

Impact of Financial Education on Financial Literacy Levels and diversity of Investment Choices

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Abstract

In this study, we have investigated the different levels of financial education and its impact on financial literacy and self-confidence about this topic. In addition, the impact of financial literacy on the financial instruments diversity of choice has been identified. Research has been conducted on the number of 329 students of Muğla Sıtkı Koçman Universitys Business Administration Department by using survey technique. The resulting data was analyzed by using logistic regression in the model. Findings showed that financial literacy increases the diversity of financial instruments that preferred and also financial education is a factor that increases the financial literacy level which is determined by finance literature. Besides, one of the main finding of the study is the inverse relation between number of finance course taken and confidence about finance literacy.

Key words: *Financial Literacy, Education, Portfolio Diversity*
JEL Classification : *A 20, A 13, D 14*

1. Introduction

As a result of technological advances financial markets and financial products has experienced rapid change and variation over time. Generally, free access to information about financial assets and firms in a very short time has revealed the importance of the interpretive abilities of investors and depositors. The parties who have information about the diversified products that meets their needs and making the necessary valuations for these products are very important aspects of the decision making process. Raw data processing to gain the qualifications to respond to the needs of decision-making is only possible by the financial literacy skills of individuals.

Financial literacy, in general, is defined as the ability to make informed and effective decisions about issues related to use of money and management of its derivatives (Noctor et al., 1992 cited in Marcolin and Abraham, 2006: 2).

In today's liberalized economy, the financial decisions that related to the lives of individuals pass their decision making authority from state organs to individuals. However, diversifying and developing financial markets like capital and derivative markets make it more difficult for individuals to give decisions about their future plans. Besides the basic financial issues such as inflation and interest calculations, advanced questions about operational structure of financial markets, bond, t-bills, stocks and asset diversification is used to measure the level of financial literacy levels of individuals. Individuals with a certain level of financial literacy, invest heavily on stocks which is one of the complex and long term capital market instruments. It is also known that, investors with high level of financial literacy who participates in stock markets benefits from higher premiums, reduces information and transaction costs and also succeeds to reduce risk by creating a more diversified portfolio (Guiso and Japelli, 2008:13). Besides that, it is a known fact that individuals with low financial literacy levels relied heavily on the advice of people who around them while making decisions about their investment (Rooij, Lusardi and Alessie, 2007: 2).

Some differences occur in individuals wealth level according to their financial literacy status whether it is high or low. Because of this reason, individuals with higher financial literacy level are directing their funds to stock markets with higher premium. In addition, financial literacy identified as lower among some group of individuals such as women, some minority groups among society and people with low level of education. This situation that leads household to a failure in retirement planning, lack of participation in the stock market and bad debt behavior may resolved with basic level of training that given in finance (Lusardi, 2008: 19).

The proportion of domestic depositors investing in the capital market in Turkey remains low against foreign investors. Lack of direct investment of the household savings to the capital

markets adversely affects many stakeholders at the micro and macro scale and hinders the efficient operation of financial markets especially including capital markets. Signification of the behavioral patterns of depositors, identification and improvement of the factors that lead to investment will increase participation patterns of stock markets in Turkey. In this sense, it is important to determine the financial literacy level and its severity as a non economic factor on stock market preferences for directing these individuals to participate in the stock markets. In this context, the theoretical framework of this study is financial literacy factor influencing the financial preferences of individuals. In the following section, literature on the subject was given. Then, established model and the findings of analyzes performed under this model was mentioned in the methodology section of the study.

2. Literature

Financial literacy and its relation with financial decision making in general and stock market participation, pension fund management, asset diversification and evaluation of the self financial literacy evaluation in particular is available in the literature. Many research are realized especially with regard to financial literacy by Lusardi and Mitchell (2006, 2007, 2008, 2011a, 2011b, 2012).

Recent studies show that even the economically developed countries have low level of financial literacy. In addition, participants in these studies identified as reasonably overconfident about financial issues. It is known that individuals with low level of financial literacy and excessive confidence in financial matters are more prone to make wrong financial decisions which may cause high losses. One of the factors that cause to this condition is macro level experiences of the individuals. For example, according to a study conducted in Italy, which participants struggling for many years with the inflation problem have more self-esteem against issues related to inflation (Lusardi and Mitchell, 2011: 9).

Apart from these studies, Lusardi and Mitchell (2007, 2008, 2009) respectively determined that; financial planning and financial literacy has a strong impact on the wealth of individuals, women are in the bottom line social demographic factor according to their financial planning and literacy proficiency and individuals have higher level of financial literacy whether they took finance and economics related courses in their educational lives.

On the other hand, individuals who participate in the stock markets are also experiencing a positive development about their financial literacy levels. In other words, there is an interaction between participation in the stock market and financial literacy. It is determined that financial literacy levels among students who do not prefer to participate in the stock markets is very low. Lack of sufficient and compulsory financial courses is shown to be main factor of this situation at universities (Chen and Volpe, 1998:107).

Indirect investments in the stock market are held by mutual funds. Investment funds are divided into two groups according to their passive or active assets management strategies. Investors with high level of financial literacy prefer passive investment funds due to their lower commission rates. In addition, investors with low level of financial literacy directs their funds to traditional investment channels which results as paying more commission and taxes. Besides, high levels of financial literacy investor reduce investment costs by using channels such as internet and telephone (Müller and Weber, 2010: 126).

There is no consensus reached on a financial literacy proficiency level in studies of the literature. However, the level of financial literacy in the majority of the studies determined as inadequate. German household's financial literacy level identified as high as an exception to the studies conducted in the literature. But the study used only three questions (basic inflation, interest and risk calculations) of financial literacy scale developed by Lusardi (2007) shows the weakness of the study (Koenen, 2008: 30).

It is known that students who study business and economic at university level show more interest to the financial matters and have greater level of financial literacy than other fields like natural sciences and literature (Chen and Volpe, 2002). However, according to criticism made by study of Beal and Delpachitra (2003: 77), financial education is insufficient for financial decisions later in life and real market investment experience is proposed to increase the financial literacy levels of individuals (Beal and Delpachitra, 2003: 77). Considering that how financial literacy differentiation occurs according to demographic factors, it was found that younger individuals are more likely to be trained in financial literacy, but this tendency decreases over the years. However, Mandell (2006) indicated that financial education received in schools do not influence financial literacy levels in later stages of life. Accordingly, it was determined that there was no difference between student's financial literacy levels after seven years of high school graduation whether they took the finance courses or not. Instead, Mandell and Klein (2009: 21) reported that interactive applications such as "stock market game" which is carried out with virtual money and real market data on the internet increases significantly financial literacy levels of students.

Rooij et al. (2007) have conducted a study on the sample of Netherlands household over the internet and have examined the relationship between financial literacy and preference of stock market participation. They used two different modules to measure the level of financial literacy including simple and advanced level financial questions. Basic level of financial literacy module consists of five questions and it is stated that level of financial literacy increases with the education. Also, positive and significant relationship has been identified between financial literacy level and stock market participation preferences.

Lusardi and Mitchell (2006) have carried out a survey to individuals over 50 years of age residing in the United States and more than 60 percent of respondents stated that they do not want to invest in risky assets. In addition, the level of financial literacy in the study was determined to remain at very low levels for elderly participants. Index was created to measure the financial literacy which includes three basic finance questions in the study. There is a significantly positive correlation (70 percent) between answers to interest calculation and return ratios under the impact of inflation. Only 19 percent of the participants have a financial plan as a natural consequence of this situation.

In an another study by Rooij et al. (2012) indicates there is a positive correlation between financial literacy level and wealth accumulation according to the results of a survey administered to over 1500 households in Netherlands. And households who have greater financial literacy levels direct their savings to the stock markets with higher premium is indicated as the cause of this finding.

Chen and Volpe (1998) conducted a study on 924 university student in the United State of America and find out that average of correct answers to the questions was 53 percent. This ratio decrease in the lower grades and other departments of the university than business administration.

Although, nearly all of the studies in the area of financial literacy is formed a financial literacy index from correct answers of participants, still it is not known which level indicates proficiency for financial literacy. In addition, the target group for survey and interview conducted mostly on university students in these studies. The concept of financial literacy consists of financial information and financial decision-making practice. Therefore, a well organized financial literacy scale can be used to predict financial decision making and outcomes of these decisions.

3. Methodology

3.1 Objectives, Scope and Limitations

The main purpose of this study is to examine the financial literacy variable which is one of the factors that motivates households to prefer stock market participation in the context of university students in Muğla province. Stock market participation is important because of the long term nature of capital markets.

Non economic factors such as sociability, confidence, political affiliation, life satisfaction and religious beliefs strongly affect risk perception of individuals. Risk perception of investors is known as one of the strongest factors which direct them to invest in the stock market. However, only financial literacy variable has been identified without taking into account the perception of risk, economic expectations and trust factors and comparison of stock market participation preferences are made.

Related to main objective stated above, sub-objective of the study is to determine the financial literacy level of business students at different grade level. Financial literacy is social equipment that necessary for using wide variety of financial instrument in sophisticated financial markets effectively and efficiently. Economically developed countries are building up a financial education strategies in order to increase the low financial literacy levels of household. It is important to determine financial literacy level of individual to planning, implementing and controlling a proper financial education policy for preparing them to constantly and rapidly developing financial markets.

This research is based on the student of Business Administration Depertmant of Muğla Sıtkı Koçman University. University students being choosed as a target group of the study in order to determine financial literacy level differences of student according to their grade level. We could not reach all of these students and simple random sampling was applied. Students from other fields of University are excluded from scope of the research, because they are not taking a detailed financial education. The number of students in the study sample was 329.

Participation is performed in two different ways in the stock markets including direct and indirect participation as described in the literature. Direct participation in the stock markets is carried out by capital investors buying shares of companies that offered its shares to public through a brokerage firms and then become shareholders of the company. In addition to that, indirect participation in the stock market is carried out in the form of investing hedge funds, mutual funds and pension funds that managed by professional managers and might include equity assets. This study only considered direct participation preferences in the stock market tends to measure it in a more objective manner.

3.2 Model and Dataset

The research model used in the study was created in order to test the hypothesis which indicates whether financial literacy has impact on the investment decisions of individuals. First, logistic regression technique applied on the dataset and it is aimed to determine whether this financial literacy factor influence stock market participation preferences of individuals. Then, impact of graduate level on self confidence about financial literacy which affects investment decisions determined by using the same method.

In this research, we are measuring the impact of financial literacy which is defined a non economic factor in the literature on stock market participation preference. Dependent variable gets the value of “1” if participant wants to participate in the stock market and “0” otherwise and this causes the dependent variable to consider as dummy variable and requires to test the model with logistic regression.

Basic model for the affect of financial literacy on stock market participation preferences (SMPP) is as follows;

$$SMPP = a + \beta_1 X_{FL} + \varepsilon \quad (1)$$

Also, financial literacy level has an impact on the level of utilization of different financial products (Nunoo and Andoh, 2012: 2). Simple linear regression analysis was used to reveal the relationship between the level of financial literacy and willingness to use different financial instruments (DFI). Sub-model established to test this relationship is as follows;

$$DFI = a + \beta_1 X_{FL} + \varepsilon \quad (2)$$

Financial literacy index created to measure the financial literacy levels subjectively were recruited from Lusardi and Mitchell (2006) which includes basic financial questions and results for this scale compared with likert scale that participants assesses them subjectively. The differences between these two different scales show financial literacy confidence of participants. Model that measures the financial literacy confidence level is as follows:

$$\text{Overconfidence: Subjective FL} - \text{Objective FL} > 0$$

$$\text{Under confidence: Subjective FL} - \text{Objective FL} < 0 \quad (3)$$

Grade levels impact on financial literacy was tested by using independent sample one-way ANOVAs. We determined also whether there is a difference between genders to the questions given by using independent sample t-test analysis.

Survey technique was used to obtain dataset that will be analyzed in the study. The survey of the study consists of three main parts. Questions were asked in the first part of survey aimed at identifying the demographic features of the participants.

Questions were asked in order to determine financial literacy levels of participants in the second section of survey. Index is created consists of basic and advanced level finance questions in the objective measurement of financial literacy. In addition, likert-type scale was used to measure subjective financial literacy level of participant to examine whether there is overconfidence or not. Financial literacy over/under confidence is composed of the differences between the objective and subjective measurements.

In the last part of survey investment preferences were asked in case of having some savings. Financial instruments in this part vary from short term money market instruments to long term capital market instruments. Gold which might classify as commodity in some definitions and foreign exchange were added to the scale to increase the significance of relationship between variables.

A pilot survey conducted in this study and stock market participation and finance literacy related questions were asked to the sample group. Stock market participation among observed group is very low that it is also the true nature of stock market participation in Turkey.

Given the focus of this research, affect of other non-economic or economic factors cannot be observed or uncontrollable in this research is inevitable weakness of the study. In addition,

inherent related errors of data collection method which is survey in this study should be considered.

3.3 Hypotheses

Financial literacy level, relation between financial literacy level and participation preferences to the different financial markets and the relationship between grade level and financial literacy is the main concern of this study. Hypotheses are used in this context;

H₁: There are differences in participant's financial literacy level according to grade level of students.

H₂: There is a relationship between financial literacy level of participants and participation preference of different financial market instruments.

H₃: There is a relationship between grade levels and confidence on financial literacy of participants.

3.4 Findings

Statistically significant data belongs to the demographic variables used in the study are given below. Accordingly, we conducted the survey on a total of 329 students including 55 percent of women and 45 percent of men. According to grade levels, 34 percent of participant is final grade students while 19 percent of the students 3rd level grade students. And approximately half of the participant's grade level is at first and second degree. Respondents of 34 percent indicated that they can invest to the stocks as financial instrument. In addition, participants reported that they can invest a maximum of two financial instruments.

The hypothesis of this study is designed to detect the differences and relationship between variables. Financial literacy level difference between participants according to their grade levels is examined by One-way ANOVA test. Table 1 shows how financial literacy level of students differentiate according to their grade levels and H₁ hypothesis was confirmed.

Table 1: Affect of Grade on Financial Literacy Level

	Sum of Squares	df	Mean Square	F	p
Between Groups	184,579	3	61,526	40,882	,000
Within Groups	489,117	325	1,505		
Total	673,696	328			

Scheffe test was used to determine the cause of differences between the groups. The results of this test are given in Table 2.

Table 2: Signification of Differences with Scheffe Test

(I) Degree	Grade(J) Degree	Grade	Mean Diff. (I-J)	β	p	95% Confidence Interval	
						Lower Bound	Upper Bound
1,00	2,00		,15123	,19711	,899	-,4027	,7052
	3,00		-1,42615*	,20994	,000	-2,0161	-,8362
	4,00		-1,41635*	,18232	,000	-1,9287	-,9040
2,00	1,00		-,15123	,19711	,899	-,7052	,4027
	3,00		-1,57738*	,20814	,000	-2,1623	-,9925
	4,00		-1,56759*	,18024	,000	-2,0741	-1,0611
3,00	1,00		1,42615*	,20994	,000	,8362	2,0161
	2,00		1,57738*	,20814	,000	,9925	2,1623
	4,00		,00979	,19419	1,000	-,5359	,5555
4,00	1,00		1,41635*	,18232	,000	,9040	1,9287
	2,00		1,56759*	,18024	,000	1,0611	2,0741
	3,00		-,00979	,19419	1,000	-,5555	,5359

*. The mean difference is significant at the 0.05 level

It is determined in scheffe test that differences concentrate especially on the third grade and fourth grade student's financial literacy levels. Accordingly, differences found in one-way ANOVA test meaningful when we compared the financial education status of students in different grades. In other words, third and fourth grade classes have been found to be more ascendant than the other classes about financial literacy and this ascendancy is significant in size in terms of statistics.

Another hypothesis of the study (H_2), established to determine how and to what extent the financial literacy of participants financial literacy levels affect the financial instrument utilization preferences. In other words, number of financial instrument holding preference is expected to increase with financial literacy levels. Linear regression analysis performed to show size and direction of relationship between variables was given in Table 3 below.

Table 3: Relationship between Financial Literacy Level and Number of Financial Instrument Preference

Model	Standardized Coefficients		Non-Standardized Coefficients	t	p
	B	Std. Error	Beta		
(Constant)	,875	,143		6,100	,000
Financial Literacy	,361	,043	,423	8,435	,000

R²: 0,176
a. Dependent Variable: Financial Instruments

According to findings, financial literacy of participants explains approximately 18 percent of number of financial instrument holding preference ($R^2 = 0,176$). According to ANOVA test, Table 4 shows that our model is significant at the 95 percent confidence interval ($p = 0,000$).

Table 4: ANOVA Test for Financial Literacy Level and Number of Financial Instrument Preference

Sum of Squares	df	Mean Squares	F	p
87,869	1	87,869	71,152	,000
403,827	327	1,235		
491,696	328			

According to these tests, model is as follows;

$$Y_{DFI} = ,875 + ,361 X_{FL} \quad (4)$$

According to the established model, one-unit increase in financial literacy level of participants increases the number of preferred financial instrument as 0.361 units. This finding shows that H₂ is also confirmed.

Another hypothesis of the study is overconfidence level of students about financial literacy. The difference between two different financial literacy scales gives participants overconfidence level about this topic. Chi-square analysis has revealed that there is a direct and significant relationship between risk perception and over confidence ($X^2 = ,659$; $sd = 99$; $p < 0,0001$). Because of overconfidence, individuals evaluate their knowledge more and predict risks as low. This affects the dependent variable indirectly through risk perception.

Descriptive statistics indicates that 36.1 percent of the participants overestimate their financial literacy levels. In other words, 36.1 percent of those students have overconfidence about their financial literacy levels. ANOVA test revealed that there is a significant relationship between grade and overconfidence on financial literacy of participant at 1 percent significance level ($F = 38,818$; $sd = 1$; $p = 0,000$).

Direction of the relationship between education grade and degree of confidence on financial literacy was examined by simple linear regression analysis. The results of the regression analysis are shown in Table 5 below.

Table 5: Relationship between Financial Literacy Overconfidence and Grade Year

Model	Standardized Coefficients		Non-Standardized Coefficients	t	p
	B	Std. Hata	Beta		
(Constant)	1,039	,219		4,738	,000
Grade Year	-,473	,076	-,326	-6,230	,000

Dependent Variable: Overconfidence on Financial Literacy

Regression analysis showed that there is a negative correlation between grade years and overconfidence on financial literacy. In other words, the participant's confidence level on financial literacy is declining when participants pass to upper grade degree. According to this, H₃ is confirmed and negative relationships between variables are determined.

4. Conclusions

Individual investor's reluctance to participate or abstinence from stock markets constitutes an important field of research in the literature. This is an emergent case in Turkey, because of very low participation rate (approximately 1.5 percent of population) in the stock market. Stock market participation studies mostly focused on economic factors in the literature. However, many social and behavioral factors have been identified as non-economic

and effective determinants of stock market participation. Financial literacy level of individuals is one of these factors.

Studies in the literature indicates that financial literacy level of individuals will provide to better management of their savings, reduce transaction and information costs of financial markets. Although there is not a consensus on required financial literacy level, it is determined in this study that financial literacy level increases with education received.

In addition, the relationship between financial literacy level and number of financial instrument preference is determined. Accordingly, number of preferred financial instruments diversified as much as financial literacy level of individual increases. This situation can be perceived as an indication of building up a portfolio in a classical sense. Also, stock market participation increases with financial literacy which confirms the literature.

One of the factors that influence financial decision making of individuals is overconfidence level on the related subject. Overconfident individuals evaluate the risk less and relying on knowledge they have during the decision making. An inverse relationship was detected between the level of financial literacy and overconfidence.

Scarcity of investors among participants and addressing the investment preferences of these participants should be considered as limits of the study. It is recommended to consider the different classes of the society for better identification of financial literacy levels in the possible future studies. Additionally, international comparisons may be carried out on individual investors of different cultures and countries.

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