able to get more. Thus people are more cautious or even risk-averse in case of possible loss according to Tversky and Kahneman (1981).

Conclusion

At present, FL belongs to important qualities of an individual that help him/her in adequate financial decision-making in regular financial situations. FL and its development improve in younger generation. Its level is different in various countries.

The principal aim of this study was a comparison of FL within chosen economic faculties in Slovakia. The analysis focuses on FL comparison at "input and output", i.e. between first-year and last-year students of relevant study programs from procedural point of view. The written form of questionnaire was chosen due to given research targets and form of data collection. Many facts were found out by realizing survey, while using questionnaire that focused on financial behavior and respondents' skills of selected economic faculties. Statistically significant dependency of FL level on respondents' sex was confirmed in two out of three faculties. Male respondents reached higher FL than female ones. Hypothesis of better high school education of economy at Business Secondary School was rejected in quantitative research of FL in first-year students at the universities. It was determined that a rate of financially literate respondents who attended Grammar School or Business Secondary School is comparable. Subsequently, the level of FL was analyzed among the students of the first-year (Bachelor study program) and students in their last year (last-year students at

Master study program) based on the hypothesis which supposes FL increase by completing economic study programs. In EKF TUKE and NHF EUBA was evident statistically significant dependency of FL level on study level when students of the last year at given faculty had higher financial skills. This hypothesis was not confirmed at FM PU as first-year students had higher level of FL as opposed to those who are completing their studies. The rate of financially illiterate first-year students at FM PU was lower than the rate of financially literate students in their last year of studies. In the end of research, the analysis focused on a relation between FL level and financial decision-making of respondents in terms of risk and uncertainty that emerge from prospect theory principles. However, no statistically significant dependency was confirmed that would result in the fact that financially literate respondents make decisions rationally, i.e. according to maximum expected utility. On the other hand, the assumption and validity of risk-averse theory in case of possible loss presented by Kahneman and Tversky (1979; 1981) were confirmed.

The results of presented research provide important information for policy makers who should reflect on present status of this issue in Slovakia, reveal research potential in adjusting FL monitoring system within Slovakia and develop a platform for efficient concepts of financial education in Slovakia. Last but not least, research initiation in FL area and its support from state will also support formation of international comparison platform and development of international standards in financial education field.

Research presented in this paper was supported by VEGA 1/0726/14.

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FINANCIAL LITERACY OF STUDENTS IN CHOSEN UNIVERSITIES – RESEARCH PLATFORM FOR REGULATORY PROCESSES OF EDUCATIONAL SYSTEM IN SLOVAKIA

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The main goal of this paper is to compare the level of financial literacy among the selected faculties of economics in Slovakia and to elaborate a comparison of financial literacy level at both input and output level, i.e. between the university students at the beginning of their Bachelor study and the university students who are in the final stage of their Master study. In addition, we want to analyze the level of financial literacy by means of practical tasks aimed at confirmation or rejection of the prospect theory principles. Concerning methods we statistically process our primary data which were collected through the survey 2015/2016 from Slovak University of economics in Košice, Prešov and Bratislava. Inter alia, we analyze correlative data dependence of selected variables. The survey is focused also on financial behavior of respondents and their skills in terms of financial literacy concept. Last but not least, we deal with features of respondents' financial decision making under the conditions of risk and uncertainty. At first, we show that statistically significant dependency of FL level on respondents' sex does exist. Male respondents reached higher FL than female ones. Hypothesis of better high school education of economy at Business Secondary School was rejected, rate of financially literate respondents who attended Grammar School or Business Secondary School is comparable. Subsequently, students in their last year of studies at EKf TUKE and NHF EUBA have significantly higher level of FL than those students who are at the beginning of their studies. Contrary, at FM PU the rate of financially illiterate first-year students was lower than the rate of financially literate students in their last year of studies. We found out a correlation of FL with decision-making based on prospect theory. The results of the presented research provide important information for policy makers who should reflect on present status of this issue in Slovakia.

Key Words: *Financial literacy, financial education, prospect theory.*

JEL Classification: *I21, I22, I25.*

DOI: *10.15240/tul/001/2018-1-012*