

## Changing Students' Financial Knowledge through Different Levels of Economic University Education

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Doi:10.5901/jesr.2014.v4n4p150

### Abstract

Most authors agree that financial, i.e. economic education is a key determinant of the level of financial knowledge and, consequently, that knowledge is a key component of prosperous and efficient financial behaviour. Relevant researches, carried out at the national and international level, have indicated a relatively low level of financial knowledge of economics students. Based on these postulates, this paper aims to analyse the level of financial knowledge of the population of the economic university students and intends to evaluate the relationship of financial knowledge with their obtained educational level. The research results serve to confirm the hypothesis: higher level of economic education implies higher financial knowledge of students. The survey was conducted at the Department of Economics and Business Economics of the University of Dubrovnik. It lasted for two months (May - June 2012) and involved 233 economics students. Students were classified in five groups according to their level of education. The main results indicate that the financial knowledge of economics students increases over time as a result of a positive influence of economic university education.

**Keywords:** financial knowledge; educational level; economics students;

### 1. Introduction

This paper presents a conceptual framework for understanding the importance of financial knowledge and, at the same time, conducts an empirical analysis of the level of financial knowledge of the economic university students. It demonstrates the dependence between the level of financial knowledge and the level of economic university education. The final goal of this paper is to highlight the importance of the economic component in the process of university education.

Although the study of students' financial stress, literacy, knowledge and behaviour is a relatively recent phenomenon (Grable, Law, & Kaus, 2012), there are various definitions of the concept of financial literacy and knowledge which try to explain the mentioned terms and to determine a unique method of measuring the degree of literacy and knowledge as well. But, in spite of all theoretical considerations, the elements and structure of the concept still remain unclear. Therefore, we are going to describe financial literacy along two dimensions: conceptual and operational one. Consequently, the main conceptual and operational ideas and implications, which are theoretically and practically important, will be provided in the first part of this paper.

One of the critical characteristics of the concept of students' literacy lies in the fact that students haven't got life or business experience which could participate in creating their financial behaviour. Therefore, there is no other component in the creation of their attitudes besides the knowledge gained from the educational process. Thus, for research purposes, students' financial literacy will be observed solely through the level of their financial knowledge.

Previous studies, which focused on student population, demonstrated an insufficient level of their financial knowledge due to the lack of systematic education on personal finances. At the same time, students of economics showed better results in terms of the level of financial literacy already during the first year of their studies. Therefore, most authors propose an implementation of mandatory additional financial education during secondary education, so that individuals, whether they continue their university education or not, can make responsible financial decisions.

The intention of the research conducted in the paper is to obtain some important insights into the level of financial knowledge of economic university students at a local level. The study has been designed towards finding an answer whether the introduction of basic economic education is an appropriate tool for achieving the required financial

capabilities.

Our central viewpoint is that economic education, especially at the university level, would shape and deepen the students' capabilities to participate in a more prosperous and efficient way in future business and personal life.

## 2. A Theoretical Framework for Financial Knowledge

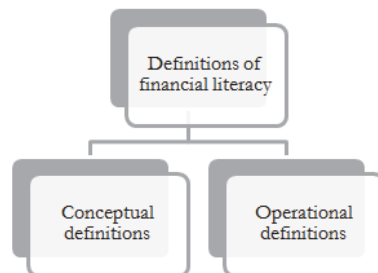
Financial knowledge is a completely new area of economic research. Namely, conventional microeconomic approach starts from rational and well-informed consumers who can always make optimal financial decisions, but does not include financial knowledge in the analysis. However, the changing profile of economic environment (e.g. risky returns on investment), changes in consumer preferences (e.g. risk aversion) and global financial crisis that began in 2008 pointed out the importance of financial knowledge when it comes to reaching informed, sound and optimal financial decision. Due to these reasons, the concept of financial knowledge has experienced a significant progress in its use during this century.

Despite a short period of studying the mentioned concept, scientific literature abounds with a series of definitions, and the terms financial literacy, financial knowledge and financial education are often used interchangeably in literature and popular media (Huston, 2010). It is the lack of distinction between the mentioned concepts that imposed the necessity of conceptual definition of financial knowledge.

Since financial knowledge is a component of financial literacy, the definition of the latter will be dealt with first and the definition of financial knowledge will be derived from it by an analytical method. Literature mentions numerous definitions of financial literacy which can be divided into two groups:

- conceptual definitions
- operational definitions (Figure 1).

**Figure 1.** Definitions of financial literacy



**Source:** Created by the authors.

Conceptual definitions explain abstract concepts in concrete terms and the most common component in conceptual definitions of financial literacy is, in fact, financial knowledge. Based on a review of research studies since 2000, many conceptual definitions of financial literacy fall into five categories: (1) knowledge of financial concepts, (2) ability to communicate about financial concepts, (3) aptitude in managing personal finances, (4) skill in making appropriate financial decisions and (5) confidence in planning effectively for future financial needs (Remund, 2010). Below are presented several of the most interesting conceptual definitions.

Hilgert, Hogarth & Beverley (2003) simply define financial literacy as *financial knowledge*. Moore (2003) differs from the usual viewpoints and identifies financial literacy with practical experience concluding that it provides the basis for knowledge and literacy. According to him, individuals are considered financially literate if they are competent and can demonstrate they *have used the knowledge* they have learned and that literacy is obtained through practical *experience* and active *integration of knowledge*.

Conceptual definition of financial literacy, formulated by Lusardi (2008), should be pointed out as particularly interesting since it defines financial literacy as the *knowledge* of basic financial concepts, such as the working of interest compounding, the difference between nominal and real values and the basics of risk diversification.

Certain authors, as Mandell (2007) and Lusardi and Tufano (2009), accentuate judgement and decision-making as basic aspects in light of which the whole financial literacy should be observed. So, Mandell (2007) conceptually defines financial literacy as the *ability* to evaluate new and complex financial instruments and *make informed judgements* in both

choices of instruments and the extent of use that would be in their own best long-term interests.

Lusardi and Tufano (2009) focus on debt literacy, a component of financial literacy, defining it as “the *ability to make simple decisions* regarding debt contracts, in particular how one *applies basic knowledge* about interest compounding, measured in the context of everyday financial choices.”

All previously stated conceptual definitions represent an assumption for the formulation of one, all encompassing, consistent conceptual definition which says that *financial literacy is a measure of the degree to which one understands key financial concepts and possesses the ability and confidence to manage personal finances through appropriate, short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic conditions* (Remund, 2010).

Unlike conceptual definitions, operational ones convert these concrete terms into measurable criteria, and basically represent strategies for measuring financial literacy. As would be expected from the diversity of conceptual definitions, the methods used to measure financial literacy also vary quite substantially (Hung, Parker, & Yoong, 2009). By reviewing former research, it has been determined that, during the measurement of financial literacy, most of the research use a questionnaire consisting of questions about actual knowledge, while several surveys include questions requiring from people to indicate their self-assessed knowledge. From the aspect of this research, a special attention is given to the research measuring actual knowledge in a way that it is assessed by correct responses to the posed questions. The mentioned strategy can be found in the research of Volpe, Chen, & Pavlicko (1996), Chen & Volpe (1998), Volpe, Kotek, & Chen (2002), Hilgert, Hogarth, & Beverley (2003), Mandell (2007), Lusardi & Mitchell (2007) and Lusardi & Mitchell, (2008).

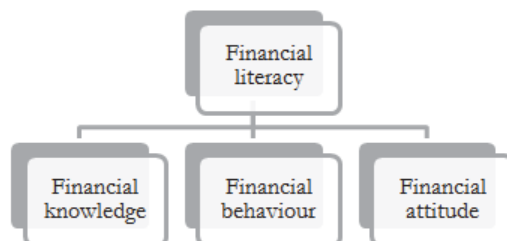
The pointed out review of operational definitions of financial literacy cannot be complete without the OECD (2012) definition, according to which: *Financial literacy is knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life.*

All highlighted definitions imply a general conclusion that financial literacy is not merely knowledge measurement since it *reflects the totality of attitudes and behaviours which enable an individual to make individual financial decisions* (Chardin, 2011). So the most correct way to determine the instance of financial literacy is by the combination of three dimensions (Figure 2):

- financial knowledge,
- financial behaviour and
- financial attitude.

The first dimension, financial knowledge dimension, includes basic knowledge of key financial concepts. The dimension of financial behaviour suggests that the way in which a person behaves will have a significant impact on their financial wellbeing. And finally, financial attitudes and preferences are considered to be an important element of financial literacy. If people have a rather negative attitude towards saving for their future, for example, it is argued that they will be less inclined to undertake such behaviour (Atkinson & Messy, 2012).

**Figure 2.** Components of financial literacy



**Source:** Created by the authors.

In line with the mentioned three-dimensional conceptualisation of financial literacy and for the needs of financial literacy research across 14 countries at different stages of development on four continents, Atkinson i Messy (2012) have formulated an operational definition which says: *Financial literacy is a combination of awareness, knowledge, skill,*

*attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing.* The suggested operational definition of financial literacy has additionally emphasised the fact that financial knowledge is only a component of financial literacy. However, since student population is usually characterised by limited financial behaviour and financial attitude, and for the purposes of conducting the following research, financial knowledge will be equalized with the concept of financial literacy.

### 3. Review of Related Financial Knowledge Research

Listed hereafter is a short review of the chosen existing empirical research (Table 1). Chen and Volpe surveyed 924 students from 13 American colleges with a questionnaire. Research results revealed an inadequate level of financial knowledge of student population. Authors point out that the obtained results are a direct consequence of the subjects' age, who in the early stages of their lives rarely face financial issues regarding general knowledge on finances, savings, debt and insurance, and a systematic lack of education on personal finances within college curricula. The research furthermore ascertained that surveyed students have worse knowledge about investments, where poorer results were achieved by women and persons under 30 with insufficient work experience.

Jones (2005) completed a survey on 216 students, also via a printed questionnaire. The survey revealed a low level of financial literacy among students, mostly in the segment of knowledge on credit concepts. Thus, the author suggests additional education on credit concepts prior to college education to enable students, at the beginning of their study, to reach informed decisions and avoid excessive debt which affects their current and future financial security.

**Table 1.** Review of the most significant research on students' financial literacy

Author(s) (the year of research)	Number of surveyed students	Research results
Chen & Volpe (1998)	924 college students	Participants answer about 53% of questions correctly
Jones (2005)	216 freshmen students	Most students knew little about credit
Mandell (2008)	1.030 full-time college students	Literacy increases with each year of college.
Lusardi (2010)	7417 responses	Financial Literacy is low, especially among young adults.

**Source:** Created by the authors.

Mandel (2008) and Jump\$art Coalition conducted a national research to measure financial literacy of young adults in America, with senior high schools students and college students participating in the research. According to the research results, college students showed a higher level of financial literacy than the high school students, with financial literacy increasing with each college year.

Lusardi et al. (2010) proved that less than one third of young people possess basic knowledge on interest rates, inflation and risks by a national survey on the sample of 7417 young persons between 12 and 17 years of age. At the same time, a significant correlation between financial literacy and socio-demographic characteristics of the surveyed subjects was pointed out.

The OECD International Network on Financial Education (INFE) developed a comprehensive questionnaire used to assess financial literacy of population from different countries in the world. The questionnaire was designed in a way that financial literacy was assessed by an interview or telephone survey. The questions used in the survey include financial knowledge, behaviour and attitudes and important socio-demographic details on the surveyed subjects.

On the basis of such a formulated questionnaire, Atkinson and Messy (2012) conducted an extensive pilot research in 14 countries on 4 continents. The research was published as an OECD publication named "*Measuring Financial Literacy: Results of the OECD/International Network on Financial Education (INFE) Pilot Study*". Research results demonstrated not only insufficient financial knowledge of a significant part of the population in all countries participating in the research, but also a presence of significant room for improvement of financial behaviour and a great difference in the attitudes of the surveyed subjects.

As a result of facts that has been pointed out, it can be concluded that the extensive research of financial knowledge level, i.e. financial literacy of the population, is a key component in determining the success of national strategies of financial education, because research results enable education policy makers to identify possible shortcomings in the existing educational system and to design optimal solutions.

In the Republic of Croatia in 2011, "Banka" magazine conducted a research on the Faculty of Economics in Zagreb where 728 students participated and the questionnaire consisted of 12 questions on investments and financial literacy. A

great number of students demonstrated mistrust in financial institutions, although Croatian financial system overcame the world financial crisis without huge shocks. It is interesting that students are mostly dissatisfied with their own knowledge on finances, which is testified by the fact that they graded their financial knowledge with a 3 and they are even more critical towards an average Croatian citizen whose knowledge they gave a 2 (Martinović, 2012). Precisely these results instigated the research whose results are to be presented hereafter.

#### 4. Research Design

As it has been indicated in the previous part of this paper, through the review of existing research, there is a problem of low financial literacy of economics students at a national and international level, which is in collision with theoretical postulates that economic education stimulates financial literacy. Therefore we decide to conduct this phenomenon at a local level.

The instrument used in this study was a Questionnaire developed by OECD within International Network on Financial Education (INFE) Pilot Study (Atkinson & Messy, 2012). The mentioned questionnaire was used to measure financial knowledge, behaviour and attitude all around the world and only a part related to financial knowledge was downloaded and adapted. The structure of the adapted and used questionnaire consisted of two parts. The first part included basic demographic questions on gender, year of study, study course and obtained financial education. The second part included eight knowledge questions covering the main spectrum of financial issues: time value of money, calculation of interest, compound interest, real interest rate, inflation, risk, diversification and exchange-rate.

A study sample consisted of 233 students enrolled in economics and business economics at the University of Dubrovnik. The research was conducted in the period of May - June 2012 comprising 53% of total students of the Department, implying that the data gathered in this research may be considered representative in order to reach conclusions on the level of the whole target group. For analysis purposes, students were divided into five main groups according to their class rank, and their structure is shown in table 2. The number of students corresponds to the target group with all its characteristics, thus achieving adequate representativeness in this area as well.

**Table 2.** The structure of students participating in the research

Characteristics of the Students		Frequency (N)	Percent (%)	
Gender	Male	68	29,18	
	Female	165	70,82	
	<b>Total</b>	<b>233</b>	<b>100,0</b>	
Class rank	Undergraduate studies	1 <sup>st</sup> year	60	25,75
		2 <sup>nd</sup> year	64	27,47
		3 <sup>rd</sup> year	42	18,03
	Graduate studies	1 <sup>st</sup> year	36	15,45
		2 <sup>nd</sup> year	31	13,30
	<b>Total</b>	<b>233</b>	<b>100,00</b>	
Study course	Economics	25	10,73	
	Tourism	74	31,76	
	International Trade	45	19,31	
	Marketing	89	38,20	
	<b>Total</b>	<b>233</b>	<b>100,00</b>	
Number of Completed Financial Disciplines during the Study	Neither one	81	34,76	
	One course	62	26,61	
	Two courses	54	23,18	
	Three courses	23	9,87	
	Four courses	12	5,15	
	Five courses	1	0,43	
<b>Total</b>	<b>233</b>	<b>100,00</b>		

**Source:** Created by the authors according to the empirical research data.

The data gathered by the questionnaire were processed with the statistical package for social sciences SPSS version 20

for Windows, in order to test the validity of the proposed main hypothesis:

H1: Financial knowledge is determined by conducted formal education.

The formulated basic hypothesis will be proven by two auxiliary hypotheses, namely that:

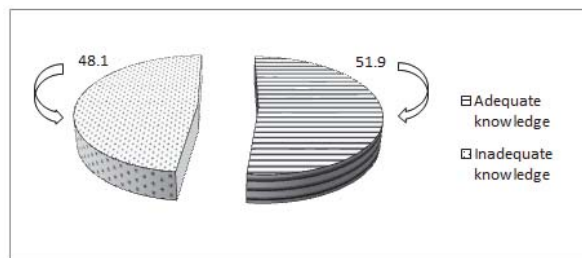
H2: Financial knowledge depends on class rank.

H3: Financial knowledge depends on the number of completed financial disciplines during the educational process.

### 5. A Survey of Findings and Results

Using eight closed-ended questions, either multiple-choice questions or questions with "correct-incorrect" responses, a real level of students' financial knowledge was defined. Since all the questions were related to basic knowledge of financial categories and concepts, the OECD scale of knowledge assessment was accepted. According to this scale, the individuals who responded correctly to six or more questions were placed in the group of students with adequate financial knowledge while others, with less than six correct responses, were placed in the group with inadequate financial knowledge. The following chart shows the structure of students according to the described criteria.

Figure 3. Level of students' knowledge according to correct responses



Source: Created by the authors according to the empirical research data.

In order to prove the first auxiliary hypothesis (H2), the existence of dependence between class rank and the level of financial knowledge was examined. Descriptive statistics proves that, at the beginning of their education, the share of students with inadequate financial knowledge was around 68% while, at the end of their studies, the share was reduced to 25% of population.

Statistical analysis results, shown in Table 3, imply that with the level of significance at 5% and degrees of freedom 4, there is a significant correlation between class rank and the level of financial knowledge. Thus, the first auxiliary hypothesis has been accepted. Hence, data analysis confirms that **the level of financial knowledge depends on class rank.**

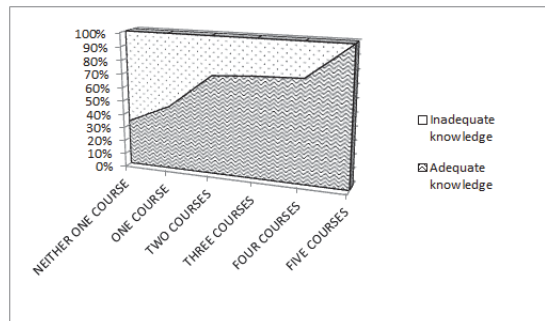
Table 3. Research results of the interdependence between financial knowledge and class rank

	Value	df	Asymp. Sig.
Pearson Chi-Square	41,125	4	,000

Source: Created by the authors according to the empirical research data.

In order to prove the second auxiliary hypothesis (H3), the existence of dependence between a number of completed financial disciplines during the educational process and the level of financial knowledge was examined. With the use of descriptive analysis, it can be noticed that the level of financial knowledge increases with the number of completed/passed financial courses, as is shown in Figure 4.

**Figure 4.** Level of students' knowledge according to the number of completed financial courses



**Source:** Created by the authors according to the empirical research data.

Statistical analysis proves that, with the significance level of 5% and degrees of freedom 5, there is a statistically significant correlation between the number of completed financial disciplines and the level of financial knowledge, thus making the acceptance of the second auxiliary hypothesis possible. The data presented in Table 4 imply that the **level of financial knowledge depends on the number of completed financial disciplines during the educational process.**

**Table 4.** Research results of the interdependence between financial knowledge and the number of completed financial disciplines during the educational process

	Value	df	Asymp. Sig.
Pearson Chi-Square	28,881	5	,000

**Source:** Created by the authors according to the empirical research data

Considering that the research and the analysis of obtained data prove both auxiliary hypotheses, it can be concluded that the main hypothesis of this paper has been confirmed:

**Financial knowledge is determined by completed formal education.**

As the research carried out on the sample of students of the Department of Economics and Business Economics of the University of Dubrovnik shows, during their university economic education, students become capable of responsible financial behaviour and understanding of everyday financial issues. Therefore, the claim that high school seniors are unprepared to deal with finances when they graduate (Manton, English, Avard, & Walker, 2006) cannot be applied, at least not to the study of economics in Dubrovnik.

**6. Concluding Remarks**

In recent years, the number of subjects interested in the promotion of financial knowledge of the whole, and particularly student, population has increased rapidly. The reasons lie in the fact that financial literacy among student population has dual effect: their financial situation during their studies affect the ability to complete a college degree, while financial decisions during their studies have important influence on financial situation after it. Each person has to understand their financial obligations and take necessary actions in order to provide the resources necessary for life, i.e. to improve their own financial position.

As it is stated in the paper, the essential precondition of successful financial behaviour is the possession of a certain level of financial knowledge.

Former research focused on student population showed an unsatisfactory level of financial knowledge. More precisely, student population in average has a low level of financial knowledge, which then improves in later years of studying. A low level of financial knowledge of freshmen students is particularly interesting, so many authors propose mandatory financial education during early stages of education. What is particularly worrying are the results for the Republic of Croatia which demonstrated that economics students are dissatisfied with their own financial knowledge and grade their financial literacy with a 3.

This study endeavoured to find out if financial knowledge depends on the level of economic university education. Based on the outcome of an empirical analysis, we come to the conclusion that economic education has a positive impact on the level of financial knowledge. More precisely, the level of financial knowledge depends not only on the class rank, but on the number of completed financial courses as well.

Thus, it is conclusive that the introduction of a basic economic course into each type of university educational programme will contribute to the enhancement of financial literacy of respective population, which will be reflected in the improvement of the financial status of the whole economy.

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