

**Literacia Financeira entre os Estudantes do Ensino Superior:
Uma Evidência Empírica para o Caso Português.**
Financial Literacy Among the Higher Education Students:
Empirical Evidence for the Portuguese Case.

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ABSTRACT

Financial literacy is a topic that has lately gained acuity, mainly in the aftermath of the global financial crisis. This work is committed with two main goals: to measure the level of financial literacy of the Portuguese students attending higher education programs; and to clarify the issues that may explain the level of financial literacy previously obtained. Concerning methodology, a questionnaire was sent to the national higher education institutions. The questions were drawn to establish the profile, the financial experience and the financial knowledge of the respondents. In this study, 550 answers were received, which highlighted a «Good» level of financial literacy within the sample. Age and the level of household income of the respondents are positively correlated with the financial literacy of respondents. It was also observed that individuals attending programs in business sciences tend to reveal a higher level of financial literacy, as well as do the women in the sample. The latter result is not in line with the current understanding widespread in the literature.

Keywords: Financial literacy, financial education, higher education students, interest rate, savings.

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1. INTRODUCTION¹

Individuals are called upon to take increasingly complex financial decisions, thus having the skills to make adequate choices is required. In fact, financial literacy held by individuals should be faced as a major factor in managing their daily lives, with considerable consequences for the collective wellbeing.

In the path of a growing concern on this research topic, several studies have been conducted both by academicians and financial entities, in order to assess the level of financial literacy within some particular populations. Financial literacy must be seen as a broader concept comparing to financial knowledge, because the former involves two dimensions: the *understanding* of financial issues and the *use* that individuals make of this knowledge through the decision making processes (Huston, 2010).

Mandell & Klein (2009) and Grifoni & Messy (2012) state that individuals with more financial skills can make better decisions, and their aggregate behavior will have a positive effect on the global economy. The study of Chen & Volpe (1998), held in a set of American higher education organisms, allowed to observe how the extent of the level of students' financial literacy is related to the characteristics of their own. They found that individuals with higher financial literacy levels are males aged less than 30 years old, trained in the economic and financial field, but with little experience in the labor market. For the Portuguese case, the *Relatório de Supervisão Comportamental 2010*, issued by the Portuguese central bank, recognizes that the context in which the individuals take their financial decisions has suffered considerable changes, particularly in recent years (Banco de Portugal, 2011a). Nevertheless, despite the increasing of the citizen's education level, their financial expertise still remains very low. This financial illiteracy is particularly obvious when it comes to deal with banking system and financial services providers.

¹ The article is a summary of the master dissertation in Financial Analysis discussed at Instituto Superior de Contabilidade e Administração de Coimbra, presented by the first author and supervised by the second author.

This article has two main goals: first, we intend to assess the level of financial literacy among the Portuguese higher education students; furthermore, the determinants of the level of financial literacy previously obtained are also identified.

The launching of a questionnaire seemed to be the most adequate methodology for those purposes. So, this questionnaire was composed by 19 questions, distributed in 3 groups, aimed to identify the profile, the financial experience and the financial knowledge of respondents, respectively, and it was sent to the email addresses of the majority of the Portuguese higher education institutions.

This article provides an update of the previous research concerning the Portuguese case, rightfully focused on a particular segment of the population. First, the individuals of our sample will play an important role in the future, because they will be more likely to perform relevant tasks in the national economy. Moreover, our results help to design effective programs targeted to improve the financial literacy among the young Portuguese population.

The article is outlined as follows. At section 2, the previous most relevant contributions in literature related to financial literacy are considered. Section 3 explains how the data were collected, while section 4 is focused on the methodology. Section 5 reports the results that were obtained, and finally section 6 presents conclusions.

2. LITERATURE REVIEW

Prior studies in the literature explain financial literacy based on a wide range of factors usually named as determinants. Some of these determinants are related with individual characteristics, such as age, gender, income level, education or academic degree, whilst others are more specific, depending on the population profile, such as professional skills, political choices or attendance at a prestigious school (Koshal, Gupta Goyal & Choudhary, 2008).

The most relevant contributions on the following explanatory factors are discussed on this article, namely: income level, education level, education area, age, gender, experience in the labor market, motivation, and a residual topic of other factors.

Income level

Previous literature reveals a positive relationship between financial literacy and the income level of individuals (Lusardi & Mitchell, 2007; Monticone, 2010). In these sense,

there is a strong level of financial literacy among families whose income is higher than average.

According to Monticone (2010), individuals with higher income are more likely to invest in the acquisition of knowledge, mainly financial knowledge. In the same work, the needs to strengthen financial education and to promote the greater access to financial advice are both emphasized.

Education level

Coleman (2003) recognized a positive relationship between the level of financial knowledge and individuals' education level, confirming the idea that the risks of investments increase with the training of their holders. Instead, in other studies this factor is not relevant (Halek & Eisenhauer, 2001; Hallahan, Faff & McKenzie, 2004).

Training area

According to Wood & Doyle (2002), individuals graduated in finance and economics are more capable to make good financial decisions than others with a degree in other areas. In the same sense, Pang (2010) promoted an experience involving the fulfillment of a course in finance and economics. At the end, students that had completed the course revealed highest levels of financial literacy than the others. Nevertheless, there is no unanimity in the literature on this issue. In fact, Koshal, Gupta, Goyal & Choudhary (2008) shows the contrary, just because students with economic knowledge had less financial literacy levels than the others.

Age

There is no consensus in the literature about the relevance of age as a determinant of financial literacy.

Grimes, Millea & Thomas (2010) state that individuals learn along their lives, so age must be considered as an explanatory variable of financial literacy. Instead, Wood & Doyle (2002) conclude that age has little relevance in financial literacy, whilst Walstad & Rebeck (2002) argue that older people use to have greater financial knowledge comparing to younger people, just because they had more time to learn and opportunity to gain knowledge.

Monticone (2010) notes that the age profile as for financial knowledge is concern is concave shaped or U-inverted. In line with the results formerly proposed by Walstad & Rebeck (2002), this author establishes that middle aged adults have more financial

knowledge than the younger and the older as well. Both studies conclude that literacy increases until the age of 40-60 years and since then starts to decline.

Lusardi, Mitchell & Curto (2009) are focused on the assessment of financial literacy and financial sophistication among people over 55 years. According to the research carried out thitherto, they conclude that this particular demographic group is one of the groups with lowest financial skills.

Gender

Gender is one of the most scrutinized determinants of financial literacy. Many works pointed out the difference between the financial literacy of female and male gender, and this difference tends to favor the male gender. Among those studies, Atkinson, McKay, Kempson & Collard (2006) provided insight that the level of financial literacy is higher in men compared to women. Also for Wang (2011) men tend to be more informed and active in managing their capital, and they are also considered more capable than women in this domain. Worthington (2006) provides the same evidence in a research based on a sample of Australian individuals.

We also like to mention the study of Lusardi & Mitchell (2008). This study is aimed to evaluate the women skills to plan their savings, namely to provide income for the elderly, and it is supported in two statements: women use to have a greater average life expectancy than men, but also have shorter experiences on the labor market and receive lower salaries. Lusardi & Mitchell (2008) conclude that women reveal very low financial literacy levels, whilst they do not express concern about pension planning. However, women with higher levels of financial education are more likely to succeed in planning their financial future.

Experience in the labor market

The experience in the labor market is other of the topics considered in financial literacy research.

Koshal, Gupta, Goyal & Choudhary (2008) concluded that financial literacy gains tend to be improved whilst the experience in labor market.

Monticone (2010) showed that the professional status also affects the financial literacy. Usually, active individuals correctly answer more questions related to financial issues than the unemployed or the individuals who are out of labor market.

Motivation

Some other studies observe how the financial illiteracy can be linked to other factors inherent to the culture or even to the idiosyncrasies of oneself. Mandell & Klein (2007) argued that low levels of financial literacy can be explained by the lack of motivation to learn or to retain new insights. This factor will become accurate if we take into consideration the continuous emergence of new financial products and services and the rapid development of financial markets. Thus, it is necessary that individuals are predisposed to educate themselves towards to achieve better results. The determinant of motivation is often connected with the studies carried out in the context of behavior finance theory.

Other factors

Less frequently, other factors are considered in the explanation of financial literacy which are shortly described next: the marital status, in the sense that widows and widowers tend to perform worst, whilst married are those who reveal better results (Monticone, 2010); the residence area, with the individuals living in regions with better education organisms presenting better levels of financial literacy as well (Lusardi & Mitchell, 2009); mathematical knowledge aptitudes also have a significant positive effect on financial literacy (Jappelli, 2010).

3. DATA

Data were collected through a survey, whose structure and purposes will be discussed at the next section. This survey is a mix between the questionnaire used by the Portuguese central bank and launched at 2010 to the Portuguese population as a whole, and other questionnaires available in the literature.

The questionnaire was sent by email to 152 higher education institutions across the country with the request to deliver it to the email addresses of the current students of each institution. This sending took place at the 29th August 2014 and the answers were collected until the 1st October 2014.

The reply form was previously tested within a group of 5 persons.

It was not possible to know how many students received this reply form. Even so, according to the “thumb rule”, we established that a minimum level of 500 answers was required. The answers were collected at the GoogleDocs platform and the anonymity of

respondents was absolutely assured. In this context, only the completely filled reply forms were considered as a valid answer.

The questionnaire was replied by 550 Portuguese higher education students, widespread all over the Portuguese territory. The responses were not recorded by higher education institutions, but even by the district where they are located. Within the 550 responses, 102 were from Coimbra, followed by the Autonomous Region of Madeira, with 99 responses. The smaller records came from Setúbal (5), Beja (3) and Portalegre (3). This can be explained by reasons of proximity although the results obtained in the Autonomous Region of Madeira do not fit this argument.

4. METHODOLOGY

We used a questionnaire composed by three groups of questions which is an extended and adapted version of the one used by the Portuguese central bank at 2010 (Banco de Portugal, 2011b).

The first group of questions intends to draw the respondents' profile, and deal with the following topics: year of birth, gender, country, level of education, training area, experience in the labor market, family dimension, and household income.

The second group of questions is aimed to assess the financial and economic experience of our sample, and is composed of four multiple choice questions concerning the financial products and services hold by the respondents, their credit experiences, saving habits, and budget management.

The third group of questions pretends to check financial knowledge of individuals. These questions are about the concepts of Euribor and spread, the relationship between interest rate and inflation rate, the risk level of some financial products, and the calculation of the return of a very simple financial application (compound interest *versus* simple interest). So that the first goal of our research can be accomplished, we define a plain financial literacy measure based on the correct answers to the five questions contained in the last group of the questionnaire. Necessarily, the greater the number of correct answers, the highest the level of financial literacy. Thus, the level of financial literacy varies in a scale from 0 to 5.

These criteria are disclosed on the table below.

Table 1 – Level of financial literacy

Number of correct answers	Grade	Level of financial literacy
0	0	Very bad
1	1	Bad
2	2	Reasonable
3	3	Good
4	4	Very good
5	5	Excellent

Source: Authors, according to the criteria described in the text (2014).

Furthermore, towards to accomplish the second goal of this work, namely to scrutinize the relevance of each one of the financial literacy determinants, the hypotheses to be tested are the following:

Hypothesis 1: The monthly household income is positively related to the level of financial literacy;

Hypothesis 2: To be skilled in economics or finance is positively related to the level of financial literacy;

Hypothesis 3: Parents qualifications are crucial to explain the level of financial literacy;

Hypothesis 4: Age is crucial to explain the level of financial literacy;

Hypothesis 5: Gender is crucial to explain the level of financial literacy;

Hypothesis 6: Having some kind of loans is positively related to the level of financial literacy;

Hypothesis 7: Having some type of savings is positively related to the level of financial literacy.

5. RESULTS

Adding all the results obtained in our survey, we calculate the level of financial literacy, based on the previously proposed rating scale. The following results were obtained:

Table 2 – Financial literacy of higher education Portuguese students

Grade	Level of financial literacy	Number of respondents	%
0	Very bad	0	0%
1	Bad	126	23%
2	Reasonable	158	29%
3	Good	171	31%
4	Very good	95	17%
5	Excellent	0	0%
Total		550	100%

Source: Survey results (2014).

Given these results, we conclude that students attending higher education programs in Portugal have a reasonable knowledge about financial issues. This can be seen by the fact that the more frequent level of financial literacy is the level «Good», even with 48% of respondents (31% + 17%) occupying the «Good» and «Very Good» levels. However, we found there is no report at extreme levels, in other words, none of the respondents got the levels «Very bad» or «Excellent».

Using SPSS, the previously defined hypothesises are tested next.

1 – Monthly household income

H₀: Financial literacy level does not depend on the monthly household income

Vs.

H₁: Financial literacy level depends on the monthly household income

Table 3 – ANOVA for monthly household income

ANOVA					
Level	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	10,534	4	2,634	2,536	,039
Within Groups	566,057	545	1,039		
Total	576,591	549			

Source: SPSS results (2014).

F statistics is about 2,536 and the significance is 0,039 (<5%). So, we reject H₀ and accept H₁, in other words, income level is determinant to explain financial literacy of individuals

and both variables are positively correlated. This result is in line with many studies previously carried out (Monticone, 2010; Lusardi & Mitchell, 2007).

One of the questions in the survey was on the number of household persons, which allowed us to conclude that none of the respondents lived alone, and to identify a medium-sized of the households about 4,35.

2 – Training in economics or finance

H_0 : Financial literacy level does not depend on the training area

Vs.

H_1 : Financial literacy level depends on the training area

Table 4 – ANOVA for training area

ANOVA					
Level					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17,074	2	8,537	8,346	,000
Within Groups	559,517	547	1,023		
Total	576,591	549			

Source: SPSS results (2014).

F statistics is 8,346 and significance is 0,000 (<5%). One must reject H_0 and accept H_1 , so the training area is relevant when it comes to explain the level of financial literacy of individuals.

Accordingly to prior research (Wood & Doyle, 2002; Walstad & Rebeck, 2002; Koshal, Gupta, Goyal & Choudhary, 2008), higher education Portuguese students which attend programs in economic sciences are more able to deal with financial matters.

3 – Parents' educational attainment

H_0 : Financial literacy does not depend on the educational attainment of the father

Vs.

H_1 : Financial literacy depends on the educational attainment of the father

Table 5.a – ANOVA for educational attainment of the father

ANOVA					
Level					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2,602	4	,650	,618	,650
Within Groups	573,989	545	1,053		
Total	576,591	549			

Source: SPSS results (2014).

$F = 0,618$ and significance is $0,650$, therefore $> 5\%$. In this case, H_0 must be accepted, whereby in our sample financial literacy does not depend on the fathers' educational attainment.

H_0 : Financial literacy does not depend on the educational attainment of the mother

Vs.

H_1 : Financial literacy depends on the educational attainment of the mother

Table 5.b – ANOVA for educational attainment of the mother

ANOVA					
Level					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15,305	4	3,826	3,715	,005
Within Groups	561,286	545	1,030		
Total	576,591	549			

Source: SPSS results (2014).

$F = 3,715$ and $p\text{-value} = 0,005 (< 5\%)$, therefore H_0 is rejected instead H_1 is accepted. Looking at these results, one should conclude that the mother's educational attainment is relevant to explain financial literacy of the individuals; whilst father's educational attainment is not.

This seems to be paradoxical, but can be explained by the fact that only in the latest generation the level of the education is quite similar for both genders. Concerning the individuals in our sample, have an educated mother can work as a differentiating factor in their skills.

4 – Age

H₀: Financial literacy level does not depend on age

Vs.

H₁: Financial literacy level depends on age

Table 6 – ANOVA for age

ANOVA					
Level					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	49,463	3	16,488	17,078	,000
Within Groups	527,127	546	,965		
Total	576,591	549			

Source: SPSS results (2014).

F statistics is 17,078 and significance is 0,000, so H₀ must be rejected and take into consideration that age is a determinant of financial culture.

In fact, our results confirm the conclusions of prior studies, in other words, the level of financial literacy depends on the age of individuals. The contributions of Walstad & Rebeck (2002) and Monticone (2010) must not be forgotten. As they stated the level of financial literacy is highest for the individuals aged more than 30 years. In our research, the question of age included four response intervals: between 18 and 23 years old; between 24 and 29 years old; between 30 and 35 years old; and over 36 years old. The group that revealed the highest level of financial literacy were the individuals between 30 and 35, followed by those 36 years old.

5 - Gender

H₀: Financial literacy does not depend on gender

Vs.

H₁: Financial literacy level depends on gender

Table 7 – ANOVA for gender

ANOVA					
Level					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	9,093	1	9,093	8,780	,003
Within Groups	567,498	548	1,036		
Total	576,591	549			

Source: SPSS results (2014).

$F = 8,780$ and significance is about $0,003 (< 5\%)$, that implies to reject H_0 and to accept H_1 . In this sense, gender is a determinant to explain financial literacy of individuals. However, previous studies in literature, such as Atkinson, McKay, Kempson, & Collard (2006), Wang (2011) and Worthington (2006), tend to conclude that males have a better financial culture than females. In our sample, results show the opposite.

In fact, among the 550 respondents 339 (62%) were females and 211 (38%) were males. Women answered correctly to a wider range of questions than men. Looking at the criteria previously defined, 36% of women have a «Good» level of financial literacy and 20% of them have a «Very good» level of financial literacy. Meanwhile, 28% of men have a «Good» level of financial literacy and only 16% have a «Very good» level of financial literacy.

6 – Credit experience

H_0 : Financial literacy does not depend on prior credit experiences

Vs.

H_1 : Financial literacy depends on prior credit experiences

Table 8 – ANOVA for credit experiences

ANOVA					
Level					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	24,990	2	12,495	12,368	,000
Within Groups	553,634	548	1,010		
Total	578,624	550			

Source: SPSS results (2014).

$F = 12,368$ and significance is $0,000 (< 5\%)$. H_0 is rejected and H_1 is accepted, and one may conclude that the existence of prior experience as credit clients increases the financial literacy of individuals. In our sample, 146 individuals had, at least once, a bank credit. Concerning the type of credit, the following possibilities were considered on the survey: consumption and purchase credits; car loans; credit cards; traded overdraft facilities; and others. The highest number of responses was recorded in the residual category «Others», so one may consider that higher education Portuguese students use bank credits to finance their studies. This issue must be included and more scrutinized in future research.

7 – Savings

H_0 : Financial literacy does not depend on the saving habits

Vs.

H_1 : Financial literacy depends on the saving habits

Table 9 – ANOVA for saving habits

ANOVA					
Level					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8,862	1	8,862	8,554	,004
Within Groups	567,729	548	1,036		
Total	576,591	549			

Source: SPSS results (2014).

Attending to the statistics on the table above, $F = 8,554$ and significance is $0,004 (< 5\%)$. Thus, H_0 is rejected, and H_1 is accepted, confirming that the existence of savings is relevant to explain financial literacy level. Moreover, in our sample, individuals with savings are also those with more financial literacy levels.

Table 10 – Multiple Linear Regression Model Results

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,350 ^a	,122	,109	,967

a. Predictors: (Constant), Savings, Age, Training Area, Gender, Ed.At.Father, Income, Credits, Ed.At.Mother

b. Dependent Variable: Level

Source: SPSS results (2014).

Looking at the results in the table above, one may conclude that only 12, 2% of the variation of the financial literacy level is explained by the variables considered in the model. Thus 87,8% of that variation is not explained by those variables. However, some statistical tests were conducted (KMO test, VIF method and Durbin-Watson test).

Table 11 – ANOVA for Multiple Linear Regression Model

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	72,314	8	9,039	9,698	,000 ^b
	Residual	504,277	541	,932		
	Total	576,591	549			

a. Dependent Variable: Level

b. Predictors: (Constant), Savings, Age, Training Area, Gender, Ed.At.Father, Income, Credits, Ed.At.Mother

Source: SPSS results (2014).

F test on the table 11 ($F = 9,698$) measures the overall significance of the regression. As the *p-value* is 0.000 ($< 0,05$), variables in the model explain the financial literacy of the students considered in our sample.

Table 12 – Model coefficients

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,970	,415		7,149	,000
	Income	,082	,048	,077	1,695	,091
	Training area	-,133	,061	-,090	-2,168	,031
	Ed.At.Father	-,052	,061	-,044	-,855	,393
	Ed.At.Mother	,039	,065	,031	,601	,548
	Age	,232	,051	,218	4,517	,000
	Gender	-,169	,088	-,080	-1,912	,056
	Credits	-,176	,109	-,076	-1,617	,107
	Savings	-,223	,092	-,100	-2,413	,016

Source: SPSS results (2014).

The relevance of each variable in the explanation of financial literacy level is disclosed on table 12. Accordingly with these results, age is the most significant variable in financial literacy understanding.

6. CONCLUSIONS

The article has as main objectives to assess the level of financial literacy among the higher education students in Portugal and also to scrutinize the determinants that sustain that level.

First, taking into consideration the methodology proposed at section 4, we classify the level of financial literacy in our population as «Good».

In addition, looking at the determinants of financial literacy, our results are generally in line with prior results in the literature. The only exception is gender since females have a higher level of financial literacy than males.

Finally, as it was stressed before, the level of education of the mother is determinant for financial literacy, but this is not the case of the father. This can be explained because not all mothers of the individuals in the sample entered the labour market, so that their training can be a differentiating factor in their children education.

Nevertheless, this work also encompasses some weaknesses which must be considered in further research. First, financial literacy is measured through a very simple way; this measure should be improved, even weighted by the social and economic profile of respondents. Second, despite the «Good» level of financial literacy, another kind of

methodology should be adopted, namely interviews, in order to clarify all the determinants related to financial literacy. Third, the outlines to promote financial literacy must also be discussed. In this sense, two key points can be remarked: financial sector play an undeniable role in the improvement of financial literacy, whereby supervisors have to check the quality and the accuracy of the information provided by these institutions; financial issues must be included in school curricula since the basic level.

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