Financial Literacy and the Determinants of Mortgage Selection

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Abstract

This study investigates the relationship between financial literacy and mortgage lender choice within a sample of Finnish mortgage borrowers. Findings reveal that Finnish mortgage borrowers exhibit a relatively high level of financial literacy, which plays a critical role in the selection of mortgage lenders. Financially more literate borrowers excel in assessing the true loan costs, disregarding supplementary products and other factors unrelated to the loan terms. Conversely, financially less literate borrowers tend to opt for lenders based on factors such as service quality and external endorsements. To enhance financial stability, policymakers should develop programs to improve financial literacy, particularly among vulnerable groups such as first-time mortgage takers. Providing guidance during the mortgage application process, especially for those with limited financial literacy, is vital for ensuring comprehension of the long-term implications of loan decisions. Furthermore, policymakers should advocate for borrowers to explore diverse lender options to secure the best possible deal.

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1. Introduction

In recent years, financial literacy (FL) has gained attention not just in academic research and policymaking, but also among consumers due to the development of financial markets, institutions, and services, and due to FL's impact on decision-making in consumer actions related to them. It is an essential characteristic of modern economies and a potential source of financial well-being for individuals (Behrman et al., 2012; Lusardi and Mitchell, 2014). However, many individuals lack financial literacy in many countries. This has led countries like the US, UK, Canada, Poland, and Estonia, to take actions for the enhancement of it (Lusardi and Mitchell, 2011; Klapper et al., 2015; OECD, 2016). Related to this study, Finland has also initiated a national financial literacy strategy in the early 2020s, with an ambitious aim for Finns' financial literacy to be the best in the world by 2030.[1]

Financial literacy affects individuals' financial decisions directly. In the cases of the mortgage and consumer lending market, less literate borrowers have been observed to make suboptimal decisions (Fernandes et al., 2014; Agarwal et al., 2017; Gathergood and Weber, 2017; Bajo and Barbi, 2018; Bhutta et al., 2024), hold riskier and larger credit portfolios (Disney and Gathergood, 2013; Lusardi and Tufano, 2015), pay higher loan interest rates and fees (Lusardi and Tufano, 2015), and lack confidence when interpreting credit terms and conditions (Disney and Gathergood, 2013). Van Ooijen and van Rooij (2016) argue that the decisions regarding mortgage lending are considered especially complex due to a weaker understanding of the characteristics of loan products. Similarly, more literate borrowers tend to consult a larger number of information sources when selecting a mortgage product (van Ooijen and van Rooij, 2016). Van Ooijen and van Rooij (2016) also suggest that consumers tend to prefer advice from friends, family, and other non-professional parties rather than financial experts. However, there is a research gap when considering the mortgage lender choice. Dungey et al. (2015) conclude that financial literacy could affect the selection between fixed and variable rate mortgages in the Australian market. Similarly, in the UK context, Gathergood and Weber (2017) find that individuals with lower financial literacy are more likely to choose Alternative Mortgage Products, such as interest-only loans, which offer lower initial payments but entail higher long-term costs. In contrast, financially literate individuals are more inclined to select adjustable-rate mortgages over fixed-rate mortgages, reflecting a better understanding of cost structures like the term premium and greater responsiveness to macroeconomic conditions. However, there are no academic studies on how financial literacy affects the mortgage lender selection and which characteristics of the loan offers are perceived as important. So far, no academic study has connected both FL and debt literacy to this decision.[2]

This is surprising, as selecting a mortgage lender represents one of the most significant financial decisions an individual is likely to make in their lifetime. Despite the mortgage market being both highly competitive and subject to extensive regulatory oversight, which is designed in part to protect the more vulnerable party, the borrower, mortgage applicants still face a range of complex decisions. These include trade-offs between loan maturity and monthly installment amounts, the choice between fixed and variable interest rates, the use of interest rate hedging instruments, and the evaluation of various contractual features and lender-provided incentives.

Individuals with higher levels of financial and debt literacy are better equipped to understand these financial instruments and concepts. As a result, they are more capable of identifying and focusing on the contractual elements that have the greatest impact on the total cost of borrowing, while appropriately discounting less consequential terms. In essence, better financial and debt literacy enables borrowers to make more informed and deliberate mortgage choices, which are likely to contribute positively to their long-term financial well-being – especially when compared to individuals with lower levels of literacy.

Some of the most recent studies on financial literacy emphasize the role of effort put into the financial education by the financial institutions and other relevant stakeholders, like the central banks and public authorities. In earlier studies, Willis (2008 and 2011) argued that financial education provided by banks is mostly a marketing trick designed to attract

[1] *https://publications.bof.fi/bitstream/handle/10024/43727/Talousosaamisen-strategia-EN.pdf*

[2] *Roughly speaking, the concept of debt literacy refers to the understanding of debt-related issues, while the financial literacy covers the understanding of more basic financial concepts (Lusardi and Tufano, 2015).*

new customers, and in fact, banks have an incentive to keep financial education ineffective, because they benefit from the inadequate skills of customers to compare loan and deposit prices. Furthermore, a careless financial management by illiterate customers might yield bank revenues in the form of overdraft fees or other types of additional costs to these customers.

However, more recent studies, for example, Kalmi and Ruuskanen (2023), use internet searches and personal interviews with professionals from the Finnish banking industry and authorities, to focus on the provision of financial literacy by especially the banks and credit unions. They suggest, among other things, that when the bank customers have ties to a number of different financial services providers, the benefits of providing the customer with financial education are higher. Based on some of the stakeholder professional interviews, they also claim that one of the best ways to increase the financial understanding of banks' customers is the transparency of the financial products and the increasing of the customers' understanding of inherent cost components and pricing policies.

A large part of the financial literacy studies concentrates on financial education programs and their usefulness. For example, Brown et al. (2016) study the causal effects of financial education on debt behavior and find mostly positive and significant, although economically moderate, effects. Harvey (2019) finds that the high-school level financial education is associated with increased financial planning and decreased adverse financial behavior. Carpena et al. (2017) also argue that financial education improves awareness and attitudes towards financial products but for long-term impact, it would be important to utilize several educational methods, such as goal setting and personally tailored counseling.

However, Fernandes et al. (2014) present a pessimistic view of financial education programs, indicating that their impact on financial behavior is minimal, particularly for low-income individuals, and diminishes over time. A more recent and comprehensive meta-analysis of randomized controlled trials by Kaiser et al. (2022) finds contrary results once accounting for publication bias and program heterogeneity. On average, financial education significantly improves financial knowledge and behavior, with lasting effects for both low-income individuals and the general population. Additionally, Haliassos et al. (2020) discovered that financial literacy has spill-over effects, as individuals with economics or business educated neighbors are more likely to engage in financial activities like having retirement accounts and participating in stock markets.

It should be kept in mind that, unlike the consumer lending market, the mortgage market in Finland is heavily regulated due to its importance to general financial and macroeconomic stability (Kettunen, 2022; Laiho, 2023). The stringent regulation of banks ensures that mortgage lending practices are consistent, and consumer protection is prioritized. This regulatory environment significantly reduces the risk of individuals receiving unfavorable mortgage deals, even if they have lower financial literacy. Consequently, while financial literacy remains important, the likelihood of being significantly disadvantaged in a mortgage agreement is limited due to the constrained lending practices.

However, there can still be subtle differences in mortgage terms and conditions based on individual preferences and financial literacy levels. Our research aims to understand the role of financial literacy in shaping these preferences for various loan and bank characteristics among different types of individuals.

This study examines the relationship between financial literacy (FL) and mortgage lender selection, with the main research question stated as follows: How does the level of financial literacy relate to the importance of various loan offer characteristics and loan conditions when mortgage borrowers consider their mortgage? This question can be divided into two more detailed sub-questions of:

1. *How does FL affect the perceptions of loan offer characteristics; and*

2. *What loan features are the most important for the mortgage selection decision?*

The contributions of the study can be divided according to these questions. First, the study investigates how the mortgage borrowers perceive loan offer conditions and the features affecting their lender selection. More specifically, the study concentrates on examining whether FL can be used to explain the perceived importance of loan offer features. Second,

the study investigates whether more financially literate individuals value different aspects in mortgage selection than the less literate individuals. It is important to emphasize that the focus of our study is on comprehending the relationships and patterns between financial literacy and borrower perceptions, rather than establishing a causal connection between them.

Based on special characteristics described in the next section, we focus on the specific case of the Finnish mortgage market, for which a cross-sectional dataset was collected using an online survey consisting of three parts. The first part concentrated on measuring FL. The three questions developed by Lusardi and Mitchell (2011) were used to measure basic FL, but this collection of questions was augmented by two additional, debt literacy (DL) -related questions suggested by Lusardi and Tufano (2015). These question sets have become a standard way to measure both financial and debt literacy and have been used in several previous studies.[3] The second part of the survey focused on the respondents' mortgage selection process and the importance of the various characteristics of the loan offer, and the third part surveyed information about the characteristics of the respondents and their loans. The sample is considered to be representative particularly of Finnish mortgage borrowers, rather than Finnish consumers in general, as it is based on borrower characteristics and customer data that are similar or closely aligned with those used in previous studies. In addition, the descriptive statistics on financial literacy, especially among women, less educated individuals, and younger respondents, closely resemble the findings of comparable studies conducted in other countries using the same measurement tools, making the data comparable in this respect.

The study is conducted as a survey on preferences regarding loan and banking features, combined with measured financial literacy data. This approach follows the research design used by van Ooijen & van Rooij (2016). Although the chosen method is subject to typical survey biases, particularly self-reporting and non-response biases, and causality cannot be directly observed, it is still possible to observe associations between FL and perceived preferences.[4] This enables the examination of aspects that could not be accurately measured and therefore would not be available, for example, from loan registers.

Our empirical results show that although the studied mortgage borrowers have relatively high FL, many of them have difficulties in understanding debt-related issues. FL is also found to decrease the weight given to factors unrelated to loan characteristics when selecting a mortgage lender. That is, borrowers with higher FL are found to concentrate more on the terms of the loan and are more willing to shop around for the best deals for each product and services than those with lower FL. Hence, our main policy recommendations can be given as follows. First, it is essential to improve financial literacy because, based on our results, borrowers with low income and younger age have problems in understanding basic financial concepts. To address this, policymakers could develop programs to enhance financial literacy especially among first-time homebuyers. Second, our findings highlight the need for greater transparency in the mortgage lending process to help borrowers make informed decisions. Policymakers could work with the mortgage industry to develop clear and standardized information on loan products, including information on the true cost of the loan, so that borrowers can better compare different loan offers. Third, from both the financial supervisors' and banks' point of view, there should be more interest in providing guidance during the mortgage lending process. Our results show that financially illiterate borrowers may value the convenience of having all financial services from the same bank or financial institution, which could lead to suboptimal decisions. Therefore, policymakers could consider providing guidance to borrowers during the mortgage lending process, particularly to those who lack financial literacy, to ensure they understand the long-term implications of their loan decisions. Furthermore, our results also speak in favor of encouraging mortgage takers to shop for the best deals. This is because financially literate borrowers are more willing and able to shop for the best deals for each product or service, even if it means selecting different services from different banks. Policymakers could support consumers to shop around and compare offers from different lenders to ensure they are getting the best deal possible. Finally, our results suggest that financially literate borrowers are better able to evaluate the monetary benefits, such as insurance discounts or bonuses. In contrast, illiterate borrowers might make irrational decisions when they do not understand the requirements for obtaining certain discounts. Policymakers could develop programs to educate borrowers about the monetary benefits of loan products and how to evaluate them effectively.

[3] *A more detailed description and discussion of the questions used for measuring the FL and DL is presented in Appendix A.*

[4] *For robustness of our results, we also applied the propensity score matching method. See Sub-section 4.2 for details.*

The study is structured as follows: Section 2 presents the previous studies on FL, its relation to the mortgage market, and the characteristics of the Finnish mortgage market. Section 3 describes the data and empirical methods. Section 4 presents the results, and Section 5 concludes.

2. Financial literacy and mortgage selection

2.1 Financial and Debt Literacy

There are plenty of varying definitions for FL but common for most of them are the roles of knowledge of basic financial concepts, awareness of financial conditions, and attitude towards financial affairs. For example, Remund (2010) states that FL encompasses the ability for long-term financial planning and mindfulness of life events and economic conditions while OECD (2018) describes financial literacy as *"A combination of awareness, knowledge, skill, attitude, and behavior necessary to make sound financial decisions and ultimately achieve individual financial wellbeing."* However, for research purposes, these definitions can be considered too broad due to the measurement problems related to behaviors and attitudes. In this study, we rely on the approach by Lusardi and Mitchell (2011) and Lusardi and Tufano (2015) which measure the knowledge of basic financial concepts and debt calculations.[5]

Previous studies have been quite unanimous in their conclusions about the effects of FL on the wellbeing of individuals. According to Lusardi and Mitchell (2014), a lack of FL leads to sub-optimal financial decisions, inducing costs both before and after retirement. Similarly, Behrman et al. (2012) and Lusardi and Mitchell (2007; 2011) report that FL greatly affects pension preparedness, as more illiterate consumers tend to be less prepared for their retirement. Behrman et al. (2012) also argue that FL has an important role in the wealth accumulation of individuals, and in general terms, it is an even more important factor for household wealth and pension contributions than schooling, for example. Hence, the authors suggest that investments in financial knowledge may have high payoffs in the future. Moreover, Lusardi and Mitchell (2011) find that the impact of FL is a significant determinant of wealth even when controlling for the effects of education. Thus, education in general cannot be used as a reliable indicator for FL.

How literate are consumers then? According to an international S&P Global FinLit Survey conducted in 2014, only one out of three adults can be considered as financially literate (Klapper et al., 2015). However, there is strong variation among the different groups and countries, as the poor, low educated, and women tend to be less financially literate. The authors also mention that the usage of financial services increases with FL. In terms of variation among countries, individuals in the major developed economies are more financially literate compared to their peers living in the developing economies (Klapper et al., 2015). Lusardi and Mitchell (2011) obtain similar conclusions based on several international surveys: women are less literate than men, older people are less literate than the middle-aged, and the low educated are less literate than those with higher education. At more detailed levels of economic/financial variables or concepts, it is found that the concept of inflation is quite hard to understand. However, FL for this concept can be time and state dependent: understanding and awareness of inflation rises if the economy has experienced a high inflation period recently (Lusardi and Mitchell, 2011; Klapper et al., 2015). On the other hand, both the studies of Klapper et al. (2015) and OECD (2016) suggest that the idea of risk diversification is one of the least understood concepts of those included in the FL measures, while Lusardi and Mitchell (2011) argue that the understanding of it is likely to characterize those with a high level of FL. The OECD/INFE survey conducted in 2015 also reveals that the majority of European adults struggle to understand, for example, the ideas of standard interest rate compounding (OECD, 2016).

[5] *The key principles of their measures are 1) Simplicity: Aim is to measure basic financial concepts; 2) Relevance: Questions have to be related to concepts pertinent to people's day-to-day financial decisions over the life cycle ; moreover, they have to capture general rather than context-specific ideas; 3) Brevity: The number of questions have to be kept to a minimum in order to secure widespread adoption; and 4) Capacity to differentiate: The questions need to be able to differentiate between financial knowledge levels, so as to compare people in terms of their scores on a common set of questions.*

Studies based on the widely used OECD method have not previously considered the concept of debt literacy (DL) at all. Lusardi and Tufano (2015) define DL as the knowledge of concepts related to debt and debt instruments. They design specific survey questions for measuring DL and find that US consumers' over-indebtedness seems to be related to the lack of DL. They further report that only a third of the US population understand the ideas behind compound interest on credit card debt. Furthermore, they show that the level of DL is especially low among women, the elderly, minorities, and those who are divorced or separated. The DL questions have also been used for the specific case of the Netherlands by van Ooijen and van Rooij (2016), who found that Dutch consumers' understanding of basic financial concepts (measured along the lines of traditional OECD FL surveys) is higher than the understanding of the debt-related issues. However, further evidence on DL and its effects on financial behaviors is still limited, and this calls for further studies on the topic.

2.2 Financial Literacy and Behavior in the Debt Market

Previous evidence on the relationship between FL and mortgage market behavior indicates that less literate borrowers are more likely to make suboptimal mortgage decisions. Agarwal et al. (2017) find that less financially savvy mortgage borrowers systematically select suboptimal mortgage products. Bajo and Barbi (2018) show that only a small proportion of Italian mortgage borrowers with fixed-rate mortgages used a profitable opportunity to refinance their mortgages. Although they do not measure FL, they suggest that it has a role in this suboptimal behavior, since it is associated with the less educated, poor, immigrants, women, and borrowers living in the less developed areas of Italy. Lusardi and Tufano (2015) examine DL and find that less literate borrowers in the US end up paying higher interest rates and fees on their mortgages, leading to over-indebtedness of households. In a similar vein, Bhutta et al. (2024) argue that borrowers' mortgage knowledge is linked to mortgage overpayment. Disney and Gathergood (2013) report similar evidence from the UK consumer credit market. Furthermore, Disney and Gathergood (2013) and Lusardi and Tufano (2015) argue that borrowers with weaker FL hold larger and riskier credit portfolios with more and higher costs of consumer credit than more sophisticated individuals.

Previous studies suggest that financially less literate consumers may need specific guidance on debt-related issues. Disney and Gathergood (2013) argue that financially less literate borrowers lack the ability to interpret credit terms and are less likely to search for information on financial affairs through reading financial pages in the press. They are also typically self-aware of their inability to interpret the costs of debt (Disney and Gathergood, 2013). In one of the most recent studies, Guiso et al. (2022) analyze the cost of banks' steering in mortgage markets and find that less literate households are more vulnerable to steering. They argue that these households are not capable of making optimal mortgage choices and thus need guidance for their decision-making. On the other hand, van Ooijen and van Rooij (2016) observe that more literate borrowers consult a larger number of information sources when selecting a mortgage product.

2.3 Characteristics of the Finnish Mortgage Market

Homeownership and mortgages play a significant role in Finnish households' wealth and financial well-being. Hyytinen et al. (2006) show that residential assets correspond to over 60% of the total gross assets of more than 80% of Finnish homeowners. In international comparison, the wealth of Finnish homeowners is highly centralized in owner-occupied dwellings (Campbell and Cocco, 2003; Hyytinen et al., 2006). Thus, it is obvious that optimal mortgage choice is especially important for the financial well-being of Finnish consumers.

Finnish mortgage products differ substantially from the mortgage products in the US and other euro area countries, making it hard to apply previous studies' interpretations in the Finnish context (Hyytinen et al., 2006). While fewer than 20% of the mortgages in the euro area have a variable rate of interest, in Finland the proportion of variable-rate mortgages exceeds 95%. Even if the Finnish households are more likely to utilize other kinds of hedging products, like the interest rate caps or collars, according to a recent Nordea bank report by Koskivuo and Kostiainen (2022), due to the high share of variable-rate mortgages, they are still much more vulnerable to rising interest rates than other euro area mortgage takers

in some other euro area countries. The largest mortgage lender in Finland, the OP Financial Group (2022), reports that 41% of their new mortgages and about 30% of their whole mortgage portfolio were hedged against rising interest rates in 2022.

Most Finnish mortgages have maturities between 20 and 25 years (about 43%) or between 25 and 30 years (about 25%). Even though the maturities of the Finnish mortgages have been increasing significantly, the proportion of mortgages with maturities exceeding 30 years is still quite low (about 5%).[6] In mid-2022, the nominal stock of Finnish households' mortgage debt was 108.5 billion euros. The Finnish mortgage market is remarkably centralized. In mid-2022, 77.7% of household mortgages were issued by the three largest operators: the OP Financial Group held a mortgage portfolio worth 41,521 billion euros (38.3% market share), Nordea 32,345 billion euros (29.8%), and Danske Bank 10,463 billion euros (9.6%).[7] However, the home buyers still have quite a lot of options available. In 2022 the Finnish Financial Supervisory Authority supervised individually 175 deposit banks or financing institutions, most of which are small individual member cooperative banks, local cooperative banks, or savings banks as part of central bodies or cooperatives.[8] Appendix B shows the stable development in the market shares of the Finnish mortgage operators for 2017–2022.

3. Data and methodology

3.1 Survey Data

FL is often measured based on surveys. Lusardi and Mitchell (2011) designed questions to measure the knowledge of basic financial concepts which have been widely used in previous studies for various countries (see e.g. Lusardi and Mitchell, 2014; van Ooijen and van Rooij, 2016; Klapper et al., 2015; Lusardi and Tufano, 2015; Kalmi and Ruuskanen, 2016). The questions aim to measure the understanding of concepts like interest rate and compounding, inflation, and risk diversification. The FL level of the respondent is measured as the number of correct answers (Lusardi and Mitchell, 2011).[9]

Besides measuring FL, previous studies have suggested some additions to the surveys. Lusardi and Tufano (2015) study the effects of debt literacy and financial experiences on over-indebtedness of the US consumers. They designed three survey questions to specifically measure DL: one regarding the interest rate compounding, one asking the respondent to estimate how many years it would take to pay off credit card debt when making minimum payments equal the interest payments on the outstanding debt, and one for testing the understanding of time value of money and ability to compare payment methods (Lusardi and Tufano, 2015).

To examine the effects and relationships between FL and DL, the question sets by Lusardi and Mitchell (2011) and Lusardi and Tufano (2015) have previously been combined in van Ooijen and van Rooij (2016) and Disney and Gathergood (2013). This study follows the same approach. The collection of data was conducted in May 2022 using an online survey following the guidelines of the OECD (2018). Our survey's target group comprised of Finnish mortgage borrowers who had obtained a new home loan within the past two years. The use of two-year threshold serves two purposes. First, during this period,

[6] *Bank of Finland: Stock of housing loans by original maturity: https://www.suomenpankki.fi/en/Statistics/mfi-balance-sheet/charts/rati-kuviot-en/asuntolainat_alkuperaisen_maturiteetin_mukaan_chrt_en/*

[7] *Bank of Finland: Market shares of credit institutions operating in Finland: https://www.suomenpankki.fi/en/Statistics/mfi-balance-sheet/tables/rati-taulukot-en/markkinaosuudet_luottolaitokset_en/*

[8] *Regularly updated list of supervised entities by Financial Supervisory Authority is available in: https://www.finanssivalvonta.fi/en/registers/supervised-entities/.*

[9] *The questionnaire by Lusardi and Mitchell (2011) does not completely meet the definition of FL used by the OECD because the OECD method also includes questions about financial behavior and attitudes of respondents (OECD, 2018). Financial behavior is measured with questions regarding the respondent's budgeting, active saving, avoidance of borrowing to make ends meet, and choosing financial products. Financial attitudes are measured by asking how much the respondent agrees or disagrees with statements regarding their personal finances. Both the FL and financial behavior scores are calculated as the sum of correct or "financially savvy" answers. The financial attitudes score is calculated as the average response across three attitude questions.*

borrowers experienced rather similar low-interest rate conditions just before the major interest rate hike. Excluding April and May of 2022, when the most often used reference rate of interest for mortgages, the 12-month Euribor, turned positive, for majority of the sample period, the interest rate remained relatively stable and consistently below zero, with a daily average of -0.42 and standard deviation of 0.12 between May 2020 and March 2022. Second, the two-year window is considered to be relevant time period for which the borrowers can still recall the reasons why they chose their specific mortgage. This aspect is crucial for the internal validity of the survey. The survey consisted of two main stages. In the initial step, the Cambri customer research tool, which aggregates information from various consumer panels[10], commenced sending invitations to registered panellists. The subsequent step employed a screener question to assess respondent suitability. The goal of the survey was to amass a total of 300 responses.

During the first step, the Cambri customer research tool was utilized to distribute surveys to registered panellists. A total of 5576 survey invitations were sent, resulting in 2726 respondents initiating the survey, corresponding to a 51% response rate. The subsequent stage featured a screener question to determine whether the respondents had acquired a new home mortgage within the last two years. Due to this strict filtering question, the survey was concluded slightly earlier than originally planned. Roughly 10% of the respondents (267 individuals) affirmed their recent mortgage acquisition, qualifying them for the survey data analysis. Respondents without a mortgage in the last two years were unable to continue the survey, and those who progressed to the next stage took an average of 4 minutes and 34 seconds to complete the survey. The survey was conducted in Finnish, and the participants received nominal compensation ranging from 0 to 0.50€ based on the panel used to access the survey.

To examine the relationship between FL and mortgage lender selection, the survey included three sections. First, to measure FL, three questions introduced in Lusardi and Mitchell (2011), and for DL, two additional suggested questions from Lusardi and Tufano (2015) were used. For more concise notation, in the future, unless otherwise stated, the questions are referred to as FL questions without differentiating between FL and DL questions. It should be noted that the posed questions are designed to gauge broad financial and debt literacy levels and are not specifically tailored to mortgage borrowing contexts. Since mortgage decisions are complex financial decisions that extend beyond the understanding of solely mortgage-specific terms, the adoption of a broader approach aims to reveal the connections between individuals' overarching financial comprehension and their perceptions of mortgage characteristics. Second, the survey inquired on a scale of 1-5, how important the borrowers considered the various features of the loan offer and which lender they eventually selected. Third, the respondents were asked questions about their demographic and socio-economic background. [11]

Since the study focuses on a narrowly defined subpopulation, namely, individuals who have taken out a mortgage within the two years preceding the survey, the measured financial literacy scores may not be representative of the general population's financial literacy. Individuals who have obtained a mortgage may be more financially literate or more interested in financial matters. Conversely, those without a mortgage may include individuals who either self-select out of the mortgage market due to a perceived lack of financial knowledge or are excluded by financial institutions due to low creditworthiness, potentially stemming from limited financial literacy.

Accordingly, our policy recommendations are primarily targeted at individuals who both have the capacity and the willingness to participate in the mortgage market.

3.2 Descriptive Statistics

The FL score used in the estimations is calculated as the sum of correct answers given by the respondent. Thus, the FL score gets a value between 0 and 5. Out of 267 respondents, 23 (8.6%) did not give any correct answers, 58 (21.7%) gave one correct answer, 63 (23.6%) gave two correct answers, 71 (26.6%) gave three correct answers, 50 (18.7%) gave four correct answers and only two respondents (0.7%) gave the right answers to all five questions.

[10] *For further information, see cambri.io.*

[11] *The survey questions are given in Appendix A.*

Table 1 presents the shares of correct answers to FL questions and the average FL scores among the demographic groups. Female, young, less educated and respondents with lower income levels consistently have lower scores on financial knowledge for almost all questions. These findings are in line with previous studies (Lusardi and Mitchell, 2011; Klapper et al., 2015; Lusardi and Tufano, 2015). However, one interesting finding from the answers to question 2 could be highlighted: even in the rapid inflation environment of spring 2022, only 60% of the respondents understand the concept of inflation and real interest rate. According to Klapper et al. (2015) and Lusardi and Mitchell (2011), inflation is better understood in economies experiencing high inflation rates. In the study by Kalmi and Ruuskanen (2016), from the low inflation period, the same number was 77%. The lower share of correct answers from spring 2022 is most likely reflecting the fact that the sample also covers observations of mortgage selection choices from the years of still extremely low inflation (2020 and 2021), so the inflation experience from those years might dominate in the responses. Hence, even though this finding also follows the findings of Klapper et al. (2015) and Lusardi and Mitchell (2011), it obviously raises concerns about losing the understanding of one of the main macroeconomic variables during a prolonged period of extremely low inflation rates.

The low number of respondents giving correct answers to questions 4 and 5 measuring debt-related knowledge supports the evidence of van Ooijen and van Rooij (2016). The debt-related questions seem to be harder for the respondents, even if they are holding a mortgage loan. An especially difficult question was question number 5 related to the time value of money and payment options: only 17% of respondents gave the correct answer.

The lender selection of the 267 respondents is distributed among banks as follows: 105 respondents (39.3%) selected the OP Financial Group, 70 (26.4%) Nordea Bank, 19 (7.1%) Danske Bank, 19 (7.1%) S-Bank, 18 (6.7%) Savings Bank and the remaining 36 (13.4%) some other bank (Handelsbanken, POP Bank, Ålandsbanken, Aktia, Hypo group and all other lenders) with lower market share. These follow quite well the development of market shares of each of the banks in recent years (see Appendix B).

Table 1: *Summary statistics from the responses to financial literacy questions*

	Correct answers to FL questions					FL score	
	Q1	**Q2**	**Q3**	**Q4**	**Q5**	**Mean**	**SD**
Total sample (n = 267)	70 %	60 %	56 %	24 %	17 %	2.27	1.26
Male (n= 137)	73 %	58 %	59 %	29 %	21 %	2.41	1.28
Female (n =130)	66 %	62 %	53 %	19 %	12 %	2.13	1.22
18 – 34 years old (n = 112)	66 %	45 %	48 %	19 %	22 %	2.00	1.22
35 – 54 years old (n = 123)	73 %	70 %	64 %	28 %	15 %	2.50	1.27
Over 55 years old (n = 32)	69 %	78 %	53 %	28 %	6 %	2.34	1.18
Higher education (n = 171)	71 %	61 %	57 %	29 %	16 %	2.33	1.28
No higher education (n = 96)	68 %	59 %	55 %	16 %	19 %	2.17	1.20
Income under 30,000 € (n = 60)	58 %	50 %	45 %	12 %	20 %	1.85	1.12
Income 30,000–50,000 € (n = 125)	72 %	63 %	58 %	24 %	15 %	2.33	1.22
Income over 50,000 € (n = 82)	74 %	63 %	61 %	34 %	17 %	2.50	1.34

Notes: The table presents the shares of correct answers to FL questions Q1 – Q5, the mean values of FL score (FL_i) and the standard deviations of FL scores. Q1 measures the understanding of interest compounding, Q2 inflation, Q3 risk diversification, Q4 minimum payments, and Q5 the time value of money. The FL score is calculated as the number of correct answers given to questions Q1 – Q5.

Table 2 presents the correlations between the FL scores, respondents' ages, education levels, income, net wealth, and loan amounts of the last mortgage. The evidence supports the findings of Behrman et al. (2012) and Lusardi and Mitchell (2011) suggesting that education or any other demographic variables would not be a good proxy for FL. Financial literacy seems to be positively correlated with all the variables included in the analysis, excluding gender, but the coefficients of correlation are rather small. In line with the observations reported in Table 1, female mortgage borrowers seem to be less financially literate. An especially interesting value is the low and statistically insignificant correlation between FL and education level ($\rho = 0.09$). The reported correlation coefficients also confirm our a priori expectations based on the previous literature that wealthier individuals have higher incomes, and they also take out larger mortgages. Furthermore, education is positively correlated with both income and wealth, and finally, younger homebuyers tend to have higher loan amounts. The lack of strong correlations between the variables allows all variables to be included in the estimation models without multicollinearity issues[12].

Table 2: *Correlations*

	FL	Income	Wealth	Education	Gender	Age	LoanAmount
FL	1.000***	0.162***	0.163***	0.085	-0.111*	0.194***	0.092
Income		1.000***	0.480***	0.271***	-0.199***	0.109*	0.407***
Wealth			1.000***	0.257***	-0.143**	0.272***	0.138**
Education				1.000***	0.057	-0.051	0.269***
Gender					1.000***	-0.007	-0.057
Age						1.000***	-0.144**
LoanAmount							1.000***

*Notes: The table presents correlation coefficients between the variables FL, Income, Wealth, Education, Gender, Age, and LoanAmount, where FL is the FL score calculated as the number of correct answers to FL and DL questions, Income is the respondent's annual gross income, Wealth net wealth, Education education level, Gender gender coded as 0 = male and 1 = female, Age age group, and LoanAmount the loan capital the respondent borrowed last time he/she took out a home loan. ***, ** and * denote the statistical significance at 1%, 5%, and 10% levels, respectively.*

3.3 Econometric Model Specification

To investigate the role of FL in choosing the mortgage lender more formally, we utilize logit regression models to study how important an individual borrower considers the various loan offer features when selecting their latest home loan supplier and for the probability of selecting a specific lender (bank).

An ordered logit model is used to explain how FL affects the perceived importance of various loan offer features. The starting model for this analysis is specified as

$$P(Imp_{ik} = l) = F(\mu_l - \alpha_k FL_i - \beta_k X_i) - F(\mu_{l-1} - \alpha_k FL_i - \beta_k X_i), \quad (1)$$

where the general form of the cumulative distribution function with conditioning information reflecting the effects on the probability for a change in the importance of loan offer features is given as

$$F(z) = \frac{e^z}{1+e^z}. \quad (2)$$

[12] *In Appendix C we report the variance inflation factor values that also imply that we do not have any serious multicollinearity problems in our data sample.*

In this empirical specification, lmp_{ik} is the (unobserved) importance of loan offer feature k for individual i, whereas l refers to the response options from 1 to 5, and μ_l and μ_{l-1} refer to the cut-off values for options l and l-1, respectively. The first explanatory variable (FL_i) refers to the financial literacy score and x_i to the vector of other explanatory customer-specific variables (*Income, Wealth, Education, Gender, Age*, and *LoanAmount*).

In the final step, a multinomial logit model is used to study how the perceived importance of different loan offer features affects the probability of selecting a certain mortgage lender. The model is specified as

$$\pi_{ij} = \frac{e^{\mu_j + \alpha_j LoanFeature_i}}{\sum_{j=1}^{n} e^{\mu_j + \alpha_j LoanFeature_i}} \tag{3}$$

where π_{ij} is the probability of individual i selecting bank j, n is the number of banks and *LoanFeature* consists of all the k individual loan features.[13] Instead of comparing individual banks, we divide the banks into groups according to their characteristics (large vs. small, and stakeholder vs. shareholder banks). Hence, the estimation results can be interpreted as an answer to the question "How does the variable X affect the probability of selecting bank from bank group j instead of the reference bank group?" To reveal the possible differences in the effects of various lender selection determinants between borrowers with varying levels of FL, the estimation is done first for the full sample, then for the more literate borrowers' subsample and finally for the less literate borrowers' subsample. For this, the respondents were divided into subsamples based on their FL score: those having an FL score of 3 or greater are included in the more literate sample (n = 123) and those having an FL score 2 or lower in the less literate sample (n = 144). Based on the previous literature there is no clear threshold value to be used for a priori classification of the individuals into more and less literate groups. Hence, this division was guided by two practical considerations. First, we aimed to ensure that each group would be large enough to provide sufficient statistical power for meaningful analysis. Second, we sought to maintain a roughly equal number of individuals in both groups to facilitate comparison. Due to the limitations of the dataset, the resulting split is admittedly somewhat coarse, which suggests that the findings may be conservative. It is likely that comparing more extreme ends of the literacy spectrum would have yielded even stronger effects.

The goodness of fit of every limited dependent variable model presented is evaluated with Pseudo-R^2, also known as the McFadden-R^2. The Pseudo-R^2 is defined as

$$\text{Pseudo} - R^2 = 1 - \frac{LLF}{LLF_0}$$

where LLF is the maximized value of the log-likelihood function for the unrestricted model and LLF_0 is the corresponding value for the restricted model where all the slope parameters are set to zero (Brooks, 2019, p. 525). A higher Pseudo-R^2 value indicates a better fit, but the measure does not have any intuitive interpretation. Furthermore, it is important to acknowledge the potential endogeneity issues that may arise in our research setting due to omitted variable bias, measurement error, and reverse causality.

The omitted variable bias can occur when unobserved factors influence both financial literacy and mortgage and bank preferences. For instance, individual risk tolerance or prior financial experiences could affect both, leading to biased estimates. For example, individuals with higher risk aversion may seek financial education to better manage their risks, thereby increasing their financial literacy. Simultaneously, their risk attitudes directly influence their mortgage preferences. Similarly, individuals with prior mortgage experience may have higher financial literacy, which in turn influences their current mortgage choices.

The measurement error in financial literacy score can introduce additional noise into the data, causing the estimated effects to be biased towards zero. Reverse causality is also a concern. While the level of financial literacy may influence

[13] *According to Long (1997), multinomial logit models assume the Independence of Irrelevant Alternatives (IIA) which means that the odds ratio between any two alternatives is not affected by any other option available. If the IIA was rejected, the model would produce biased predicted probabilities (Long, 1997, p. 185–186). We used the Hausman-McFadden test to test for the IIA assumption, and the null hypothesis of IIA was not rejected in the analysis.*

preferences, it is plausible that individuals who prefer certain loan and bank characteristics, seek out for more information and financial education, thereby increasing their financial literacy, too. Although the current estimation framework does not explicitly address these endogeneity concerns, acknowledging their presence is essential for understanding the findings. Therefore, our results should be interpreted with caution, as we are studying the relationship between the variables of interest rather than making causal inferences.

4. Results

This section presents the results of the study by utilizing the second part of the survey questions which investigate the determinants of mortgage lender selection. Sub-sections 4.1 and 4.2 concentrate on research question 1; *"How does FL affect the perceptions of loan offer characteristics?"*. Sub-section 4.1 shows descriptive statistics on the perceived importance of each of the loan, service, and bank characteristics for the whole sample, as well as for the five groups divided based on FL scores. Sub-section 4.2 continues with the same theme, utilizing more formal econometric methods presented in sub-section 3.3 and controlling for borrower characteristics. In sub-section 4.3, we conclude our analysis by presenting the results for question 2; *"What loan features are the most important for the mortgage selection decision?"*. It shows the results related to the importance of loan, service, and bank characteristics on bank selection, separately for more literate and less illiterate customers, and when the mortgage decisions are made between large and small banks, as well as between stakeholder and shareholder banks.

4.1 Mortgage Lender Selection

To be able to give an answer to our research question 1, the respondents were asked to evaluate how important they considered the various features of mortgage offers and other banking services to be while selecting their latest home loan. The answer is given on a scale of 1 to 5 where 1 is "not important at all" and 5 is "very important". All 26 variables are listed in the first column of Table 3, and the second column reports the mean and standard deviation for the perceived importance of each loan offer feature over the whole sample.

Columns 3-7 of Table 3 categorize the mean values and standard deviations of lmp_k, the perceived importance of loan offer feature k, into five subgroups based on the level of FL. Due to the limited number of participants who answered all five questions correctly, they were grouped together with those who answered four questions correctly. The financially more literate customers seem to be more price-sensitive compared to those less financially savvy, because the perceived importance of the loan margin and APR increase with the level of FL. The less financially literate customers, however, weigh more on a long loan maturity and a monthly payment, indicating that they are more interested in their monthly cash flow than in the true expenses of the mortgage. The perceived importance of (monetary) benefits such as bonuses or other loyal customer benefits seems to decrease with FL.

Table 3: *Perceived importance of loan offer features (k).*

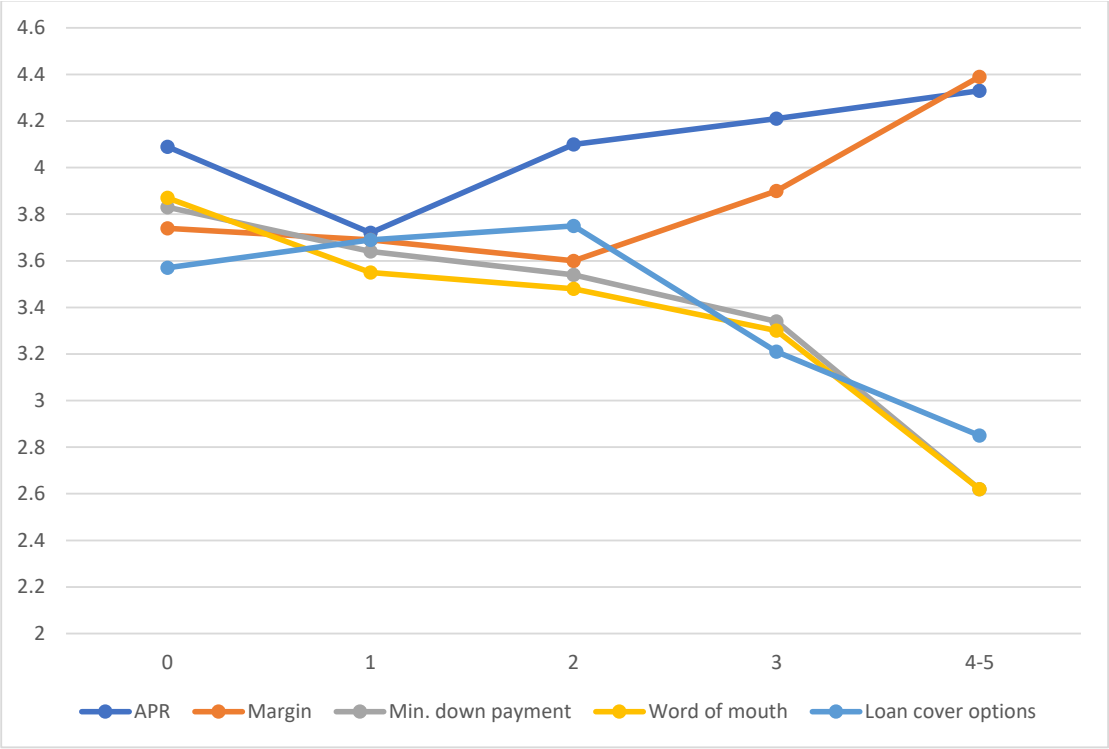
k	**Mean (std)**	$FL_i = 0$ **(n = 23)**	$FL_i = 1$ **(n = 58)**	$FL_i = 2$ **(n = 63)**	$FL_i = 3$ **(n = 71)**	$FL_i \geq 4$ **(n = 52)**
Pricing characteristics of the loan						
Margin	3.87	3.74	3.69	3.60	3.90	4.39
	(1.02)	(1.05)	(1.05)	(1.13)	(1.02)	(0.63)
Service charge	3.35	3.44	3.50	3.40	3.38	3.04
	(1.07)	(0.99)	(1.08)	(1.13)	(1.05)	(1.01)
Loan period	3.60	3.83	3.62	3.57	3.70	3.29
	(1.06)	(0.94)	(0.89)	(1.06)	(1.10)	(1.19)
Monthly payment	3.40	3.74	3.74	3.37	3.39	2.92
	(1.13)	(0.96)	(0.85)	(1.13)	(1.10)	(1.34)
APR	4.09	4.09	3.72	4.10	4.21	4.33
	(0.96)	(1.00)	(1.06)	(0.91)	(0.89)	(0.90)

k	Mean (std)	$FL_i = 0$ (n = 23)	$FL_i = 1$ (n = 58)	$FL_i = 2$ (n = 63)	$FL_i = 3$ (n = 71)	$FL_i \geq 4$ (n = 52)
Hedging products						
Interest rate hedge options	3.47	3.78	3.64	3.86	3.31	2.89
	(1.18)	(1.00)	(1.04)	(1.19)	(1.15)	(1.20)
Interest rate hedge price	3.51	3.65	3.67	3.79	3.37	3.12
	(1.17)	(1.02)	(1.08)	(1.14)	(1.21)	(1.23)
Loan cover options	3.40	3.57	3.69	3.75	3.21	2.85
	(1.10)	(0.95)	(0.96)	(1.12)	(1.08)	(1.07)
Loan cover price	3.44	3.87	3.64	3.76	3.25	2.90
	(1.13)	(0.92)	(1.02)	(1.09)	(1.12)	(1.15)
Other than pricing characteristics of the loan						
Payment plan flexibility	3.81	3.61	4.07	3.87	3.75	3.62
	(0.94)	(0.99)	(0.86)	(0.94)	(0.94)	(0.97)
Collaterals needed	3.60	3.48	3.62	3.75	3.59	3.44
	(1.04)	(0.99)	(1.07)	(1.05)	(1.09)	(0.94)
Additional collateral price	3.42	3.87	3.76	3.48	3.35	2.89
	(1.15)	(0.87)	(0.94)	(1.08)	(1.22)	(1.28)
Min. down payment	3.35	3.83	3.64	3.54	3.34	2.62
	(1.11)	(0.98)	(1.00)	(1.15)	(1.04)	(0.99)
Sustainable product	3.46	3.83	3.71	3.64	3.21	3.15
	(1.08)	(0.89)	(0.88)	(1.13)	(1.10)	(1.14)
Bank characteristics and image						
Service quality	3.86	3.74	3.88	3.98	3.83	3.79
	(0.99)	(0.86)	(1.09)	(0.96)	(1.01)	(0.96)
Service speed	3.81	3.74	3.86	4.06	3.75	3.56
	(1.00)	(0.96)	(1.07)	(0.91)	(1.00)	(1.02)
Brand	3.60	3.96	3.90	3.52	3.61	3.17
	(1.08)	(0.93)	(1.00)	(1.05)	(1.13)	(1.06)
Own experiences	3.82	3.91	3.87	3.91	3.92	3.54
	(1.00)	(0.85)	(1.05)	(1.00)	(0.98)	(1.02)
Word of mouth	3.31	3.87	3.55	3.48	3.30	2.62
	(1.15)	(0.87)	(1.10)	(1.09)	(1.09)	(1.21)
Domesticity	3.67	3.83	3.79	3.73	3.73	3.31
	(1.08)	(0.78)	(1.05)	(1.07)	(1.11)	(1.16)
Other banking services						
Insurance benefits	3.28	3.48	3.57	3.59	3.14	2.69
	(1.18)	(0.85)	(1.12)	(1.12)	(1.23)	(1.15)
Daily banking services	3.56	3.74	3.69	3.60	3.75	3.12
	(1.04)	(0.75)	(1.03)	(1.17)	(0.92)	(1.06)
Daily banking services' price	3.71	3.87	3.91	3.79	3.72	3.33
	(1.03)	(0.92)	(1.00)	(1.08)	(0.94)	(1.12)
Investing services	3.16	3.65	3.55	3.22	2.99	2.65
	(1.17)	(1.03)	(0.99)	(1.18)	(1.15)	(1.19)
Investing services' price	3.26	3.61	3.67	3.25	3.13	2.83
	(1.16)	(0.94)	(1.00)	(1.14)	(1.23)	(1.18)
Other monetary benefits	3.46	4.09	3.86	3.44	3.41	2.83
	(1.14)	(0.73)	(1.00)	(1.13)	(1.15)	(1.14)

Notes: The table presents the mean values and standard deviations (reported in parenthesis) of lmp_k, measuring the perceived importance of loan offer feature k among respondents having varying FL scores (FL_i. The respondents were asked to evaluate how important they considered the various features of mortgage offers and other banking services to be while selecting their latest home loan. The answer was given on a scale of 1 to 5, where 1 is "not important at all" and 5 is "very important". The FL score is calculated as the number of correct answers given to questions Q1 – Q5 in Appendix A. FL scores 4 and 5 are presented as one group due to the low number of respondents (2) having all 5 questions right.

To visualize the data, Figure 1 presents the stated preferences for mortgages across selected variables. As already observed in the results of Table 3, the curves for APR and Margin are upward-sloping, indicating that individuals with higher financial literacy place greater value on these attributes than those with lower FL. Conversely, for minimum down payments, word of mouth, and loan cover options, the curves are strongly downward-sloping, suggesting that individuals with lower FL value these features more. Notably, as mentioned above, APR is highly valued across all FL levels, receiving higher preference scores than the other selected variables regardless of financial literacy. This suggests that, overall, individuals tend to recognize and value the most relevant characteristics in mortgage products, even if the emphasis varies by financial literacy level.

Figure 1: *Financial literacy (horizontal axis) and stated preferences (vertical axis) on mortgage selection for selected variables*



The statistics reported in Table 3 also indicate that the financially more literate borrowers seem to be less interested in additional mortgage protection products such as interest rate hedges and loan protection insurances when comparing the loan offers. This could be related to a smaller need and interest in hedging products, that could reflect better payment ability, higher income, and higher wealth of especially the financially more literate customers. However, some caution needs to be taken when interpreting these results. As the survey question asked how much the hedging product options affected the mortgage lender selection, the result cannot be directly interpreted as an indication that financially more literate customers do not want or need mortgage protection products.

Interestingly, the financially more literate customers emphasize the availability and price of financial investment services less than the less savvy customers. The previous studies by Behrman et al. (2012) and Lusardi and Mitchell (2007; 2011; 2014) present evidence that financially literate individuals are more likely to prepare for the future by saving and investing regularly. Hence, straightforward conclusions about financially literate borrowers' decreased interest in financial investment services should not be drawn. Rather, it could be assumed that the financially more literate borrowers do not select their mortgage lender based on the investment services provided, and hence, are more willing to use service providers that are separate from the mortgage lender, like specific investment service providers and possibly providers of other financial services, too. The less financially literate customers, on the other hand, might appreciate the convenience of concentrating all their financial services in one institution. Similar phenomena can also be observed in the case of insurance benefits.

The results are in line with van Ooijen and van Rooij (2016) about the role of information sources used when selecting a financial product. The financially more literate respondents report that the experiences and suggestions of friends and acquaintances were not very influential on their mortgage lender selection, while the less literate respondents relied more on the advice of those. Instead, the financially more literate borrowers consult a greater number and more relevant information sources (Calcagno and Monticone, 2015; van Ooijen and van Rooij, 2016).

4.2 Perceived Importance of Loan Offer Features

This sub-section deepens the understanding of the relation between financial literacy and the perceived importance of various loan characteristics. Table 4 reports the results from our empirical analysis where we examine the impact of financial literacy on how important an individual customer perceives certain loan offer features and conditions when selecting between the mortgage offers.

Our first empirical finding is that, from all the analyzed explanatory variables, the financial literacy score seems to be the most important determinant behind the perceived importance of the loan features and conditions, in terms of both the magnitude and statistical significance of the regression coefficients. Furthermore, the age of the loan customer seems to be the second most important determinant.

The results are in line with the findings of Lusardi and Tufano (2015) and Disney and Gathergood (2013) who found that the more financially illiterate borrowers pay higher interests and fees on their loans. According to our results, the higher level of FL is significantly related to the higher perceived importance of the margin and the true cost of the loan, measured by the annual percentage rate, APR. Similarly, FL is in a negative relation to the importance of service charges. This supports the findings from descriptive statistics on financially more literate customers comparing the loan offers based on their true total cost rather than a single fee. The perceived importance of true loan costs is found to increase with age as well. A bigger loan amount is found to be marginally connected to the increased perceived importance of the loan interest margin and the loan maturity. This is an a priori expected result as a higher loan amount increases the motivation to find the lowest possible margin, and a long maturity could keep the monthly outgoing cash flow affordable when holding a large mortgage.

Table 4: *Ordered logit model estimation results*

k	$\mu 12$	$\mu 23$	$\mu 34$	$\mu 45$	FL	Income	Wealth	Education	Gender	Age	Loan-Amount
Pricing characteristics of the loan											
Margin	-1.094*	0.135	1.773***	3.457***	0.270***	0.096	0.076	0.070	0.106	0.127	0.147*
	(0.648)	(0.585)	(0.586)	(0.614)	(0.093)	(0.087)	(0.065)	(0.126)	(0.233)	(0.093)	(0.088)
Service charge	-3.535***	-1.554***	-0.020	1.413***	-0.157*	-0.014	0.039	0.092	0.097	-0.090	0.006
	(0.642)	(0.571)	(0.561)	(0.571)	(0.092)	(0.084)	(0.064)	(0.12)	(0.228)	(0.092)	(0.084)
Loan period	-4.308***	-2.797***	-1.209**	0.384	-0.112	-0.029	-0.119*	-0.146	0.300	-0.043	0.146*
	(0.648)	(0.582)	(0.555)	(0.553)	(0.094)	(0.087)	(0.066)	(0.129)	(0.230)	(0.091)	(0.085)
Monthly payment	-4.310***	-2.69***	-1.074*	0.168	-0.300***	-0.143*	0.015	0.055	0.159	-0.115	0.061
	(0.638)	(0.581)	(0.558)	(0.559)	(0.094)	(0.082)	(0.062)	(0.125)	(0.227)	(0.091)	(0.085)
APR	-2.558***	-0.988	0.538	2.143***	0.203**	-0.135	0.066	0.064	0.129	0.259***	0.125
	(0.741)	(0.597)	(0.573)	(0.590)	(0.097)	(0.086)	(0.065)	(0.127)	(0.236)	(0.095)	(0.089)
Hedging products											
Interest rate hedge options	-2.989***	-1.781***	-0.518	0.992*	-0.374***	0.034	-0.053	0.170	-0.045	0.084	-0.089
	(0.601)	(0.569)	(0.555)	(0.56)	(0.094)	(0.087)	(0.064)	(0.122)	(0.227)	(0.092)	(0.087)
Interest rate hedge price	-2.161***	-1.22**	0.245	1.676***	-0.273***	-0.004	-0.022	0.177	0.072	0.236***	-0.125
	(0.596)	(0.571)	(0.562)	(0.575)	(0.091)	(0.086)	(0.064)	(0.125)	(0.227)	(0.092)	(0.086)

k	$\mu 12$	$\mu 23$	$\mu 34$	$\mu 45$	FL	Income	Wealth	Education	Gender	Age	LoanAmount
Loan cover options	-3.696***	-2.280***	-0.767	0.917	-0.376***	0.000	-0.100	0.163	-0.097	0.105	-0.124
	(0.621)	(0.577)	(0.559)	(0.564)	(0.094)	(0.084)	(0.064)	(0.125)	(0.229)	(0.091)	(0.087)
Loan cover price	-3.363***	-2.286***	-0.768	0.953*	-0.396***	-0.034	-0.126*	0.130	0.018	0.162*	-0.035
	(0.613)	(0.582)	(0.561)	(0.568)	(0.094)	(0.085)	(0.065)	(0.128)	(0.229)	(0.092)	(0.087)
Other than pricing characteristics of the loan											
Payment plan flexibility	-4.22***	-2.393***	-0.672	1.125*	-0.147	0.077	-0.019	-0.104	0.388	0.091	-0.054
	(0.755)	(0.600)	(0.572)	(0.577)	(0.094)	(0.084)	(0.064)	(0.125)	(0.234)	(0.095)	(0.086)
Collaterals needed	-3.048***	-1.549***	0.128	1.663***	-0.049	0.035	-0.056	-0.012	0.383	0.030	0.095
	(0.644)	(0.576)	(0.566)	(0.577)	(0.091)	(0.084)	(0.065)	(0.125)	(0.230)	(0.094)	(0.083)
Additional collateral price	-3.447***	-2.241***	-0.841	0.745	-0.367***	-0.171**	0.013	0.084	0.145	0.058	0.068
	(0.613)	(0.574)	(0.556)	(0.563)	(0.093)	(0.084)	(0.065)	(0.125)	(0.227)	(0.091)	(0.086)
Min. down payment	-4.63***	-3.121***	-1.59***	0.186	-0.457***	0.045	-0.183***	0.140	-0.060	-0.078	-0.039
	(0.648)	(0.599)	(0.571)	(0.572)	(0.095)	(0.084)	(0.066)	(0.124)	(0.227)	(0.092)	(0.083)
Sustainable product	-3.504***	-2.554***	-0.806	0.940*	-0.302***	-0.188**	-0.012	-0.040	0.304	0.142	0.094
	(0.607)	(0.575)	(0.55)	(0.556)	(0.094)	(0.085)	(0.063)	(0.123)	(0.232)	(0.091)	(0.085)
Bank characteristics and image											
Service quality	-2.76***	-1.588***	-0.093	1.748***	-0.068	0.022	0.007	-0.085	0.378	0.218**	0.002
	(0.661)	(0.598)	(0.58)	(0.59)	(0.093)	(0.085)	(0.063)	(0.123)	(0.234)	(0.094)	(0.087)
Service speed	-2.756***	-1.275**	0.186	2.009***	-0.194**	0.086	-0.029	-0.088	0.435*	0.218**	0.111
	(0.669)	(0.586)	(0.576)	(0.590)	(0.094)	(0.085)	(0.064)	(0.125)	(0.232)	(0.093)	(0.087)
Brand	-3.010***	-1.723***	-0.084	1.474***	-0.367***	-0.081	0.083	-0.071	0.097	0.190**	0.145
	(0.635)	(0.587)	(0.575)	(0.585)	(0.093)	(0.083)	(0.065)	(0.123)	(0.230)	(0.093)	(0.087)
Own experiences	-2.835***	-1.432**	0.119	1.903***	-0.210**	-0.076	0.089	0.048	0.191	0.296***	-0.025
	(0.67)	(0.589)	(0.572)	(0.585)	(0.093)	(0.085)	(0.065)	(0.123)	(0.233)	(0.096)	(0.086)
Word of mouth	-3.914***	-2.774***	-1.412***	0.556	-0.394***	-0.149*	0.087	0.218*	0.230	-0.263***	0.006
	(0.626)	(0.593)	(0.575)	(0.580)	(0.095)	(0.086)	(0.064)	(0.126)	(0.231)	(0.094)	(0.086)
Domesticity	-3.962***	-2.415***	-0.876	0.466	-0.167*	-0.027	-0.039	-0.065	0.006	0.095	-0.027
	(0.648)	(0.574)	(0.552)	(0.552)	(0.091)	(0.082)	(0.061)	(0.122)	(0.230)	(0.09)	(0.087)
Other banking services											
Insurance benefits	-3.509***	-2.597***	-1.129**	0.539	-0.313***	-0.212***	-0.005	-0.066	-0.043	0.048	0.156*
	(0.601)	(0.580)	(0.562)	(0.565)	(0.092)	(0.085)	(0.065)	(0.124)	(0.231)	(0.090)	(0.085)
Daily banking services	-3.645***	-2.665***	-0.976*	0.818	-0.216**	-0.091	0.050	-0.180	0.031	0.061	0.097
	(0.643)	(0.607)	(0.584)	(0.587)	(0.092)	(0.085)	(0.065)	(0.125)	(0.232)	(0.092)	(0.085)
Daily banking services' price	-3.165***	-2.109***	-0.483	1.244**	-0.277***	-0.079	0.030	0.064	0.238	0.072	0.117
	(0.638)	(0.589)	(0.564)	(0.572)	(0.094)	(0.084)	(0.065)	(0.123)	(0.23)	(0.092)	(0.085)
Investing services	-3.828***	-2.799***	-1.024*	0.401	-0.420***	-0.228***	0.163***	0.071	-0.220	-0.168*	0.082
	(0.622)	(0.596)	(0.575)	(0.581)	(0.095)	(0.087)	(0.065)	(0.126)	(0.230)	(0.093)	(0.086)
Investing services' price	-3.538***	-2.319***	-0.973*	0.757	-0.339***	-0.109	0.101	0.088	-0.227	-0.138	0.014
	(0.599)	(0.569)	(0.553)	(0.558)	(0.093)	(0.085)	(0.063)	(0.125)	(0.227)	(0.093)	(0.084)
Other monetary benefits	-4.134***	-3.034***	-1.725***	0.189	-0.473***	-0.159*	0.062	0.087	-0.202	-0.074	0.054
	(0.626)	(0.598)	(0.581)	(0.572)	(0.095)	(0.089)	(0.066)	(0.127)	(0.233)	(0.095)	(0.085)

*Notes: The table presents the parameter estimates of the ordered logit model (based on Equations (1) and (2) in the text) explaining lmp_k, the perceived importance of a loan offer feature k. Standard errors of parameter estimates are reported in the parentheses under the estimates. ***, **, and * denote the statistical significance at 1%, 5%, and 10% levels, respectively. FL is the FL score calculated as the number of correct answers to FL questions, Income is the respondent's annual gross income, Wealth net wealth, Education education level, Gender gender coded as 0 = male and 1 = female, Age age group, and LoanAmount the loan capital respondent borrowed last time he/she took out a home loan.*

Even if FL is not statistically significant for the importance of loan maturity, it is significant for the case of the monthly payment, because a financially less savvy customer gives stronger importance to the low monthly payment. This indicates that financially more illiterate borrowers might not be able to evaluate other loan conditions and thus end up evaluating offers based on the simplest possible number on the offer sheet – how much money will they pay back on the loan on a monthly basis. In addition, the customer income has the same relationship with monthly payments, although the result is statistically significant only at a 10% level. Naturally, high-income borrowers can repay their debt with higher monthly instalments, and hence, do not weigh a low monthly payment as much when selecting between the loan offers.

As the results reported in Table 3 have already indicated, additional hedging products or other financial services offered by the bank are not as influential for the lender selection as the more strictly loan-related conditions. The results given in Table 4 show how most of the services and products not being strictly related to the loan conditions are losing their importance in mortgage lender selection with the increase of the literacy score of the borrower. This result applies to all hedging products -related features, i.e., for the interest rate hedge options, interest rate hedge price, loan cover options, and loan cover price. However, it is important to notice that this finding should not be interpreted as an indication of more literate borrowers not being interested in hedging products. More likely, a higher FL score predicts a decreasing impact of these products on lender selection, i.e., the lender is selected based on other criteria, and buying/selecting hedging products is a separate decision.

The lower FL seems to be also related to a higher perceived importance of the minimum down payment and the additional collateral price. The financially more literate customers may also be able to or are at least willing to negotiate more advantageous conditions related to collaterals or other ways to arrange the needed collaterals without having to pay for additional guarantees. In addition, a high income seems to be connected to the decreased importance of the additional collateral's price, and wealth to the decreased importance of the minimum down payment. Apparently, customers with high income and wealth do not struggle with the required self-financing shares and collateral requirements for their loans. Moreover, even though the descriptive statistics presented in Table 3 indicate that the payment plan flexibility is highly influential on mortgage lender selection, the results do not show that any of the borrower characteristics would be statistically important for the payment plan flexibility.

The perceived importance of a sustainable loan product[14] is found to decrease with higher FL and income. One possible explanation could be related to the low number of "green" mortgage products available in Finland, financially literate customers' understanding of possible problems related to "green money", and high-income customers' ability to receive offers with fair conditions anyway. In addition, higher FL has a negative relation to the perceived importance of the bank's service speed, its brand/image, domesticity, one's own and others' previous experiences, insurance benefits, investing services, daily banking services, and other monetary benefits. These are all providing support for the view that borrowers with higher FL concentrate mostly on the loan features instead of additional services and bank characteristics when selecting their mortgage.

Older borrowers are found to give more weight to service quality, service speed, and the lender's brand/image. An interpretation for this could be that older customers value rapid and high-quality face-to-face service whereas younger borrowers might be more familiar with digital banking services where the same characteristics are a build-in feature and hence not valued similarly. Age also seems to be increasing the importance of the borrower's own previous experiences, but at the same time, decreasing the importance of others' recommendations. The older borrowers might be loyal to the banks from which they've had good experiences and to those who have served them well.

Behrman et al. (2012) and Lusardi and Mitchell (2007; 2011; 2014) argue that FL increases active saving, investing, and pension preparedness. Our results show how higher wealth predicts a higher perceived importance of financial investment services on the mortgage lender selection. Once again, the result should not be interpreted as an indication of higher

[14] *In the questionnaire this loan feature was asked by asking from the customer a question "When you think about your latest mortgage taken, how big effect did the sustainability of the loan product have on your choice?" Hence, the concept of sustainability was not defined in more details at all, so the interpretation of this feature is also probably very subjective.*

income and more financially literate borrowers not being interested in investing, but rather, as an indication that they do not select their mortgage based on the investment services offered by the bank granting the credit.

All in all, FL seems to have a very significant impact on how important the different loan offer features are perceived to be when selecting a home loan. FL increases the weight given to the margin and especially the true cost of the loan, while financially illiterate customers seem to be more willing to compare offers based on the monthly payment. They are also more likely to give weight to the other financial services and benefits not related to the loan conditions, possibly appreciating the convenience and simplicity of having all the financial services from the same service provider. Similarly, more financially literate borrowers are more capable of comparing a wide range of financial service providers and thus could end up having different services from different banks. For example, a high-income, financially more literate mortgage borrower could take out her mortgage from the bank that offers the best loan conditions, while keeping her investments with another, and insurances with a third provider.

To further assess the robustness of our results, we also estimated them using the propensity score matching (PSM) method. A description of the method and the corresponding results, which support our original findings, can be found in Appendix D.

However, several limitations must be acknowledged when applying PSM in this context. First, issues of reverse causality or endogeneity may arise: individuals' preferences could influence their financial literacy, or both may be shaped by unobserved factors such as cognitive ability or financial experience. This challenges the assumption that all relevant differences between groups are accounted for and may affect the comparability of matched individuals. Second, financial literacy is not randomly assigned. Although we control for observable characteristics such as age, gender, education, and income, unobserved heterogeneity may still confound the results. Therefore, the findings should be interpreted with caution and regarded as suggestive rather than strictly causal.

4.3 Lender Selection Determinants

To examine which loan, service, and bank characteristics are the most important for the mortgage selection decision, Table 5 presents the results from the multinomial logit regression of Equation (3) to study how the perceived importance of different loan offer features impacts the probability of selecting between large and small banks (Panel A), and alternatively, between stakeholder and shareholder banks (Panel B). The results are estimated separately for the full sample and for the subsamples of financially literate ($Lit_i \geq 3$) and illiterate ($Lit_i < 3$) borrowers. In panel A, we use large banks (OP Group and Nordea) and in Panel B, the stakeholder banks (OP Group, S-Bank, Savings Bank, and POP Bank) as the reference groups, and the results are interpreted as indicating the effects of the analyzed variables on the probability of selecting a bank from the small or from the shareholder bank group instead of the reference bank group, respectively. Of the mortgages, about 65.5% are taken from the large banks (67.5% for the literate and 63.9% for the illiterate groups, respectively) while 55.4% are taken from the stakeholder banks (54.5% for the literate and 56.3% for the illiterate groups, respectively).

Table 5. *Multinomial logit model estimation results for bank group selection determinants*

	Panel A: Large vs Small			Panel B: Stakeholder vs Shareholder		
Variable	**Full sample**	**Literate**	**Illiterate**	**Full sample**	**Literate**	**Illiterate**
μ	-2.526**	-3.913	-1.148	-3.302***	-1.910	-5.407***
	(1.179)	(2.513)	(1.613)	(1.159)	(2.445)	(2.024)
Pricing characteristics of the loan						
Margin	-0.254	-0.723*	-0.123	-0.104	0.003	-0.435
	(0.179)	(0.362)	(0.264)	(0.188)	(0.321)	(0.351)
Service charge	0.163	0.375	0.006	0.471**	0.779**	0.920*
	(0.173)	(0.331)	(0.273)	(0.195)	(0.386)	(0.428)
Loan period	-0.043	0.197	-0.222	-0.119	0.065	-0.509
	(0.202)	(0.390)	(0.321)	(0.207)	(0.374)	(0.414)
Monthly payment	-0.007	-0.190	0.009	0.068	-0.343	1.295***
	(0.199)	(0.364)	(0.315)	(0.199)	(0.339)	(0.471)
APR	0.263	0.652	0.548	-0.049	-0.221	-0.080
	(0.205)	(0.400)	(0.334)	(0.197)	(0.371)	(0.333)
Hedging products						
Interest rate hedge options	0.477**	0.486	0.441	0.044	0.202	-0.386
	(0.201)	(0.352)	(0.317)	(0.199)	(0.368)	(0.361)
Interest rate hedge price	-0.519**	-0.136	-0.988***	-0.353*	-0.010	-1.203***
	(0.211)	(0.422)	(0.351)	(0.208)	(0.410)	(0.410)
Loan cover options	-0.031	-0.460	0.512	0.015	-0.749	0.472
	(0.240)	(0.492)	(0.377)	(0.246)	(0.607)	(0.409)
Loan cover price	0.198	0.327	-0.003	0.106	1.009**	-0.500
	(0.219)	(0.415)	(0.329)	(0.210)	(0.504)	(0.384)
Other than pricing characteristics of the loan						
Payment plan flexibility	-0.082	0.199	-0.514*	0.324	0.700*	0.888**
	(0.203)	(0.422)	(0.311)	(0.213)	(0.396)	(0.414)
Collaterals needed	0.211	0.132	0.256	-0.049	0.345	-0.020
	(0.189)	(0.330)	(0.292)	(0.199)	(0.354)	(0.381)
Additional collateral price	-0.306*	-0.263	-0.601*	0.106	-0.016	0.809**
	(0.178)	(0.348)	(0.329)	(0.183)	(0.367)	(0.400)
Min. down payment	0.440**	0.426	0.695**	0.342*	0.312	1.066***
	(0.187)	(0.314)	(0.338)	(0.187)	(0.336)	(0.368)
Sustainable product	0.045	0.606	-0.591*	-0.066	0.200	-1.204**
	(0.192)	(0.371)	(0.347)	(0.202)	(0.362)	(0.530)
Bank characteristics and image						
Service quality	0.354	0.456	0.428	0.130	-0.189	-0.062
	(0.224)	(0.455)	(0.322)	(0.228)	(0.470)	(0.389)
Service speed	-0.542**	-0.597	-0.578*	-0.446*	-0.308	-1.054**
	(0.222)	(0.417)	(0.346)	(0.232)	(0.421)	(0.507)
Brand	0.115	-0.153	0.536*	0.311	0.457	0.692*
	(0.191)	(0.335)	(0.308)	(0.200)	(0.368)	(0.411)
Own experiences	0.229	0.315	-0.165	0.393*	0.138	1.160**
	(0.203)	(0.348)	(0.389)	(0.215)	(0.376)	(0.504)
Word of mouth	0.199	0.554	0.193	0.336*	-0.132	1.495***
	(0.187)	(0.366)	(0.301)	(0.191)	(0.345)	(0.463)

Variable	Panel A: Large vs Small			Panel B: Stakeholder vs Shareholder		
	Full sample	Literate	Illiterate	Full sample	Literate	Illiterate
Domesticity	-0.254	-0.438	-0.213	-0.618***	-0.881**	-1.648***
	(0.188)	(0.369)	(0.306)	(0.195)	(0.379)	(0.465)
Other banking services						
Insurance benefits	-0.236	-1.067***	0.259	-0.204	0.246	-1.297***
	(0.195)	(0.411)	(0.306)	(0.197)	(0.381)	(0.441)
Daily banking services	-0.057	0.556	-0.004	-0.791***	-1.373***	-0.235
	(0.238)	(0.458)	(0.405)	(0.244)	(0.529)	(0.531)
Daily banking services' price	0.290	-0.233	0.618	0.317	0.177	0.675
	(0.231)	(0.451)	(0.391)	(0.239)	(0.456)	(0.439)
Investing services	-0.280	-0.233	-0.554	-0.051	0.130	-1.130**
	(0.260)	(0.540)	(0.394)	(0.245)	(0.496)	(0.476)
Investing services' price	-0.040	-0.158	0.221	0.412*	0.784	1.189**
	(0.243)	(0.484)	(0.386)	(0.247)	(0.481)	(0.494)
Other monetary benefits	-0.104	-0.102	-0.125	-0.356	-0.956**	-0.439
	(0.203)	(0.389)	(0.323)	(0.222)	(0.450)	(0.400)
Controls						
Loan amount	-0.062	0.028	-0.164	-0.100	-0.160	0.001
	(0.114)	(0.194)	(0.196)	(0.116)	(0.205)	(0.213)
Income	0.180	0.429*	-0.006	0.414***	0.289	0.604***
	(0.115)	(0.238)	(0.183)	(0.122)	(0.234)	(0.218)
Wealth	-0.015	-0.155	0.200	-0.064	0.144	-0.191
	(0.087)	(0.157)	(0.147)	(0.090)	(0.163)	(0.169)
Education	-0.133	-0.113	-0.308	0.089	-0.061	-0.339
	(0.167)	(0.314)	(0.253)	(0.170)	(0.309)	(0.316)
Gender	0.275	-0.424	0.850*	0.012	-0.538	0.624
	(0.300)	(0.602)	(0.478)	(0.304)	(0.576)	(0.525)
Age	0.121	-0.065	0.041	0.267**	-0.034	0.566**
	(0.130)	(0.250)	(0.192)	(0.132)	(0.223)	(0.241)
N	267	123	144	267	123	144
Pseudo-R^2	0.126	0.256	0.211	0.204	0.324	0.404

*Notes: The table presents the parameter estimates of the multinomial logit model (Equation (3)) explaining the probability of individual i selecting bank from group j. Panel A shows the results for Large vs Small banks, where Large banks (OP Group and Nordea) are used as the reference group. Panel B presents the results for Stakeholder vs Shareholder banks, where Stakeholders (OP Group, S-Bank, Savings Bank, and POP Bank) are used as the reference group. Standard errors of parameter estimates are reported in the parentheses under the estimates. ***, **, and * denote the statistical significance at 1%, 5%, and 10% levels, respectively. The goodness-of-fit measure Pseudo – R^2 is calculated as $1 - \frac{LLF}{LLF_0}$, where LLF stands for the maximised value of the log-likelihood function for the unrestricted model and LLF_0 for the log-likelihood function for the restricted model. The Independence of Irrelevant Alternatives (IIA) assumption was tested with the Hausman-McFadden test. The perceived importance of loan offer features is evaluated on a scale of 1-5. The full sample includes all the observations, the literate sample includes respondents having an FL score of 3 or higher, and the illiterate sample includes respondents having an FL score of 2 or less.*

In both panels of Table 5, the first column presents the results for the full sample (n = 267), the second column for the financially more literate (n = 123, denoted 'Literate') and the third column for the less literate customers (n = 144, denoted 'Illiterate'). Interestingly, the coefficients for the APR variable are not statistically significant in any of the panels. Hence, the bank selection step cannot be predicted based on the perceived importance of the APR, even if it was found to be the most influential loan offer feature in the lender selection results reported in section 3.3. This finding could be an indication that the pricing of loans in all banks included in the overall sample is quite uniform. In addition, the statistically

significant negative intercept term, μ, for the full sample indicates that the customers in general favour mortgages from the large banks, but there is no clear difference between the bank groups for either of the sub-groups of loan customers.

In Panel A, for the full sample, the interest rate hedge options and minimum down payments are the only statistically significant variables that increase the probability of customers selecting smaller banks instead of larger banks. On the other hand, the interest rate hedge price, additional collateral price, and service speed decrease that probability. For the group of more literate customers, better insurance benefits affect negatively the probability of selecting smaller banks, indicating that they value the insurance benefits as a part of their mortgage, and the large banks seem to be able to offer these. Of the marginally statistically significant variables, the loan margin decreases the probability of selecting small banks, suggesting that the larger banks are able to offer smaller margins for their mortgages. On the other hand, the higher income of the customer increases the probability of selecting a small bank. For the group of less literate customers, the interest rate hedge price seems to drive customers towards larger banks, indicating that the less literate individuals pay attention to the costs of hedging their mortgages. Furthermore, the less literate customers seem to value the minimum down payment and the brand of the bank as they both increase the probability of selecting a smaller bank. However, the payment plan flexibility, additional collateral price, sustainable product, and service speed have a negative, albeit only marginally significant impact on selecting a smaller bank. Moreover, women are more likely to select a smaller bank. When comparing the groups of more and less financially literate customers, it seems that the former value more the loan margin when selecting where to take their mortgage while the latter group pays more attention to the hedging prices and other than pricing characteristics of the loan.

The results reported in Panel B focus on the role of loan features affecting the selection between the stakeholder and shareholder banks. Again, the APR variable is not statistically significant in any of the panels. According to the results, the service charge (i.e., fee for opening a loan account), higher income, and older age, as well as, at the marginal significance level, the minimum down payment, experiences of others, and the customers themselves, and the price of investing services have a positive probability on selecting a shareholder bank. However, especially the domesticity and daily banking services drive customers to stakeholder banks, together with the interest rate hedging price and the speed of the service. In practical terms, the finding of, for example, higher preference for choosing a stakeholder bank instead of a shareholder bank due to its domesticity is somewhat obvious since none of the analyzed stakeholder banks are of foreign origin.

For the more literate customers, the estimates show clear push and pull features from and towards the shareholder banks. Service charge, loan cover price, and payment plan flexibility all drive the customers to take their mortgages from the shareholder banks, while domesticity, daily banking services, and other monetary benefits increase the probability of selecting a stakeholder bank. For the less literate sample of customers, the results are more mixed, as the size of monthly payments, payment plan flexibility, additional collateral price, minimum down payment, own experiences, word of mouth, and investing service's price all have a statistically significant and positive coefficient, together with marginally significant service charge and bank image. Together with higher income and older age, all these features increase the probability of less financially literate customers selecting a shareholder bank. On the other hand, the interest rate hedge price, sustainable products, service speed, bank's domesticity, insurance benefits, and investing services increase the probability of mortgage borrowers selecting a stakeholder bank. All in all, it seems somewhat difficult to exactly characterize the mortgage lender choice based on just the bank ownership structure in view of the loan characteristics considered here. In general terms, it seems that the more literate customers are better able to evaluate the loan product characteristics that the shareholder banks give. However, the bank characteristics and other than just loan related (also monetary) banking services seem to play a role especially for the literate customers of the stakeholder banks. The understanding of the special advantages stemming from the ownership of stakeholder banks is better among the literate customers.

It is worth noticing how the goodness-of-fit of the model increases when the sample is divided into subgroups. Based on this, it could be concluded that the borrowers with high vs. low FL scores probably allow different attributes to drive their mortgage lender selection, respectively. All in all, from the results, it can be concluded that, compared to the group of more literate customers, the less literate borrowers value more other than the pricing-related characteristics of the loan, as well as bank characteristics and its image, when making their mortgage choice. They are also more interested in the price of the interest rate hedge.

5. Conclusions

This study examined the relationship between financial literacy (FL) and mortgage lender selection. The data were collected with an online survey, which was answered by the Finnish mortgage borrowers having a home loan taken out between May 2020 and May 2022. The previous literature on mortgage lender selection criteria is scarce, and especially the effect of financial literacy on the mortgage decision has remained a nearly unresolved research question. Thus, this paper serves as an opening for the discussion on the topic.

The empirical results suggest that Finnish mortgage borrowers have a relatively high level of FL. The descriptive statistics support the previous evidence on the role of FL among young, female, and low-income consumers. Even though all the respondents that participated in the survey have already taken a home loan and made a purchase affecting their financial wellbeing significantly, these groups have serious issues in understanding the basic financial concepts. On average, borrowers having annual income under 30,000 € gave only 1.85, and borrowers under 35 years gave 2.00 correct answers on the five FL questions. Considering that the groups with the lowest FL represent also the most vulnerable mortgage borrowers – the first-home buyers and those having the weakest solvency – the finding is quite worrying and underscores the importance of policy actions to improve their financial understanding, transparency of the mortgage lending process, and proper guidance during it. Especially worrying is the smaller number of correct answers for the debt -related questions (FL questions 4 and 5) which revealed how the mortgage borrowers struggle to understand how monthly payment is constructed and the differences between the various payment options. However, this observation can be seen for all the borrowers, especially based on the answers obtained for the FL question 5.

The main findings of the study are related to the FL's connection to the perceived loan and mortgage lender characteristics. FL is found to decrease the weight given to add-on products and factors unrelated to the terms of the loan, and especially to the true cost of the loan, when selecting a mortgage lender. That is, financially more savvy borrowers do not find those characteristics to guide their selection between the mortgage offers of different banks. Financially more illiterate customers, on the other hand, perceive, for example, other financial services, service quality, and recommendations of others as more important than their more financially savvy peers. They possibly value the convenience of having all financial services from the same bank or financial institution. As the financially more illiterate borrowers evaluate the loan offers based on the monthly payment, possibly instead of APR or margin, they might end up selecting a loan offer and payment plan being not optimal in the long term. The long loan maturity could have made even extremely large mortgages seem affordable during the era of negative interest rates, but borrowers might end up in a situation where the outstanding balance will be eliminated very slowly, if at all, during the first years of loan maturity. Thus, using variable annuity or equal payments payment plans and long loan maturities might cause unpleasant surprises for the illiterate borrowers, especially during the conditions of suddenly and fast increasing interest rates. Instead, the more literate borrowers are more willing and able to shop for the best deals for each product or service, even if it means selecting the different services from different banks. This could help to more accurately identify the mechanism behind FL's impact on loan selection. Future research could also benefit from employing more nuanced surveys, experimental designs, or instrumental variable approaches to further address the endogeneity concerns in the regression analyses of FL effects. For instance, variables such as the use of financial planning services, educational attainment, or self-assessed financial knowledge could be used as proxies for financial attitudes and sophistication, which might confound the results. Moreover, an alternative approach to investigating these research questions could involve using data from loan registers, which would enable the identification of actual mortgage customer choices rather than relying on stated preferences. This method would allow for a direct comparison between customer decisions and observable loan and bank characteristics. However, since access to banks' loan register data may be limited, another viable approach could be to conduct an experiment in which participants select the most suitable options from a set of alternatives. For instance, this could be implemented using conjoint analysis, which also allows for causal inferences. These ideas are left for future research.

Although this study focuses on the Finnish mortgage market, which is known for its strict regulation and strong consumer protection, the findings may still offer insights applicable to other contexts. Despite Finnish borrowers being less likely to face highly unfavorable loan terms due to regulatory safeguards, the observed patterns, such as financially literate individuals placing more emphasis on cost-related features and actively comparing offers, are likely to apply in other

countries as well. Mortgage decisions everywhere involve complex trade-offs, and the role of financial literacy in shaping borrower preferences is a universal concern. Therefore, while the results should be interpreted with some caution, they raise interesting questions for future research in more diverse regulatory and market environments.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used Microsoft Copilot in order to improve readability and language of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Appendixes

Appendix A. Survey questions

Part 1. Measuring financial literacy

Lusardi and Mitchell (2011) suggest that the FL measures should fulfil the following requirements:

i. Simplicity: Questions measure the understanding of basic financial concepts;

ii. Relevance: Questions should relate to the day-to-day financial decisions over the individual's life cycle and measure the understanding of general concepts instead of context-specific knowledge;

iii. Brevity: The number of questions should be kept at a minimum since very few surveys can devote much time to FL questions;

iv. Capacity to differentiate: Questions should be able to differentiate between the financial knowledge levels.

Following these principles, the study uses three FL questions designed by Lusardi and Mitchell (2011). These questions have been used in some previous studies on FL, too, for example by Lusardi and Mitchell (2014); van Ooijen and van Rooij (2016); Klapper et al. (2015) and Lusardi and Tufano (2015).

The questions measure understanding of interest compounding (question 1); understanding of inflation (question 2); and understanding of risk diversification (question 3). To make these questions clearer for the Finnish respondents, some additional remarks regarding the Finnish taxation were added to questions 1 and 2 and euros were used as the currency instead of the US dollars. The final questions used were (right answers bolded):

1. *Suppose you had 100 € in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? Imagine there is no need to pay tax on the interest paid on the account.*
   i) **More than 102 €**
   ii) *Exactly 102 €*
   iii) *Less than 102 €*
   iv) *Do not know*

2. *Imagine that the interest rate on your savings account was 1% per year and there is no need to pay tax on the interest paid on the account. Inflation was 2 % per year. After 1 year, how much would you be able to buy with the money in this account?*
   i) *More than today*
   ii) *Exactly the same*
   iii) **Less than today**
   iv) *Do not know*

3. *Please tell whether you think this statement is true or false. 'Buying a single company's stock usually provides a safer return than a stock mutual fund'.*
   i) *True*
   ii) **False**
   iii) *Do not know*

To better measure the understanding of the debt-related issues, two additional questions on DL are added to the survey. The questions are from the DL questions set designed by Lusardi and Tufano (2015). The questions measure the understanding of debt contracts, capability to compare payment methods and understanding of the time value of money. The first question included in the original DL questions set by Lusardi and Tufano (2015) is not used, because question 1 already measures the understanding of interest compounding. Hence, the questions 4 and 5 were:

4. *Imagine that you owe 3,000 € on your credit card. You pay a minimum payment of 30 € each month. At an Annual Percentage Rate of 12% (or 1% per month), how many years would it take to eliminate your credit card debt if you made no additional new charges?*
   i) *Less than 5 years*
   ii) *Between 5 and 10 years*
   iii) *Between 10 and 15 years*
   iv) **Never, you will continue to be in debt**
   v) *Do not know*

5. *You purchase an appliance which costs 1,000 €. To pay for this appliance, you are given the following two options: (a) pay 12 monthly instalments of 100 € each; (b) borrow at a 20% annual interest rate and pay back 1,200 € a year from now. Which is the more advantageous offer, in other words, which one will cost less?*
   i) *Option a*
   ii) **Option b**
   iii) *They are the same*
   iv) *Do not know*

In the future, all the questions 1.–5. are referred as FL questions without making separation between FL and DL questions.

Part 2. The importance of various loan offer features

Think about the most recent mortgage you took out for purchasing your own home. How much influence did the following factors have on your choice of mortgage and bank?

Please respond on a scale from 1 to 5, where 1 = "not important at all" and 5 = "very important".

Margin
Service charge
As long a loan period as possible
As small a monthly installment as possible
Annual percentage rate (APR)
Interest rate hedging options and their features
Cost of interest rate hedging
Loan cover options and their features
Cost of loan cover
Flexibility of the loan repayment schedule
Collateral required by the bank
Cost of additional collateral or guarantees
As small a down payment as possible
Sustainable loan product
Quality of service
Speed of service

Bank's brand/image
Own previous experiences
Experiences and recommendations from acquaintances
Domestic origin (Finnish bank)
Insurance benefits/discounts
Features of daily banking services
Cost of daily banking services
Features of investment services and products
Cost of investment services and products
Other monetary benefits, such as bonuses

Part 3. Demographic and socio-economic background

In addition to the questions on FL and the importance of various loan offer features, the respondents were asked additional background and demographic questions to get the data for the additional variables used in the empirical analysis. The respondents were asked their age, gender, education level, annual gross income, net wealth, and the amount of the last mortgage loan they took out. To make both answering and data preparation easier, the options were grouped as follows.

Age variable got values 1 = 16–17, 2 = 18–24, 3 = 25–34, 4 = 35–44, 5 = 45–54, 6 = 55–64, 7 = 65–74 years old and 8 = over 75 years old. *Gender* variable got values 0 meaning male and 1 meaning female. *Education* variable got values 1 = primary school, 2 = secondary school (high school), 3 = undergraduate, 4 = graduate and 5 = licentiate or doctoral degree. *Income* variable measuring net wealth got values 1 = 0 – 9,999 €, 2 = 10,000 – 19,999 €, 3 = 20,000 – 29,999 €, 4 = 30,000 – 39,999 €, 5 = 40,000 – 49,999 €, 6 = 50,000 – 74,999 €, 7 = 75,000 – 99,999 €, 8 = 100,000 € or more. *Wealth* variable got values 1 = under 0 €, 2 = 0 – 9,999 €, 3 = 10,000 – 24,999 €, 4 = 25,000 – 49,999 €, 5 = 50,000 – 74,999 €, 6 = 75,000 – 99,999 €, 7 = 100,000 – 249,999 €, 8 = 250,000 – 500,000 € and 9 = 500,000 € or more. *LoanAmount* variable got values 1 = 0 – 49,999 €, 2 = 50,000 – 99,999 €, 3 = 100,000 – 149,999 €, 4 = 150,000 – 199,999 €, 5 = 200,000 – 299,999 €, 6 = 300,000 – 399,999 €, 7 = 400,000 – 499,999 € and 8 = 500,000 € or more.

Appendix B. Characteristics of the Finnish mortgage market; nominal mortgage lending to households from different banks

	12/2017	06/2018	12/2018	06/2019	12/2019	06/2020	12/2020	06/2021	12/2021	06/2022
Panel A: Millions of euros										
OP Financial Group	37,737	38,087	38,572	39,109	39,602	39,645	40,125	40,724	41,462	41,521
Nordea Bank	28,353	28,321	28,098	28,226	28,685	29,277	30,179	30,990	31,755	32,345
Danske Bank	10,916	10,913	10,755	10,704	10,684	10,732	10,718	10,642	10,515	10,463
Savings Bank	4,890	5,092	5,309	5,405	5,493	5,553	5,641	5,719	5,691	5,808
Aktia Bank	3,966	3,950	3,946	3,975	4,013	4,044	4,159	4,290	4,309	4,328
S-Bank	2,064	2,186	2,382	2,602	2,785	2,998	3,250	3,462	3,673	3,856
Handelsbanken	2,836	2,876	2,956	2,998	3,020	3,036	3,083	3,113	3,124	2,989
POP Bank	1,885	1,911	1,959	1,989	2,023	2,063	2,130	2,221	2,318	2,347
Oma Savings Bank	1,048	1,096	1,189	1,304	1,419	1,508	1,669	1,834	2,154	2,286
Ålandsbanken	1,409	1,412	1,427	1,424	1,433	1,419	1,416	1,418	1,445	1,445
Hypo Group	676	716	758	764	762	747	768	807	815	795
MuniFin	279	285	290	277	280	288	284	290	296	296
Others	16	15	13	14	14	13	17	23	29	32
Total	96,075	96,862	97,653	98,792	100,211	101,322	103,440	105,534	107,585	108,510

	12/2017	06/2018	12/2018	06/2019	12/2019	06/2020	12/2020	06/2021	12/2021	06/2022
Panel B: Market shares										
OP Financial Group	39	39	39	40	40	39	39	39	39	38
Nordea Bank	30	29	29	29	29	29	29	29	30	30
Danske Bank	11	11	11	11	11	11	10	10	10	10
Savings Bank	5	5	5	5	5	5	5	5	5	5
Aktia Bank	4	4	4	4	4	4	4	4	4	4
S-Bank	2	2	2	3	3	3	3	3	3	4
Handelsbanken	3	3	3	3	3	3	3	3	3	3
POP Bank	2	2	2	2	2	2	2	2	2	2
Oma Savings Bank	1	1	1	1	1	1	2	2	2	2
Ålandsbanken	1	1	1	1	1	1	1	1	1	1
Hypo Group	1	1	1	1	1	1	1	1	1	1
MuniFin	0	0	0	0	0	0	0	0	0	0
Others	0	0	0	0	0	0	0	0	0	0

Appendix C. Variance inflation factors

Variable	VIF	1/VIF
Investing services	3.90	0.256699
Investing services' price	3.69	0.271075
Loan cover options	3.41	0.292999
Interest rate hedge price	2.84	0.352374
Loan cover price	2.82	0.354835
Other monetary benefits	2.74	0.364304
Daily banking services' price	2.61	0.383523
Daily banking services	2.61	0.383855
Interest rate hedge options	2.57	0.389602
Insurance benefits	2.56	0.390783
Monthly payment	2.29	0.436374
Service quality	2.22	0.450987
Word of mouth	2.19	0.45764
Service speed	2.18	0.457851
Loan period	2.18	0.459325
Brand	2.07	0.482799
Additional collateral price	2.07	0.483039
Sustainable product	2.01	0.496964
Domesticity	1.97	0.506802
Own experiences	1.96	0.510741
Min. down payment	1.94	0.516126
Income	1.88	0.531358
Collaterals needed	1.88	0.531729
Payment plan flexibility	1.79	0.558582
APR	1.76	0.569038
Service charge	1.75	0.571903
Wealth	1.73	0.577475
Margin	1.64	0.607905
Loan amount	1.52	0.659898
Age	1.49	0.669312
Education	1.29	0.77275
Gender	1.15	0.869917
MeanVIF	2.21	

Appendix D. Propensity score matching

First, we divide the sample into high and low financial literacy (FL) groups using the classification described in Sub-section 4.3: individuals with $Lit_i \geq 3$ are categorized as high-FL, and those with $Lit_i < 3$ as low-FL. In the propensity score matching (PSM) framework, the high-FL group (123 observations) is compared to the low-FL group, and the low-FL group (144 observations) to assess differences in outcomes after adjusting for observable characteristics.

Second, we estimate the propensity scores using a logit model with the following covariates: gender, age, education, and income. We apply one-to-one nearest-neighbor matching without replacement. This means each individual in the high-FL group is matched to a single individual in the low-FL group with similar characteristics, and each match is used only once. In cases where multiple control units share identical or very similar covariate profiles, we average their outcome values to compute the matched group differences.

Table D1 reports the matched differences and their robust standard errors. Compared to the baseline results in Table 4, the statistical significance of several variables, such as service charges, monthly payments, brand, own experiences, bank domesticity as well as daily banking services and their prices, diminishes. However, the direction of the effects remains consistent: the coefficients for Margin and APR remain positive, while the rest are negative. Notably, the role of APR is still emphasized in the PSM results as on average, individuals with high FL, had an APR value 0.29 units higher than individuals in low-FL group, after matching on the covariates. Overall, we continue to observe statistically significant differences in mortgage-related preferences between individuals with high and low financial literacy.

Table D1. *Propensity score matching results: Matched differences in outcomes between high and low financial literacy groups*

Pricing characteristics of the loan	**Differences**	**Std. Error**
Margin	0.39***	(0.13)
Service charge	-0.14	(0.14)
Loan period	0.17	(0.14)
Monthly payment	-0.13	(0.15)
APR	0.29**	(0.12)
Hedging products		
Interest rate hedge options	-0.55***	(0.16)
Interest rate hedge price	-0.46***	(0.16)
Loan cover options	-0.58***	(0.14)
Loan cover price	-0.56***	(0.15)
Other than pricing characteristics of the loan		
Payment plan flexibility	-0.06	(0.13)
Collaterals needed	0.04	(0.14)
Additional collateral price	-0.36**	(0.15)
Min. down payment	-0.41***	(0.15)
Sustainable product	-0.40***	(0.14)
Bank characteristics and image		
Service quality	-0.02	(0.13)
Service speed	-0.26**	(0.13)
Brand	-0.17	(0.14)
Own experiences	-0.09	(0.13)
Word of mouth	-0.31**	(0.15)
Domesticity	-0.08	(0.15)
Other banking services		
Insurance benefits	-0.48***	(0.15)
Daily banking services	-0.04	(0.13)

Pricing characteristics of the loan	Differences	Std. Error
Daily banking services' price	-0.19	(0.14)
Investing services	-0.37**	(0.15)
Investing services' price	-0.35**	(0.16)
Other monetary benefits	-0.41***	(0.15)

*Notes: This table reports the matched differences in the perceived importance of loan and banking characteristics between individuals with high and low financial literacy, based on propensity score matching. Robust standard errors are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.*