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Financial Literacy: Financial Knowledge of Portuguese Individuals

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Master in Management

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I would like to dedicate this dissertation to my family.

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To my parents, thank you for putting my needs always above yours. I would never be standing where I am without your continuous support.

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Resumo

A literacia financeira já não é uma escolha, mas sim uma obrigação. As pessoas devem estar por dentro das diversas situações financeiras que afetam seu dia a dia, caso contrário, podem ser prejudicadas pelas suas próprias decisões. A crescente complexidade dos mercados financeiros está a dar origem a produtos financeiros cada vez mais sofisticados, portanto, os indivíduos devem possuir o conhecimento adequado para enfrentar essas inúmeras alternativas.

Neste contexto, o presente estudo pretende avaliar a literacia financeira dos portugueses em algumas áreas consideradas cruciais para o seu bem-estar financeiro. É importante compreender os hábitos de poupança e investimento das pessoas, identificar os seus conhecimentos sobre crédito e taxas de juro, mas também perceber a sua tolerância ao risco nos seus investimentos.

Em 2020 (janeiro-abril), foi realizada um questionário com o intuito de obter as evidências necessárias para o desenvolvimento deste estudo. As perguntas abrangeram diversos tópicos permitindo obter dados de várias áreas financeiras, como por exemplo a poupança, títulos ou taxas de juros. A amostra é composta por 240 portugueses, com idades compreendidas entre os 18 e os 69 anos.

Os resultados mostram que o nível de conhecimento efetivo dos participantes é inferior a 50%, o que representa claramente um resultado inadequado. Esses resultados estão em linha com estudos anteriores, portanto, embora tenham sido implementados programas específicos com foco na melhoria do conhecimento financeiro dos indivíduos, estes ainda não possuem a literacia financeira que lhes é exigida.

Palavras-chave: Literacia Financeira, Poupança, Investimento, Conhecimento Financeiro

Classificação JEL: I22 - Educação Financeira; D14 - Finanças Pessoais

Abstract

Financial literacy is no longer a choice, but an obligation. People must be aware of the several financial issues that affect their daily lives, otherwise, they can be harmed by their decisions. The growing complexity of financial markets is originating more sophisticated financial products, therefore, individuals must possess the adequate knowledge to face these innumerous alternatives.

In this context, this study aims to assess the financial literacy of Portuguese individuals, about some areas considered crucial for their financial well-being. It is important to understand the savings and investing habits of individuals, to identify their knowledge regarding credit and interest rates, as well as to identify their risk tolerance towards investing.

A survey was conducted in 2020 (January – April), in order to obtain the necessary evidence for the study. The questions included several topics, thus enabling to collect data from different financial areas, such as savings, securities or interest rates. The sample comprises 240 Portuguese individuals, from 18 to 69 years old.

The results show that the level of effective knowledge of participants is below 50%, which clearly represents an inadequate outcome. These results are in line with previous studies, thus meaning that even though there have been implemented specific programs focused on incrementing the financial knowledge of individuals, they still do not possess the necessary financial literacy that is required.

Keywords: Financial Literacy, Savings, Investment, Financial Knowledge

JEL Classification: I22 - Financial Education; D14 – Personal Finance

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1 Introduction

This introduction is divided in the following: Motivation, relevance and subject delimitation; objectives; research methodology questions and, for last, the structure of the dissertation is presented.

1.1 Motivation, Relevance and Subject Delimitation

Saving and investing are two concepts that play a crucial role in dictating the level of financial well-being of individuals. High levels of financial literacy are a requisite if people want to explore the maximum potential of these concepts. This literacy goes way beyond the knowledge regarding financial issues, since it also affects the decision making of individuals. These choices are going to have a direct influence in the individual's future.

There are already ongoing programs aiming at enhancing the levels of financial literacy of individuals. The purpose of such initiatives is to educate the population in financial matters, since it can help them to face periods of financial instability that occur especially during economic crises and recessions. The development of better saving habits is seen as a strong hedge against all these situations.

Financial literacy is an emerging topic in Portugal, since the first study of the Portuguese individuals was performed solely in 2011 by Banco de Portugal. Afterwards, in 2016, the Conselho Nacional de Supervisores Financeiros has done another research to find out the evolution throughout those 5 years. The results obtained from this dissertation are going to be compared with those generated from the previous studies. Through this comparison, it is expected to illustrate the evolution in the levels of financial literacy of Portuguese individuals during these last years.

1.2 Problem and Objectives

The growing complexity of financial issues nowadays emphasizes the importance of financial literacy for individuals' lives. People must be prepared and informed in order to make the best possible decision according to each situation.

Financial education is even more important in difficult economic periods, such as crises, because commonly there is an increase in the unemployment rate, meaning that individuals will not be able to rely on their main source of income to afford their cost of living. In this period ahead of us, due to the extreme effects of the COVID-19 pandemic which has hugely increased the unemployment, people's financial literacy is going to be tested.

Every individual must be completely conscious of these two concepts: Savings & Investments. People must understand the importance of keeping aside a portion of their income every month (Saving) and, afterwards, apply those savings in products that will offer the best possible return towards a certain level of risk desired (Investing).

The overall purpose of this dissertation is to find out the current level of financial knowledge among Portuguese individuals. The growing complexity of financial issues is a constant, therefore, it is highly important to understand how prepared the Portuguese population are to deal with this. Afterwards, some measures aiming at promoting the financial literacy will be proposed.

In order to comply with the scope of this research, the following objectives were defined:

1. Characterize financial habits
2. Characterize knowledge related to credit and interest rates
3. Assess perceived and effective financial knowledge in securities
4. Assess the risk profile
5. Identify the explanatory factors of habits and financial knowledge

These objectives were carefully selected in order to enable a proper illustration of the current level of financial literacy among the target population of the study.

1.3 Research Overview

The possibility to evaluate the level of financial literacy of every Portuguese individual would be the perfect scenario since it would originate the exact picture of the population, however, it is known that this is very unlikely to materialize.

Nevertheless, the purpose is to reach the maximum number of individuals, in order to obtain the most accurate results possible. To collect this data, a questionnaire was created and shared through social media. The questions selected for the research tool were based on two previous surveys of BdP (2011b) and CNSF (2016), since these entities have conducted similar research and they both benefit from a strong reputation.

1.4 Outline

Besides this introduction, the dissertation is divided into four more chapters: literature review, methodology, discussion/results and conclusions.

The literature review contemplates the theoretical approach of the study and is subdivided in several different parts.

The first part highlights the concept of financial literacy as well as its importance for individuals, the effect in the economy and its evolution during the last few years.

The second part involves a discussion on the concepts of savings & investments, thus explaining the vital role these play in building a healthy economy and the financial well-being of individuals. Further, it is also mentioned the growing complexity of financial products throughout the years.

The third part of the study is related with some important concepts for individuals, such as credit and interest rates.

The fourth part comprises a macroeconomic analysis of Portugal, having into consideration the negative impact of the Covid-19 pandemic in 2020.

The fifth part is extremely relevant for the scope of this project, since it explains briefly the reasons that led to the Subprime mortgage crisis in 2008, thus relating its catastrophic effects with the lack of financial literacy of individuals.

The sixth part regards securities and describes the financial products considered for the scope of this project.

The seventh part is more technical and has the purpose to understand the difference between two of the most popular financial products: stocks and bonds.

The eight part regards the existing risk in investing, thus explaining what it is and its consequences for individuals.

The ninth part of the literature addresses the real estate market, thus highlighting its huge potential as an investment alternative to securities, as well as its effects in an investment portfolio.

Then, the last part of the literature approaches the differences between the effective and the perceived knowledge of individuals.

Afterwards, in the second chapter of this project, titled *Methodology*, it is explained how the research was conducted as well as the methodological aspects. The problem and objectives, the model and hypotheses, the population, the sampling method and the sample, the instruments used to collect the data and the process of data processing were the topics approached.

In the third chapter are presented and discussed the results obtained from the study. Firstly, are presented the several dimensions tested through the survey. Then, in the discussion, the results obtained are compared to the existing literature.

Finally, in the last chapter are presented the conclusions of the project, the main limitations and suggestions for future research.

2 Literature Review

This section has the purpose of providing the necessary theory to enable the development of the research. Firstly, the concept of financial literacy is presented, as well as other related topics such as savings, investments, credit and interest rates. Then, aiming at providing an understanding of the Portuguese reality, a macroeconomic analysis of Portugal is presented. Finally, there are some other topics that have a high importance for the scope of this dissertation as well.

2.1 Financial Literacy

2.1.1 Introduction of the concept

Financial literacy has recently been garnering widespread attention as it is acknowledged to be of great importance to consumer welfare (Jiang et al., 2020).

High levels of financial literacy drive people to make better decisions and to manage accurately some fundamental aspects of their personal finance, such as the budget, the spending, savings, future planning, as well as using financial products to obtain positive returns (ANZ, 2008).

Financially literate citizens are well informed regarding issues of money and prices and can manage their personal budget responsibly. Finances are an important part of everyday life and financial literacy is the best way to prevent over-indebtedness of citizens (Tomášková et al., 2011).

The concept of financial literacy does not have a correct and unique definition, since each author has a personal perception of what it represents. In Table 2.1 financial literacy is defined through three different perspectives.

Table 2.1: Financial literacy definitions

Organization/Author(s)	Definition
Huston (2010)	How well an individual can understand and use personal finance-related information.
Lusardi et. Al. (2010)	Ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt and pensions.
OECD (2014)	Knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge 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.

Investing in financial products has become more complex throughout the years, thus it is required a certain level of financial literacy to be able to negotiate such products (Rooij et al., 2011). Financial education works as a key element in protecting consumers from the huge risks

attached to the financial markets. It offers the necessary tools required to understand the basics of personal finance (Borkovcová et al., 2011).

Several studies provide evidence of this positive correlation between financial literacy and good investment decisions. For instance, Bannier & Schwarz (2018) explain that individuals with greater financial literacy hold higher wealth. Bernheim et al. (2001) and Bernheim & Garrett (2003) point out that those who were exposed to financial education in high school or in the workplace are more likely to save. Gaudecker (2015) argues that individuals with a higher level of financial literacy hold better diversified portfolios. Further, Deuflhard et al. (2018) relate higher yields on deposit accounts with higher levels of financial education on individuals. Volpe et al. (2002) suggested that the level of financial literacy varies according to people's education, age, income and gender.

Besides, households with higher income and higher academic degrees had more knowledge in investment issues than those with lower incomes and lower education. Similarly, Lusardi & Mitchell (2007) show that people with higher financial literacy are more likely to plan for retirement, to invest in stocks and to accumulate more wealth. As reported in Calvet et al. (2007), investors with low-education levels and low-wealth are likely to hold portfolios poorly diversified.

Lusardi & Mitchell (2014) argue that financial literacy helps individuals to earn higher returns on their savings, which boosts their financial welfare substantially.

Further, households with high levels of financial literacy have less problems with debt (Lusardi & Tufano, 2009; Stango & Zinman, 2009).

Rooij et al. (2011) have found that a great majority of people possess basic financial knowledge, however, very few go beyond the basic concepts. They also point out that financial literacy is directly correlated with financial decision-making and that it differs substantially depending on education, age, and gender. Those with low literacy are more likely to rely on family and friends as their main source of financial advice. Besides, authors found evidence that people with low literacy are much less likely to invest in stocks.

The lack of knowledge should encourage people to consult the assistance of an expert, but that is not the case. Calcagno & Monticone (2015) show that it is exactly the opposite. The authors found evidence that a high degree of financial literacy increases the probability of consulting an advisor. Besides, it reduces the probability of delegating the portfolio choice. Shin et al. (2020) highlight the importance of financial planners for good investment decisions, thus assigning an important role to these professionals.

Lührmann et al. (2015) have conducted a very interesting study where they analyze the impact of financial training in teenagers. The results of their research show that financial training increases actual financial knowledge in several dimensions. Teenagers get better at identifying the riskiness of assets and, generally, an increase in the number of correct answers is observed. One of the most striking results regards the student's behavior with respect to shopping issues. After the training, they become less likely to define themselves as impulse buyers, suggesting that their purchases are less likely to happen due to lack of self-control.

Further, the authors find evidence that the lack of financial knowledge is correlated with worse financial outcomes, such as: less saving, lower wealth, and lower participation in stock markets (Lührmann et al., 2015). Besides, the study highlights strong gender differences in all dimensions of financial matters. Girls are less likely to save, show a lower self-assessed knowledge and a lower interest for financial issues. The authors consider important to reduce this gender gap in terms of financial literacy.

2.1.2 Financial Literacy in Youngsters

Youngsters represent the future of the society, since they are going to be the adults of tomorrow and perform a key role in the economy.

Lusardi & Mitchell (2009) argue that in order to overcome the current low levels of financial literacy in the population, it is mandatory to start educating people as early as possible, thus providing them with the necessary tools to be capable of making the best decisions in the future and to deal with complex situations that are going to appear.

High literate individuals are more likely to make better financial decisions and to be more responsible with their economic lives (ANZ, 2008).

Cull & Whitton (2011) reveal that financial literacy is an important life skill and a critical intellectual competence, thus characterize it as a key part of a university diploma. The lack of financial education is an effective reality in youngsters and represents a problem that must be surpassed. It is crucial that schools and universities play a determinant role in educating the students, since they are going to participate actively in society and represent the future of the economy.

Cull & Whitton (2011) argue that uninformed decisions in the early days may carry deep consequences for youngsters' future, thus bringing huge negative effects for their lives. Besides, these wrong decisions may have an impact in the economy as well (Bianco & Bosco, 2011).

Chen & Volpe (1998) conclude that university students in the US have low levels of financial knowledge, relating it with the lack of financial education in their curriculums. Peng

et al. (2007) have obtained poor results as well in their study regarding savings and investments for the same segment of the population. It appears that the US authorities did not have into consideration the flows identified through Chen & Volpe (1998), since in Peng et al. (2007) the results were disappointing as well.

Brown et al. (2018) develop a study that tests whether culture influences financial literacy among school students or not. The research is based on a survey data for 15-year old secondary school students located in the narrow geoFigureic region along the German - French language border within the Swiss canton of Fribourg. They find that students from the German-speaking area are more financial literate, thus scoring on average 1.3 points (23%) higher than French-speaking students. This difference in financial literacy across the language groups is stronger for native students and monolingual students than for immigrant students and bilingual students. The cultural divide in financial literacy is related with the financial socialization across the language groups. Students in the German speaking region are more likely to receive pocket money at an early age and are more likely to have independent access to a bank account than students in the French speaking region.

A previous research from Lusardi et al. (2010) document substantial differences in financial literacy among the youth in the US by ethnicity and race.

These findings come to emphasize the key role that schools must embrace in eliminating the different levels of financial literacy among students from different cultures, ethnicity and race, especially in countries with a culturally diverse population (Brown et al., 2018).

2.1.3 The Importance of Financial Literacy

The negative effects of financial illiteracy on individuals' well-being is too important to be overlooked (Muñoz-Murillo et al., 2020). The inability to understand even basic financial problems can lead to serious negatives consequences in people's lives (Bajo et. al, 2018).

Less financially literate people are usually charged higher fees (Choi et al. 2010), earn lower returns on savings and pay higher interest rates on credits (Gine et al. 2017), accumulate less wealth (Behrman et al. 2012), and are offered less information about financial product characteristics and risks (Anagol et al. 2017).

The research from Gathergood (2012) has examined the relationship between financial literacy and over-indebtedness using survey data from a representative sample of UK households with consumer credit debts. The levels of financial literacy were found to be low in absolute terms and two-fifths of the sample were confused by finance. The findings suggest that poor financial literacy is positively associated with over-indebtedness.

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Moreover, differences in financial literacy levels help explaining around 40% of wealth inequality in the United States (Lusardi et al., 2017).

The lack of financial literacy of citizens can also lead to catastrophic consequences in the global economy. According to Borkovcová et al. (2011), this lack of knowledge in the population was one of the triggers of the Subprime Crisis, especially in the USA, thus assigning a high importance to the topic in these matters.

The factors that contributed to the financial crisis of 2007/2008 were diversified, such as an increase in debt due to the introduction of novel financial instruments, the emergence of a housing (mortgage) bubble, irresponsible risk taking, and lax oversight (Hausman & Johnston, 2014a), nevertheless, Borkovcová et al. (2011) still argue that if the levels of financial literacy among individuals were higher, the consequences could be smoother.

According to Banco de Portugal, several nations have demonstrated concern with the financial literacy topic, since they recognized it as one of the drivers of the last financial crisis (BdP, 2010).

Crossan (2010) explains that many countries realized that due to the growing complexity of the financial products and services, it is mandatory to provide their citizens with the necessary tools to understand the economic reality, thus being capable of differentiating positive from negative decisions. The author also mentions that even people that possess basic financial knowledge may face huge problems in dealing with the high variety and complexity of financial issues.

Frank (2009) argues that the 2008 crisis highlights the strong relationship between public and personal finances. Poorly financial literate individuals that are not capable of making the most adequate decisions in matters of savings, investment and debt, are going to harm themselves, but also their neighbors and the society. Therefore, if individuals have positive levels of financial education, the society is going to benefit from their correct decisions.

Central banks assign a crucial role to financial literacy, since they consider it a necessary tool to prevent economic crisis, as well as to contribute to a sustainable economic recovery (BdP, 2011b).

Sobhan (2011) argues that during a global crisis, the financial literacy of the population is a requisite, thus driving people to make the best possible decisions in a very complicated period.

2.1.4   The Evolution of Financial Literacy in Portugal (2010-2015)

In 2010, Banco de Portugal (BdP) has conducted the first survey to test the levels of financial literacy across Portuguese individuals. Five years later, in 2015, a second survey was launched with the purpose of analyzing the evolution of financial literacy during those years.

The survey entitled "Inquérito à Literacia Financeira de 2015", has revealed some improvements in certain aspects, such as the savings habits and the general financial knowledge of the population. However, people still lack the required knowledge in certain areas, as well as a lack of proactivity in applying their savings in financial products. Besides, it was also noticed that individuals tend to overestimate their knowledge, as seen in the previous survey.

Further, the data shows that there is a positive relationship between the school level, the financial literacy of individuals and their income. Those with more knowledge are commonly individuals with higher monthly incomes, with better savings habits and with propensity to acquire financial products.

Conversely, individuals with lower levels of financial literacy and education tend to have lower monthly incomes. Moreover, these low literate respondents are more likely to be excluded from the financial system and to not having savings habits nor a bank account.

In terms of the process of decision making, such as choosing a bank or a financial product, individuals tend to trust their friends and family judgment instead of a personal evaluation through comparison amongst the several existing options (Conselho Nacional de Supervisores Financeiros, 2016).

2.1.5   International Comparison of Portuguese Literacy

The "Inquérito à Literacia Portuguesa 2015" has included some questions set by the International Network on Financial Education (INFE), thus enabling to compare the results obtained among Portuguese individuals with those abroad.

In order to compare the financial inclusion of Portugal with other countries, three products were used: deposits, insurances and savings products.

The results show evidence that regarding deposits accounts and insurances, the Portuguese reality looks better than the average of the 17 OECD countries, with weights of 94% and 77%, against 86% and 64% respectively. However, if the ownership of savings products is considered, Portugal is below the average of the 17 OECD countries (45% against 63%).

Then, aiming at comparing the level of financial literacy, another three indicators were selected: financial behavior, financial attitudes and financial knowledge.

In the first indicator, Portugal ranks eighth amongst the 30 countries considered, thus exhibiting results above average in issues regarding family budget, personal finance and a correct use of credit. The negative aspects are related with the lack of proactivity in applying their savings, as well as an indication that the income is not enough to cover the daily expenses.

In terms of financial attitudes, Portugal ranks fifth being only behind New Zealand, Norway, Hungary and Canada. Portuguese respondents gain prominence for referring their concern with saving for the future instead of living merely for the present.

Lastly, regarding the financial knowledge, Portuguese individuals are in line with the average registered in the other countries. The topics evaluated in the indicator involve the perception between risk and return, computation of simple and compound interest and the relationship between inflation and the cost of living.

To conclude, a global indicator involving the results of the three previous indicators was created. Portugal is above the average of the OECD countries as well as the average of the 30 countries considered for the study, occupying the 10th place in the list (CNSF, 2016).

2.2   Savings & Investments

2.2.1   Savings & Investments: Concepts

Savings represent the positive difference between the disposable income and consumption expenses. On the other hand, when expenses are above the income, it is called indebtedness. When saving, individuals are giving up on a certain part of their consumption in the present.

Afterwards, those savings should be invested in order to generate more income for the future, usually from interest, dividends and other gains. Investing is basically a strategy of applying savings aiming at obtaining the most possible return, for a certain level of risk (Alves, 2012).

2.2.2   Savings & Investments' Role

Savings and investments by individuals are as vital to personal financial well-being and security as to a healthy economy. People with savings are more prepared to face economic shocks, such as a loss of income, are more likely to build assets for the future, and are less reliant on credit to cover unexpected expenses.

Besides, savings also play a very important role in enhancing actions such as entrepreneurial activities and access to education and training. At the macroeconomic level,

household savings drive growth by enabling banks to lend to businesses, and by financing – directly or indirectly – investment in companies.

However, there are individuals who do not save even when they know the huge benefits that may arise from it. This situation is problematic and leads policy makers to find ways to encourage the households' savings, since they want people to have some reserves in order to face unexpected situations. Improving the financial education of individuals, as well as to enforce the protection of the financial consumer are some tools than can be used. (Lewis & Messy, 2012).

2.2.3   Savings & Investments' Planning

Given an increased responsibility to both accumulate and manage retirement savings, there is interest in establishing the factors that influence individual choices to change their investment strategy (Gerrans et al., 2018).

The ageing of the population, as well as a reluctance to further burden taxpayers, as led governments to transfer the responsibility of accumulating retirement savings to individuals. The idea is to incentivize the population to save enough resources to have a positive standard of living when they reach their retirement age (Gerrans et al., 2018).

According to Clark et al. (2009) individuals are beginning to be more conscious about this necessity to plan for retirement, especially when they are getting older. Moreover, Agnew et al. (2003) report an increased likelihood of older individuals reducing their risk exposure in their 401(k) plans and rebalance more frequently.

2.2.4   Factors Influencing Savings & Investments

Lusardi & Mitchell (2014) state that a factor that is significantly related with retirement planning is financial literacy. Dobrescu et al. (2017) find that individuals with lower levels of education are significantly less likely to trade and rebalance their investments. Financial literacy appears to be positively associated with the intention to save, rebalancing of portfolios, voluntary retirement savings, and planning for retirement (Lusardi & Mitchell, 2007).

Chakraborty & Digal (2011) findings suggest that saving objectives are related with some factors, such as the age, occupation and income level of the small and medium household investors. Unlike the elder ones, young investors are not very keen on saving for their post retirement days and, as of now, do not think of investing long-term. These findings are not surprising since the study has concluded that for every life cycle stage, there are different saving objectives of individuals.

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Every individual investor possesses a different mindset when they decide about investing in a particular investment. It depends on their risk-taking ability and on their purpose for which such investment is to be done. Therefore, the purpose of investment can be related with saving objective. Each individual investor selects the investment option that better fits his personal financial goals.

The investment behavior of an individual investor reveals how he/she wants to allocate the surplus of financial resources to various instruments for investment available. It basically consists in the reason people want to invest, how much of their disposable income they want to invest, for how long they want to invest and, most importantly, the timing of such investment (Chakraborty & Digal, 2011).

2.2.5 Complexity of Savings & Investments

Lewis & Messy (2012) explain that savings and investment products are becoming more complex throughout the years, meaning that individuals are going to face more responsibility and risk towards their own financial well-being.

Distribution channels for savings and investment products have become more sophisticated. Innovations such as smart cards and mobile phone banking can open access to formal savings opportunities for people who previously lacked access to financial services. People increasingly buy even quite complex investment products online, including across borders. Conversely, technological innovation also carries risks that consumers may be exposed to, like fraud or scams, or that products bought through non-traditional channels may not be adequately regulated (Lewis & Messy, 2012).

2.2.6 Savings & Investments: Evidence from Previous Studies

The research developed by the Conselho Nacional de Supervisão Financeiros (CNSF), in 2016, suggests that most individuals save money (59%), thus showing their concern for the future. These regular savers have pointed out unexpected expenses that may occur, as well as their desire to have some money to vacations and travelling, as the main reasons that drives them to save. The remaining individuals attribute their insufficient income has the main reason that stops them from saving.

On the other hand, when it comes to investing, the results obtained from the study are the opposite, since solely 4.4% of participants own securities. The main reason that prevents these last to pursue such investment, is related with their insufficient income (65.3%). It is interesting that this represents the exact same reason that prevented individuals from saving money in the

first place. Besides, these minority who own securities, have a clear preference to invest in stocks (83.3%), followed by investment funds as their second choice (41.7%).

2.2.7 Why People Save

There are several motives that drive individuals to accumulate savings throughout their lives. In Table 2.2 are listed some of these reasons, according to Lewis & Messy (2012):

Table 2.2: Why people save

Reasons
1. Anticipate future expenditures during old age, since their income is going to decrease (e.g. retirement planning);
2. Precaution against unexpected events, such as job loss or illness;
3. Enjoy a gradually improving lifestyle (holidays; down payment for a durable good);
4. Invest the money saved to generate more money;
5. To pass on to their children or other family members;
6. The income obtained is consistently greater than expenses;

Source: (Lewis & Messy, 2012)

2.3 Credit and Interest Rates

The concept of credit plays a huge importance in the economy, since it can enable individuals and institutions to acquire money that they do not have in that moment, in order to acquire goods or even to invest, as it happens more commonly with companies that tend to use that money to expand their business.

Therefore, credit can be defined as a financial product, usually documented through a written agreement, where an entity lends money to a client, in exchange for interest. These agreements have a certain maturity (Roquette, 2012).

In terms of credit for individuals, this can be of two types: mortgage credit and credit for consumption. The first one, as the name suggests, is related with borrowing money to acquire a house, whereas the second option includes everything else.

As it was mentioned above, financial institutions such as banks, whose main income comes from the credit they lend to clients, are expected to receive something in return from the risk involved with lending money. This is called interest. The interest is presented as a rate (interest rate) and is used to determine the amount of interest associated to a certain credit operation (Roquette, 2012).

When applying for a credit, the client should be aiming at obtaining the minimum interest rate possible for that operation. This makes perfect sense since the lower the interest rate obtained, the lower the cost of borrowing associated to that operation (*ceteris paribus*).

However, towards an opposite operation, when instead of borrowing money the purpose is to apply that money in order to obtain a return, it is fundamental to look for the highest interest rate possible (also called rate of return in this scenario) for the same level of risk (Alves 2012). Following this idea, in the research of Banco de Portugal in 2011 is tested if people are aware of the importance of comparing the interest rates among the several financial products, in order to choose the best option. The conclusions of the study suggest that only 44% of respondents make a comparison before investing their money in a financial application (BdP, 2011b).

Furthermore, there were other interesting outputs regarding these topics that were obtained from the research. In terms of asking for credit, around 60% of respondents compare interest rates before getting a loan. Besides, 66% of participants know the interest rates of their financial applications (50% know the rates approximately whereas 16% know the rates by their exact value). Finally, most individuals are aware of the interest rates charged in their loans (65%), however, from these, only 22% knows the exact value of the rates (BdP, 2011b).

2.4 Macroeconomic Analysis of Portugal

There are some indicators that influence the savings ratio in Portuguese individuals, such as the Gross Domestic Product (GDP) growth rate, the inflation rate and the unemployment rate.

In Table 2.3, are exhibited the values for these three indicators in 2018 and 2019, as well as a projection for the year after.

Table 2.3: Macroeconomic analysis of Portugal

Period	GDP	Inflation Rate	Unemployment Rate
2018	3.00%	1.00%	7.00%
2019	2.20%	0.30%	6.50%
Projection to 2020	-9.50%	0.10%	10.10%

Source: Banco de Portugal (2020a) and INE (2020)

The most important variable for illustrating the economic situation of a country is its GDP, which represents the total amount of final goods and services for a certain period.

The Covid-19 outbreak has led to negative projections in terms of GDP variation (negative growth), as well as the unemployment rate (higher rate). The pandemic consequences come to reverse the recovery that the Portuguese economy was facing in the last years.

According to the expectations made by Banco de Portugal (2020a), GDP is going to decrease 9.5% in 2020, against the 2.20% registered one year before. Another negative effect of the crisis is the increase in the unemployment of Portuguese citizens, since its rate is expected to increase to 10.1%. The main reason that drives people to not save is related with insufficient income of the population (BdP, 2011a). The employment situation in a country is directly

related with the savings ratio of individuals, because if people are not employed, they cannot save.

In terms of the inflation rate, the downward pressures in prices are expected to prevail, thus leading to moderate inflation levels for 2020. This indicator is extremely important for savings because, for instance, if a product has a nominal annual interest rate of 1% and an inflation rate with 1% as well, the real interest rate of that specific product is null (DECO, 2012). Therefore, people must be aware of the differences between the real and the nominal interest rates.

To sum up, it is possible to understand that the Portuguese situation for 2020 does not seem quite optimistic, meaning that people must be cautious and prepared to face a more difficult period ahead. Individuals may not have the opportunity to invest as much as they did in the years before.

2.5 The Subprime Mortgage Crisis

The financial crisis of 2007-2008, characterized in part by considerable losses for individuals, has unleashed a growing concern in better understanding how to improve the level of financial literacy among individuals, in order to promote better saving and borrowing behaviors (Klapper et al., 2013).

Several factors such as the fall in interest rates, a greater economic stability, favorable lending conditions, as well as a general increase in the asset prices, has led to a decrease in the saving rates in many economies over the decades prior to the financial crisis. People were aware of the rise in their homes' value, therefore, they no longer saw the same need for precautionary saving. The access to credit was so easy that individuals knew that if any unexpected situation would appear, they could easily borrow the necessary money. The problem was related to a heavy credit promotion and an underpriced level of risk incurred by the lenders. There were many causes that originated the financial crisis of 2007-08 however, it is clearly understood that both individuals and financial institutions failed to be conscious about the risks they were taking in the credit market (Lewis & Messy, 2012).

The consequences of this lack of responsibility were catastrophic and precipitated a recession in many countries. The wealth declined on average, unemployment increased and general confidence in the financial system eroded. Access to credit reduced significantly. These changes created uncertainty, older workers delayed retirement in order to offset their decline in wealth and the saving rate increased across many countries, despite, in many cases, persistent low interest rates (Lewis & Messy, 2012).

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2.5.1 Effects of the Subprime Mortgage Crisis (2007-2010)

The ability of individuals to make responsible and informed decisions can contribute to a better allocation of financial resources as well as to greater financial stability at both micro and macroeconomic levels (Lusardi & Tufano, 2009a). Besides, according to Cole et al. (2011) financial literacy can also perform a critical role in increasing savings rates among individuals.

Klapper et al. (2013) findings suggest that financial literacy is significantly related to greater participation in formal financial markets and negatively related to the use of informal sources of borrowing.

Furthermore, individuals with greater financial literacy are significantly less likely to report experiencing a negative income shock during 2009. Moreover, they are more likely to report having higher availability of unspent income and less likely to report low spending capacity.

Greater financial literacy can help individuals to face unexpected macroeconomic and income shocks. The knowledge of inflation and interest compounding, as well as the capacity to do interest rates calculations, play a pivotal role in explaining most of the financial and real outcomes examined in the study. As the shift continues toward individual responsibility for saving, investment, and debt management, it is important that people be equipped with the tools necessary to make good financial decisions.

Financial literacy cannot only contribute to savvier financial decisions, but individuals may also be better able to shield themselves against shocks. Improving financial literacy may not only help individuals but also contribute to market and macroeconomic stability (Klapper et al., 2013).

2.6 Savings & Investment: Securities

Securities are documents issued by enterprises or other entities that represent rights and duties and can be bought or sold in financial markets. These documents represent an alternative financing method for enterprises, since they can obtain capital through different sources instead of merely resorting to bank credit. For investors these securities are an alternative to apply their savings, obtaining better returns than through bank deposits (CMVM, 2005).

There are several different types of securities people can invest their money in. However, for the scope of this project, only the following are considered: (1) demand deposits (2) time deposits, (3) stocks, (4) bonds, (5) investment funds and (6) pension funds.

2.6.1 Demand Deposits

Demand deposits are payment accounts that enable a free access to the deposited funds at any time. When an individual opens this type of account, he/she can purchase other banking products and services and even use payment cards, banking transfers and checks.

The biggest downside of demand deposits account is their low or even null associated interest rate, meaning that if a person only resort to this financial product, inflation is going to cut its purchasing power year after year (BdP, 2020b).

2.6.2 Time Deposits

Time deposits are a different type of deposits account since they are supposed to be used by people who are not expected to move those funds for a while. Usually there is a timeline attached and the purpose is to keep the funds immobilized until then.

Financial institutions sometimes enable an early mobilization, although there is a penalty involved namely through a cut in the interest of that period.

It is true that if an individual wants to benefit from a free mobilization of its deposited funds the best option is to open a demand deposits account, nevertheless, the major advantage of time deposits is that they carry higher interest rates than the former (BdP, 2020b).

2.6.3 Stocks

Mladjenovic (2006) defines stock investing as the money invested to buy a piece of a certain company. He explains that stocks represent ownership in corporations. Someone who buys shares of stock in a company becomes a shareholder, and, according to Sincere (2004), that investor becomes part of the corporation itself. Therefore, the more stocks owned, the more control a shareholder possesses in a company. However, most shareholders own insignificant portions of corporations, thus they cannot interfere in their daily activities. The author emphasizes that to own a company listed in the stock market, an investor needs to possess millions of shares of that company. Mladjenovic (2006) warns that before investing in a stock, it is crucial to understand what is being bought.

Sincere (2004) explains that companies need to attract money and that is why they issue shares, in order to get funded for their activities. On the other hand, investors believe in the success of that company and buy the stock waiting for its price to go up in the future. If the corporation performance is good in the next years and its stock price goes up, shareholders know that they will make a profit if they sell it. Conversely, if the company's performance was poor, and the stock price goes down, they know that, if they sell the stock, they will lose money.

Instead of gaining money through buying and selling stocks with profit, shareholders can also be rewarded if the company distributes dividends. The author believes that people buy stocks with only one goal: make money.

According to Wild (2012), in the long run, few investments pay off as well as stocks. The author emphasizes the huge return of stocks but also their high volatility, which makes them very dangerous for investors.

2.6.4   Bonds

Choudhry (2004) explains that a bond is a debt instrument that pays a fixed interest rate for a fixed period. It is a collection of cash flows. Brealey & Myers (2003) reinforce this idea of a bond as a debt instrument and mention that a bondholder is entitled to the repayment of the bond, plus its interest. According to Choudhry (2006), bonds are a form of debt, much like how a bank loan is a form of debt. It is issued by a borrower, who then must repay to the lender the amount borrowed plus the interest, this all within an agreed period.

Furthermore, the author explains that bonds are crucial for debt-capital markets across the world since their prices are directly affected by economic events and politics. Besides, their yield levels function as fundamental economic indicators, especially in some government bonds. The Treasury Bonds are a good example of this since their yields reflect several indicators of each country, such as interest rates, inflation, economic growth and public-sector debt. Bond yields can even have more importance than the equity market in some situations, such as the health and direction of the economy, that is why they are so important for the market. Thau (2011) points out the complexity of issuing a bond. The values are so large that the issuers use investment banks as intermediaries in order to facilitate all thes process involved. Bonds are a very ancient financial instrument and they function as a very good tool for entities to raise capital without giving up control (Mazzi, 2013).

A bond is always issued with a principal, a maturity and a certain interest rate, called coupon rate (Wild, 2012). This coupon rate can be fixed, meaning that the coupon payment is constant throughout the life of the bond, can be variable, which is called a floating rate. It basically means that the coupon payment varies according to a money market index, such as the Euribor or, in other cases, the coupon rate can be zero (The Hong Kong Institute of Bankers, 2014).

Generally, bonds are considered a more conservative investment than for instance stocks or commodities, because most of them possess a certain degree of stability and predictability.

In most cases the investor is entitled to a steady stream of income and the principal is paid entirely when the bond matures (Wild, 2012).

2.6.5   Investment Funds

An Investment fund is a pool of capital that belongs to several people with the purpose of investing in certain assets. These investment vehicles are managed by professionals in order to achieve the best possible outcomes.

The capital of these funds can be invested in a wide range of goods, such as stocks, bonds or real estate, in order to build a solid and diversified portfolio, aiming at giving positive results to the investors (CMVM, 2005).

2.6.5.1   Mutual Funds

Instead of investing directly in the stock or bond market, investors can choose mutual funds. These funds are created by investment companies and include several securities, such as bonds or stocks. It is like hiring a personal money manager. The fund manager makes the buying and selling decisions by himself/herself. Funds are perfect for those who do not have the time or knowledge to invest by themselves. There are several mutual funds, such as stock funds, bonds funds, international funds, and so on.

Usually people choose this type of funds because it allows them to diversify, thus reducing its exposure to risk. These financial products provide an enormous opportunity to investors seek a diversified investment portfolio for the minimum cost available in the market (Sincere, 2004).

2.6.5.2   Index Funds

An index is a statistical measure used to represent the value of an amount of stocks (Mladjenovic, 2006). Index Funds are a type of mutual fund that do not have active managers, thus being less expensive and with no extra sales charges. Besides, more than 50 percent of portfolio managers have failed to beat the return offered by index funds. This is the main reason that justifies the popularity of these funds among investors. Low cost and high performance are very attractive indeed (Sincere, 2004). These index funds have grown from constituting about 14% of assets under management in 2002 to about 22% in 2010. They have become a common alternative for investors to access the stock market at a low cost (Cremers et al., 2016).

2.6.5.3 Bond Funds

Bond mutual funds are comprised of a portfolio of bonds that is managed by an investment adviser (Thau, 2011). Most mutual funds are open-end funds. This means that the number of shares available is not limited. Investors pay the mutual fund company a yearly fee and sometimes a sales charge (called a load) to buy the fund. In exchange for the money, investors get an instant portfolio with professional management (Wild, 2012). Bond funds enable the investor to enter in different sectors of the bond market. There are corporate, international, municipal bond funds and so on. Funds have different levels of risk and return, thus offering to the investor the possibility of choosing according to their propensity to risk (Thau, 2011).

It is completely different to invest in individual bonds or to buy a bond fund. Individual bonds have a definite maturity date, whereas a fund does not. Bond funds are more complex. There is no single date at which all the bonds of the portfolio will mature, since they are actively managed, thus leading to continuous changes (Thau, 2011).

2.6.5.4 Pension Funds

Pension funds are managed by financial institutions that invest retirement savings from workers, aiming at providing pension benefits (Cadoni et al., 2017). They are considered as long-term saving instruments (Mercedes, 2017). Each country as its own laws to regulate these investments (Cadoni et al., 2017). These funds are very important for their nations because they contribute to economic growth, especially because of the increase in savings at national level (Babalos & Stavroyiannis, 2019). In many countries, pension funds play a central role in investing pension savings and providing old age benefits (Dreu & Bikker, 2012).

Financial institutions in charge of these funds should follow a solid asset allocation strategy, in order to offer the desired level of risk and diversification for their investors (Dreu & Bikker, 2012). The authors explain that pension funds usually offer suboptimal portfolio diversifications, thus emphasizing the importance of a valid strategy while choosing their assets. The financial crisis of 2007-2008 caused huge losses of major pension funds worldwide because most of them have increased their portfolio risk, aiming at obtaining higher returns, even though pensions funds are supposed to maintain a prudent profile (Cadoni et al., 2017). The crash in equity prices, coupled with a dramatic decline of long-term interest rates used to discount liabilities affected these funds around the world. For instance, in the Netherlands, the market value of total pension assets dropped by more than 17% just in that year (Dreu & Bikker, 2012). This enhances the importance of following a good asset allocation strategy.

The reality is that the gradual population aging has given rise to concerns about the credibility of pension systems for the future, thus enhancing the need to save for retirement (Mercedes, 2017). In Portugal, the proportion invested in life insurance and pension funds has been gaining importance since the 1990s as people start perceiving the importance of these financial products (Cardoso, Farinha and Lameira, 2008). The pension fund industry has experienced a significant growth over the last two decades (Mercedes, 2017).

Pension funds have a more favorable tax treatment than several forms of savings. They enable tax deduction to their households (Guariglia & Markose, 2000). The main downside of these funds regards their high illiquidity levels (Samwick, 1998). According to the same author, people cannot withdraw their savings before the retirement. This implies that they cannot depend on that money to face decreases in income (Samwick, 1998). However, Gale (1998) looks at this illiquidity in the short run in a positive way. Since households cannot use the money from those funds, they are not tempted to spend it.

2.7 Stocks vs Bonds

Bonds and stocks have completely different levels of risk and return. Usually stocks are more volatile and have a higher expected return that bonds. These differences between the two assets are the reason to mix them into a portfolio, allowing investors to achieve the level of risk they desire. For instance, if the prices of two assets tend to move in opposite directions, putting them in the same portfolio would be less risky than investing in them separately (Kwan, 1996).

Human beings are more willing to take bigger risks when they are young and they are encouraged to take those risks. For instance, the papers Barberis (2000), Viceira (2001) and Gollier (2002), advise young investors to invest more into risky assets, such as stocks, thus building a riskier investment portfolio. Benzoni et al. (2007) explain that investment in risky assets generates a high correlation between human capital and market returns for those investors. Other example is from Bali et al. (2009), that mention the tendency to advise investors to reallocate their funds from a primarily stock portfolio to other more focus on bonds as they get older.

Many researchers, such as Latané (1959) and Markowitz (1976) share this idea that as the investment horizon increases, the proportion of equity in the portfolio should increase as well, since the geometric mean return on equity is higher than the geometric mean on bonds (Bernstein, 1976). Therefore, stocks dominate bonds in the long run following this logic. However, other researchers such as Merton & Samuelson (1974), Samuelson (1989)

and Samuelson (1994) disagree. They conclude that lengthening the investment horizon should not reduce risk, meaning that the optimal portfolio of an investor should be independent of the planned holding period. Furthermore, if stock prices follow a random walk[1], although the probability of the return falling below some minimal level falls with the investment horizon, the extent to which the actual outcome can fall short of this minimum level increases. Therefore, no matter how long the investment horizon is, equity will never dominate bonds through this perspective.

Bali et al. (2009) study the investment horizon aiming at finding out when should a portfolio have more bonds or more stocks. They have used Government Bond Files to obtain the bond returns from November 1941 to December 2008. Return on bonds with a maturity of 30 years are considered. Regarding stocks, the weighted returns are measured from NYSE/AMEX/Nasdaq index and cover the period from January 1926 to December 2008. The conclusions obtained are quite interesting. Their research proves that the mean and standard deviation of stock returns are greater than those of bond returns and both returns increase as the investment horizon increases. However, the main conclusion was that geometric mean of stocks is higher than that of bonds.

Furthermore, the same authors have computed the likelihood of stock returns being higher than bond returns for different investment horizons. The results from this study are not surprising since for all periods was found that stock returns are more likely to be higher than bond returns (using real data, the probability is 65.55% for 1-month and 97.05% for 60-months). After this analysis, they decide to go even further and try to understand what the perfect combination of stocks and bonds in a portfolio could be, having into consideration the respective investment horizon. The results are very interesting and give a good insight for those who are keen to understand what the best portfolio combination would best fit them. They have used a table named "Target Retirement Funds managed by Vanguard" (Source: Lipper Inc.). The conclusions are the following: for long investment horizons 90% of assets should be in stocks and 10% in bonds and these weight of bonds in the portfolio should increase over the years. For instance, for a short-term period, the stock should be around 35%, 50% in bonds and the 15% remaining in inflation-protected securities. The general conclusion here is that for short horizons there is no reason for investors to choose stocks over bonds, however, by looking at

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[1] The random walk describes a market where all participants have access to the same information at the same time, meaning that the changes in price of stocks are unpredictable. (Brealey, 1970)

the higher geometric mean of stocks regarding bonds, it is argued that for medium and long-term horizons, stocks are better.

By taking a more precise view for these short and long-run periods, the research from Raúl Ibarra-Ramírez (2011) is very clarifying. It explains that for horizons of nine years or longer, stocks dominate bonds, but for two-years horizon or less, bonds dominate stocks. This clearly makes stocks more attractive for long horizon investors. Further, for a five-year investment horizon, only the portfolios consisting of 20% stocks or more are efficient, while for an eight-year investment horizon only the portfolios with 40% stocks or more are efficient.

2.8   Risk in Investing

Levy (1998) explains that risk has a very ambiguous definition. Furthermore, it classifies a riskless position as the probability equal to 1 of obtaining the return expected towards an investment. For instance, in case of investing in Treasury Bills. In this example the likelihood of obtaining the expected return is certain, equal to 1, because the US government cannot go bankrupt. It can print money or simply increase taxes in order to pay for its debts.

By taking a more specific approach, risk for most investors is related to a situation where the future values will be less than expected. By adding values to the explanation, the following situation can be enlightening: if an investor expects $20,000 in the end of the period, he/she will be concerned about getting less than that value (Modigliani & Gerald, 1973).

Modigliani & Gerald (1973) also mention that diversification is vital to decrease the risk of a portfolio, by adding assets with low correlation, although the risk cannot be completely eliminated. This risk that it is been discussed can be divided into unsystematic and systematic risk. To clarify these two types of risk it is important to, at first, understand that each security bears a risk and, that same risk, is then split into these two. The systematic risk is the portion of a certain security risk that cannot be eliminated by placing it in a well-diversified portfolio. On the other hand, unsystematic risk is basically the other part, which is, the portion of that same security risk that can be eliminated through diversification. This unsystematic risk will decrease gradually as the number of holdings increase until it becomes entirely systematic. Regarding systematic risk, it is explained by the fact that the return on most portfolios depends on the overall performance of the stock market, meaning that investors are always exposed to uncertainty from the market, regardless of the number of stocks they hold. Therefore, the return on diversified portfolios is highly correlated with the market itself.

Modigliani and Gerald (1973) mention the Capital Asset Pricing Model to measure the relationship between risk and return. The model underlies that assets with the same risk should have the same expected return, leading to a situation of equilibrium on the market. Let us consider a risk averse investor, who holds a riskless portfolio. By taking no risk at all, he/she will earn a rate of return proportional to that riskless approach. Brealey & Myers (2002) explain that the increased risk tends to be compensated by increased reward, a risk premium, and that is why investors mostly do not mind bearing an extra risk if they believe they will be compensated.

Van Rooij et al. (2007) have concluded from their research that risk is correlated with the ownership of stocks, meaning that those who are not willing to take risk are less likely to participate in the stock market. Therefore, it is possible to understand that risk plays a significant influence in the differences among households' investments.

A research from Conselho Nacional de Supervisores Financeiros, tested the risk profile of individuals back in 2015. The results suggested that most individuals reveal a certain level of risk aversion, since most of them are not prepared to risk some of their money while investing. The score obtained was 2.42, a value below the average in a scale comprised between 1 and 5 (CNSF, 2016).

2.9   Real Estate

2.9.1   Real Estate as an asset

Real estate is seen as a direct alternative to stocks and bonds, and its investment involves the purchase, ownership, management, rental or sale for profit. It has several unique characteristics as well as advantages and disadvantages regarding other alternative investments. Unlike traditional investments, real estate investors can influence the performance (Baker & Chinloy, 2014). Real Estate is considered an asset class these days, mostly due to its importance for both national and international investors. The investment in this asset class has increased significantly over the past two decades and nowadays it is considered as a very strong alternative to be used in portfolios for diversification purposes (Tiwari & White, 2014). However, real estate may be a little complex. It can be divided into two distinct sub-classes: commercial real estate and residential real estate. Besides, it can be classified as direct investment or indirect investment. Direct real estate investment is the most familiar since it is achieved through acquisition of properties, while indirect real estate investment is achieved through the acquisition of shares or units in listed or unlisted entities that hold property, for

instance the Australian real estate investment trusts (A-REITs) (Heaney & Sriananthakumar, 2012). Furthermore, and regarding the direct investment, both liquidity costs, taxes and transaction costs are important to take into consideration in either residential real estate or commercial real estate. There are also problems with the valuation of direct real estate investment because real estate tends to be held for long periods of time and is rather heterogeneous in nature (Heaney & Sriananthakumar, 2012).

2.9.2 Portfolio Diversifier and Risk Reducer

Real estate is a powerful asset to be taken into consideration for investors while building their own portfolio. Jorion (1986) finds out that diversifying the portfolio reduces a lot its risk. Several studies prove the usefulness of adding real estate to a portfolio, such as Chaudhry et al. (1999). Ennis & Burik (1991) and Ziobrowski (1997) go even further by stating that 15% to 30% of a mixed-asset portfolio should be allocated to real estate. It offers some diversification benefits that should be explored (Heaney & Sriananthakumar, 2012). As Higgins (2007) explained, real estate is seen as an important asset class for mutual funds locally and globally. Besides, according to Blake et al. (1999), it accounts for around 10% of UK portfolio investment, around 5% of US portfolio investment and close to 10% for Australian mutual funds. Investment decisions involve a trade-off between the risk and return. Investors should be willing to purchase a particular asset if the expected return is adequate to compensate for the risk, and as already explained, real estate offers a very positive risk-return relationship (Jones et al., 2009). There are several studies that, through a deep analysis of the correlations between real estate and stocks, real estate and bonds, and even real estate and cash, find out that real estate can play a significant role in a mixed asset portfolio (Fabozzi & Jones, 2019). Portfolio diversification works to reduce the risk of a portfolio to an investor (Jones et al., 2009). Furthermore, when two imperfectly related assets, less than 1 of correlation, are included in the same portfolio, *"there is an opportunity to construct a portfolio that has a higher expected return at each level of risk, or equivalent, to reduce risk for a given level of expected return. The risk is the portfolio's standard deviation."* (Fabozzi & Jones, 2019: 796). Real estate should be considered in a portfolio because it can generate high absolute returns or risk adjusted returns. One study from Hudson-Wilson et al. (2005) reports that, on average, real estate did not outperform stocks and bonds in absolute terms in the period 1987-2004. However, real estate outperformed them both in terms of total return per unit of risk. Besides, real estate is also considered by some observers to be an inflation hedge, because if inflation exceeds the expected

inflation rate, the returns obtained from real estate will compensate the negative response of the other assets return in the portfolio (Fabozzi & Jones, 2019).

2.9.3 The Real Estate Market

The evolution of supply & demand in the real estate market is very complex, since it is correlated with the evolution of other markets. Nevertheless, the real estate works according to the supply & demand, like other markets do (Neves et al., 2009). In the property asset market, investors may invest in properties in anticipation of expected returns. Property generates income (in the form of rent) and capital (in the form of change in capital values over time) returns for investors. Investors in the property asset market are both national and international (Tiwari & White, 2014). An investor may decide to invest if he/she has observed increasing real values for consecutive periods, thus leading he/she to assume that real estate assets are becoming more valuable over the years, making sense to invest (Tiwari & White, 2014). It is a very interesting market to explore because it is known that infrastructure investments offer some unique financial characteristics such as long-term, stable and predictable, as well as inflation-linked returns with low correlation to other assets (Bitsch et al., 2010).

The real estate market can be very important for the economic and social development of a region or even a country. Maier & Herath (2009:7) define it as *"the market where supply of and demand for real estate meet and where real estate is traded"*. The authors associate three key features with the real estate market, such as the *"type of real estate"* (e.g. housing, office, shopping centers, industrial buildings and infrastructure real estate), the *"space"* which basically the location of the property and the *"time"*, which is nothing more than the period when the acquisition takes place, since it can influence the price charged (Maier & Herath, 2009:7).

According to Rybak & Shapoval (2011), the real estate market is a crucial piece for any economy, accounting for more than 50% of the world's economic wealth and having direct influence in the functioning of the labor, financial, commodities and services markets, among others.

Since real estate assets have this fundamental role in the overall economy, changes in the transaction volume or value will bring consequences to every sector of the economy (Maier & Herath, 2009). Therefore, an accurate valuation of the real estate investments is very important, since it influences many participants. For instance, the sellers or buyers of properties, who need to know the value of their assets, the governments whose revenues depend in part on real estate taxes, the financial institutions who want to minimize their risks through the implementation of

banking policies and, finally, the brokerage firms that need a correct evaluation of the real estate to use on a daily basis while serving their clients (Guo, Xu, & Bi, 2014). This market is seen as investments which carry the high risk and high return of economic activity (Minli & Wenpo, 2012), therefore there are many studies aiming at evaluating the risk in the sector (Pires et al., 2018).

2.10 Evolution of the Real Estate market in Portugal

2.10.1 Price/m2 evolution (2015-2019)

Portugal is living a housing boom characterized by a sharp increase in the prices of the residential buildings across the country. Figure 2.1, with data from January 2015 to June 2019, illustrates this evolution. The increase in the average price of houses in the country is enormous. In the first period registered in Figure 2.1, the cost per square meter (m2) was around the 1,056€. A year after, the price increased 8.90% and was around 1,150€ per square meter. In the following year, the price was already registered around 1,305€/m2, representing an increase of 13.5% regarding January 2016. So far it is possible to identify an upward trend in the housing prices between 2015 and 2017, however, it is relevant to check this evolution in the next years. According to the data from January 2018 and 2019, it is indeed, an upward trend. From January 2017 to January 2018 the prices have increased 19.6%, almost one fifth, the higher variation of this 5-year period represented in Figure 2.1. In January 2019 the price was fixed around 1,814€ per square meter, a change of 16.2% compared with January 2018. In June 2019, the last period under analysis the price was already set around the 1,932€/m2. The data from Figure 2.1 proves that Portugal is indeed experiencing a housing boom where the prices continue to increase year after year for considerable amounts. In fact, if instead of comparing the variations on a yearly base, it is considered the total change in housing prices between the entire period under analysis, this idea is reinforced. The price per square meter almost doubled. The variation was around 71.8% between January 2015 and the same month in 2019, however, if it is considered the entire extension of the data provided, thus taking into consideration June 2019, the total increase in price per square meter was 83%.

The data from Figure 2.1 is a very good illustration of the current trend in the Portuguese residential real estate market. The houses are getting more expensive throughout the years, thus leading to endless possibilities of people to explore this market. Real estate is becoming more and more an important asset for some households which use that market to obtain profit through renting or through buying cheap and selling expensive. For instance, and according to the data

from Figure 2.1, if someone had bought an apartment in January 2015 and decided to sell it in June 2019, the profit could perfectly be around the 83%, since this was the variation in prices during that period in the country, on average.
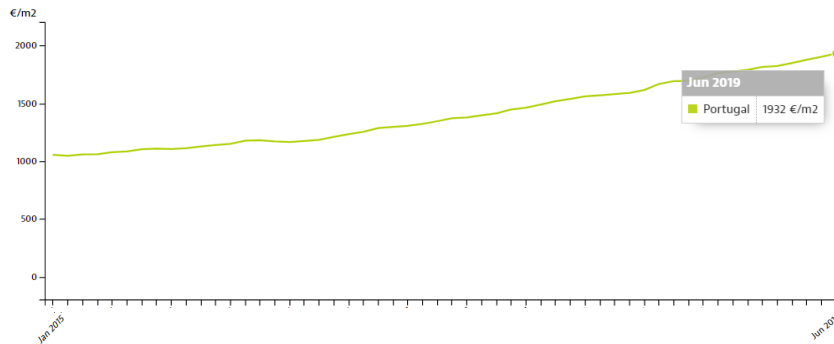
Figure 2.1: Evolution of price/m2 in Portugal between 2015-2019 (Source: Idealista 2019)

2.10.2 Historical Prices

The upward trend in the housing prices in the country over the last years is so intense that it is even driving several regions to its maximum ever registered. According to the data provided by Table 2.4, the most expensive region in the country, on average, is the Lisbon Metropolitan Area with 2,807€/m2, followed by the Algarve and the North, with values of 2,153€ and 1,570€, respectively. In the first two, these current prices are also the maximum prices ever registered per square meter. Besides, the Autonomous Region of Madeira also reaches its maximum historical price in the month of the analysis, June 2019. All the other regions identified in the Table 2.4 are very close to their maximum, which explains the fact that the average of the country is the maximum ever registered, namely with 1,932€ per square meter.

Regarding the variation in the price over the last year, June 2018 to June 2019 respectively, only the Autonomous Region of Azores has registered a negative value, -0.2%. The higher change in this matter was in the North region with a variation of 23.8%, followed by the Lisbon Metropolitan Area with 15.6%.

It is interesting to notice that the current trend is going to lead to new record prices year after year, at least until something changes in the market and stabilizes it (please see Table 2.4).

Table 2.4: Prices per Portuguese region and historical maximums (June 2019)

Location	Price per m2 Jun 2019	Monthly Change	Trimestral Change	Annual Change	Historical Maximum	Maximum Change
Portugal	1932 €/m²	+1.5%	+4.5%	+15.9%	1932 €/m² jun 2019	0.0%
Alentejo	1041 €/m²	+2.1%	+1.5%	+2.7%	1062 €/m² nov 2018	2.0%
Algarve	2153 €/m²	+0.8%	+3.9%	+9.2%	2153 €/m² jun 2019	0.0%
Lisbon Metropolitan Area	2807 €/m²	+3.7%	+6.5%	+15.6%	2807 €/m² jun 2019	0.0%
Center	1020 €/m²	-0.4%	+4.0%	+10.5%	1029 €/m² dec 2018	-0.8%
North	1570 €/m²	-1.1%	+3.8%	+23.8%	1588 €/m² may 2019	-1.1%
Madeira	1539 €/m²	+1.8%	+3.1%	+8.6%	1539 €/m² jun 2019	0.0%
Azores	834 €/m²	-2.6%	-1.8%	-0.2%	919 €/m² jan 2015	-9.2%

Source: Idealista (2019)

Afterwards, through Figure 2.2, Figure 2.3 and Figure 2.4 it is seen in more detail the variations in the housing price in each one of the regions. At first, looking at the Lisbon Metropolitan Area, and considering that these Figures include data exclusively from January 2015 to June 2019, it is possible to notice that the variation of the price across those 5 years and 6 months was astronomical. In January 2015, the value registered was around 1,277€/m2 when, in June 2019, the price was located around the 2,807€/m2. The variation in this period was 119.8%, meaning that the price more than doubled.
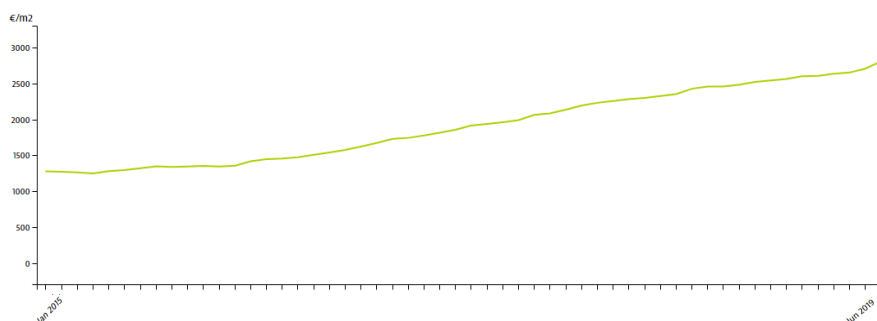
Figure 2.2: Price change between 2015-2019 in the Lisbon Metropolitan Area (Source: Idealista 2019)

Regarding the Algarve the variation was quite large as well, but not as colossal as in the example seen before. In this scenario, the price per square meter has increased 65.9% from 1,298€/m2 to 2,153€/m2.
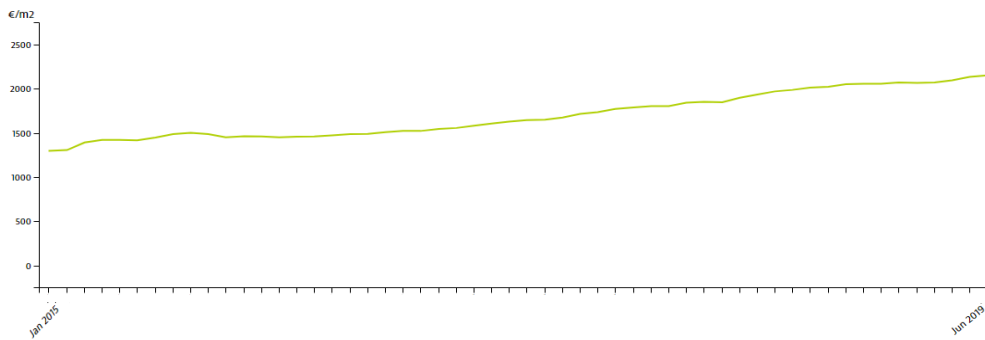
Figure 2.3: Price change between 2015-2019 in the Algarve region (Source: Idealista 2019)

Further, in the North region the variation is 68.3%. However, there is a very interesting aspect important to mention in this region. The data shows that between May 2019 and June 2019, a period of one month, instead of increasing as in the other two regions across all the periods, the price decreased from 1,588€/m2 to 1,570€/m2. Therefore, it remains unknown if this change represents or do not a change in the trend.
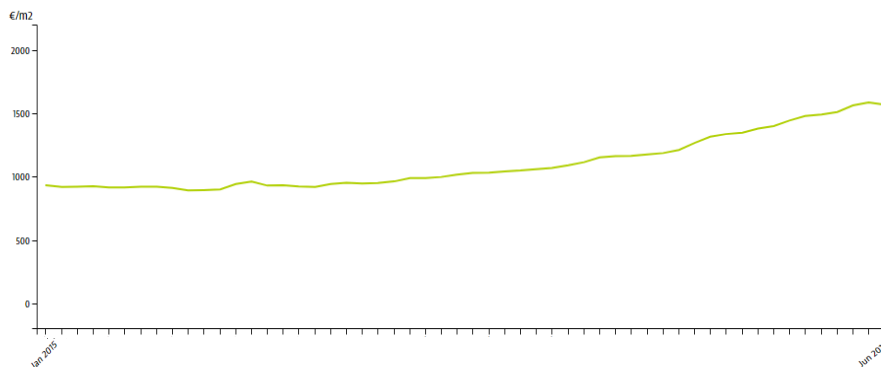
Figure 2.4: Price change between 2015-2019 in the North region (Source: Idealista 2019)

It is not by chance that these three regions are those with higher price per square meter. The districts belonging to the areas are as well the more expensive across the country, as can be seen through Table 2.5. Lisbon is the district with higher price followed by Faro, Porto, Madeira (Island) and Setubal, respectively. The fact that the three most expensive districts belong to the three regions where the prices are higher, is representative of the enormous influence that these districts play in setting the prices across the country. Lisbon, with a price of 3,162€/m2, is clearly the most expensive district in the country by far, since the difference to Faro, the second most expensive, is quite large. The district from the Algarve region has a price per square meter of 2,153€. An interesting fact is that the district of Setubal, which is the 5th more expensive

district in the country, belongs to the Lisbon Metropolitan Area, and therefore, as well as Lisbon, it is explanatory of the price practiced in the Metropolitan Area.

On the other hand, in terms of the cheapest districts in country, these are found mainly in the interior. Guarda and Castelo Branco, with prices per square meter of 645€ and 663€ respectively, hold the title for most accessible districts to acquire a house.

Table 2.5: Prices per Portuguese district (June 2019)

Location	Price per m2 Jun 2019	Monthly Change	Trimestral Change	Annual Change	Historical Maximum	Maximum Change
Portugal	1932 €/m²	+1.5%	+4.5%	+15.9%	1932 €/m² jun 2019	0.0%
Aveiro	1060 €/m²	+0.2%	+4.2%	+17.5%	1060 €/m² jun 2019	0.0%
Beja	774 €/m²	-1.1%	-1.9%	-3.1%	851 €/m² feb 2016	-9.1%
Braga	955 €/m²	-0.4%	+3.5%	+11.0%	959 €/m² may 2019	-0.4%
Bragança	701 €/m²	-1.6%	+3.7%	+9.0%	712 €/m² may 2019	-1.6%
Castelo Branco	663 €/m²	-2.4%	-2.5%	+2.2%	742 €/m² set 2015	-10.5%
Coimbra	1045 €/m²	+0.3%	+2.9%	+5.7%	1166 €/m² nov 2015	-10.4%
Évora	859 €/m²	+0.3%	+3.2%	+0.6%	939 €/m² mar 2016	-8.5%
Faial (Island)	731 €/m²	-0.5%	-1.8%	-4.3%	1031 €/m² nov 2018	-29.1%
Faro	2153 €/m²	+0.8%	+3.9%	+9.2%	2153 €/m² jun 2019	0.0%
Guarda	645 €/m²	+2.7%	+4.8%	+8.8%	656 €/m² jun 2016	-1.7%
Leiria	1165 €/m²	-3.3%	+4.2%	+9.6%	1204 €/m² may 2019	-3.3%
Lisboa	3162 €/m²	+3.0%	+5.3%	+12.2%	3162 €/m² jun 2019	0.0%
Madeira (Island)	1548 €/m²	+1.7%	+3.1%	+8.7%	1548 €/m² jun 2019	0.0%
Pico (Island)	757 €/m²	-8.5%	-5.8%	-12.8%	1047 €/m² apr 2017	-27.7%
Portalegre	740 €/m²	-0.4%	-2.0%	0.0%	822 €/m² feb 2018	-9.9%
Porto	1816 €/m²	-0.3%	+5.1%	+23.7%	1821 €/m² may 2019	-0.3%
Porto Santo (Island)	1222 €/m²	+4.3%	+2.9%	+2.1%	1405 €/m² oct 2017	-13.0%
Santarem	781 €/m²	-0.7%	-1.9%	+3.1%	797 €/m² mar 2019	-1.9%
São Miguel (Island)	852 €/m²	-4.0%	-5.2%	+5.2%	928 €/m² dec 2018	-8.2%
Setubal	1431 €/m²	+2.3%	+4.6%	+14.2%	1431 €/m² jun 2019	0.0%
Terceira (Island)	840 €/m²	+3.1%	+8.2%	-5.1%	947 €/m² feb 2015	-11.3%
Viana do Castelo	980 €/m²	-0.4%	+0.6%	+2.9%	1001 €/m² dez 2018	-2.1%
Vila Real	730 €/m²	+3.8%	+3.1%	-4.7%	793 €/m² mar 2016	-7.9%
Viseu	763 €/m²	+2.9%	+2.9%	+6.5%	763 €/m² jun 2019	0.0%

Source: Idealista (2019)

2.10.3 Forecast for 2020

The upward trend that lies in the Portuguese housing market is heading the prices for historical maximums and, the question that has been raised over the years is: When will this trend stop?

It is impossible to have an accurate answer for that question, however, there are organizations that specialize in these issues, and, through several studies and investigation, they try to forecast what is going to happen in the coming years. For instance, the company Fitch Ratings believes that in 2020 the housing market will stabilize across the European countries. Nevertheless, it also states that despite this slowdown, some countries, such as Portugal, will continue to register strong growths with variations around 5 to 6%.

Furthermore, a study from the Moody's Corporation, believes that Portugal will continue to be one of the countries in Europe where the prices increase more and points out a growth rate around 7 to 8% until the end of 2020.

2.10.4 Valorization between 2013-2018 in the EU countries

The previous Figures and respective analysis were very enlightening of the current trend that Portugal is experiencing in the last years. The data from those years have shown that the prices have, indeed, increased throughout the years and they are most likely to follow the same trend at least until the end of 2020, according to the analysis of Moody's and Fitch Rankings. Nevertheless, seeing that Portugal is since 1986 a member of the European Union, it is always relevant to compare what is happening in the country with the other members.

Figure 2.5 shows the evolution of these prices between 2013 and 2018, thus providing very interesting data for some conclusions. The first aspect to be noted in Figure 2.5, is that only five countries (Sweden, Estonia, Hungary, Ireland, Iceland) have registered a higher increase in the housing prices during the period under analysis. Then, the fact that only one country, Italy, has registered a fall in prices of almost 10% is very interesting, since it is an exception to the overall tendency. Afterwards, it is also quite relevant to compare the growth rate of Portugal with the growth rate of the EU and the Euro Zone. The difference is enormous. Portugal has registered a growth rate of 38.6% against 18.6% in the EU and only 14.2% in the Euro Zone. Both rates are less than half of the one registered in Portugal, which proves that, in fact, the housing boom that Portugal is living in the present is not only above the average, but quite exceptional.

The study from Fitch Ratings predicts a slowdown in the housing prices for the coming years, however, it still expects that Portugal will continue to be one of the leaders in these price variations.

Ireland	70.6
Island	66.7
Hungary	55.2
Estonia	42.3
Sweden	41.7
Portugal	38.6
Czech Republic	38.4
Lithuania	35.9
Latvia	32.7
UK	32.1
Luxemburg	31.9
Austria	29.9
Slovakia	29.6
Bulgaria	29.2
Netherlands	29.1
Denmark	27.6
Malta	27.4
Norway	26.6
Germany	25.6
Spain	23.2
Romania	19.5
European Union	18.6
Poland	15.6
Euro Zone	14.2
Belgium	10.6
Croatia	6.2
France	4.0
Finland	2.5
Cyprus	1.1
Italy	-9.6

Note: Slovenia does not have data for 2018.

Figure 2.5: Evolution of housing prices between 2013-2018 (Source: Dinheiro Vivo, 2019)

2.11 Perceived & Effective Knowledge

The perceived knowledge of individuals corresponds to the level of knowledge individuals believe they possess regarding a certain topic. The effective knowledge is the knowledge that individuals have for real and works as a basis for comparing the knowledge of individuals across time.

A research from Banco de Portugal has attributed a level of 58% for the effective knowledge of individuals regarding several categories of financial literacy in 2011 (BdP, 2011b). In 2005, OECD has elaborated a similar study across several countries in the world (US, Australia, UK, and South Korea) and has concluded that most individuals have low levels of financial literacy. The results, for instance from United States, corresponded to 52.3% of correct answers to the questions asked in the survey. Another example, this time from Korea, also show that individuals levels of financial knowledge is low, since in most categories have registered scores below 50% (OECD, 2005).

Then, it is also highly important to understand the relationship between the perceived knowledge and the effective knowledge of individuals. Following this statement, a previous

study elaborated by Inês Roquette in 2012 has made a comparison between the perceived and the effective knowledge of individuals. Firstly, it was obtained a variable representative of the effective knowledge of individuals, as well as another variable representative of the perceived knowledge of individuals. Afterwards, both variables were compared in order to understand if there were differences between what individuals believe to know and what they actually know. The findings suggest that the perceived knowledge tends to be higher than the effective knowledge, meaning that individuals overvalue their levels of financial literacy (Roquette, 2012).

Furthermore, in the research from OECD in 2005, the same conclusions were obtained. This research was based on surveys made to the population of the United Kingdom, United States and Australia. The respondents in these three countries feel confident in their knowledge of financial issues. However, when they are tested, it is found that their knowledge is more limited than what they think. This scenario may be problematic for individuals because if they feel their current knowledge is enough to make financial decisions, they will not look for more information before making those decisions. Therefore, this knowledge overvaluation may lead individuals to make wrong decisions and that can be harmful to their lives (OECD, 2005).

3 Research Model and Methodology

3.1 Objectives and Research Model

Aiming at measuring the levels of financial literacy among Portuguese individuals, the following objectives were defined:

1. Characterize financial habits;
2. Characterize the knowledge related to credit and interest rates;
3. Assess the perceived and effective financial knowledge in securities;
4. Assess the risk profile;
5. Identify the explanatory factors of habits and financial knowledge.

The literature review presented in the previous chapter, enabled the identification of some dimensions that are directly related with the financial knowledge of individuals. Furthermore, a few studies from the last decade, such as those from Banco de Portugal (2011) and CNSF (2016), were extremely important as well. Since the scope of this research is to evaluate the financial literacy among the Portuguese population, it is quite relevant to consider similar studies such as those mentioned above.

Through all the information gathered from several authors and previous studies, the following dimensions were proposed as possible relevant factors to obtain an understanding of the financial knowledge among Portuguese individuals.

- Savings Habits;
- Investing Habits;
  - Securities;
  - Real Estate;
- Credit & Interest Rates;
- Risk Profile.
- Perceived Knowledge
- Effective Knowledge

The aim with these six dimensions is to gather as much information as possible from different financial topics, in order to create a complete overview. For instance, the two initial dimensions (savings and investing habits) have the objective of understanding who are the individuals who save and who are those that invest, as well as the reasons behind those decisions. Then, through the dimension of credit & interest rates is tested if individuals are familiar with both terms, as well as if they considered them for their daily life financial decisions. Afterwards, the risk

profile measures the individuals' propensity to take risks while investing. These dimensions enable to obtain an understanding of the knowledge of individuals.

Following the context illustrated above, in Figure 3.1 it is presented the research model proposed for this research.
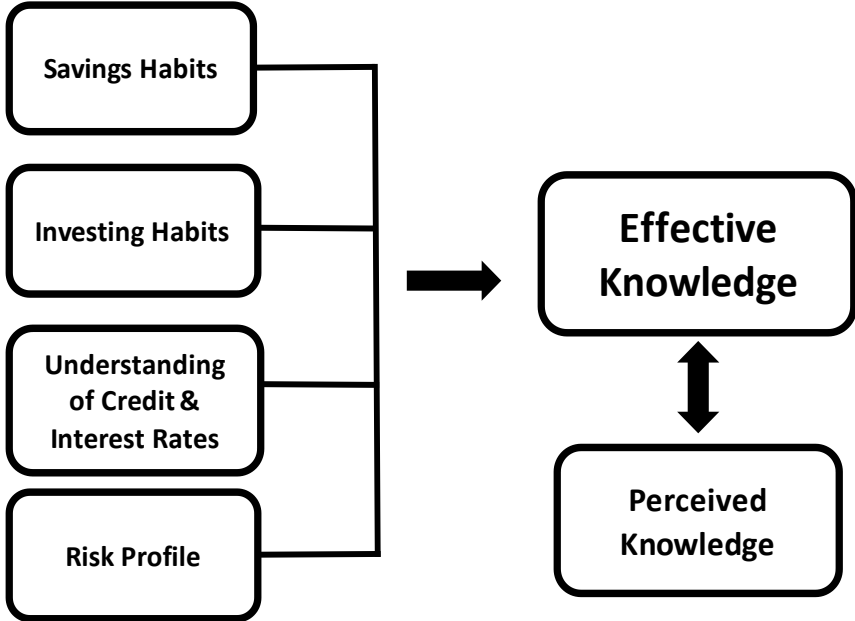
Figure 3.1: Research model proposed

3.2   Population and sample

This study aims at finding out the general level of financial literacy across the Portuguese society, therefore, it targets every Portuguese individual with an age between 18 and 69 years old. Since the method chosen to collect the data is an online survey, it is considered that all the respondents have access to the internet, otherwise, it would be unlikely their participation.

Afterwards, after defining the target population for this research, it is time to collect the necessary responses to build the sample that is going to be considered.

The initial idea is to obtain a perfect sample of the entire population, thus obtaining the same responses for each age segment considered. However, especially due to a limitation in gathering a higher number of responses across all these segments, it ended up being divided in the following way: 51% aged between 18-24, 13% between 25-39, 28% between 40-54 and 8% between 55-69.

The sample is composed by 240 cases (n=240). However, the convenience sampling method used may not guarantee the representation of population.

3.3 Instrument used to collect data

In order to collect data for this research, a questionnaire was made (please see Annex A1) based on the previous financial literacy surveys of Banco de Portugal (2011) and CNSF (2016). Besides, a few specific questions were integrated by the researcher. The survey has thirty-two questions, divided into six dimensions.

These are the following: savings habits, investing habits (securities & real estate), credit and interest rates, propensity to take risks, perceived knowledge and effective knowledge. This division is quite different from the one used by the previous surveys, since the goal was to be specific in areas related with savings and investing issues.

In Table 3.1 are classified all the questions for each dimension of the study, as well as their role.

Table 3.1: Dimensions of the research

Dimensions	Questions	Description
Savings Habits	B1 – B5	Questions with the aim of understanding if people save money or not and the reasons behind that decision.
Investing Habits (Securities)	C1 – C7	Questions made to measure the extent to which Portuguese citizens are willing to invest in securities as well as the major risks they associate to them.
Investing Habits (Real Estate)	C8 – C11	Questions made to understand if people are aware of the potential of real estate as an investment vehicle and if they are already using it.
Credit & Interest Rates	D1 – D5	Questions made to understand the knowledge people have of interest rates and credit.
Propensity to take risks	E1 – E2	Questions with the aim of measuring how individuals deal with risk while investing.
Perceived Knowledge	F1 – F6	Questions with the aim of understanding individuals' self-assessment of their own knowledge.
Effective Knowledge	G1- G9	Questions made with the purpose of evaluating the real knowledge of individuals regarding financial issues.

The dimensions set for this research were all selected with a specific goal. At first, the questions regarding the Savings dimension were assigned to obtain an understanding of the current savings habits of individuals. It is highly relevant to see who saves money and who does not, as well as the reasons behind each of these decisions. This section consisted in five multiple choice questions.

Then, the Securities dimension aims at understanding who are the individuals that invest in securities, as well as the financial products they own. Besides, it is also important to find out the reasons behind those that do not invest in securities and what could change that decision.

Afterwards, a set of questions regarding the Real Estate market were considered. This market has a huge potential to generate good returns, especially through renting, thus, it is interesting to understand how individuals look at it. The Investing Habits dimension consisted in ten

multiple choice questions, one question with a scale from 1 to 5, where 5 represented the highest value in the scale (C9) and another question with a scale from 1 to 4, where 4 represented the highest value in the scale (C8).

Next, in terms of Credit & Interest Rates, the purpose was to understand to what extent people take into consideration the current economic situation and its influence in the interest rates of the market towards investing and asking for loans. This section was comprised by five multiple choice questions.

It is extremely important for investors to balance these two different concepts when investing: risk & return. It is not surprising that investors want to obtain the highest return from their investments, however, they can never forget to consider their level of risk, since these concepts are positive correlated. Therefore, two questions were selected (E1 & E2) in order to draw a risk profile of individuals in a scale from 1 to 5, where the highest value corresponded to the highest risk profile, meaning that they show a higher risk tolerance.

Then, the knowledge of individuals was assessed. At first, the assessment comprised the real knowledge individuals have, which represents their effective knowledge. On a second phase, the assessment was regarding the individual's believe of their own knowledge, which represents their perceived knowledge for the scope of this research.

In terms of the perceived knowledge, six questions were selected (F1–F6). Each of these comprised five possible answers, from 1 to 5, where 1 represented very low knowledge and 5 very high knowledge. The response chosen by the individual would correspond to the exact score of that answer, meaning that, for instance, if an individual's answer is 3 (normal knowledge), the score for that question was 3 as well. Since there are six questions, the final score obtained would be comprised between 6 and 30 points, where the highest the score obtained, the highest the perceived knowledge of the individual.

Further, regarding the effective knowledge of individuals, some questions from different topics were selected. It was added one question with the purpose of evaluating individual's knowledge of inflation which score was 3 points for a correct answer and 0 points for an incorrect one or for a "I do not know" answer (D5). Besides, six questions aiming at testing the level of risk that individuals assigned to each financial product were selected (G1-G6). The possible answers were comprised in a scale from 1 to 3, where 1 is low risk and 3 high risk. The distribution of scores varies according to each one of these six questions, since there are questions where the answer can be more straightforward and others that are not so direct. In Table 3.2, it is shown the score distribution:

40

Table 3.2 – Score distribution regarding financial products' risk assessment in the survey (G1-G6)

Products	Scores			
	Low	Medium	High	I don't know
Shares	0	0	3	0
Bonds	2	2	0	0
Investment Funds	1	1	1	0
Pension Funds	2	1	0	0
Demand Deposits	3	0	0	0
Time Deposits	3	0	0	0

Through the table above it is possible to notice that some financial products such as shares, demand deposits and time deposits have only one correct answer, while the remaining accept more than one alternative. This happens because it does not seem to exist any doubt whatsoever regarding the high level of risk associated to shares and, on the other hand, the inexistence of risk in some products, such as demand deposits or time deposits. However, in terms of bonds, investment funds and pension funds, it was considered that there was not a right answer, since it would depend on the product chosen inside each of these three categories. For instance, the risk of investing in a treasury bond cannot be the same as investing in a corporate bond, since the likelihood of losing the principal is much higher in the second option. Usually, treasury bonds are a risk-free product since they depend on the country itself to repay the principal invested. Then, in terms of investment funds, all answers were considered correct because, for this financial product, the risk depends on the fund chosen. If it is a hedge fund the risk associated to the investment is huge, however, if it is an investment fund that invests specially in treasury bonds, the risk is low. Finally, pension funds were considered as a product that comprises low risk in general, however, there are some of these that can have a more aggressive portfolio.

Furthermore, three more multiple choice questions (G7-G9) were part of this effective knowledge dimension. The first one asked the participants about the volatility between shares, bonds and investment funds, in order to test if individuals knew that the product with a higher volatility of these three are shares. Then, participants had to answer a question regarding the risk of investors towards a bankruptcy scenario, where they were supposed to answer that the investors who face a higher risk in this situation are the shareholders, and not the bondholders, since the later have priority in being repaid. Finally, the last question had the purpose of testing if individuals knew what financial product usually provides the highest return in the long-term, from the following alternatives: shares, treasury bonds, corporate bonds, treasury bills and time deposits. Those who answered "shares" have obtained the score of 3, while the remaining

answers would give 0 points to respondents. In the previous two questions, the scores were the same, meaning that the correct answer was 3 points and all the remaining answers, as well as the "I do not know" answer, would have a null score.

The scale for the effective knowledge variable was comprised between 1 to 26 points, in which it was considered that the higher the score, the higher the effective knowledge of individuals. In order to perform comparisons between these two variables and with previous studies, the results obtained for the perceived and the effective knowledge were converted to percentages through a linear interpolation.

3.4 Process of collection and data processing

The questionnaire was elaborated via online through Google Forms and was available to respondents for 4 months (January 2020 - April 2020). In order to obtain the most possible number of responses, a few social networks such as WhatsApp, Facebook and Instagram were used. These tools have played a crucial role in advertising the survey, thus reaching a wide range of individuals.

As it was explained above, there were limitations in gathering the required responses to build a sample that represented the whole Portuguese society, nevertheless, the number of responses (n=249) has enabled an acceptable sample of 240 valid answers to perform the data processing.

Afterwards, when initiating the data processing, it is important to, at first, make a sample characterization. This stage is going to be highly relevant since it enables to understand who the participants are, thus looking at several aspects such as their age, gender and education level. Further, the next step involves an analysis of the data collected for each one of the defined objectives, right before pointing out the clear trends found in their responses. The trends identified are going to be used as a basis to draw the conclusions for the research.

Microsoft Excel 2010 and IBM SPSS Statistics (version 26) constitute the software used to perform the necessary statistical analysis for the study. Regarding the data analysis we performed descriptive statistics techniques and to assess the reliability of the two individual's perceived knowledge dimensions we use the Cronbach alpha measure (both show a value above 0.6). Furthermore, and as the sample does not allow to do statistical inference, we use hypothesis tests to assess the magnitude of the differences among the sample means (considering a significant value of 0.05) and also association measures to evaluate the strength of the relationship between two variables.

4 Results

4.1 Sample Characterization

The questionnaire has enabled to collect 240 valid responses to build the sample. In order to proceed to the sample characterization, the following aspects were selected: Gender, Age and Educational Level (please see Table 4.1). The major stake of respondents belongs to the female gender with 64.6%, while male respondents represent 35.4% of the sample size. For this research, it was considered only the respondents with an age between 18 and 69 years old. More than half of the sample size, 50.8%, is made of people with 18-24 years old, the millenniums. The second age class with more weight in the sample is made of people with 40-54 years old, representing 27.5%. In terms of educational background, most respondents have a university degree, 60%, meaning that the 40% left represent people who have finished at least the 9th grade. From this analysis of Educational Level, it is possible to see that most of the respondents are people with high levels of education and many possess a university diploma.

Table 4.1 – Sample characterization

Characteristics	Respondents	%
Gender		
Male	85	35,4
Female	155	64,6
Age		
18-24	122	50,8
25-39	32	13,3
40-54	66	27,5
55-69	20	8,3
Educational Level		
9th grade	7	2,9
12th grade	89	37,1
Bachelor's degree	102	42,5
Master's degree or above	42	17,5

Note: n=240

4.2 Characterization of Financial Habits

4.2.1 Savings Habits

Table 4.2 divides the sample in people who save and people who do not save. The results indicate a clear trend of savers, since only 8.3% of respondents have answered that they do not

save money. Besides, only regarding savers there are those that save money in some occasions (60.5%) or those that tend to save money very often (39.5%).

Table 4.2 – Distribution of People who Save Money

People who save money	Respondents	%
No, I do not save money	20	8.3
Yes, I save money in some occasions	133	55.4
Yes, I save money very often	87	36.3

Note: n=240

Table 4.3 shows the destination of savings as well as the reasons why people save money for the future. From the respondents who save money, only 24.7% invest immediately in a financial application such as a time deposit, a stock or a bond, in order to obtain positive returns in the future. The majority, around 70%, prefer to leave the money in a bank account before spending or investing. Furthermore, it is interesting to mention that there are still people who opt to save their money at home, 3.7%.

In terms of the main reasons why people save, there are two answers that stand out. Most people save money to face unexpected expenditures that may occur in the future (43.3%) while others save money with the purpose of travelling or to have great holidays (38.7%). The low weight of those that save for retirement (2.3%) can perhaps be due to the great share of young participants. According to Chakraborty & Digal (2011) youngsters are not keen to save for long-term, namely for their retirement.

Table 4.3 – Destinations of savings and reasons to save

Characteristics	Respondents	%
Destination		
Leave it in a bank account to spend later on	97	44.3
Leave it in a bank account before applying it in financial application	57	26.0
Apply it immediately in a financial application	54	24.7
Save them at home	8	3.7
Apply them in family businesses	1	0.5
Save for holidays	2	0.9
Total	**219**	**100.0**
Reasons to save money		
Take advantage of fiscal benefits	3	1.4
Future expenditures (holidays, travelling...)	84	38.7
Acquisition or replacement of long term goods	19	8.8
Children's education	3	1.4
To face unexpected expenditures	94	43.3
For retirement	5	2.3
Other	9	4.1
Total	**217**	**100.0**

Further, in Table 4.4 are illustrated the reasons why people do not save money and the outcome is not surprising. Most of respondents say that the main reason that stops them from saving money is the fact that their income is not enough, meaning that these 80% need to use all their monthly income constantly to afford the cost of living. The second reason is impulse spending with a weight of 15%.

Table 4.4 – Why People do not Save Money

Reasons to not save money	Respondents	%
The income does not allow	16	80.0
It is not a priority	1	5.0
Not planned expenses (impulse spending)	3	15.0
Total	**20**	**100.0**

Finally, in Table 4.5 it is shown the result of a question aiming at understanding how people would react in a situation where they earn a lot of money suddenly. There is not an answer that stands out, however, most people have chosen to apply the earned money in a savings account, which illustrates that they are thinking up front and showing concern over their future. Afterwards, around 28% of respondents would acquire or replace long terms goods, thus taking advantage of the money earned to improve their current lifestyle. Two other alternatives involve

applying the money in vacations or for travelling (12.5%) and investing in financial products (20.8%). This last one is quite interesting since it shows that one fifth of the respondents understand the potential that financial products have in generating good returns.

Table 4.5 – What would people do with a 50.000 € prize

Apply a 50.000€ Prize	Respondents	%
Apply in travelling or vacations	30	12.5
Purchase financial products (shares, bonds, investment funds, real estate market, etc.)	50	20.8
Leave the money in a bank account	10	4.2
Acquire or replace long term goods (bigger house, furniture, vehicle...)	68	28.3
Apply in a savings account	74	30.8
Pay the loans (Mortgage, etc.)	3	1.3
Give to children	1	0.4
Help elderly and homeless	1	0.4
Apply it in several things	2	0.8
Invest in family business	1	0.4
Total	**240**	**100.0**

4.2.2   Investing Habits

4.2.2.1   Securities

The main reason that stops people from investing their savings in securities is the fact that their income is not enough (please see Table 4.6). Around 56% of respondents have stated that their insufficient income is the major problem. Afterwards, 27% individuals consider their lack of knowledge a huge barrier between them and the success in the securities market. The high level of risk associated to securities is another valid reason for individuals to not invest in these products.

The evidence suggests that with a higher disposable income, individuals would invest in securities. The fact is that 52% of responses indicate that having more money would be a valid reason to start acquiring these products. Besides, it is interesting to highlight that 18% of individuals have mentioned that they are not planning to start investing at all, regardless what happens in their lives. Afterwards there are similar weights of 8/9% of people who refer a higher stability in the economy, more confidence in the securities market, as well as having access to more information about these products as extremely valid reasons to start investing (please see Table 4.6).

Table 4.6 - Why people do not invest in securities and what would change that

	Respondents	%
Reasons to not invest in securities		
The income is not enough	114	55.9
Lack of knowledge	55	27.0
High risk	26	12.7
Negative past experience	5	2.5
It is not a product a care about	3	1.5
High Complications	1	0.5
Reasons to start investing in securities		
Have more money	105	51.5
Higher profitability attached to securities	9	4.4
Lower interest rates in time deposits	2	1.0
Access to more information about the securities market	19	9.3
Have more confidence in the securities market	17	8.3
Higher stability in the economy	16	7.8
I do not plan to start or restart investing at all	36	17.6

Note: n=204

Afterwards, in terms of the highest threats of investing in securities, it is possible to notice that around half of the responses indicate that huge decreases in price are the highest concern regarding securities, thus referring the huge volatility of these products as their main threat. Besides, 29% of individuals have mentioned the low liquidity in the securities market, while 17% enhanced the risk attached to these investments.

The results obtained from this question indicate that most people have a low weight of securities in their portfolio, around 31%. Moreover, 39% of participants have an exposure comprised between 11% and 50%, while the lower stake, namely 14%, are very comfortable with having more than half of their portfolio invested in securities. Besides, it is noticed that 17% of respondents are not quite sure about the weight of these products in their portfolio (please see Table 4.7).

The data shows that 86% of respondents do not own any security. These are divided into people who have never had money invested in securities in the past (73%), and in those who have mentioned their past investment experiences (14%). On the other side, the number of positive responses has represented solely 14% of the total data under analysis.

Table 4.7 – Securities information

	Respondents	%
Securities in the portfolio		
<11%	11	36,7
11-25%	7	23,3
26-50%	7	23,3
>50%	5	16,7
Total	**30**	**100,0**
Highest threat of securities		
High risk	4	16,7
Low liquidity in the market	7	29,2
Huge decreases in price	12	50,0
Long-term Investment	1	4,2
Total	**24**	**100,0**
Owners of securities		
Yes	32	13,6
No, but I used to have in the past	32	13,6
No, and I have never had	172	72,9
Total	**236**	**100,0**

Each financial product has its own specific characteristics, therefore, before the purchase, investors should be aware of the risks involved in holding those products. The ownership of a certain financial product is directly related with the investment strategy, as well as with the risk profile of individuals. In the following table it is possible to understand which are the financial products that individuals are more willing to hold. With no surprise, demand deposits represent the primary choice since it is not a complex product and it is kind of a requisite for every person. However, the fact that only 60% of the participants own a demand deposit account is quite astonishing. Afterwards, around 40% of respondents own time deposits, being this evidence in line with the strong history between the Portuguese and this specific product. Then, around 16% of respondents own treasury bills, a product that even though is offering quite a low interest rates nowadays, it has always represented one of the Portuguese citizens first choices. On the opposite side, products such as bonds or investment funds are not chosen for at least 93% of respondents (please see Table 4.8).

Table 4.8 – Financial products owned

	Yes	
	Respondents	%
Shares	23	9.58
Bonds	11	4.58
Investment funds	16	6.67
Pension funds	23	9.58
Demand deposits	146	60.83
Time deposits	96	40.00
Treasury bills	38	15.83

Note: 77% of participants own at least one financial product

Finally, investing in a financial product can represent a tough decision for every individual. It is crucial to be aware of the perks and the downsides of each product. In order to understand why people would opt for a specific investment product instead of another, it is illustrated in the following table the criteria that Portuguese citizens take into consideration the most before investing their money.

The results are quite balanced, however, it seemed that the most important criteria for those who participated in the survey is the low risk and high security attached, representing around 67% of positive answers. Then, with a weight of 60%, most people also consider highly relevant the income that those financial products can generate in the future. Other criteria that people consider before acquiring a certain financial product is the full refund guarantee (50%), the liquidity level (43%), fiscal benefits (31%) and no penalty for anticipated withdraw (27.5%) (please see Table 4.9).

Table 4.9 – Criteria for choosing financial products

	Yes	
Criteria for choosing financial products	Respondents	%
Income of the products	143	59.58
Liquidity level	104	43.33
Low risk and high security	160	66.67
Fiscal benefits	75	31.25
Full refund guarantee	120	50.00
No penalty for anticipated withdraw	66	27.50

4.2.2.2 Real Estate

By looking at the data, it is possible to identify a clear trend in respondents to see the real estate market as an income generator (please see Table 4.10). Around 69% of respondents believe in the potential of the real estate market to generate extra income to investors. These are divided

into people who believe this market has some potential (33%) and into those who believe it has a lot of potential (35.4%). On the other hand, it is noticed that around 9% of participants do not believe in the potential of the real estate market as an income generator. The remaining 22% of responses are from individuals who do not have a clear idea regarding this subject.

The major stake of respondents (85%) consider the real estate prices in Portugal as high or even very high. From these last, 37% refer to "high prices" and 48% to "very high prices". Afterwards, there are still people who think the prices are perfectly normal (5%) as well as those who believe that the prices are low or very low (1.2%). Finally, it possible to notice that 10% of participants do not have a clear idea of the current real estate prices in the market nowadays (please see Table 4.10).

Table 4.10 – People's opinion on the real estate market nowadays

	Respondents	%
Real estate as income generator		
Does not have potential	7	2.9
Has low potential	15	6.3
Has some potential	80	33.3
Has a lot of potential	85	35.4
I do not know	53	22.1
Real estate prices in Portugal		
Very low prices	1	0.4
Low prices	2	0.8
Normal prices	10	4.2
High prices	87	36.3
Very high prices	116	48.3
I do not know	24	10.0

Note: n=240

The following table divides the participants into owners and not owners, thus understanding the situation of individuals in the real estate market. Most of respondents do not possess their own house (70%), however, around 6% of these did have their own home in the past. The 30% left are those who currently own real estate (please see Table 4.11).

Table 4.11 – Distribution of real estate owners

Real estate owners	Respondents	%
Yes	72	30.1
No	152	63.6
No, but I used to be in the past	15	6.3
Total	**239**	**100.0**

The results identify a clear trend in people not using real estate as a source of income. Only 19.5% of respondents have mentioned that indeed use this market to generate income. The others 80.5% are divided into people who were used to obtain income from real estate in the past (15%) and in people who do not use real estate as a source of income neither in the past or in the present (please see Table 4.12).

Table 4.12 – Distribution of people who use real estate as a source of income

Users of real estate as a source of income	Respondents	%
Yes	17	19.5
No	57	65.5
No, but i used to do that in the past	13	14.9
Total	**87**	**100.0**

4.2.3 Interest Rates in financial decisions

It is important to understand the knowledge degree individuals have regarding interest rates obtained from financial products (please see Table 4.13). The results suggest that around 23% of participants are not aware of the interest rates obtained from financial products. On the other hand, 27% of responses indicate the individuals who have at least a general idea of these interest rates and 8% of these are aware of the exact amounts. Moreover, there are other respondents that the moment they have new savings to apply is the moment when they are aware of the interest rates obtained from financial products.

Furthermore, the data shows that most people do not take much effort in comparing the interest rates between the several existing financial products (65%). These unconcerned individuals are divided into those who always choose their bank (36%) and 29% that do not compare at all. Afterwards, regarding the opposite branch, there are citizens who make the comparison between all the banks in the market (22.5%), while the other (12.5%) only consider the banks where they are customers (please see Table 4.13).

The analysis shows that the major stake of participants, around 48%, do not have loans at the moment. The remaining 52% who have loans, are divided into those who are aware of the interest rates charged, and those who are not. The first group corresponds to 31.3% of the responses and is divided into people who know exactly the value of the rates (6.3%) and into people who have an approximate idea of their value (25%). Moreover, the 21% remaining are not aware of the interest rates charged in their loans (please see Table 13).

In the following table it is possible to see people's thought regarding the access to credit nowadays (please see Table 13). The evidence suggests that most respondents (25.8%) consider

this period as unfavorable to obtain credit. Afterwards, the second major stake of responses believe that the access to credit is normal in comparison to other periods (23.3%). Moreover, around 17.5% of participants say that currently the access to credit is favorable and 2.9% go even further and say it is very favorable. The 5% remaining have distinguished the current period as very unfavorable. It is also important to notice that 25.4% of participants did not want to take a shot, thus having answered "I do not know".

Table 4.13 – Importance assigned to interest rates

	Respondents	%
Interest rates obtained from financial products		
Yes, always in the exact value	20	8.3
Yes, always in an approximate value	44	18.3
Only when I have new savings to apply	58	24.2
No	55	22.9
I do not have financial applications in the bank	63	26.3
Interest rate comparison between financial products		
Yes, among the banks where I am a customer	30	12.5
Yes, among all the banks	54	22.5
No, I always choose my bank	87	36.3
No	69	28.8
Interest rates in loans		
Yes, always in the exact value	15	6.3
Yes, always in an approximate value	60	25.0
No	50	20.8
I do not have loans	115	47.9
Access to Credit		
Very unfavorable	12	5.0
Unfavorable	62	25.8
Normal	56	23.3
Favorable	42	17.5
Very favourable	7	2.9
I do not know	61	25.4

Note: n=240

4.2.4 Risk Profile

The data presented in the following tables measures people's attitude towards risk taking, as well as regarding their main objective when investing their money in financial products. Most participants express their unwillingness to take risks, since 42% says that they do not like to take risks and 25% says that they hate to take risks. Conversely, only 2% of respondents say that they love to take risks and 8% have expressed to like to take risks. The last 23% are people who express an indifference towards risk raking.

Regarding people's attitudes, it is possible to see that most participants do not want to lose money, thus considering it a priority while investing (46%). There are also people who consider not losing their money a priority while investing, however, they admit a few losses in the process (20%). On the other hand, around 17% of respondents consider gaining money as their priority while investing. From these, 16% admit moderate losses in order to gain money, while 2% admit huge losses in the process. Furthermore, there are also individuals who did not think much about this subject (17%) (please see Table 4.14).

Table 4.14 – People's attitudes towards investing and risk taking

	Respondents	%
Attitude towards risk taking		
I hate to take risks	60	25.0
I do not like to take risks	101	42.1
I am indifferent	55	22.9
I like to take risks	19	7.9
I love to take risks	5	2.1
Attitude towards investing in financial products		
The priority is to not lose money	110	45.8
The priority is to not lose money, but I admite a few losses	47	19.6
The priority is to gain money, therefore I admit moderate losses	38	15.8
The priority is to gain the most money I can, therefore, I admite huge losses	4	1.7
I do not know	41	17.1

Note: n=240

Therefore, in order to understand at what extent Portuguese individuals are or not risk averse, the risk profile of individuals was computed, which basically represents their willingness to take risks. The results are comprised in a scale that goes from 1 to 5, whereas 1 corresponds to minimal risk tolerance and 5 corresponds to maximum risk tolerance. From the data shown it is possible to notice that most individuals are risk averse[2], since the average of 2.32 is considerably below the intermediate value. Besides, the median obtained demonstrates that most respondents have chosen a value very close to the average (please see Table 4.15).

Table 4.15 – People's Risk Profile

	Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum
Risk profile	240	2.32	0.85	1.00	1.50	2.00	3.00	5.00

Note: The scale is comprised between 1 and 5 (exception in the column "Valid N")

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[2] The term risk averse describes the individual who prefers lower returns with known risks rather than higher returns with unknown risks

4.3   Perceived and Effective Knowledge

4.3.1   Perceived Knowledge

The data displayed in the following table works as a mark to understand the knowledge regarding a certain set of financial products, across those who have participated in the survey (please see Table 4.16). The evidence shows that the only financial product with a mean above the average point of the scale is the demand deposit, with a score slightly above 3. The remaining five financial products have means below the average point of the scale, however, they cannot be put in the same branch. For instance, time deposits have a score of 2.94, which is very close to the average point of the scale, while all the other four scores are around 2.00.

Table 4.16 – Individual's perceived knowledge

Financial product	Mean	Std. Dev	Minimum	Percentile 25	Median	Percentile 75	Maximum
Demand deposits	3.11	1.18	1.00	2.00	3.00	4.00	5.00
Time deposits	2.94	1.18	1.00	2.00	3.00	4.00	5.00
Bank deposits	3.03	1.14	1.00	2.00	3.00	4.00	5.00
Shares	2.11	1.14	1.00	1.00	2.00	3.00	5.00
Bonds	2.03	1.12	1.00	1.00	2.00	3.00	5.00
Investment funds	1.98	1.13	1.00	1.00	2.00	3.00	5.00
Pension funds	1.87	1.07	1.00	1.00	2.00	2.00	5.00
Other products	2.00	0.98	1.00	1.00	1.75	2.50	5.00

Note: n=240 respondents; Cronbach alpha bank deposits=0.932; Cronbach alpha other produtcs=0.880.

Furthermore, the next table works as a mark to understand the knowledge level that individuals possess for each one the financial products presented. At first, looking at shares, it is possible to see that most respondents, around 70%, have mentioned that their knowledge is low or even very low. From the remaining responses, 15% consider their knowledge has normal, while the other 15% believe they have a high or even very high understanding of this product. The same trend is registered with bonds, investment funds and pension funds, meaning that most participants' knowledge is limited for these applications. From these last three it is interesting to highlight that the product whose knowledge is lower is the pension funds, a financial product where 78% of respondents have answered low (30%) or even very low (48%). On the other hand, there is another trend that aggregates both deposits, demand and time deposits, in which most responses are divided between the columns of "Normal" and "Low" knowledge. For instance, demand deposits have registered a weight of 30% in "Normal" and 24% in "Low" and time deposits have had values of 27.5% and 27.1%, respectively (please see Table 4.17).

Table 4.17 – Distribution of individual's knowledge

	Very low		Low		Normal		High		Very high	
	Respondents	%	Respondents	%	Respondents	%	Respondents	%	Respondents	%
Shares	91	37.9	77	32.1	36	15.0	27	11.3	9	3.8
Bonds	100	41.7	72	30.0	38	15.8	22	9.2	8	3.3
Demand deposits	21	8.8	57	23.8	71	29.6	57	23.8	34	14.2
Time deposits	28	11.7	65	27.1	66	27.5	55	22.9	26	10.8
Investment funds	107	44.6	68	28.3	37	15.4	18	7.5	10	4.2
Pension funds	115	47.9	73	30.4	27	11.3	18	7.5	7	2.9

4.3.2 Effective Knowledge

The following table shows evidence of the results from a question that intended to understand which of the three financial products people believe are commonly more volatile through time. Many participants have chosen the option " I do not know" meaning that they were not completely sure of the right answer (42.1%). Afterwards, this turn looking at the respondents that did choose one of the other three options, it is possible to notice a clear trend, since basically half of the individuals (49.2%) believe that from the three options presented, the financial products with a higher price volatility are shares. The remaining two alternatives have collected low responses, since investment funds have a weight of 5.4% and bonds register 3.3% of responses.

In order to see who individuals believe that carry the highest level of risk during an insolvency situation among the three stakeholders indicated, a question was made. Table 18 shows how people have responded to that specific question. The data indicates that most respondents believe shareholders are those who face the highest risk during an insolvency, since more than half of responses regards this option. Other very interesting situation is the fact that around 44% of participants have answered "I do not know", meaning that these were not sure and have preferred not to risk one of the three alternatives. The remaining respondents (4%) have chosen the option "bondholder", meaning that in their opinion the investors who own bonds are the ones facing more risk in this situation.

Before choosing a certain financial product to invest in, it is crucial that individuals are aware of the risks and potential returns involved. The evidence of this knowledge is displayed in the following table. Through the data, it is possible to notice that the product that people believe it will offer a higher return in the long term is shares. Afterwards, people have named treasury bills as the financial application with more long-term return (17.5%). The financial product people believe it will offer the lowest return in the long run are corporate bonds, with a weight of 3%. It is also important to highlight the huge number of people who have answered "I do not know", with a weight of 40%.

It is crucial to understand the role inflation plays in increasing or decreasing the purchasing power of individuals. In this sense, a question who evaluates the knowledge of participants in this matter was part of the questionnaire. The results indicate a clear trend since most participants have stated that towards a situation where interest rates are below inflation, the purchasing power tends to decrease (64.6%). Besides, only 4.2% of respondents have answered the opposite, namely that the purchasing power goes up when the inflation rate is above the interest rate. Finally, it is interesting to notice that almost a third of participants (31.3%) have preferred to not risk a answer since they were not completely sure (please see Table 4.18).

Table 4.18 – Individuals' financial knowledge

	Respondents	%
Highest price volatility		
Shares	118	49,2
Bonds	8	3,3
Investment funds	13	5,4
I do not know	101	42,1
Highest risk in an insolvency		
Investor of shares (shareholder)	124	51,7
Investor of senior bonds (bondholder)	5	2,1
Investor of subordinated bonds (bondholder)	5	2,1
I do not know	106	44,2
Highest return in long-term		
Shares	52	21,7
Treasury bonds	26	10,8
Corporate bonds	7	2,9
Treasury bills	42	17,5
Time deposits	17	7,1
I do not know	96	40,0
Effect in purchasing power when interest rates are below inflation		
Positive	10	4,2
Negative	155	64,6
I do not know	75	31,3

Note: n=240

The following table works as a mark to understand the risk level that individuals associate to each one the financial products presented. At first, by looking at shares, it is possible to see that most respondents (58%) have considered them as a product with high risk associated, while 35% have answered medium risk and only 8% consider it a low risk financial application. Regarding bonds, the major stake of responses selected medium risk, with a weight of 62.5%. The remaining participants have considered bonds a product with low risk (13.6%) and a

product with a high level of risk (23.9%). Next, looking at both demand deposits and time deposits, most respondents have considered them as low risk products, 66% and 57% respectively. It is important to mention that these last two were the only ones that comprised more answers in the "Low" column. Finally, in terms of investment and pension funds, most respondents have answered medium risk, with weights of 52.4% and 58.3%, respectively. In investment funds the second most common response was "High" risk (35.7%), while in pension funds it was "Low" risk" (29.5%) (please see Table 4.19).

Table 4.19 – Perceived risk of financial products

	Low		Medium		High	
	Respondents	%	Respondents	%	Respondents	%
Shares	15	7.5	69	34.7	115	57.8
Bonds	24	13.6	110	62.5	42	23.9
Demand deposits	140	66.0	43	20.3	29	13.7
Time deposits	118	56.7	63	30.3	27	13.0
Investment funds	20	11.9	88	52.4	60	35.7
Pension funds	46	29.5	91	58.3	19	12.2

4.3.3 Relationship between knowledge and risk

4.3.3.1 Relationship between effective and perceived knowledge

Firstly, in order to get a better representation, the scores obtained for both variables were converted to percentages through a linear interpolation (please see Table 4.20). By comparing the effective knowledge and perceived knowledge, it is possible to notice that the last one is, on average, much lower than the real one (difference around 16.4pp). Additionally, it is important to explain that both variables vary from 0 to 100 and, besides their different means, they also register distinct values for the median (Effective knowledge Median = 50 and Perceived Knowledge Median = 25).

Furthermore, if a comparison is made between the scale used for the variables (0-100) and the mean obtained for both knowledges, there is no doubt in stating that they have registered low values, since none of them is above the average of the scale (50).

Table 4.20 – Effective and Perceived Knowledge

	Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum
Effective Knowledge	240	49.44	26.35	0.00	30.77	50.00	69.23	100.00
Perceived Knowledge	240	33.04	23.56	0.00	16.67	25.00	45.83	100.00

Notes: t(239)= -10.540; p<0.001; Pearson(240)=0.538; p<0.001

4.3.3.2 Relationship between both knowledge indicators and risk

In unreported results, it was found evidence of the correlation between the three following variables: effective knowledge, perceived knowledge and level of risk. The data suggests a positive and weak correlation between risk and perceived knowledge (Pearson (240) = 0304; p<0.001), but also between the risk and the effective knowledge (Pearson (240) = 0.310; p<0.001). These two correlations indicate a slight trend for both knowledges to increase when the level of risk increases.

4.4 Explanatory factors regarding financial habits and knowledge

The comparison between the effective knowledge of men (M=44.62) and women (M=52.08) shows that there is a very weak influence of gender in the effective knowledge of individuals.

Furthermore, on average, by looking at the different age classes, it is possible to notice that there are no significative differences. The lowest perceptive knowledge is registered in individuals with 18-24 years old (M=46.09) and the highest is registered in the eldest ones (M=56.73). Therefore, the conclusion is that there is a very weak influence of age in the perceptive knowledge of Portuguese individuals.

Besides, in terms of education level, the data suggests that there are no significative differences between the different levels. The lowest effective knowledge is registered in the individuals who have studied until the 12th grade (M=48.14), while those with the highest mean have completed a master's degree or even higher education (M=52.93). Finally, it is possible to conclude that there is a weak influence of the education level in the effective knowledge of individuals (please see Table 4.21).

Table 4.21 – Effective knowledge according to demographic characteristics

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Gender	Male	85	44.62	27.13	0.00	19.23	46.15	65.38	100.00	t(238)= -2.116; p= 0.035
	Female	155	52.08	25.61	0.00	34.62	53.85	69.23	100.00	Eta = 0.257; Eta^2=0.066
Age	18-24	122	46.09	25.07	0.00	26.92	46.15	61.54	96.15	
	25-39	32	50.96	24.17	11.54	30.77	53.85	69.23	96.15	F(24;215)=0.967;p= 0.511
	40-54	66	52.68	28.11	0.00	34.62	55.77	73.08	100.00	Eta = 0.312; Eta^2=0.097
	55-69	20	56.73	30.07	11.54	32.70	55.77	84.62	100.00	
Educational Level	9th grade	7	52.75	9.86	42.31	42.31	50.00	61.54	65.38	F(3;236)=0.858;p= 0.659
	12th grade	89	48.14	26.45	0.00	26.92	50.00	65.38	96.15	Eta = 0.296; Eta^2=0.087
	Bachelor's degree	102	48.91	28.24	0.00	23.08	50.00	69.23	100.00	
	Master's degree or above	42	52.93	23.38	11.54	34.62	53.85	73.08	96.15	

Note: The values from all columns are in percentage (exception in the column "Valid N")

The comparison between the perceptive knowledge of men (M=32.21) and women (M=33.49) shows that there is no influence of gender in the perceived knowledge of individuals (please see Table 4.22).

Furthermore, on average, by looking at the different age classes, it is possible to notice that there are no differences. The lowest value for perceived knowledge is registered in individuals between 18-24 years old (M=31.42) and the highest is registered in the eldest ones (M=40.62). Therefore, the conclusion indicates that there is a very weak influence of age in the perceived knowledge of Portuguese individuals.

Besides, in terms of education level, the data suggests that there are no significative differences between the different levels. The lowest perceptive knowledge is registered in the individuals who have studied until the 12th grade (M=29.26), while those with the highest mean have completed a master's degree or even higher education (M=36.21). These data suggest that there is no influence of the education level in the perceived knowledge of individuals.

Table 4.22 - Perceived knowledge according to demographic characteristics

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Gender	Male	85	32.21	24.00	0.00	12.50	25.00	50.00	100.00	$t(228)= -0.404; p= 0.686$
	Female	155	33.49	23.39	0.00	16.67	29.17	45.83	100.00	$Eta = 0.026; Eta^2=0.001$
Age	18-24	122	31.42	23.38	0.00	12.50	25.00	45.83	100.00	
	25-39	32	35.94	23.08	0.00	20.83	27.09	47.92	100.00	$F(3;236)=1.065; p= 0.365$
	40-54	66	32.32	23.87	0.00	16.67	25.00	50.00	95.83	$Eta = 0.116; Eta^2=0.013$
	55-69	20	40.62	24.33	8.33	22.92	33.33	58.34	100.00	
Educational Level	9th grade	7	31.55	25.56	0.00	12.50	25.00	45.83	79.17	$F(3;236)=1.299; p= 0.276$
	12th grade	89	29.26	25.36	0.00	12.50	25.00	41.67	100.00	$Eta = 0.127; Eta^2=0.016$
	Bachelor's degree	102	35.13	21.93	0.00	16.67	33.33	50.00	95.83	
	Master's degree or above	42	36.21	22.87	8.33	16.67	33.33	50.00	100.00	

Note: The values from all columns are in percentage (exception in the column "Valid N")

The comparison between the risk profile of men (M=2.29) and women (M=2.34) shows that there is no influence of gender in the propensity of individuals to take higher risks (please see Table 4.23).

Furthermore, on average, by looking at the different age classes, it is possible to notice that there are no significative differences. The lowest propensity to take risks is registered in individuals between 25-39 years old (M=2.09) and the highest is registered in the younger ones (M=2.45). Therefore, the conclusion is that age plays no role in the risk profile of Portuguese individuals.

Besides, in terms of education level, there are no significative differences between the different levels. The lowest perceptive knowledge is registered in the individuals who have studied until the 9th grade (M=2.00), while those with the highest result have completed a master's degree or have even higher education (M=2.39). Therefore, it is possible to conclude that there is no influence of the education level of individuals in their risk profile.

Table 4.23 – Risk profile according to demographic characteristics

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Gender	Male	85	2.29	0.81	1.00	1.50	2.00	3.00	4.00	t(238)= -0.410; p= 0.682
	Female	155	2.34	0.88	1.00	1.50	2.00	3.00	5.00	Eta = 0.176; Eta^2=0.031
Age	18-24	122	2.45	0.89	1.00	1.50	2.50	3.00	5.00	
	25-39	32	2.09	0.63	1.00	1.50	2.00	2.50	3.50	F(8;231)=1.207;p= 0.296
	40-54	66	2.20	0.91	1.00	1.50	2.00	2.50	5.00	Eta = 0.200; Eta^2=0.040
	55-69	20	2.30	0.62	1.50	2.00	2.25	2.50	3.50	
Educational Level	9th grade	7	2.00	0.87	1.00	1.50	1.50	2.50	3.50	F(8;231)=1.034;p= 0.411
	12th grade	89	2.26	0.91	1.00	1.50	2.00	2.50	5.00	Eta = 0.186; Eta^2=0.035
	Bachelor's degree	102	2.36	0.85	1.00	1.50	2.00	3.00	5.00	
	Master's degree or above	42	2.39	0.74	1.00	2.00	2.50	3.00	4.00	

Note: The scale is comprised between 1 and 5 (exception in the column "Valid N")

In the following table, it is possible to verify that the destination of savings does not play any influence (Eta=0.097) in the effective knowledge of individuals (0.9% of the variation of the knowledge is explained by the destination of savings). However, this null relationship does not lead to significative differences between the means of the effective knowledge (F (2;236) =1.126; p=0.326) in the three levels. Furthermore, the data shows that those who apply their savings immediately have the lowest effective knowledge (M=48.11) and those that do not save money at all have the highest effective knowledge (M=57.89).

Also, the results indicate that the destination of savings does not play any influence (Eta=0.031) in the perceived knowledge of individuals as well (0.1% of the variation of the knowledge is explained by the destination of savings). Those individuals who apply their savings immediately have the lowest effective knowledge (M=32.58) and those that do not save money at all have the highest effective knowledge (M=35.42).

Finally, it is possible to verify that the destination of savings does not play any influence (Eta=0.046) in the risk profile of individuals (0.2% of the variation of the risk is explained by the destination of savings). However, this null relationship does not lead to significative differences between the means of the effective knowledge (F (2;236) =1.126; p=0.326) in the three levels. The data shows that those who apply their savings immediately have the highest risk profile (M=2.35) and those that do not save money at all have the lowest risk profile (M=2.20) (please see Table 4.24).

Table 4.24 - Influence of destination of savings in effective knowledge, perceived knowledge and risk profile of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Effective Knowledge[1]	Leave it in a bank account	164	48.92	25.49	0.00	32.70	50.00	65.38	100.00	F(2;236)=1.126;p= 0.326
	Apply it immediately	55	48.11	28.22	0.00	26.92	53.85	69.23	96.15	Eta = 0.097; Eta^2=0.009
	No, I do not save money	20	57.89	28.39	11.54	38.47	59.62	82.70	100.00	
Perceived Knowledge[1]	Leave it in a bank account	164	32.95	23.87	0.00	16.67	25.00	45.83	100.00	F(2;236)=0.112;p= 0.894
	Apply it immediately	55	32.58	22.92	0.00	12.50	29.17	45.83	91.67	Eta = 0.031; Eta^2=0.001
	No, I do not save money	20	35.42	24.39	0.00	16.67	31.25	50.00	83.33	
Risk Profile[2]	Leave it in a bank account	164	2.33	0.82	1.00	1.50	2.00	3.00	5.00	F(2;236)=0.250;p= 0.779
	Apply it immediately	55	2.35	0.87	1.00	2.00	2.50	2.50	5.00	Eta = 0.046; Eta^2=0.002
	No, I do not save money	20	2.20	1.03	1.00	1.50	2.00	2.75	5.00	

[1] The values from all columns are in percentage (exception in the column "Valid N")

[2] The scale is comprised between 1 and 5 (exception in the column "Valid N")

The data displayed in Table 4.25 shows that owning or not any piece of real estate, does not play any influence in the effective knowledge of individuals (Eta=0.038). There are no significant differences between the effective knowledge of individuals that own real estate (M=51.01) and those who do not (M=25.54).

The same conclusions are evidenced for those who use or not real estate as a source of income (Eta=0.084). Those who use real estate to generate income have a lower effective knowledge (M=45.93) than those who do not (M=51.81).

Table 4.25 – Influence of real estate in the effective knowledge of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Real estate owners	Yes	72	51.01	28.40	0.00	25.00	51.93	73.08	100.00	t(85) = -0.951; p=0.348
	No	167	48.83	25.54	0.00	30.77	50.00	65.38	96.15	Eta = 0.038; Eta^2=0.001
Users of real estate as a source of income	Yes	17	45.93	21.00	11.54	34.62	46.15	57.69	88.46	t(237)=0.588; p=0.557
	No	70	51.81	29.41	0.00	26.92	53.85	76.92	100.00	Eta = 0.084; Eta^2=0.007

Note: The values from all columns are in percentage (exception in the column "Valid N")

Then, by analyzing the data shown in Table 4.26, it is possible to notice that owning or not any piece of real estate, does not play any influence in the perceived knowledge of individuals (Eta=0.005). There are no significant differences between the risk profile of individuals that own real estate (M=32.81) and those who do not (M=33.06).

Then, if the variable considered regards using or not real estate to generate income, the conclusions are slightly different. In this scenario, the variable plays a weak influence in drawing the perceived knowledge of individuals (Eta=0.104). Further, if the results of both are compared, it is possible to see that those who use real estate as a source of income have a lower perceived knowledge (M=28.92) than those who do not (M=35.00).

Table 4.26 – Influence of real estate in the perceived knowledge of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Real estate owners	Yes	72	32.81	22.36	0.00	16.67	29.17	50.00	95.83	t(85)=-0.961; p=0.340
	No	167	33.06	24.18	0.00	16.67	25.00	45.83	100.00	Eta = 0.005; Eta^2=0
Users of real estate as a source of income	Yes	17	28.92	18.78	0.00	16.67	33.33	41.67	58.33	t(237)= -0.074; p= 0.941
	No	70	35.00	24.35	0.00	16.67	29.17	50.00	95.83	Eta = 0.104; Eta^2=0.011

Note: The values from all columns are in percentage (exception in the column "Valid N")

For last, the data regarding the effect of real estate in the risk profile of individuals indicates that owning or not any piece of real estate, does not play any influence at all (Eta=0.023). Besides, there are no significant differences between the risk profile of individuals that own real estate (M=2.35) and those who do not (M=2.31).

The same conclusions are evidenced for those who use or not real estate as a source of income (Eta=0). Those who use real estate to generate income have the same risk profile of those who do not (M=2.26) (please see next table).

Table 4.27 – Influence of real estate in the risk profile of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Real estate owners	Yes	72	2.35	0.83	1.00	2.00	2.00	3.00	5.00	t(85)=0.002; p=0.998
	No	167	2.31	0.87	1.00	1.50	2.00	3.00	5.00	Eta = 0.023; Eta^2=0.001
Users of real estate as a source of income	Yes	17	2.26	0.83	1.00	1.50	2.00	3.00	4.00	t(237)= 0.347; p= 0.729
	No	70	2.26	0.82	1.00	2.00	2.00	2.50	5.00	Eta = 0; Eta^2=0

Note: The scale is comprised between 1 and 5 (exception in the column "Valid N")

Table 4.28 shows that knowing or not the interest rates of the loans in the bank has a very weak influence in the perceived knowledge of individuals (Eta=0.057). The results also indicate that those who do not have any loans have a similar perceived knowledge (M=47.93) in comparison to those who have loans (M=50.36 & M=51.54).

On the other hand, if the interest rate comparison between financial products before applying savings is considered, it is possible to notice that it has no influence in the effective knowledge of individuals (Eta=0.030). Besides, it is possible to mention that those who compare the financial products have a lower perceived knowledge (M=48.35) than those who do not (M=50.02).

Table 4.28 – Influence of interest rates in the effective knowledge of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Interest rates knowledge in loans	Yes	75	50.36	27.01	0.00	30.77	53.85	69.23	100.00	F(2;237)=0.392;p= 0.676
	No	50	51.54	26.91	0.00	34.62	50.00	73.08	100.00	Eta = 0.057; Eta^2=0.003
	I do not have loans	115	47.93	25.80	0.00	26.92	50.00	65.38	100.00	
Interest rate comparison between financial products	Yes	84	48.35	27.37	0.00	26.92	48.08	71.16	100.00	t(238)= -0.468; p= 0.640
	No	156	50.02	25.85	0.00	34.62	50.00	69.23	100.00	Eta = 0.030; Eta^2=0.001

Note: The values from all columns are in percentage (exception in the column "Valid N")

Table 4.29 shows that knowing or not the interest rates of the loans in the bank has a very weak influence in the perceived knowledge of individuals (Eta=0.089). The results also indicate that those who do not have any loans have a similar perceived knowledge (M=33.22) in comparison to those who have loans (M=30.50 & M=36.42).

On the other side, if a different aspect is considered, this time regarding the interest rate comparison between financial products before applying savings, it is possible to notice that it has no influence in the perceived knowledge of individuals (Eta=0.049). Besides, it is possible to mention that those who do compare the financial products have a higher perceived knowledge (M=34.62) than those who do not (M=32.18).

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Interest rates knowledge in loans	Yes	75	30.50	20.89	0.00	16.67	25.00	41.67	83.33	F(2;237)=0.952;p= 0.387
	No	50	36.42	25.72	0.00	16.67	33.33	54.17	100.00	Eta = 0.089; Eta2=0.008
	I do not have loans	115	33.22	24.23	0.00	12.50	25.00	45.83	100.00	
Interest rate comparison between financial products	Yes	84	34.62	24.63	0.00	16.67	29.17	50.00	100.00	t(238)= 0.764; p= 0.446
	No	156	32.18	23.01	0.00	12.50	25.00	45.83	100.00	Eta = 0.049; Eta2=0.002

Note: The values from all columns are in percentage (exception in the column "Valid N")

The data displayed in Table 4.30 shows that knowing or not the interest rates of the loans in the bank has a very weak influence in drawing the risk profile of individuals (Eta=0.054). Besides, the results also indicate that those who do not have any loans have a similar risk profile (M=2.35) to the ones who do have (M=2.33 & M=2.23).

Then, the next question that tests if people tend to compare the interest rates of the different financial products before applying their savings, shows that this variable has a very weak influence in building the risk profile of individuals (Eta=0.064). Besides, it is possible to mention that those who do not compare the financial products have a higher risk profile (M=2.36) than those who do not (M=2.24) (please see next table).

Table 4.30 – Influence of interest rates in the risk profile of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Interest rates knowledge in loans	Yes	75	2.33	0.94	1.00	1.50	2.00	3.00	5.00	F(8;231)=0.347;p= 0.707
	No	50	2.23	0.64	1.00	2.00	2.00	2.50	3.50	Eta = 0.054; Eta2=0.003
	I do not have loans	115	2.35	0.88	1.00	1.50	2.00	3.00	5.00	
Interest rate comparison between financial products	Yes	84	2.24	0.81	1.00	1.50	2.00	2.50	4.50	t(238)= -0.996; p= 0.320
	No	156	2.36	0.88	1.00	1.50	2.00	3.00	5.00	Eta = 0.064; Eta2=0.004

Note: The scale is comprised between 1 and 5 (exception in the column "Valid N")

The data displayed in the Table 4.31 suggests that those who do not own financial products have a higher effective knowledge (M=50.64) than those who own (M=44.59). Besides, it is possible to notice that owning or not any financial product has a very weak influence in the effective knowledge of individuals (Eta=0.079).

Then, if perceived knowledge is considered instead, the conclusions are quite different, since this time there is no significant difference in the means obtained for both possible scenarios (M=33.03 & M=33.59). Further, the data also shows that there is no influence in owning or not financial products in the perceived knowledge of individuals.

Last, in terms of the relationship between owning or not financial products and the risk profile of individuals, it is possible to see that there are no significant differences in the results for both scenarios (M=2.31 & 2.32). Finally, the table also indicates that being a financial product owner or not does not influence the risk profile of individuals (Eta=0.004) (please see next table).

Table 4.31 – Influence of owning or not financial products in the effective knowledge, perceived knowledge and risk profile of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Effective Knowledge[1]	Yes	32.00	44.59	26.89	0.00	19.23	48.08	65.38	92.31	t(238)= -0.468; p= 0.640
	No	204.00	50.64	26.21	0.00	34.62	51.93	69.23	100.00	Eta = 0.079; Eta^2=0.006
Perceived Knowledge[1]	Yes	32.00	33.59	22.60	0.00	16.67	27.09	47.92	83.33	t(238)= 0.764; p= 0.646
	No	204.00	33.03	23.85	0.00	12.50	25.00	45.83	100.00	Eta = 0.008; Eta^2=0.000
Risk Profile[2]	Yes	32.00	2.31	0.86	1.00	1.75	2.00	3.00	5.00	t(238)= -0.996; p= 0.320
	No	204.00	2.32	0.86	1.00	1.50	2.00	3.00	5.00	Eta = 0.004; Eta^2=0.000

[1] The values from all columns are in percentage (exception in the column "Valid N")

[2] The scale is comprised between 1 and 5 (exception in the column "Valid N")

The results displayed in Table 4.32 illustrate the influence of owning or a not a specific financial product in the effective knowledge of individuals. From the seven products under analysis, it is possible to see that shares, demand deposits and time deposits do not have significant differences in the level of effective knowledge obtained, since the means obtained are very similar for the three cases. Then, in terms of investment funds, pension funds and bonds, the data shows that those who do not own these products have a higher effective knowledge than those who do not. Lastly, those who own treasury bills have a higher effective knowledge than those who do not own this specific product (M=62.65 & M=46.95).

Afterwards, it also possible to conclude on what extent does owning or not these products influence the effective knowledge of individuals. In general, it is possible to state that these all have a very low or null influence in the variable. The products with the highest influence are treasury bills (Eta=0.218), but even this one only has a weak effect (please see next table).

Table 4.32 – Influence of owning a specific financial product in the effective knowledge of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Shares' owner	Yes	23	49.83	28.18	11.54	19.23	46.15	84.62	96.15	t(238)= 0.075; p= 0.940
	No	217	49.40	26.21	0.00	30.77	50.00	69.23	100.00	Eta = 0.005; Eta^2=0.000
Bonds' owner	Yes	11	34.96	23.86	0.00	11.54	42.31	57.69	65.38	t(238)= -1.875; p= 0.062
	No	229	50.13	26.31	0.00	34.62	50.00	69.23	100.00	Eta = 0.121; Eta^2=0.015
Investment funds' owner	Yes	16	42.55	27.39	0.00	17.31	44.23	59.62	96.15	t(238)= -1.083; p= 0.280
	No	224	49.93	26.26	0.00	32.70	50.00	69.23	100.00	Eta = 0.070; Eta^2=0.005
Pension funds' owner	Yes	23	43.31	23.00	0.00	23.08	46.15	57.69	84.62	t(238)= -1.174; p= 0.242
	No	217	50.09	26.64	0.00	30.77	50.00	69.23	100.00	Eta = 0.076; Eta^2=0.006
Demand deposits' owner	Yes	146	50.97	26.80	0.00	34.62	53.85	69.23	100.00	t(238)= 1.126; p= 0.261
	No	94	47.05	25.58	0.00	26.92	46.15	65.38	100.00	Eta = 0.073; Eta^2=0.005
Time deposits' owner	Yes	96	50.76	27.75	0.00	28.85	53.85	69.23	100.00	t(238)= 0.634; p= 0.527
	No	144	48.56	25.42	0.00	30.77	50.00	65.38	100.00	Eta = 0.041; Eta^2=0.002
Treasury bills' owner	Yes	38	62.65	27.40	11.54	42.31	65.38	88.46	100.00	t(238)= 3.446; p= 0.001
	No	202	46.95	25.45	0.00	26.92	48.08	65.38	100.00	Eta = 0.218; Eta^2=0.048

Note: The values from all columns are in percentage (exception in the column "Valid N")

Table 4.33 measures the effect of owning or a not a specific financial product in the perceived knowledge of individuals. From the data obtained, it is possible to notice that those who own shares, demand deposits, time deposits and treasury bills have a higher level of perceived knowledge than those who do not own those financial products. On the other side,

for bonds, investment funds and pension funds, the conclusions are the opposite. Then, in terms of influence of owing or not these products in the variable under analysis, the data indicates that all of these have a very low or even a null influence. The highest value is registered in treasury bills (Eta=0.171) and corresponds merely to a very weak influence.

Table 4.33 – Influence of owning a specific financial product in the perceived knowledge of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Shares' owner	Yes	23	39.49	23.86	0.00	25.00	33.33	62.50	83.33	$t(238)= 1.384$; p= 0.168
	No	217	32.35	23.48	0.00	12.50	25.00	45.83	100.00	Eta = 0.089; Eta^2=0.008
Bonds' owner	Yes	11	18.56	19.13	0.00	0.00	16.67	25.00	66.67	$t(238)= -2.101$; p= 0.065
	No	229	33.73	23.57	0.00	16.67	29.17	50.00	100.00	Eta = 0.135; Eta^2=0.018
Investment funds' owner	Yes	16	30.21	20.21	0.00	16.67	31.25	41.67	75.00	$t(238)= -0.496$; p= 0.620
	No	224	33.24	23.81	0.00	16.67	25.00	47.92	100.00	Eta = 0.032; Eta^2=0.001
Pension funds' owner	Yes	23	28.80	18.29	0.00	16.67	29.17	41.67	62.50	$t(238)= -0.906$; p= 0.366
	No	217	33.49	24.05	0.00	16.67	25.00	50.00	100.00	Eta = 0.059; Eta^2=0.003
Demand deposits' owner	Yes	146	35.36	23.50	0.00	16.67	31.25	50.00	100.00	$t(238)= 1.913$; p= 0.057
	No	94	29.43	23.33	0.00	8.33	25.00	45.83	100.00	Eta = 0.123; Eta^2=0.015
Time deposits' owner	Yes	96.00	36.20	24.34	0.00	18.75	33.33	50.00	100.00	$t(238)= 1.703$; p= 0.090
	No	144.00	30.93	22.87	0.00	14.59	25.00	43.75	100.00	Eta = 0.110; Eta^2=0.012
Treasury bills' owner	Yes	38.00	42.32	27.51	0.00	25.00	33.33	54.17	100.00	$t(238)= 2.682$; p= 0.008
	No	202.00	31.29	22.39	0.00	12.50	25.00	45.83	100.00	Eta = 0.171; Eta^2=0.029

Note: The values from all columns are in percentage (exception in the column "Valid N")

By looking at the relationship of the following products and the risk profile of individuals (please see Table 4.34), the following conclusion can be drawn: at first, it is important to mention that, in general, owning or not any of these products does not play a significative influence in the risk profile of individuals (the highest influence is registered in time deposits with Eta=0.109, corresponding to a very weak influence)

Then, it is not possible to identify a clear trend in the relationship between these products and the risk profile of individuals, since the ownership of some of these products corresponds to a higher risk profile (shares, time deposits) while the ownership of the others left corresponds to a lower risk profile (please see next table).

Table 4.34 - Influence of owning a specific financial product in the risk profile of individuals

		Valid N	Mean	Std. Dev.	Minimum	Percentile 25	Median	Percentile 75	Maximum	Measures of Association
Shares' owner	Yes	23	2.35	0.66	1.00	2.00	2.50	3.00	3.50	$t(238)= 0.172$; p= 0.864
	No	217	2.32	0.87	1.00	1.50	2.00	3.00	5.00	Eta = 0.011; Eta^2=0.000
Bonds' owner	Yes	11	1.91	1.00	1.00	1.00	1.50	3.00	3.50	$t(238)= -1.637$; p= 0.103
	No	229	2.34	0.84	1.00	1.50	2.00	3.00	5.00	Eta = 0.105; Eta^2=0.011
Investment funds' owner	Yes	16	1.84	0.75	1.00	1.25	1.75	2.25	3.50	$t(238)= -2.327$; p= 0.021
	No	224	2.35	0.85	1.00	1.50	2.00	3.00	5.00	Eta = 0.149; Eta^2=0.022
Pension funds' owner	Yes	23	2.07	0.80	1.00	1.50	2.00	2.50	3.50	$t(238)= -1.503$; p= 0.134
	No	217	2.35	0.86	1.00	1.50	2.00	3.00	5.00	Eta = 0.097; Eta^2=0.009
Demand deposits' owner	Yes	146	2.29	0.80	1.00	1.50	2.00	2.50	5.00	$t(238)= -0.548$; p= 0.584
	No	94	2.36	0.94	1.00	1.50	2.00	3.00	5.00	Eta = 0.035; Eta^2=0.001
Time deposits' owner	Yes	96.00	2.43	0.88	1.00	2.00	2.50	3.00	5.00	$t(238)= 1.690$; p= 0.092
	No	144.00	2.24	0.83	1.00	1.50	2.00	2.50	5.00	Eta = 0.109; Eta^2=0.012
Treasury bills' owner	Yes	38.00	2.13	0.85	1.00	1.50	2.00	2.50	5.00	$t(238)= -1.478$; p= 0.141
	No	202.00	2.35	0.85	1.00	1.50	2.00	3.00	5.00	Eta = 0.095; Eta^2=0.009

Note: The scale is comprised between 1 and 5 (exception in the column "Valid N")

4.5 Summary of Results

The purpose of this section is to display the most relevant results presented in this chapter. Throughout this dissertation, several topics were tested in order to obtain a deep understanding of the knowledge individuals possessed in all the areas related with financial literacy.

At first, in terms of savings habits, the results indicate that most individuals have the caution to save money (91.7%), thus pointing out their concern with unexpected expenses that may occur (43.3%) as well as other future expenditures (38.7%) as the main reasons to save (please see Table 4.35). On the other hand, those who do not save argue that their income does not allow them to (80%) (please see Table 4.35).

Table 4.35 – Summary of savings habits

	Respondents	%
People who save money		
Yes	220	91.7
No	20	8.3
Total	**240**	**100.0**
Reasons to save		
To face unexpected expenditures	94	43.3
Future expenditures	84	38.7
Others	39	18.0
Total	**217**	**100.0**
Reasons to not save		
The income does not allow	16	80.0
Others	4	20.0
Total	**20**	**100.0**

In terms of investing habits, two areas were tested: securities and real estate. The results suggested that the main reason preventing most individuals to not owning securities (86.4%) is their insufficient income (55.9%). This answer is the same pointed out by individuals when asked about the main reason to not save money, as it is illustrated above (please see Table 4.36). Furthermore, it is possible to notice that from those individuals who own any piece of real estate (30.1%), only around a quarter use it as a source of income (23.6%).

Table 4.36 – Summary of investing habits

	Respondents	%
People who own securities		
Yes	32	13.6
No	204	86.4
Total	**236**	**100.0**
Reasons to not invest in securities		
The income is not enough	114	55.9
Others	90	44.1
Total	**204**	**100.0**
People who own real estate		
Yes	72	30.1
No	167	69.9
Total	**239**	**100.0**
Users of real estate as a source of income		
Yes	17	23.6
No	55	76.4
Total	**72**	**100.0**

Afterwards, by taking into consideration the topic of interest rates, the most relevant results suggest that most individuals are aware of the rates of their financial products (36.2%), even though there are also a lot who are not (31.1%). Besides, the major stake of participants does not have the concern to compare the interest rates across the several financial products before investing (65%) (please see next table).

Table 4.37 – Summary of interest rates

	Respondents	%
Interest rates obtained from financial products		
Yes	64	36.2
Only when I have new savings to apply	58	32.8
No	55	31.1
Total	**177**	**100.0**
Interest rate comparison between financial products		
Yes	84	35.0
No	156	65.0
Total	**240**	**100.0**

Furthermore, the risk profile of individuals towards risk was tested. The results suggest that most individuals are not comfortable with taking risks while investing (67.1%), pointing out that their priority is to not lose money (78.9%). This is illustrative of a high conservative profile regarding risk taking (please see Table 4.38).

Table 4.38 – Summary of risk profile

	Respondents	%
Attitude towards risk taking		
I hate/do not like to take risks	161	67.1
I am indifferent	55	22.9
I like/love to take risks	24	10.0
Total	**240**	**100.0**
Attitude towards investing in financial products		
The priority is to not lose money	157	78.9
The priority is to gain money	42	21.1
Total	**199**	**100.0**

4.6 Discussion

Following the results shown above, this section will present a comparison of such results with the existing literature, already discussed in previous chapters. The idea is to find out if the results obtained in this study are in line with those obtained in previous studies, or if there are substantial differences between them.

4.6.1 Characterization of Financial Habits

4.6.1.1 Savings & Investment

According to Lewis & Messy (2012) it is crucial for individuals to be familiar with savings and investing, since these have a direct influence in their financial well-being. Those with savings are in a better position to face unexpected situations that can happen, as well as to deal with financial crisis.

The results obtained suggest that most people are taking this "advice" into consideration, since around 91.7% of the respondents have the habit of saving money for the future. Furthermore, more than half of these have the concern of applying their savings in a financial application, meaning that they understand the importance of allocating their money in order to obtain a certain rate of return. This evidence shows a significant growth in savers, since the data obtained from the research of Comissão Nacional de Supervisores Financeiros (CNSF), in 2016, had pointed out 59% of people who save money for future consumption.

Besides, it is interesting to find out what are the reasons that drive individuals to save. Around 43% of individuals have mentioned their aim of being prepared for unexpected situations and for future expenditures, such as travelling or having great vacations, as a reason to save. These two objectives are in line with the list presented by Lewis & Messy (2012) regarding the reasons behind people's savings. Further, it is highly important to mention that

these were also the two main reasons that respondents have indicated in the research made by the CNSF in 2016.

Then, when the topic of investing in securities is taken into consideration, the results are not that satisfying. It is true that most participants have claimed to save money, nevertheless, they still lack the capacity to pursue the products that would reward them with better rates of return. From the data obtained, only around 14% of the individuals own securities. More than half of those who do not (55.9%) have mentioned that the reason why they choose not to invest in financial products is the fact that their income is not enough, and the main reason that could eventually make them start investing is having more money. Nevertheless, these results show some improvements in comparison with the data reported by CNSF in 2016, where only 4.4% of individuals owned securities. Their insufficient income is still the predominant reason preventing people to pursue such investment. In addition, with no surprise, most respondents mentioned the danger of great decreases in price has the main threat of securities. This reason is especially related to stocks, since it is very unlikely that individuals can constantly anticipate future drops in the prices.

4.6.1.2 Real Estate

The results obtained suggest that most individuals are familiar with the current high prices of real estate market in Portugal. These responses are in line with the literature, where it describes the housing boom that Portugal is living in since 2015. The first period under analysis, January 2015, has registered a cost per square meter (m2) around 1,056€. Then, four years after, in January 2019, the price per square meter was already 1,814€, thus representing an increase of 72%. Besides, it is interesting to mention that for instance the Lisbon Metropolitan Area and the Algarve Region have registered their highest cost per square meter ever in June 2019.

Furthermore, in the literature, it is possible to notice several authors who see real estate as an asset that can play a significant role in terms of portfolio diversification and risk reducer. The truth is that, according to Tiwari & White (2014), the investment in this asset class has increased significantly over the past two decades. The results suggest, once again, that individuals are in line with the reality of real estate these days, since most of them have considered real estate as an asset with or even very high potential to generate income. Finally, it is also interesting to notice that, in practical terms, the great majority of those who claimed to have a house of their own do not use it as source of income, for instance through renting.

4.6.1.3 Credit and Interest Rates

A highly literate individual has the obligation to know the crucial role that interest rates play in the economy. The main purpose of citizens must be to obtain the best possible interest rate from their investments while, when asking for credit, the idea is exactly the opposite meaning that individuals must focus on getting the lowest interest rate possible for their loans.

Therefore, when investing, individuals should look for the financial products that have the highest potential to generating the desired return, according to the level of risk that they are willing to bear. The data obtained regarding this topic suggests that, from the individuals who have financial applications in the bank, only 36% knows the interest rates of their financial products. The remaining 67% have no idea of the interest rates (31%) or have stated that only know the rates when they have new savings to apply (36%). Furthermore, the results also indicate that most individuals (65%) do not compare the interest rates between different financial products before applying their savings.

In terms of credit it is important to do some research to understand how the market is at moment and how it could be in the near future. This research is highly relevant because can dictate the difference between obtaining a low or a high interest rate. The results obtained show that from those respondents who have loans, around 60% know the interest rates of their loans, however, from these, only 12% know those rates by the exact value. Besides, in terms of characterizing the current period in terms of access to credit, it is possible to notice that citizens are not aware of the fact that nowadays interest rates are quite low, meaning that this is a great period to ask for credit.

In general, these results are in line with those presented in the literature, more precisely with the outputs obtained from the research made by Banco de Portugal in 2011. Back then, the conclusions suggested that around 66% of individuals were familiar with the interest rates of their financial applications (from these only 16% knew the rates exactly). Besides, from the individuals who had loans, the majority (65%) is aware of the interest rate charged (from these only 22% knew the exact rate). Finally, the study showed that 44% of the respondents compare the interest rates of the different financial products before applying their savings, meaning that more than half do not make this comparison, as it was noticed in this research as well.

4.6.1.4 Risk Profile

Investors must be aware of the strong correlation between risk and return. Under normal circumstances, the higher the potential risk associated to a certain financial product, the higher its potential return. It is evident that every individual wants to obtain the best possible return

from its investments, however, if that was easy, everybody would get it. The concept of risk plays a major role in investing. In general terms it is feasible to conclude that most individuals are risk averse, since the average score obtained is solely 2.32. Further, by converting the result to a percentage, the 2.32 obtained from the risk profile correspond to only 32.97%. Afterwards, it is very interesting to notice that only around 2% of individuals have selected the answer related with more risk tolerance for both questions regarding this topic.

According to the literature presented in this dissertation, more precisely the results obtained from a research elaborated by Conselho Nacional de Supervisores Financeiros in 2016, people tend to be risk averse, since the score obtained was below the average (2.42 on a scale from 1 to 5). Therefore, it is possible to understand that these results from 2016 are in line with those obtained in this dissertation, which is, most individuals are risk averse.

4.6.2 Perceived & Effective Knowledge

The results obtained indicate a perceived knowledge of 13.93, out of 30 points, corresponding to 33%. This score shows that individuals consider that their level of literacy regarding financial products is quite low. Furthermore, in terms of the effective knowledge, the average score obtained was 13.47, corresponding to 49.89%. These results are not surprising and show evidence that most individuals have low levels of financial literacy. The previous researches presented in this literature are not far from this conclusion. For instance, the study elaborated by Banco de Portugal in 2011 have attributed a level of 58% for the effective knowledge individuals possessed regarding these financial matters, a value not to distant from the 49.89% obtained in this dissertation. Furthermore, the study made by the OECD in 2005, that has included several countries around the world, such as United States, Australia, South Korea and United Kingdom, has reached similar conclusions regarding the financial knowledge of individuals. For instance, in Korea, the results obtained are usually below 50% for the different categories of the financial literacy. Another example is the one from the United States, where the results are not quite extraordinary as well, since the average of right answers is 52.3%.

Concluding, comparing both the perceived and effective knowledge results obtained, the data shows that respondents tend to undervalue their financial literacy, since the results obtained from perceived knowledge were 33% against 50% obtained from effective knowledge. The information presented in this literature, namely from the researches elaborated by Inês Roquette in 2012, and by OECD in 2005, show exactly the opposite, meaning that individuals tend to overvalue their current knowledge. There are several reasons that can explain the differences in the results obtained. Firstly, it is important to consider that the questions used to obtain the

variables for the effective knowledge and the perceived knowledge in this dissertation are different from those used in the previous studies. Secondly, the sample size may not be most adequate to obtain the best representation of the whole population in Portugal. Lastly, these differences can be related with a growing level of self-assessment of individuals. In these nine years period (2012-2020), individuals realized that they were overvaluing their financial knowledge and became more cautious about it.

4.6.3 Summary of Discussion

In the following table it is possible to notice that most results obtained from this research are in line with the previous studies. The only exception regards the way individuals classify their own financial knowledge. The studies from OECD (2005) and Roquette (2012) have concluded that most individuals tend to overvalue their own knowledge, meaning that they believe to know more than they actually do. In this study, the conclusion was the opposite, meaning that individuals undervalue their own knowledge regarding financial issues. This difference may be explained by two different scenarios. The first one suggests that, throughout the years, individuals have become more aware of their own limitations, thus realizing that their knowledge was not as high as they thought before. The second reason may be related with the different questions used in this study, since these were not the same selected in the previous researches (please see Table 4.39).

Table 4.39 – Summary of discussion

	Literature (Supported/Not Supported)					Summary
	OECD (2005)	BdP (2011)	Roquete (2012)	Tiwari & White (2014)	CNSF (2016)	
Savings & Investment						
Individuals have the habit of saving money for the future	n/a	n/a	n/a	n/a	✓	✓
Individuals tend to save to be prepared to unexpected expenses and for future expenditures	n/a	n/a	n/a	n/a	✓	✓
Individuals do not invest in securities	n/a	n/a	n/a	n/a	✓	✓
Real Estate						
Individuals are aware of the high prices of real estate in Portugal	n/a	n/a	n/a	n/a	n/a	n/a
Individuals consider real estate as a very powerful instrument to generate income	n/a	n/a	n/a	✓	n/a	✓
Credit and Interest Rates						
Individuals do not compare the interest rates of the different financial products before investing	n/a	✓	n/a	n/a	n/a	✓
Individuals are aware of the interest rates charged in their loans	n/a	✓	n/a	n/a	n/a	✓
Individuals are not aware of the interest rates obtained from their financial applications	n/a	✓	n/a	n/a	n/a	✓
Risk Profile						
Individuals are risk averse	n/a	n/a	n/a	n/a	✓	✓
Effective & Perceived Knowledge						
Individuals tend to undervalue their own financial knowledge	X	n/a	X	n/a	n/a	X
Individuals have low levels of financial literacy	✓	✓	✓	n/a	n/a	✓

n/a	→	Not Applicable
X	→	Not Supported
✓	→	Supported

5 Conclusion

The final section of this dissertation comprises a brief summary of the research, especially in terms of the main conclusions obtained from the procedures executed. Furthermore, the limitations of the study as well as some suggestions for future research are going to be presented.

5.1 Main conclusions

The purpose of this research was to obtain a deep understanding of the level of financial literacy among the Portuguese population. It is considered extremely important that individuals possess a certain knowledge degree regarding some financial issues, since it is essential for their financial and personal well-being.

The main conclusions were not impressive at all, since the financial knowledge of individuals is not the most adequate to face the challenges that may arise in their lives. The average effective knowledge of individuals was around 50%, meaning that individuals answered only half of the questions correctly. These conclusions indicate that there is still a lot of work to do in the future in order to fulfill the goal of improving the financial literacy of Portuguese individuals. Otherwise, individuals will continue to be exposed to the growing complexity of the financial issues, since they do not bear the required tools to support their daily decisions. Furthermore, the findings also indicate that individuals' effective knowledge is above their perceived knowledge, thus individuals tend to undervalue their real knowledge. This evidence is not in line with the previous studies, however, it is representative that individuals are becoming more cautious when discussing their own knowledge.

Besides, the data regarding the risk profile of individuals have shown that their propensity to risk is low, since the average obtained for this variable was around 33%. This conclusion is in line with the previous studies, thus enhancing the conservative approach that individuals have towards risk. It can be considered as a positive result, since it prevents them to incur in considerable losses because of their low level of financial literacy.

This research has introduced a new dimension in the survey, namely regarding the individuals' knowledge of real estate as an investment, since this topic was not assessed in the previous studies conducted in Portugal. Further, having into consideration the interest rates of the market, whose values are around historical minimums across the Europe, a new topic aiming at assessing the individuals' opinions regarding the access to credit nowadays was introduced as well.

These conclusions strongly suggest that the entities in charge of improving the financial literacy of individuals must act, otherwise, people will continue to lack the required financial knowledge to make the best financial decisions in their lives. It would be interesting to study the impacts of implementing a financial literacy program in schools, aiming at providing these highly important financial tools for individuals. These financial literate students would become a new generation of adults characterized by a solid financial knowledge, thus being capable of understanding the economic environment where they live, as well as to act accordingly.

5.2 Future Research

The importance of financial literacy on individuals is facing such a huge growth throughout the years, that even the government has implemented plans designed specifically for this scope.

Therefore, it would be interesting to perform the same research in the future, perhaps in five or ten years, in order to understand the efficiency and effectiveness of such financial literacy plans.

Furthermore, for future studies on this topic, it would be extremely relevant to obtain a wider range of responses, thus enabling to build a sample that could illustrate the Portuguese population in a more precise way. Conducting in-person interviews or even group discussions could also have a positive impact in the data obtained, since it would represent an addition to the information gathered from the questionnaire.

In terms of data analysis, through more advanced procedures it would be possible to go even further in the analyses, thus enabling the researcher to obtain more precise conclusions for this scope.

5.3 Limitations of the Study

The development of a questionnaire to collect data is quite an uncertain procedure, since it relies a lot in the willingness of individuals to take some time of their lives to respond. The truth is that most individuals are not willing to do that. With this limitation comes the problem of gathering the required number of responses, which hardly corresponds to the desired number.

Entering more specifically in the questionnaire, a different limitation arises, this time regarding the age classes of individuals. The purpose of the survey was to represent the Portuguese population in the most effective manner, however, perhaps because of the method selected to collect data, most respondents belonged to the youngest class. This occurrence does not allow to build a sample that would perfectly illustrate the Portuguese society.

Another challenge regards the inexistence of an instrument that measures the financial literacy, meaning that it becomes extremely difficult to compare the results obtained with other studies, since the questions presented in the surveys from previous years vary widely.

Finally, it is quite relevant to highlight the impact of the Covid-19 pandemic in this dissertation, since it represented an obstacle on the ongoing procedures, thus leading to an extra effort in certain situations.

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Annexes

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Annex A1: Questionnaire

My name is Gonçalo Lopes and I am attending a Master's course in management in ISCTE. This survey aims at helping me out completing my dissertation, thus representing a huge importance for my final project. The main goal is to test the general knowledge of households regarding some investment issues and to understand their behavior towards savings and consumption.

Some of the issues involve, among others, the interest rates practiced in the market, the potential of the real estate market as an asset and some general knowledge regarding securities.

All the answers are for academic purposes and will remain confidential so please answer them as truthfully as possible. Thank you very much for your participation! This survey will take approximately 4 min.

A. Characterization

A1. What is your nationality?	
Portuguese	1
Other:	2

A2. What is your gender?	
Female	1
Male	2
Prefer not to say	3
Other:	4

A3. In which age class do you belong?	
>18	1
18-24	2
25-39	3
40-54	4
55-69	5
70 <	6

A4. What is the highest level of education you have completed?	
4th grade or below	1
9th grade	2
12° grade	3
Bachelor's degree	4
Master's degree	5
PhD (Doctorate Degree)	6
Did not attend to school	7

B. Savings Habits

B1. Do you consider yourself as someone who saves money for future consumption?	
No, I do not save money	1
Yes, I save money in some occasions	2
Yes, I save money very often	3

B2. What do you do most often with those savings?	
Spend it immediately	1
Leave it in a bank account to spend later on	2
Leave it in a bank account before applying it in a time deposit or other financial application	3
Apply it immediately in a time deposit or other financial application	4

B3. What is the main reason that drives you to save?	
Take advantage of fiscal benefits	1
Future expenditures (holidays, travelling...)	2
Acquisition or replacement of long-term goods (bigger house, furniture, vehicle...)	3
Children's education	4
To face unexpected expenditures	5
For retirement	6
Other:	7

B4. What is the main reason that stops you from saving?	
The income does not allow me to	1
It is not a priority	2
Not planned expenses (impulse spending)	3
Other:	4

B5. Imagine a situation where you win 50.000€ from the lottery. What would you do with the money of the prize?	
Apply in travelling or vacations	1
Purchase financial products (Stocks, bonds, investment funds, real estate market, etc.)	2
Leave the money in a bank account	3
Acquire or replace long-term goods (bigger house, furniture, vehicle...)	4
Apply in a savings account	5
Other:	6

C. Investing Habits

C1. Do you have any money invested in a security at the moment?	
Yes	1
No, but I used to have in the past	2
No, and I have never had	3
I do not know	4

C2. What is the main reason that stops you from investing in securities?	
The income is not enough	1
Lack of knowledge	2
High risk	3
Negative past experiences	4
Other:	5

C3. What would have to happen for you to start investing in securities?	
Have more money	1
Higher profitability attached to securities	2
Lower interest rates in time deposits	3
Access to more information about the securities market	4
Higher stability in the economy	5
I do not plan to start or restart investing at all	6
Other:	7

C4. What is the weight of your securities portfolio in the total value of your current patrimony?	
0-10%	1
11-25%	2
25-50%	3
> 50%	4
I do not know	5

C5. In your opinion, what is the highest threat from investing in securities?	
High risk	1
Low liquidity in the market	2
Huge decreases in price	3
I do not know	4
Other:	5

C6. What financial products do you own?	
Stocks	1
Bonds	2
Investment Funds	3
Pension Funds	4
Demand Deposits	5
Time deposits	6
Treasury Bills	7
None	8
Other:	9

C7. What do you consider as the most important criteria in choosing financial applications?	
Income of the products	1
Liquidity level	2
Low risk and high security	3
Fiscal benefits	4
Full refund guarantee	5
No penalty for anticipated withdraw	6
Other:	7

C8. How do you classify the real estate market in terms of its potential as an income generator?	
Does not have potential	1
Has low potential	2
Has some potential	3
Has a lot of potential	4
I do not know	5

C9. How do you classify the current situation of the real estate market in Portugal, regarding the prices charged?	
Very low prices	1
Low prices	2
Normal prices	3
High prices	4
Very high prices	5
I do not know	6

C10. Are you the owner of any real estate property?	
Yes	1
No	2
No, but I used to be in the past	3
I do not know	4

C11. Do you take advantage of that property and use it as a source of income, for instance through gains from rent?	
Yes	1
No, but I used to do that in the past	2
No	3

D. Interest Rates

D1. How do you classify the current period in terms of access to credit?	
Very unfavorable	1
Unfavorable	2
Normal	3
Favorable	4
Very favorable	5
I do not know	6

D2. Are you aware of the interest rates charged in your loans?	
Yes, always in the exact value	1
Yes, always in an approximate value	2
Only when I have new savings to apply	3
No	4

D3. Are you aware of the interest rates you obtain from time deposits or other financial applications in the bank?	
Yes, always in the exact value	1
Yes, always in an approximate value	2
Only when I have new savings to apply	3
No	4

D4. Do you compare the interest rates of the different financial products before applying to one of them?	
Yes, among the banks where I am a customer	1
Yes, among all the banks	2
No, I always choose my bank	3
No	4

D5. Consider a scenario where the interest rate of a time deposit is 3% and the inflation is 4%. If you invest in that financial product, in the end of the year, have you obtained a positive or a negative return from that application?	
Positive	1
Negative	2
I do not know	3

E. Risk Profile

E1. How do you consider as your own attitude towards risk taking in financial products?	
I hate to take risks	1
I do not like to take risks	2
I am indifferent	3
I like to take risks	4
I love to take risks	5

E2. What is the attitude that best describes your behavior towards investing in financial products?	
The priority is to not lose money	1
The priority is to not lose money, but I admit a few losses	2
The priority is to gain money, therefore I admit moderate losses	3
The priority is to gain the most money I can, therefore I admit huge losses	4
I do not know	5

F. Perceived Knowledge

F1. According to a 1 to 5 scale, how do you evaluate your knowledge regarding stocks?	
1 - Very Low Knowledge	1
2 - Low Knowledge	2
3 - Normal Knowledge	3
4 - High Knowledge	4
5 - Very High Knowledge	5

F2. According to a 1 to 5 scale, how do you evaluate your knowledge regarding bonds?	
1 - Very Low Knowledge	1
2 - Low Knowledge	2
3 - Normal Knowledge	3
4 - High Knowledge	4
5 - Very High Knowledge	5

F3. According to a 1 to 5 scale, how do you evaluate your knowledge regarding demand deposits?	
1 - Very Low Knowledge	1
2 - Low Knowledge	2
3 - Normal Knowledge	3
4 - High Knowledge	4
5 - Very High Knowledge	5

F4. According to a 1 to 5 scale, how do you evaluate your knowledge regarding time deposits?	
1 - Very Low Knowledge	1
2 - Low Knowledge	2
3 - Normal Knowledge	3
4 - High Knowledge	4
5 - Very High Knowledge	5

F5. According to a 1 to 5 scale, how do you evaluate your knowledge regarding investment funds?	
1 - Very Low Knowledge	1
2 - Low Knowledge	2
3 - Normal Knowledge	3
4 - High Knowledge	4
5 - Very High Knowledge	5

F6. According to a 1 to 5 scale, how do you evaluate your knowledge regarding pension funds?	
1 - Very Low Knowledge	1
2 - Low Knowledge	2
3 - Normal Knowledge	3
4 - High Knowledge	4
5 - Very High Knowledge	5

G. Effective Knowledge

G1. According to a 1 to 3 scale, how do you consider stocks according to their level of risk?	
1- Low	1
2- Medium	2
3 - High	3
I do not Know	4

G2. According to a 1 to 3 scale, how do you consider bonds according to their level of risk?	
1- Low	1
2- Medium	2
3 - High	3
I do not Know	4

G3. According to a 1 to 3 scale, how do you consider demand deposits according to their level of risk?	
1- Low	1
2- Medium	2
3 - High	3
I do not Know	4

G4. According to a 1 to 3 scale, how do you consider time deposits according to their level of risk?	
1- Low	1
2- Medium	2
3 - High	3
I do not Know	4

G5. According to a 1 to 3 scale, how do you consider investment funds according to their level of risk?	
1- Low	1
2- Medium	2
3 - High	3
I do not Know	4

G6. According to a 1 to 3 scale, how do you consider pension funds according to their level of risk?	
1- Low	1
2- Medium	2
3 - High	3
I do not Know	4

G7. Usually, which of the following has the highest volatility (fluctuation) in terms of price over time?	
Stocks	1
Bonds	2
Investment Funds	3
I do not know	4

G8. If a company goes bankrupt, which of the following investors has a higher risk of not having its money back?	
Investor of Stocks (Shareholder)	1
Investor of Senior Bonds (Bondholder)	2
Investor of Subordinated Bonds (Bondholder)	3
I do not know	4

G9. In a situation where you had to choose a financial application for long-term investing, which of the following usually would provide you with the highest return?	
Stocks	1
Treasury Bonds	2
Corporate Bonds	3
Treasury Bills	4
Time Deposits	5
I do not know	6

Annex A2: Questions per dimension and its source

Questions	Source
A. Characterization	
A1 Nationality	-
A2 Gender	-
A3 Age	-
A4 Educational Level	-
B. Savings Habits	
B1 How often people save	BdP (2011)
B2 Destination of savings	BdP (2011)
B3 Reasons to save	CNSF (2016)
B4 Reasons to not save	CNSF (2016)
B5 Main destination of a lottery 50.000 euros prize	Researcher
C. Investing Habits	
C1 Securities owners	CNSF (2016)
C2 Reasons to not invest in securities	CNSF (2016)
C3 What could drive people to start investing in securities	CNSF (2016)
C4 Weight of securities in the portfolio	CNSF (2016)
C5 Hightest threat of securities	CNSF (2016)
C6 What financial products people own	CNSF (2016)
C7 Most important criteria when choosing a financial product to invest	BdP (2011)
C8 Classify the real estate market according to its potential to generate returns	Researcher
C9 Classify the current prices of real estate market in Portugal	Researcher
C10 Real estate owners	Researcher
C11 Users of real estate as a source of income	Researcher
D. Credit & Interest Rates	
D1 Classify the current period in terms of access to credt	Researcher
D2 Interest rates in loans	BdP (2011)
D3 Interest rates in financial product	BdP (2011)
D4 Interest rates comparison before investing	BdP (2011)
D5 Effect of inflation in purchasing power	BdP (2011)
E. Risk Profile	
E1 Risk level towards financial products	CNSF (2016)
E2 Beaviour towards financial products	CNSF (2016)
F. Perceived Knowledge	
F1 Knowledge of stocks (scale between 1-5)	CNSF (2016)
F2 Knowledge of bonds (scale between 1-5)	CNSF (2016)
F3 Knowledge of demand deposits (scale between 1-5)	CNSF (2016)
F4 Knowledge of time deposits (scale between 1-5)	CNSF (2016)
F5 Knowledge of investment funds (scale between 1-5)	CNSF (2016)
F6 Knowledge of pension funds (scale between 1-5)	CNSF (2016)
G. Effective Knowledge	
G1 Classify stocks according to level of risk (scale between 1-3)	BdP (2011)
G2 Classify bonds according to level of risk (scale between 1-3)	BdP (2011)
G3 Classify demand deposits according to level of risk (scale between 1-3)	BdP (2011)
G4 Classify time deposits according to level of risk (scale between 1-3)	BdP (2011)
G5 Classify investment funds according to level of risk (scale between 1-3)	BdP (2011)
G6 Classify pension funds according to level of risk (scale between 1-3)	BdP (2011)
G7 Choose the alternative with most price fluctuations	CNSF (2016)
G8 Choose the alternative with the highest risk in a bankrupcy situation	CNSF (2016)
G9 Choose the alternative with the highest long term return	CNSF (2016)