IMPACT OF POSITIVE CREDIT REGISTER ON THE LENDING PROCESS IN FINNISH RETAIL CREDIT MARKET

Jyväskylä University
School of Business and Economics

Master's Thesis

2023

Author: Petra Valtonen
Subject: Economics/Banking and International Finance
Supervisor: Juha-Pekka Junttila

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

ABSTRACT

Author	
Petra Valtonen	
Title	
Impact of Positive credit register on the lending process in Finnish retail credit market	
Subject	Type of work
Banking and International Finance	Master's thesis
Date	Number of pages
8/2023	54
Abstract	

Abstract

This master's thesis examines the impact of the Positive credit register, which will come into use in Finland in the spring of 2024, on the lending process of lenders granting loans for consumers. The Positive credit register is a new register that will collect and compile information about consumers' credit and income. In 2026, information on loans granted to natural persons for business activities will also be added to the register. The Income Register Unit of the Tax Administration acts as the developer and administrator of the register and this study is conducted in a collaboration with them. Credit registers are considered to be a response to the problem of asymmetric information. Asymmetric information refers to a situation where one part of the transaction has more information than the other. Credit registers are globally very common, and Finland is one of the few EU countries where a Positive credit register is not yet in use.

The aim of the study was to find out how lenders expect that the Positive register will affect their lending process. In this study, as a part of the lending process is seen details such as electronic customer identification, automated credit decision and creditworthiness assessment. In addition, pricing, costs and risks are also considered as a part of the process. The research was conducted by using a quantitative survey, where the target group was the lenders who grant loans for consumer in Finland. 21 lenders responded to the survey.

According to the results of this thesis, the Positive credit register will affect the lending processes of the lenders in the Finnish retail credit market and the effects vary between different type of lenders. Still, even in this complex group of operators, the results were fairly consistent. Overall, it seems that although the lenders see costs and some risks in the Positive credit register, most of them are optimistic and see lot of potential to upgrade their lending processes and systems in connection with this change.

Key words	
Credit register, asymmetric information, lending	
Place of storage	
Jyväskylä University Library	

4

TIIVISTELMÄ

Tekijä	
Petra Valtonen	
Työn nimi	
Positiivisen luottotietorekisterin vaikutus luottoprosessiin Suomen vähittäislainamarkki- noilla	
Oppiaine	Työn laji
Taloustiede	Pro Gradu -tutkielma
Päivämäärä	Sivumäärä
8/2023	54

Tiivistelmä

Tämä pro gradu –tutkielma tutkii Suomessa keväällä 2024 käyttöön tulevan Positiivisen luottotietorekisterin vaikutusta kuluttajaluottoja myöntävien luotonantajien luotonmyön- töprosessiin. Positiivinen luottotietorekisteri on valmisteilla oleva rekisteri, joka kerää ja kokoaa tiedot kuluttajien luotoista sekä tuloista. 2026 rekisteriin lisätään tiedot luonnolli- sille henkilöille elinkeinotoimintaa varten myönnetyistä luotoista. Rekisterin kehittäjänä sekä sen ylläpitäjänä toimii Verohallinnon Tulorekisteriyksikkö, jonka kanssa tämä tutki- mus on tehty yhteistyössä. Luottotietorekistereitä voidaan pitää vastauksena epäsymmet- riseen informaatioon. Epäsymmetrisellä informaatiolla tarkoitetaan tilannetta, jossa transaktion yhdellä osapuolella on enemmän informaatiota kuin toisella. Luottotietore- kisterit ovat maailmalla hyvin yleisiä ja Suomi onkin yksi harvoista EU-maista, joissa po- sitiivista luottotietorekisteriä ei ole vielä käytössä.

Tutkimuksen tavoitteena oli selvittää, miten luotonantajat odottavat, että positiivinen luottotietorekisteri tulee vaikuttamaan heidän luotonmyöntöprosessiinsa. Tutkimuksessa osana luotonmyöntöprosessia nähdään itse luotonmyöntöprosessiin liittyvät yksityiskoh- dat, joita ovat mm. sähköinen asiakkaan tunnistaminen, automatisoitu luottopäätös ja luottokelpoisuuden arviointi. Lisäksi osana prosessia voidaan nähdä hinnoittelu, kustan- nukset sekä riskit. Tutkimus toteutettiin kvantitatiivisena kyselytutkimuksena kyselylo- makkeella, jossa kohderyhmänä oli Suomessa kuluttajaluottoja myöntävät luotonantajat. 21 luotonantajaa vastasi kyselyyn.

Tämän opinnäytetyön tulosten mukaan positiivinen luottotietorekisteri tulee vaikutta- maan Suomen vähittäislainamarkkinoiden luotonantajien luotonantoprosesseihin. Vaiku- tukset vaihtelevat erityyppisten luotonantajien välillä. Siitä huolimatta, että luotonanta- jien ryhmä on monimuotoinen, tulokset olivat melko yhdenmukaisia. Voidaan sanoa, että vaikka lainananantajat näkevät positiivisessa luottotietorekisterissä myös kustannuksia ja riskejä, suurin osa heistä suhtautuu optimistisesti ja he näkevät paljon mahdollisuuksia päivittää luotonmyöntöprosessejaan ja -järjestelmiään tämän muutoksen yhteydessä.

Asiasanat	
Luottotietorekisteri, epäsymmetrinen informaatio, luotonmyöntö	
Säilytyspaikka	
Jyväskylän yliopiston kirjasto	

CONTENTS

6

LIST OF TABLES AND FIGURES

FIGURES

TABLES

1   INTRODUCTION

First of March in 2020, the Finnish Ministry of Justice placed an Advisory Board to prepare a positive credit register and the legislation required for it. In its report, the Advisory Board proposed a new law on the Positive credit register. In addition, they also proposed to amend the Consumer Protection Act and some other laws regarding to the positive credit information register. The law of the positive credit information register entered into force in August 2022 and is proposed to be implemented by 1st of April 2024. The administrator of the register is the Tax Administration Incomes Register Unit. (Ministry of Justice, 2021).

The Positive credit register (later the PCR) is a part of the Prime Minister Sanna Marin's government programme 2019 and the aim is to combat over-indebtedness by creating a better information base for both individual lending situations and the monitoring and supervision of financial stability and credit markets. The aim is also to have up-to-date information for the individuals on their own credits in one place. The register would store information on defined credits as well as a person's income (Ministry of Justice, 2021).

The upcoming register will have many impacts on Finnish consumers, lenders who operate on the Finnish retail credit market and the financial market in Finland. This study focuses on the lenders point of view on the lending process and on the three following aspects of it: evaluation of the creditworthiness, pricing and costs.

The previous research shows that lenders' business models and the information structure of credit markets are crucial to understanding the role of information sharing technology adoption (Liberti et al. 2022). In Finland, the lenders who provide credit for consumers are divided into two groups by the law that they are regulated by. Both groups are very diverse and have lenders of many different sizes and the selection of products that that they are offering for consumers is wide.

From a theoretical perspective, credit registers can be seen as an answer to the problem of asymmetric information between lenders and borrowers. This term refers to a situation, where one party has more information than the other does in a transaction. This can eventually lead to badly functioning markets or even market failure. The problem of asymmetric information is widely studied since Akerlof's first research in 1970, which raised the problem to more general knowledge.

This study aims to examine the possible impacts that the PSC can have on the lending process of the credit institutions that are operating in the Finnish markets and providing credit to the private consumers. The research question is:

How does the Positive credit register affects the lending process of the lenders in the Finnish retail credit market?

This study aims to research the lending process and its steps and dimensions considering different kind on lenders and credit products and the impact of the upcoming credit register on these steps, focusing on the lending process itself, pricing, costs and evaluation of creditworthiness.

In this study, the theoretical framework is based on previous scientific research and existing literature. The empirical study's objective is to examine how the PSC effects on the lending process of the loans provided to Finnish consumers by lenders in the Finnish credit market, focusing on the lending process itself, pricing, costs and evaluation of creditworthiness. The empirical section of the study was conducted by a quantitative survey using a questionnaire, where the target group was credit providers providing loans for consumers in Finland.

The study contains six chapters and they go as followed: The first chapter introduces the topic and gives an overview of it. The second chapter presents the theoretical framework, the PCR and previous studies. This is followed by chapter three which introduces the methodology, the research approach and the survey. Finally the chapter four presents the results which are followed by discussion in chapter five and conclusions in chapter six.

2 THEORETICAL FRAMEWORK

2.1 Household indebtedness and the Finnish retail credit market

According to the Ministry of Justice (2021), household indebtedness has been growing in Finland for a long time and it has been rapid especially in the 21st century. Household debt relative to disposable income has grown significantly over the last 20 years; according to the calculations of Bank of Finland and Statistics Finland (2021), the ratio of household loans to annual disposable income rose to 134.8 per cent in the first quarter of 2021, compared to 62.8 per cent at the beginning of the millennium.

Most household debt consists of housing-related liabilities. According to a study conducted by the Ministry of Finance (2019), about three-quarters of household debt is housing-related debt: housing loans account for about 62 per cent and housing company loans for about 14 per cent of total household debt. According to the study, the share of consumer credit granted by credit institutions was about 10 per cent and the share of consumer credit granted by other lenders was about 4 per cent. Other loans, such as leisure and student loans and loans to entrepreneurs, accounted for about 10 per cent. (Ministry of Justice, 2021).

Even though the consumer credit granted by other lenders is only about 4% of the whole debt, it is something that is important to observe. Digital development and innovations in the financial markets have been the key factors in the growth of over-indebtedness. In addition to traditional credit institutions, today consumer credits are offered by a wider range of lenders than before (Ministry of Justice, 2021). Lenders who provide credit for consumers are divided into two groups by the law that they are regulated by:

1. Supervised entities referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1, branches in Finland of a foreign EEA supervised entities referred to in section 4§, subsection 5 and foreign supervised entities that offers services in Finland without establishing a branch

2. Credit providers and credit intermediaries according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016)

According to the Bank of Finland (2022), monetary financial institutions (MFI's) can be divided into four different sectors: the Bank of Finland, deposit money corporations, other monetary financial institutions practising financial intermediation and money market funds. In October of 2022 there are all together 199 monetary financial institutions operating in Finland, excluding the Bank of

Finland. In addition to MFI's, there are 55 lenders and peer-to-peer brokers supervised by the Regional State Administrative Agency of Southern Finland. Even in addition to these, there are an unknown number of foreign lenders who operate completely digitally in the Finnish credit markets (Ministry of Justice, 2018). According to Raijas (2019), the lending of these foreign lenders tripled in two years from 2017 to 2019. Most of the foreign lenders are from Estonia, Sweden and Norway (Raijas, 2019).

Small collateral-free consumer credits entered the credit market in Finland in the early 2000's. At the beginning, the loan amounts where small, between 20-300 euros and the payback period was short, from seven to 90 days. Over the years, several minor changes in the legislation have affected the consumer credit market. The biggest changes were in 2013, when the regulation of interest rate cap was set. According to it, the annual percentage rate of charge of the collateral-free consumer credits less than 2000 euros may not exceed the reference rate plus 50 percentage points. Many of the operators on the market closed their business at that time (Raijas, 2019).

About half of new mortgages have a loan term of about 25 years, and the share of longer-term loans of new mortgages has clearly increased in the past few years. Because of to the exceptional situation caused by the Covid-19 pandemic, the situation of mortgage debtors has eased in the short term due the instalment-free periods provided by the lenders and the already low interest rates. The extension of repayment periods contributes to maintaining the household sector's vulnerability to economic shocks and higher indebtedness. The increase of the housing sales during the pandemic has further also increased the level of household indebtedness (Ministry of Justice, 2021).

The indebtedness of Finnish households is historically high. According to the Bank of Finland's statistics, the total euro number of different types of loans taken by households increased 2.6 times between 2003 and 2020 from 52 billion euros to 135 billion. The overall picture of indebtedness has also changed with the increase in high-interest consumer credit and forms of indirect indebtedness, such as housing company loans (Ministry of Justice, 2021) and because of the rapid rise in interest rates in 2022 (Bank of Finland, 2022). Euribor rates in 2022 are presented in figure 1.
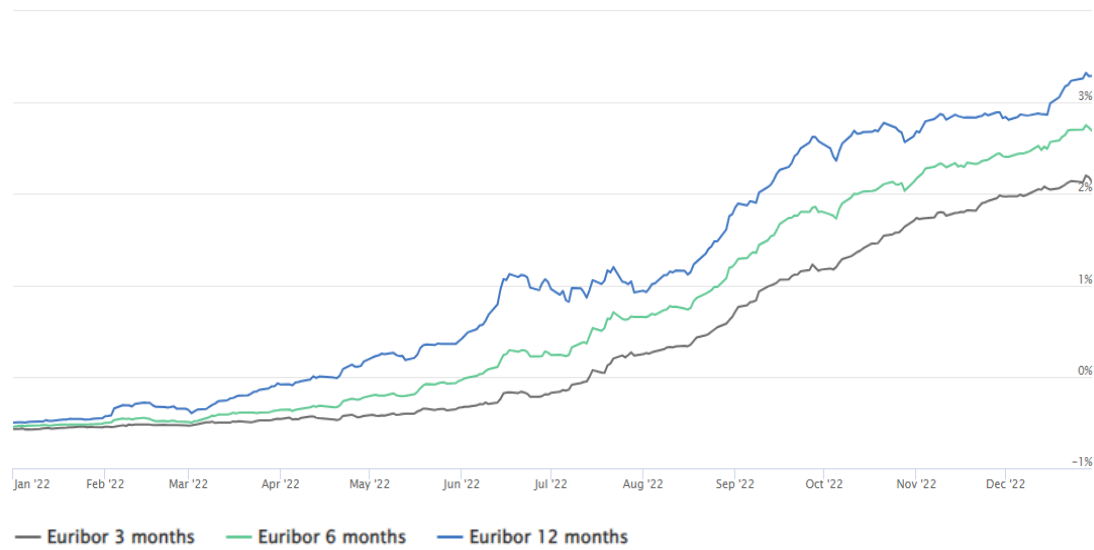
Figure 1. Euribor rates in 2022 (Euribor rates.eu, 2022)

2.2   Lending process

According to Edvard Altman (1980) banks' lending process includes four essential steps: application for a loan, credit evaluation, loan review and repayment performance:
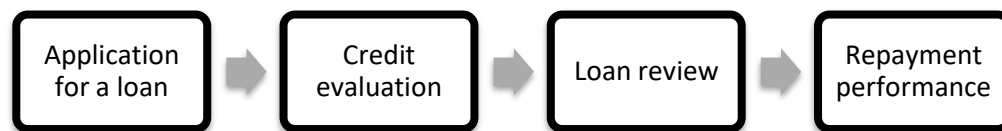
Figure 2. The lending process (Adapted from Edvard Altman, 1980).

Ruggeri et al. (2018) underlines that when considering the different kinds of information, contributions to the bank lending literature have highlighted that small banks are better to collect and act on soft information than large banks. The research also states that in the bank lending process the risk can be assessed differently among actors, so the communication plays an important role in creating the borrowers credit rating evaluation. Also, research by Ali et al. (2019) which studied blockchain and mortgage lending process notes that the lending process is a multi-step process and involves multiple parties in reaching the final credit decision. It states that while specifics of the steps and their ordering may have some differences, most mortgage lending applications go through seven procedures:

1. The borrower completes an application for a loan
2. The loan officer interfaces with the borrower to provide rates and determines prequalification
3. The loan processor collects documents from the borrower to get the loan into underwriting, and initiates orders with possible other parties
4. The underwriter reviews borrower's creditworthiness, the quality of possible collateral, and all documents related to the loan and provides approval/denial based on the bank's guidelines
5. Appraiser (not affiliated with the bank) appraises the value of the subject property
6. Property Inspector hired by the borrower to inspect the subject property for defects or damages to assess required repairs prior to closing
7. Title Agent provides title insurance and acts as the escrow agent that facilitates the final closing of the loan, transfers funds, etc.

It is definite that the process of lending is complex, challenging to define and differs significantly between different type of lenders and loan products. As mentioned earlier, even in Finland where the market is relatively small compared to other countries, there are many types of operators and products (Ministry of Justice, 2021; Raijas, 2019) and they are regulated by multiple laws (Ministry of Justice, 2021).

2.3   The problem of Asymmetric Information

According to the economist and the previous member of the Board of Governors of the Federal Reserve System (the FED) Frederick Mishkin (2019), asymmetric information occurs when one party does not know enough about the other party to make accurate decisions. For example, a lender who has a long history with a borrower has more information than a lender who has no previous relationship with that customer.

There are two types of asymmetric information; adverse selection occurs before the transaction happens, meaning that for example, when the potential borrowers who are the most likely to produce the bad credit risks are the ones who most actively seek out a loan and because of that are most likely to be selected. The other type of asymmetric information is moral hazard, which occurs after the transaction. It is the risk that the borrower is engaging immoral activities, which increases the risk that the loan will not be paid (Mishkin, 2019). It can be stated that credit registers are a response to the problem of asymmetric information that is existing on the financial markets in both these forms.

The problem of asymmetric information was raised for the first time by George Akerlof in his famous research "The Market for Lemons: Quality Uncertainty and the Market Mechanism" from 1970. In his study, he demonstrates why

used cars have much lower price than new cars because of asymmetric information problem.

Akerlof (1970) shows that usually the demand of used cars depends on the price and the average quality of used cars traded on the market. Also, the supply of used cars and the average quality depend on the price. This can also be derived from utility theory. Assuming that there are two groups of traders, the utility function for the first group is shown as:

$$U_1 = M + \sum_{i=1}^{n} x_i$$

where M is the consumption of other goods than cars, x_i is the quality of the i cars and n is the number of cars.

And likewise,

$$U_2 = M + \sum_{i=1}^{n} 3/2 x_i$$

where M, x_i and n are already explained. Because of the expected utility hypothesis, we can assume that both groups of traders are maximizing their expected utility. We can also assume that the group one has n cars with evenly distributed quality x, $0 < x < 2$ and that the second group has no cars. Last, we can also say that the price of "other goods" M, is unity (Akerlof, 1970).

The demand for used cars is the sum of the demands by both groups. If there is no price, there will be no trade. Still, at any given price between zero and three there are traders from the first group who will sell their cars at a price that the traders from second group are willing to pay (Akerlof, 1970). In summary, the research shows how prices can determine the quality of goods traded on the market. Low prices drive away sellers of high-quality goods, leaving only the bad ones on the market.

Akerlof's (1970) example of used cars is later extended widely beyond the car markets in the economic studies and the asymmetric information problem is seen as being capable of causing market breakdowns (Greenbaum et al., 2019). For example, Rothschild & Stiglitz (1976) studied if asymmetric information has effects on the pricing of insurance market products. They concluded that first, the market equilibrium included contracts on prices and quantities. Second, the high-risk individuals had dissipative effect on the low-risk individuals. And third, the structure and existence of the equilibrium depend on assumptions which were irrelevant with perfect information and that in these circumstances, the equilibrium did not exist.

Brealey et al. (1977) underlines that "equilibrium in markets with asymmetric information and signaling may have quite different properties from equilibrium either with no information transfer, or with direct and costless information transfer. Signaling equilibria may not exist, may not be sustainable, and may not be economically efficient." They created a model of capital structure and financial equilibrium. In this model, the entrepreneurs seek financing of projects

whose true qualities were known only to them. The results show that the entrepreneur's willingness to invest in his own project can serve as a signal of project quality; the value of the company increases with the share of the company held by the entrepreneur.

The study also shows that usually assets that are related to individuals - and because of that, the information is not publicly available, such as information related to mortgages and insurances - information can be obtained with an expenditure of resources. According to Brealey et al. (1977) this information can benefit lenders; and that's why there are organizations which gather and sell information about particular classes of assets.

However, according to the paper there are two problems when selling information. The first is that the lenders who buy information are able to share or resell it to others. Second, the lenders who buy information cannot know whether the information is good or not. This means that we are facing the same "lemons problem" that the asymmetric information causes and the price of the information reflects to the average quality of the information (Brealey et al., 1977). The research underlines that both problems can be prevented. According to them, the problem is solved, if the organization that is gathering the information becomes an intermediary, which buys and holds assets based on its specialized information. The second problem of appropriability is also solved, because the information is included in private good, the returns from its portfolio.

Allen (1990) also studies this problem, which is also stated as a reliability problem. According to him, the problems occur when the information is sold, and anyone can claim to have superior knowledge. Because of that, the seller cannot obtain the full value of the information. The research found that the reliability problem cannot rule out the existence of markets where information is sold directly. Second, the operation of this kind of markets depends on the information buyers have about the risk aversion of the seller and the securities that are available. And third, the view of information markets presented leads to a theory of intermediation which is not based on transaction costs.

Research about asymmetric information by Cheng & Degryse (2010) has studied on how information sharing via a public credit registry affects banks' lending decisions. They used a dataset from one of the biggest Chinese commercial bank and observed the credit card application and bank's decision on the credit card line amount, in other words the demand and supply of the credit card lending. In their study, they also had a variable for which type of information the bank observed at the time of making the credit decision, only the internal information that they have of the borrower or external information from the public credit register.

The results show that the external information does not directly decrease the bank's willingness to lend. However, simultaneously there was evidence that when the borrower is new for the bank, and they do not have the external information the credit card line was lower than for the borrowers who the bank had

also the external information. In other words, if there is positive information, it has a stronger effect on the lending decision than the extra negative information. Third, it also seems that when there is external information it alters the way bank uses the internal information (Cheng et al., 2010).

According to a discussion paper by OECD (2010), there are three ways how information sharing mitigates asymmetric information problems. First, countering adverse selection, which means that the registers enable lenders to offer loans for borrowers who had previously been priced out of the market. Second, countering moral hazard, meaning that the registers can increase borrowers' cost of defaulting which leads to increasing debt repayment. Third, countering information monopoly where one lender has more information of a borrower than the others, leading to unfair competition and ineffective pricing.

A study by Stiglitz & Weiss (1981) shows that a lender rejects credit applications even if borrowers are willing to pay a higher interest rate or provide additional collateral. Because a higher interest rate attracts higher-risk borrowers and leads to lower total returns, it is in the lender's interest to keep the interest rate at a level that low-risk customers are willing to pay and only grant credit to some customers.

Pagano & Jappelli (1993) state that information sharing is important for four reasons. First, it can increase the competitiveness in the credit markets, second it improves efficiency in the allocation of credit, third it increases the volume of lending and finally it can have policy implications. In their research they found that because of the adverse selection that we discussed earlier in this paper, some of the borrowers are priced out of the market. In this case, information sharing leads to increase lending on the market. This generates a causation where the increase in the lending market creates information sharing which can lead to more lending activity.

In 2002, Pagano & Jappelli. stated in their research that the theoretical research had suggested a threefold effect of information sharing. First, registers improve banks' knowledge of their applicants' characteristics and enables more accurate prediction of applicants' repayment probability. Because of this, the lenders are able to target and price their loans better.

Second, registers reduce the informational rents that banks could otherwise extract from their customers. They also extend the level of information on the field and that forces banks to price their loans more competitively. When the interest rates decrease, borrowers' net return increases which also improves their economic activity.

Third, registers act as supervisors of borrowers' discipline. Borrowers know that if they default, their reputation with all other banks is ruined as well. This can lead to cutting the borrower off from credit or an increase to his interest rate. This mechanism increases borrowers' willingness to repay their debts and reduces moral hazard.

According to Freixas & Rochet (2008) In a context of asymmetric information, monitoring could clearly be a way to improve efficiency. In this case the

term "monitoring" means the following: screening projects a priori in a context of adverse selection, preventing opportunistic behaviour of a borrower during the realization of a project (moral hazard) and punishing or auditing a borrower who fails to meet contractual obligations.

One aspect of the information sharing is that it still has both benefits and costs for the lenders. The benefit is that they have more accurate information about the borrowers but at the same time, the cost is the loss of the lender's informational advantage relative to its competitors (Pagano et al. 1993).

2.4   Credit register

As stated earlier, credit registers are typically a response to the asymmetric information problems. In many studies, the meaning of credit register is referred as information sharing (Cheng et. al., 2010; OECD, 2010; Pagano et al., 1993, 2000 & 2002). The main purpose of the registries is to distribute information on borrowers from lenders. According to World Bank (2019) credit infrastructures, which include credit registers, are critical in any economy for expanding access to finance, extending financial inclusion and supporting the development of stable financial systems. They comprise the institutions, information, technologies, rules and standards that enable financial intermediation. When comprehensive credit infrastructures are available, efficient, and reliable, the cost of financial intermediation falls; financial products and services become accessible to greater numbers of borrowers; and lenders and investors have greater confidence in their ability to evaluate and price risk.

There are several studies, which show that extensive information helps lenders to predict default risks. However, the evidence on the impact that the registers have on over-indebtedness is less prevalent, but some evidence still exists. For example, research by Doblas-Madrid & Minetti (2009) showed that when using a credit register, lenders were more likely to issue smaller and shorter-term loans and to require more guarantees, which could reduce indebtedness. (OECD, 2010). In addition, report by the Ministry of Justice (2018) underlines that the impact of the PSC on preventing over-indebtedness should not be overestimated but the generally accepted view is that the positive credit data can contribute to containing the development of over-indebtedness.

Credit register can be either a publicly or privately owned entity (OECD, 2010; Ministry of Justice, 2018; Pagano et al., 2000 & 2002). Private registers can be owned by the lenders or by a third party. Public registers are usually maintained by Central Banks. In Europe countries such as Belgium, Spain, Ireland, Italy, Austria, Portugal and Germany have public registers that are administrated by Central Banks (Ministry of Justice, 2018). Private registers are also called credit bureaus (OECD, 2010; Pagano et al., 2000 & 2002). Lenders provide the information about their customers to the credit bureau. The bureau can also collect

information from other sources such as courts, public registers and tax authorities (Pagano et al., 2000). Information by private credit bureaus usually provides wider range of services than public registers, e.g., credit scoring and monitoring services. (Ministry of Justice, 2018). Pagano et al. (2002) underlines that one key difference between private and public registers is, that the participation in the public registers is compulsory and its rules are imposed by regulation. That means, that the public registers have universal coverage of the information since it is stipulated by the law, that all loans must be reported to the register. Love and Mylenko (2003) found when the private credit registries exist, this is associated with lower financing constraints and higher share of bank financing, while the existence of public credit registries does not seem to have a significant effect on these perceived financing constraints.

Liberti et al. (2022) studied the voluntary adoption and formation of information sharing technology by using data from Paynet, which is a private credit register with the largest coverage of small business loans and leases in the United States. They made several interesting findings. First, lenders' business models and the information structure of credit markets are crucial to understanding information sharing technology adoption. According to the study, "early adopters are large, dispersed, model-based lenders that can take advantage of information sharing to improve credit modeling and reduce information collection and processing costs." Second, the research found that the register promotes competition. Because borrowers switch rates rise when lenders are taking part of the register it creates external pressure for the lenders to not lose their market share. Last, and what we have already seen in older studies, the results by Liberti et al. (2022) show that the total credit, the number of relationships between borrowers and lenders, and the number of collateral types financed increased for creditworthy borrowers.

In addition to the fact that credit registers may be private or public, they can also differ in two other ways. First, the credit register can be a centralized register or a query-based portal system. In the centralized register, the information is mainly collected from the credit institutions, and it is a regularly updated database. Based on this information, the register generates a credit information report to the requester. A query-based portal system is usually owned by a private credit bureau. At the request of the lender, the system conducts one-time survey of other loans already held by the borrower to other lenders who are participating the system. In this query-based portal system, the credit bureau does not form a permanent database of the information obtained. The system is based on agreements between the credit bureau and the lenders, and it also requires approval of the credit applicant (Ministry of Justice, 2018).

Second, the information that a credit register holds, or the credit register can be referred as a positive or negative information or a positive or negative credit register. Some studies, such as Pagano et. al., 2000 & 2002, also refers these as "black and white information". According to the report by OECD (2010) "negative information refers to information on defaults, delinquent payment, etc. and

positive information refers to all positive or neutral information on a borrower pertaining to her credit history, e.g., all open and closed credit accounts, repayment information, etc." The registers gather information regarding the private consumer loans but also on company and business loans. The price of a one report costs approximately between 1 and 2 dollars (Pagano et al. 2002).

It can be concluded that the information sharing varies significantly between countries. Some countries may have a public and/or private registers or several private registers. The information and how it is collected and shared can also notably differ.

Research by Ioannidou et al. (2022) studied the benefits and costs of collateral requirements in bank lending markets with asymmetric information by using data from the public credit registry of Bolivia from 1998 to 2003. First, the results show that there are benefits of collateral pledging. For example, borrowers with high risk to default tend to have high disutility from pledging collateral and because of that are less likely to demand a secured loan compared to safe borrowers. There was also evidence that riskier borrowers have a higher marginal rate of substitution of collateral for price. According to the study, on average posting collateral decreases the probability of default by 27.6%.

Second, by dropping 40% of collateral value on credit supply, credit allocation, interest rates, and banks' expected profits, the median loan's interest rate increases by 2.1%, borrowers expected demand decreases by 4.4% default probabilities increases by 1.5% and banks' expected profit decreases 5.0% when banks respond to this shock only through pricing. This shows us the effect of the credit demand and supply on the collateral channel. When banks respond to the collateral value shock through both pricing and rationing, 39% of the loan contracts seems to be unprofitable for the lenders and because of that are not offered to borrowers anymore. The research shows that collateral has a huge impact on borrowers' access and terms of credit.

Hertzberg et al. (2011) exploited a natural experiment by using data from the public credit register in Argentina in 1998. Their research provides evidence that when the information is public for the lenders, their lending decisions becomes more sensitive to it. Because of that, when the borrower is close to financial distress the creditor has a motive to inform about its lending decision.

It was also found, that when a borrower who is borrowing from multiple lenders and one lender provides bad information about its creditworthiness, the lending falls almost 20%. As a conclusion, the register leads borrowers to borrow from fewer creditors. It can increase the sensitivity of lending decisions to credit information, which can lead the creditworthy borrowers to obtain less credit.

Research by Brown et al. (2010) studied how information asymmetries and lender competition affect voluntary information sharing between lenders by using an experimental analysis. The results show that lenders are more likely to engage in voluntary information sharing when they face strong information

asymmetries and are less likely to share information when there is intense competition.

The results also show that information sharing might be high in the consumer credit market even though the market has strong competition. That is why it is possible that voluntary information sharing through private credit bureaus has grown most rapidly in the consumer credit market. In a conclusion, the results suggests that potential adverse selection may drive information sharing behavior, while lender competition may only be of secondary importance.

2.4.1 Credit registers in Finland

Research by Pagano et. al (2000) studied the operation of private credit bureaus and public credit registers in Europe. In 2002, they conducted same type of study comparing the operations across the world. The studies were conducted by questionnaires directed to private credit bureaus and central banks and on direct interviews and on official sources. Based on these papers we can state that the register in Finland has been – and still is - different but also deficient compared to other countries.

Typically, private credit bureaus are private companies, whose shares are owned by lenders. In 2002, only in Finland and Belgium private credit bureaus were private companies licensed by government agencies. According to the paper of 2000, The Committee of Governors of the European Central Banks defines a public credit register as "an information system designed to provide commercial banks, central banks and other banking supervisory authorities with information on the whole banking system regarding the indebtedness of firms and individuals". In their paper from 2002, it is stated that, "public credit registers (PCRs) are managed by central banks expect in Finland, where the credit register is contracted out to a private company". Therefore, the research does not consider it as a public credit register.

According to the Consumers' Union of Finland (2022) the credit information of consumers is currently registered by two private companies: Suomen Asiakastieto Oy and Bisnode Finland Oy. The purpose of the registers is to provide information about a person's financial situation and their ability to meet their commitments. Especially the negative or "black" information is widely used by banks, credit card companies and other consumer credit companies, telecom operators, other operators which are selling goods or services on credit and private individuals and corporations operating as landlords. Negative information is typically referred as "payment default entry". Usually, the creditor or debt collection agency sends multiple debt collection letters before the borrower gets a payment default entry. According to Finnish Competition and Consumer Authority (2022) there are several ways, how the borrower can get a payment default entry: First, the creditor can notify a payment default to the credit information register when the payment of a consumer credit is overdue by at least 60 days. In

this case, the creditor must also mention the possibility of a payment default entry in the credit agreement and send a written payment reminder to the borrower in which this possibility is mentioned at least 21 days before the entry is made. Second, a payment default may be notified by the District Court when it has issued a verdict ordering the borrower to pay the debt. Third, a payment default entry may also be made during the enforcement phase and last, it may be related to debt adjustment.

Most often, payment default entries are kept in the register for two to three years. If the borrower gets another payment default entry in the meantime, the previous entry will remain longer in the register. However, this will change in December 2022 when a new regulation about retention periods for register entries enters into force. The new regulation states, that the borrower who has payment default entry can get it removed after a month at fastest, if the debt has been paid in full. It also states that the retention periods of old entries are not affected by the new ones, each entry is viewed as its own (Suomen Asiakastieto, 2022; Finlex, 2022).

In addition to the negative information, Suomen Asiakastieto is also collecting positive information of consumers. The systems operate as previously mentioned query-based portal system. Suomen Asiakastieto (2022) states that "the information may be used only with the consumer's consent to assess the ability to pay, when considering granting a credit and evaluating the creditworthiness of the applicant. The companies participating in the service have signed contracts that precisely define the use of data". The company also underlines that in their system, "the positive credit information is collected at the consumer's request on a case-by-case and up-to-date basis from the credit providers' own customer registers" and that "the information is not stored in the credit information register and a new register is not created in the system". In August 2022, there were altogether 38 banks and credit institutions operating in Finland who were participating this system.

2.4.2 The new Positive credit register

In March 2020, the Finnish Ministry of Justice placed an Advisory Board to prepare a Positive credit register and the legislation required for it. The Advisory Board proposed a new law on Positive credit register. In addition, they also proposed to amend the Consumer Protection Act and some other laws regarding to the PCR. The law of the PSC entered into force in August 2022 and is proposed to be implemented by 1st of April 2024. In 2026, the register will include loans granted to natural persons for business activities. (Ministry of Justice, 2021).

The law regulates the administrator of the register, the information to be deposited in the register, the obligation to report the information to the register, the transfer of information from the register, and the obligations contained in the

law of supervision. Unlike many other countries where public registers are usually administrated by central banks, the administrator of the upcoming register is the Income Register Unit of the Tax Administration. The obligation to report information is supervised by the Financial Supervisory Authority and the Regional Administrative Agency of Southern Finland. (Ministry of Justice, 2021).

The primary use of the information is lending. The purpose is to collect such credit-related information in the register, which is necessary for the lenders to fulfil their obligations regarding to evaluate creditworthiness in their lending process. The information needed to evaluate creditworthiness is the basic information of the credit, information on interest and other credit costs, collateral information and repayment information. In addition to these, some negative credit information will also be collected to the register. This negative information is parallel to the "payment default entry" information which is originally mentioned in Credit Information Act. This negative information will include credit payment delay information, which is necessary for lenders to assess the creditworthiness of a credit applicant, as it provides information on possible payment difficulties at an early stage. (Ministry of Justice, 2021). As a part of the PCR, Kela (the Social Insurance Institution of Finland) also provides information about student loan guarantees for the PCR (Vero, 2021).

It is also proposed that the register will record information about debt arrangements and corporate reorganization. This is considered to be necessary, because the credit information is not updated during a debt arrangement or a corporate reorganization. Lastly, the register will also store information on income, which is essential when evaluating creditworthiness (Ministry of Justice, 2021).

In addition to lending, the register's data can also be used for the monitoring of financial stability on credit market to the extent that the data is necessary for this purpose and for certain authorities defined in law which are Statistics Finland, Financial Supervisory Authority, Finnish Competition and Consumer Authority, Financial Stability Authority and Bank of Finland. Also, consumers are able to get up-to-date information about their own credits and incomes from the register through an electronic service (Ministry of Justice, 2021). The law stipulates that reporting information to the register is mandatory for the following groups:

1. A supervised entity referred to in 4 §, subsection 1 of the Act on Financial Supervision (878/2008), a branch in Finland of a foreign EEA supervised entity referred to in 5 § of said section, or a foreign supervised entity that offers services in Finland without establishing a branch

2. A creditor or credit broker entered in the register in accordance with the Act on the Registration of Certain Creditors and Credit Brokers (853/2016)*

3. A business established in Finland, or another EEA country as referred to in 4 §, subsection 1 of the Financial Supervision Act (878/2008), which professionally grants credit to natural persons other than consumers in order to gain income or other financial benefit

4. A sole trader referred to in subsection 1, if it grants credit to natural persons other than consumers

*The Act on the Registration of Certain Creditors and Credit Brokers (853/2016) has been updated by 16.2.2023 (186), however this study refers to the previous (853/2016) act

As mentioned earlier in this paper, groups 1 and 2 provide loans for consumers and because of that are the target group of this study. In addition, those entrepreneurs to whom creditor rights arising from the credit agreement have been transferred are also obligated to report. Such operators can be, for example, collection agencies. When considering the functionality and coverage of the PCR, it is important that the information about the credit is not lost from the register in a situation where the credit is transferred from the original credit provider to another party. Because those kinds of operators do not grant loans themselves but buy debts from lenders, they are also excluded from this research.

Lenders – who are obligated to report information - would receive information from the register, specifically to evaluate creditworthiness. The data consists of information that lenders have already used on their evaluation before, but they have gathered it from different sources such as private registers, their own customer information or directly from the customer (Ministry of Justice, 2021). Figure 3 presents the operating principals and the operators taking part of the PCR.
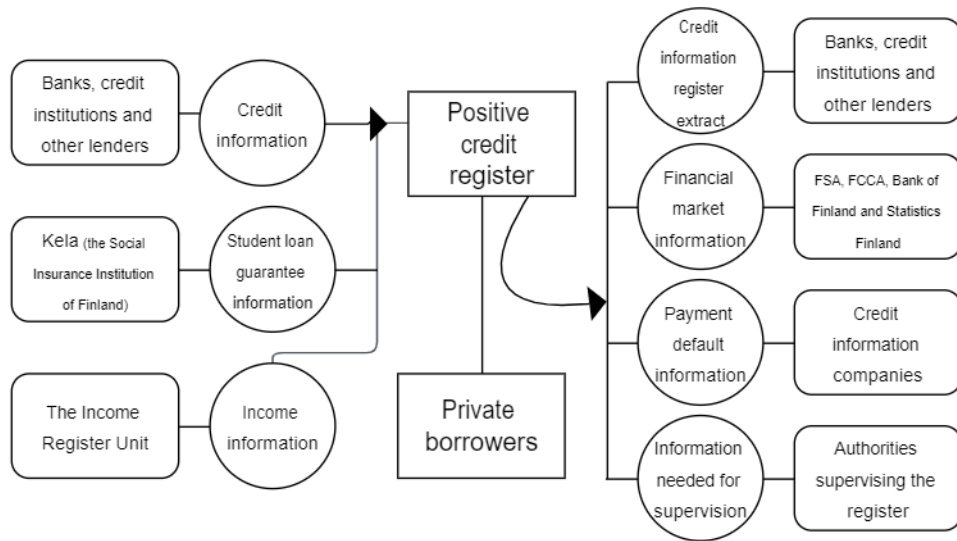
Figure 3. Operating principals of PCR (Vero, 2021).

3   METHODOLOGY

3.1   Research Approach

To collect the data for the empirical part of this study, survey was used to collect data for quantitative analysis. Quantitative study encompasses a range of methods concerned with the systematic investigation of social phenomena, using statistical or numerical data. This means that quantitative research involves measurement and assumes that the phenomena under research can be measured. It sets out to analyse data for trends and relationships and to verify the measurements made. (Watson, 2015).

According to Leeuw et al. (2008) word survey is mostly used to describe a method of gathering information from a sample of individuals. In addition, other recurring terms in definitions are systematic, organized and quantitative. Survey can be seen as a research strategy in which quantitative information is systematically collected from a relatively large sample taken from a population.
Because of these characteristics, the method of collecting data for this study was a survey. Survey can be seen as a simple and organized way of collecting information from a specific group of people and there can be several subtopics asked from the same subject.

The main research question of this study is "how the PCR affects the lending process of the lenders on the Finnish retail credit market?" and it examines the lending process and its steps and dimensions considering different kind on lenders, credit products and the impact of the upcoming credit register on these steps, focusing on the lending process itself, pricing, costs and evaluation of creditworthiness.

3.2   The Survey and Data Collection

The data for this study was collected by using a survey. The survey was conducted on the internet by using the reporting tool Webropol. Because this study was conducted in collaboration with the Tax Administration Incomes Register Unit, the respondents of the survey were the contact persons of the lenders who are regulated by the Act on PCR. The proposal to participate to the study was send by the communications department of the Tax Administration Incomes Register Unit by an email and the response time was two weeks.

The survey of this study consists of 16 questions. The questions are categorized in four sections, which are background information, the lending process, pricing & costs and the risks. There are four types of survey questions used in

this study. Most of the questions are one and multiple-choice questions but there are also open and matrix questions. The questions were created by using the theoretical framework and the discussions with the Tax Administration Incomes Register Unit.

4   RESULTS

This survey was conducted by using the reporting tool Webropol. After the responses were collected, the data were transferred into Microsoft Excel. All the calculations, analysis, tables and figures were made by using Microsoft Excel. The target group consists of approximately 100 companies and total of 21 respondents answered the survey. No personal data was collected as part of the survey and the survey was conducted anonymously.

4.1   Background Information

As a background information, the respondents were asked which of the operators they are, the balance sheet total in 2021 and what products they offer to consumers. Figure 3 shows that in the first question 62% of the respondents answered that they are a supervised entity referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1, a branch in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 (later referred as group 1) and 38% that they are a credit provider or credit intermediary according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016) (later referred as group 2). Results that varied between groups 1 and 2 are presented in the same context as the combined results. If they are not presented, there was no variation in those results.
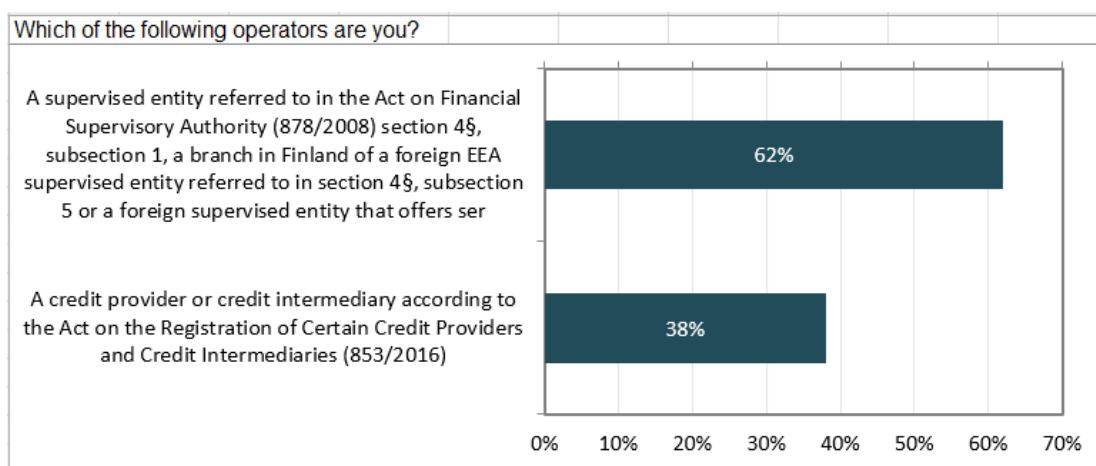
Figure 4. Survey results on a question whether the respondent is a supervised entity referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1, a branch in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 or a credit provider or credit intermediary according to the Act on

the Registration of Certain Credit Providers and Credit Intermediaries (853/2016)

The second question was about the balance sheet total of the respondents in 2021. The balance sheet total of most respondents was over 500 million euros by 60%. For 25% of the respondents the balance sheet total was between 1 and 200 million euros, for 10% it was between 200 and 500 million euros and for 5% between 500 000 and 1 million euros. There were no respondents whose balance sheet total was less than 500 000 euros in 2021. The results of question 2 are presented in figure 5.
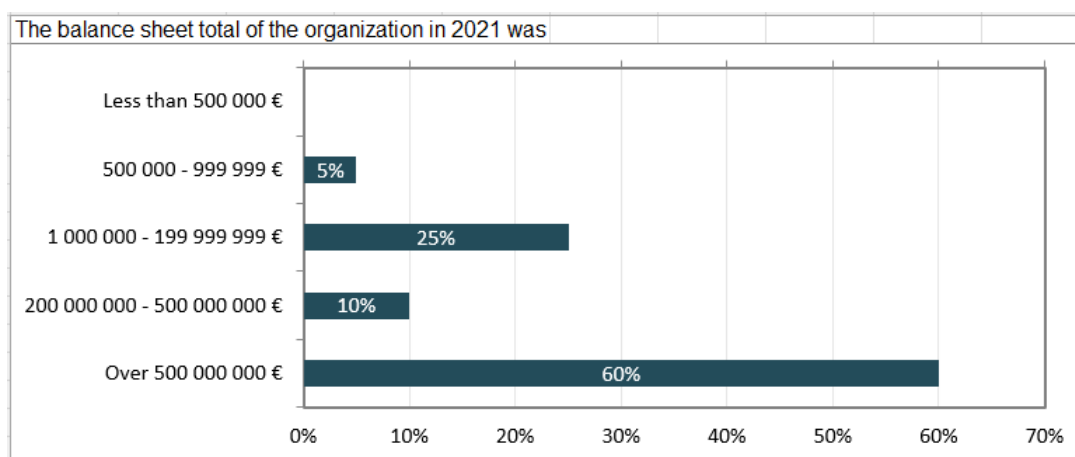
Figure 5. Survey results on a question of the respondent balance sheet total of the organization in 2021

In the third question of the survey, the respondents were asked what kind of products they offer to the consumers. The options were home loans, secured loan where the house or apartment is used as collateral, other secured loans, unsecured loans, credit cards or credit accounts, instalment payments and leases. The respondents were able to choose as many options as they wanted. The most offered product is unsecured loans, by 81% of the respondents offering those. The second most offered product is credit cards and credit accounts by 76% of the respondents offering them, and the third most offered product is instalment payments by 43% of the respondents offering those.

Other secured loans are offered by 38% of the respondents, home loans and secured loans where the house or apartment is used as collateral are both offered by 33% of the respondents and leases are offered by 29% of the respondents. The results for the third question are presented in figure 6.
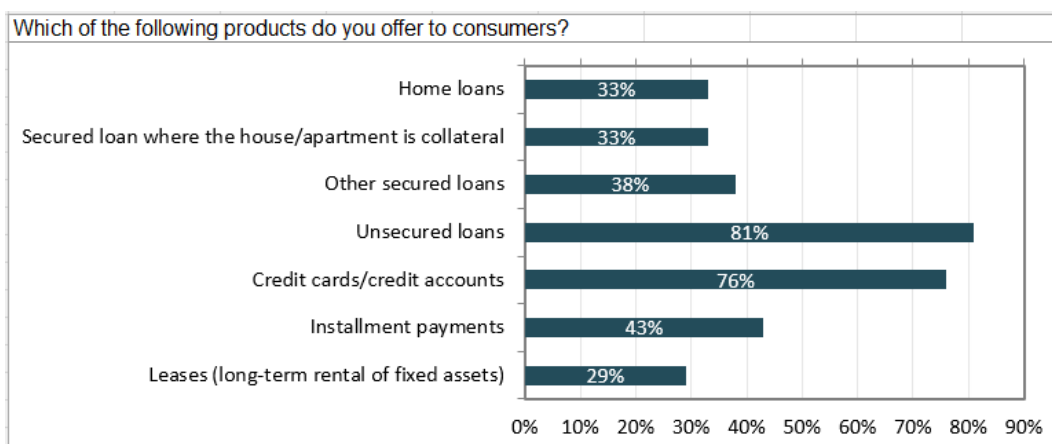
Figure 6. Survey results on a question of which products the respondent offers to consumers

When comparing the two different groups of respondents by the law that they are operating under, there is variance in the answers to this question. Respondents in Group 1 – as expected – are offering more loans with collateral, but also credit cards and credit accounts. Both groups are offering all the other unsecured products quite similarly, though leases are offered more by group 2. The results are presented in figure 7 where the group 1 stands for Supervised entities referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1 and branches in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 and 2 for the credit providers or credit intermediaries according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016).
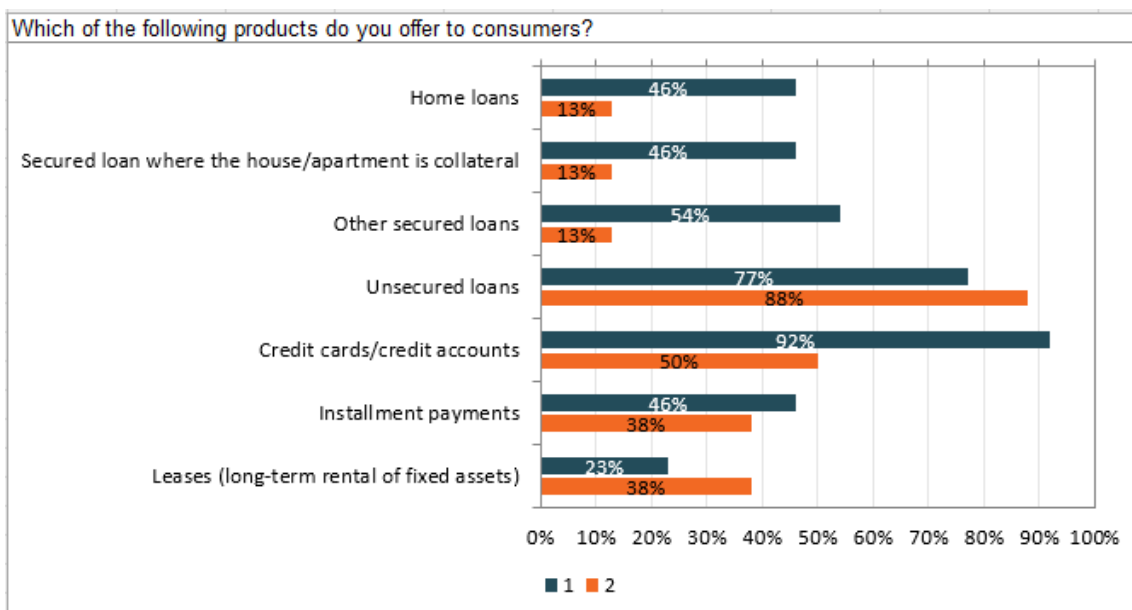
Figure 7. Survey results on a question of which products the respondent offers to consumers by comparing group 1 which stands for Supervised entities referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1 and branches in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 and group 2 which stands for credit providers or credit intermediaries according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016).

4.2   The Lending Process

The second part of the survey included questions about the lending process itself. As stated earlier in this study, the process of lending is complex, challenging to define and differs significantly between different type of lenders and loan products. In order to understand the operation, benefits and the effects of the PCR it is highly important to also understand the lending process. All together there were nine questions about the lending process. The questions were about the sources of data that the respondents use to assess the creditworthiness of the applicants, information asked from the applicants, the identification of the applicants, automated credit decision, expected credit losses and possible changes in the process.

The first question was what sources of data the respondents use to assess the creditworthiness of loan applicants. The options were credit reporting companies, loan applications, loan negotiations, documents requested from the applicants, own systems or something else that the respondents were able to write by themselves. The respondents were able to choose as many options as they wanted. All respondents use their own systems and the already existing information about the applicants when assessing the creditworthiness and 95% of them are also using credit reporting companies and loan applications. 81% of respondents use documents requested from the applicant. Only 48% of the respondents use loan negotiations and discussions with the applicants to assess their creditworthiness. 19% of the respondents chose the option "something else" which means four respondents. All four answered the question by adding specific credit reporting companies or public registers such as Digital and Population Data Services Agency. These answers can be seen as part of the option "credit reporting companies" which was chosen by 95% of the respondents and are most likely also included in that number. The results for this question are presented in figure 8.
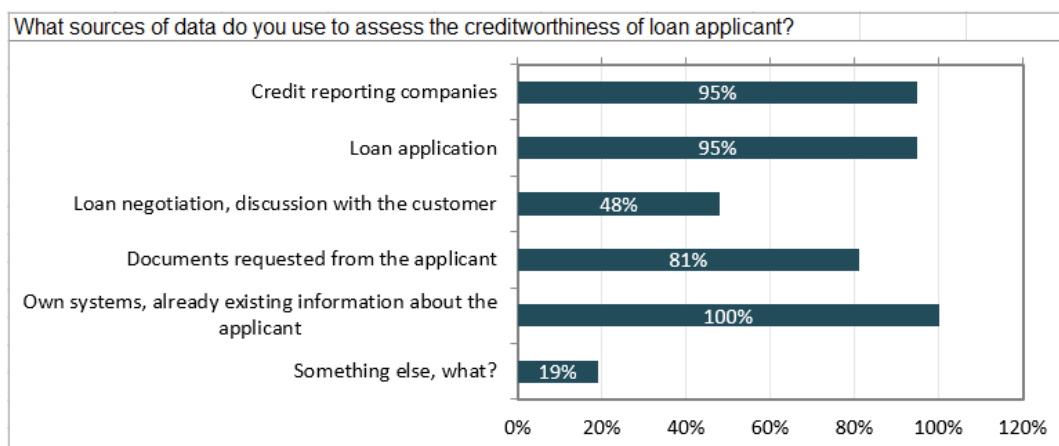
Figure 8. Survey results on a question of what sources of data the respondent
uses to assets the creditworthiness of loan applicants

The next question in this section was, what sources of data the respodents
will use in the future to assess the creditworthiness of loan applicants, when the
PCR is in use. The answers to this question were very similar to the previous one.
95% of the respondents are using their own systems and loan application also in
future to assess the creditworthiness of the applicants. 90% of them is also using
credit reporting companies in the future, 71% documents requested from appli-
cants and 48% loan negotiations. In this question, 24% of the respondents chose
the option "something else" which means five respondents. As in the question
one, all five answered to this part by adding specific credit reporting companies
or public registers and these answers can be seen as a part of the option "credit
reporting companies" which was chosen by 90% of the respondents and are most
likely also included in that number. The results for this question are presented in
figure 9.
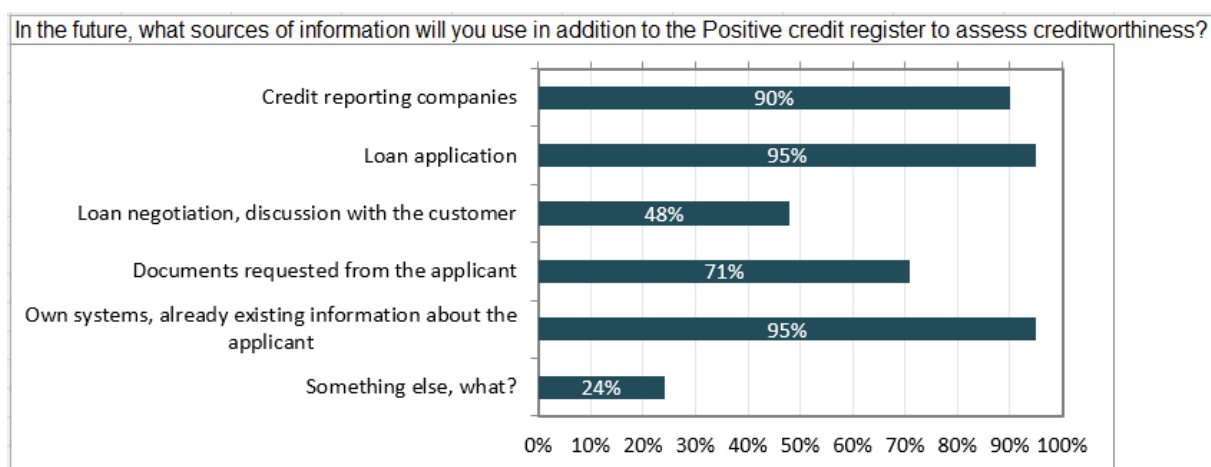
Figure 9. Survey results on a question of what sources of data the respondent
uses to assets the creditworthiness of loan applicants in the future
in addition to the PCR

The third question of this section was, will the applicant change their current sources of information when the PCR is in production. 67% will change their sources of information, 19% will not and 14% were not able to answer this question. The results for this question are presented in figure 10.

The law requires credit providers in the future to check the credit applicant's information from the Positive credit register. Will you change the current sources of information when the Positive credit register is in production?
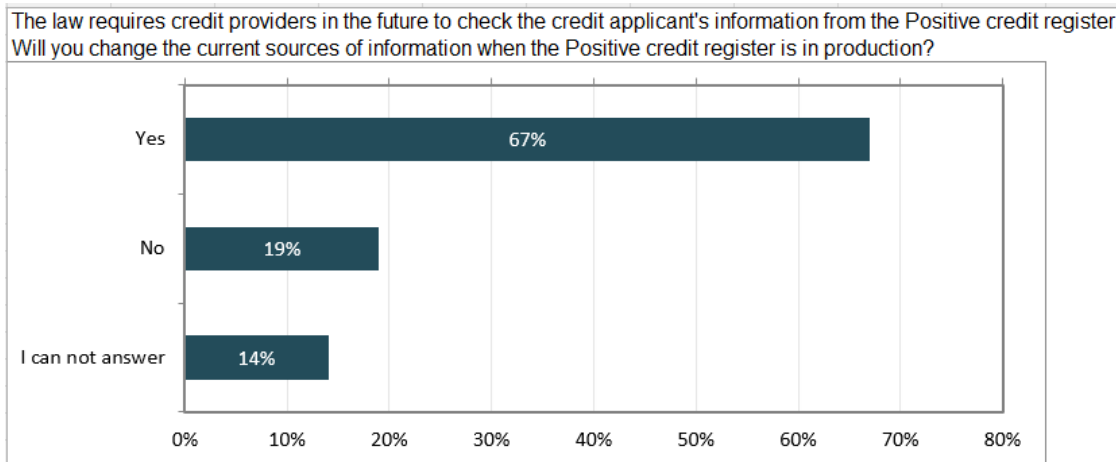
Figure 10. Survey results on a question if the respondent will change the current sources of information when the PCR is in production

Next the respodents were asked will the information requested from the customer in the loan application change when the PCR is in use. 48% of the respondents states that the information requested from loan applicants will change, 9% states that it will not change and 43% weren't able to answer. None of the respondents answered that they do not use loan applications, which is notable since 95% of them choose the option "loan application" in question 1 in this section where the sources of data were asked. The results for this question are presented in figure 11.

Will the information requested from the customer in the loan application change when the Positive credit register is in use?
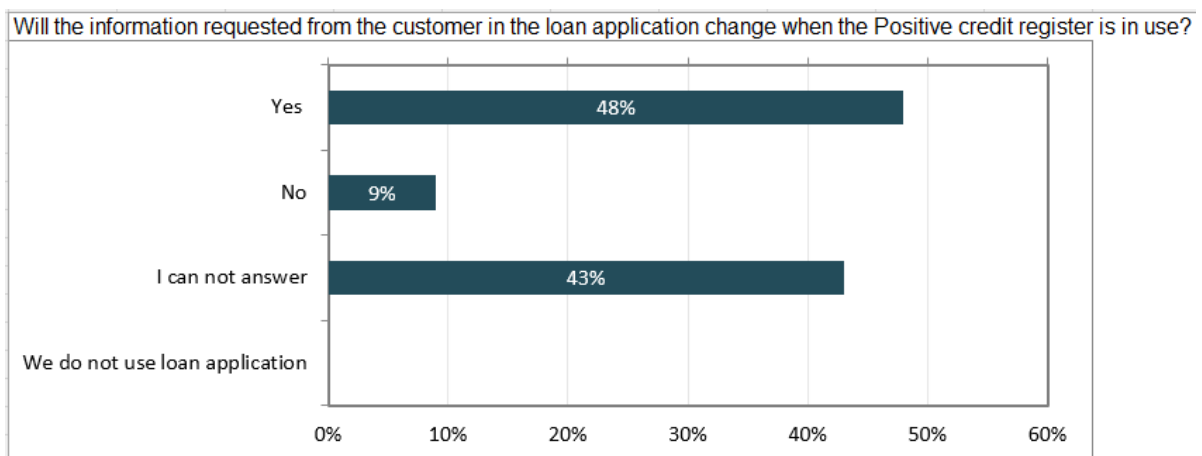
Figure 11. Survey results on a question if the respondent will information requested from the customer in the loan application change when the PCR is in use

This is one of the questions, where the results of the two groups of respondents by the law they are operating varies. 54% of the respondents from Group 1 (= Supervised entities referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1 and branches in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5) answered that "I can not answer" where in group 2 (= Credit providers or credit intermediaries according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016)) only 25% chose that. 62% of the respondents from group 2 chose the option "yes" and 38% of the respondents from group 1. The results are shown in figure 12.
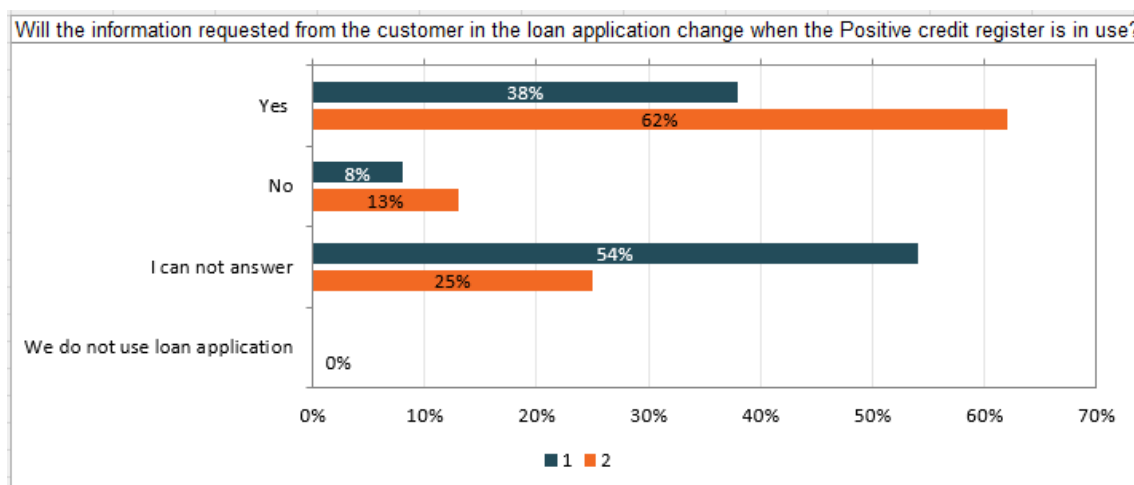
Figure 12. Survey results on a question if the respondent will information requested from the customer in the loan application change when the PCR is in use by comparing group 1 which stands for Supervised entities referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1 and branches in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 and group 2 which stands for credit providers or credit intermediaries according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016).

The fifth question in this section was about the identification of the loan applicants and the results for this question are presented in figure 13. The respondents were asked what stage in the loan application process they are identifying the applicants. 38% of the respondents are identifying their applicants before starting the loan application, 19% at the stage of sending the loan application, 14% during the loan approval stage, 10% in the loan application processing stage, before the

information has been retrieved from external sources and 5% during the loan application stage, after the information has been retrieved from external sources. 10% of the respondents chose the option "other stage, which" and replied that:

- The stage depends on the channel but it's either "before starting the loan application" or "during the loan approval stage"
- At the stage when opening a customer account
- The stage depends on the product

Strong identification refers to identity verification electronically.
At what stage in the loan application process do you identify the loan applicant?

Stage	Percentage
Before starting the loan application	38%
At the stage of sending the loan application	19%
In the loan application processing stage, before information has been retrieved from external sources	10%
During the loan application processing stage, after information has been retrieved from external sources	5%
During the loan approval stage	14%
Other stage, which?	14%

Figure 13. Survey results on a question of what stage in the loan application process does the respondent identify the loan applicant

In this question as well, the results have variance between group 1 and group 2. 62% of the respondents in group 1 are identifying their loan applicants "before starting the loan application" and none of the respondents in group 2 does that. Most of the respondents in group 2 are identifying their applicants "during the loan approval stage" by 38% and other way around, from the group 1 none of the respondents does that. The results are shown in figure 14.

Strong identification refers to identity verification electronically.
At what stage in the loan application process do you identify the loan applicant?

Stage	1	2
Before starting the loan application	62%	0%
At the stage of sending the loan application	15%	25%
In the loan application processing stage, before information has been retrieved from external sources	15%	0%
During the loan application processing stage, after information has been retrieved from external sources		12%
During the loan approval stage		38%
Other stage, which?	8%	25%

Figure 14. Survey results on a question of what stage in the loan application process does the respondent identify the loan applicant by comparing group 1 which stands for Supervised entities referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1 and branches in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 and group 2 which stands for credit providers or credit intermediaries according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016).

In the next question it was asked, how many percentage (%) of the final credit decisions are made with an automated system which refers to a system that, based on the information of the credit applicant, makes the decision of the final credit grant automatically. The average of the answers was 56%, median 60% and standard deviation 36%.

In the seventh question, the respondents were asked, how many percentage (%) of the final credit decisions are made with an automated system in the future, when using the PCR. Now the average was 67%, median 80% and standard deviation 35%. There was no statistically significant difference between the results of these two questions when using the two independent samples t-test (t-test statistic -0.965; p-value 0.341). This shows that the respondents do not expect the PCR to impact their automatically made credit decisions.

The eight question was about the creditworthiness. The respondents were asked if the PCR will affect to the total amount of expected credit losses. 57% agrees that the total amount will decrease to some extent, 24% agrees that it has no effect, 45% agrees that the total amount will decrease a lot and 14% were not able to answer. The results for this question are presented in figure 15.

As part of the credit granting process, the credit provider must assess the creditworthiness and repayment ability of the credit applicant. Expected credit losses refer to the lender's estimate of the amount of the loan that borrowers may not pay. Will the positive credit register affect to the total amount of expected credit losses?

Response	Percentage
6 I can not answer	14%
5 Decreases a lot	5%
4 Decreases to some extent	57%
3 No effect	24%
2 Increases to some extent	
1 Increases a lot	
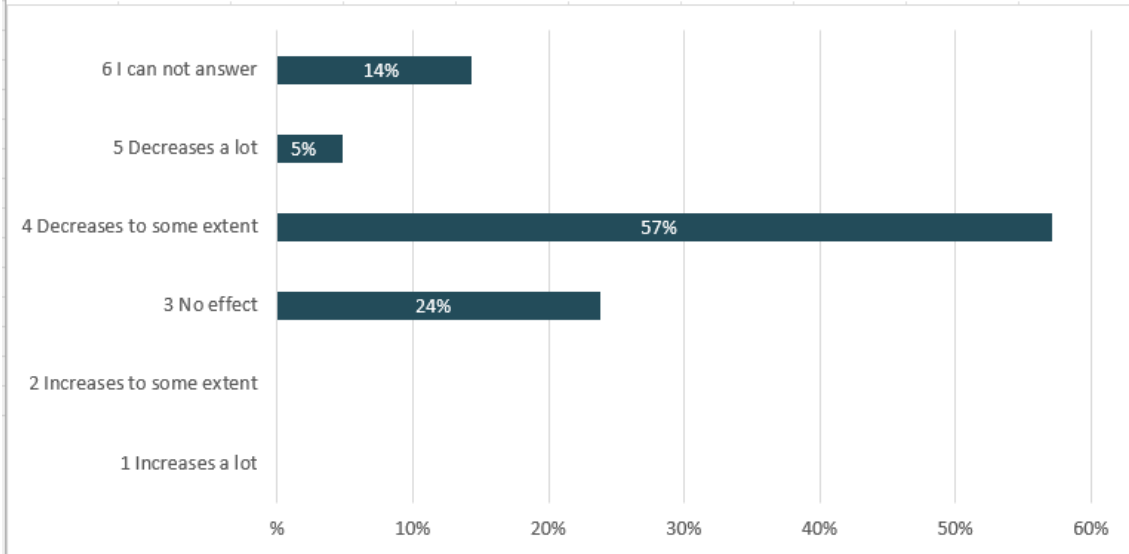
Figure 15. Survey results on a question if the PCR will affect to the total amount of expected credit losses.

Next question was, if the respondents are going to change their processes related to applying for a loan and granting credit. 62% of the respondents answered "yes", 14% are not going to change their processes and 24% were not able to answer to this question. The results for this question are presented in figure 16.

When introducing and adapting the Positive credit register, are you changing the processes related to applying for a loan and granting credit?

Response	Percentage
Yes	62%
No	14%
I can not answer	24%
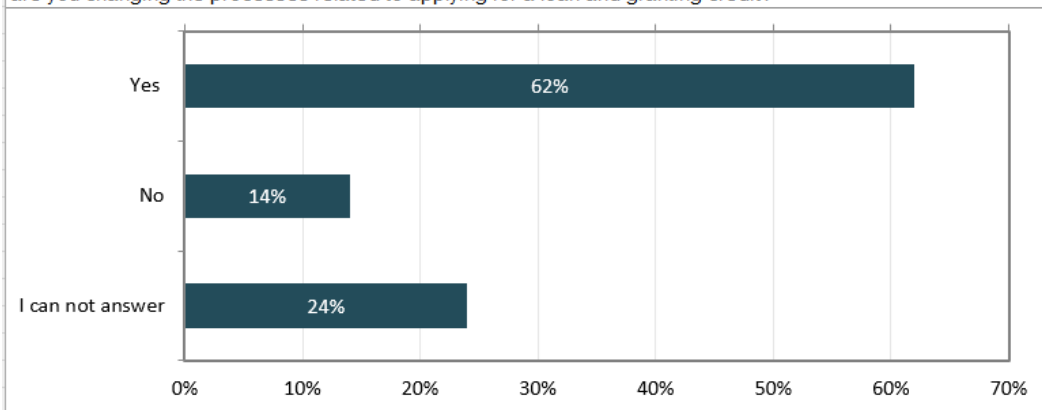
Figure 16. Survey results on a question if the respondent is going to change the processes related to applying loans and granting credit when the PCR is introduced.

In this question, the results have variance between group 1 and group 2. 75% of the respondents from group 1 answered "yes" and 25% of them answered "no".

38% of the respondents from the group 2 chose the option "I can not answer" when none from the group 1 chose that option. Results are presented in figure 17.
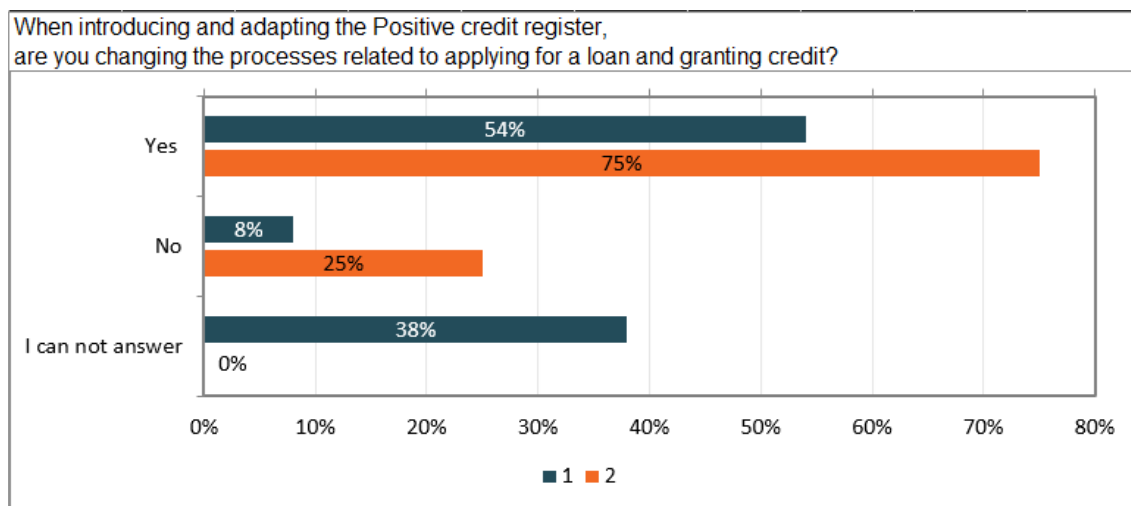
Figure 17. Survey results on a question if the respondent is going to change the processes related to applying loans and granting credit when the PCR is introduced by comparing groups by the law that they are operating under

If the respondents had answered "yes" to the previous question, they were asked how they are going to change the processes. The question was an open question, and the respondents answered the following:

- For certain information, we can reduce the documentation requested from customers
- Increasing automation and shortening the lead times of the credit process. Increasing automation is not only limited to automatic decision-making in terms of credit decisions. Applying for a loan will be easier for the customer, but correspondingly, as a credit provider, we will receive better quality data for risk management purposes from the Positive credit register
- Naturally, we must include the Positive credit register to our query processes. We will also use information obtained from the register (income, debts, monthly instalments, etc.) in our credit decisions
- Information from the Positive credit register is added and used. Back-end changes where the actual survey is carried out and data import as part of the credit decision
- The system will be renewed within a few years, and after that the information obtained through the Positive credit register can be utilized more efficiently in trough out the processes

- Trough the Positive credit register we can obtain the external responsibility information, which can be used in more comprehensive automatic credit decisions.
- The Positive credit register is a new source of information for us. In addition, the information within our owns systems will be enriched on some level as a part of this. In the future we will possibly have more extensive changes to the process, but only time will tell.
- The Positive credit register will affect to the entire end-to-end credit granting process and all the components and process steps used in it. Including applications, systems that support credit risk analysis, to ensure the final credit decision (incl. manual decision and customer communication) and dataflow monitoring and reporting capability
- Manual steps in connection with special cases are reduced. For example, if the customer has reported very large salary information or debt obligations, information about these is obtained from the Positive register, and manual checks (documents) are not required from the applicant
- We will use the information obtained from the income register
- Currently, we have only preliminary plans. However, it is very likely that with the introduction of the Positive credit register, the information requested from the customer when applying for a loan will change. In addition, some documents (e.g., salary certificate) could be dispensed with, at least as a general rule.

4.3   Pricing & Costs

The next two questions were about the pricing and costs. The first was, if the PCR will affect to the standard deviation of the loan margins. For this question 48% of the respondents were not able to answer. 29% agreed that it has no effect to standard deviation of the loan margins and 19% agreed that it will increase to some extent. None of the respondents agreed that it will decrease or increase a lot. The results for this question are presented in figure 18.
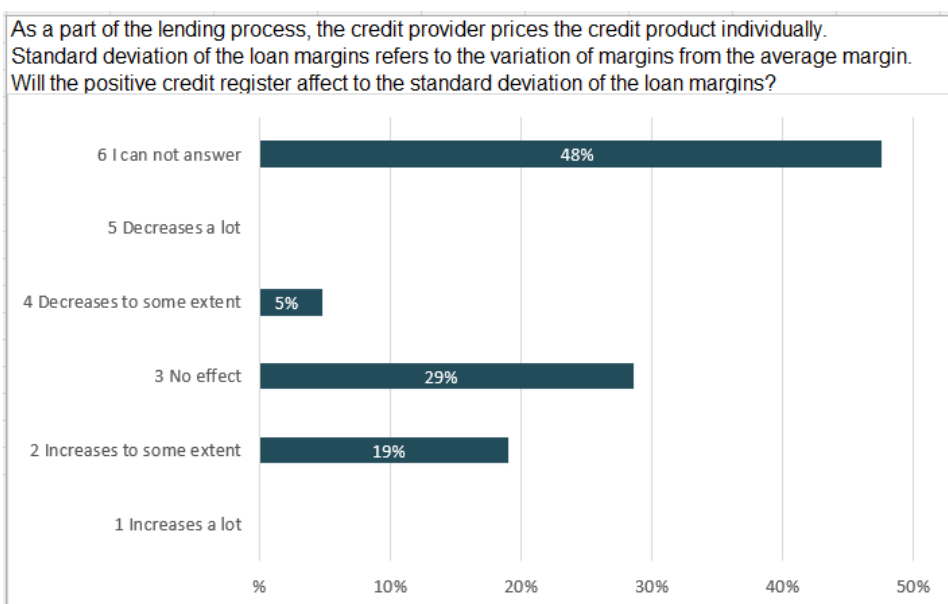
Figure 18. Survey results on a question if the PCR will affect to the standard deviation of the loan margins.

The second question of this section was about the effect of the PCR to the costs. The results for this question are presented in table 1. The respondents were asked if the PCR will affect to the personnel costs, system costs or other expenses over the next four years and after four years. "The other expends" was also an open question. The scale was from 1 to 6 where the number 1 equals to "increases a lot" 2 to "Increases to some extent", 3 to "No effect", 4 to "Decreases to some extent", 5 to "Decreases a lot" and 6 to "I can not answer".

For personnel costs, 38.1% respondents agreed that they will increase to some extent over the next four years. 14.3% agreed that there are no effect and 9.5% that they will decrease to some extent. None of the respondents agreed that they will increase or decrease for the next four years and 38.1%were not able to answer. 28.6% agreed that personnel costs will decrease to some extent after four years and 23.8% agreed that there is no effect for personnel costs after four years. 47.6% were not able to answer this question.

For system costs, 47.6% agreed that they will increase to some extent over the next four years and 28.6% agreed that they will increase a lot. For 14.3% there is no effect and 9.5% were not able to answer. After four years, the system costs will increase to some extent for 52% of the respondents, for 29% there is no effect and for 5% they will decrease to some extent. None of the respondents thought that the system costs will increase or decrease a lot and 14% were not able to answer if there will be an impact to the system costs after the four years.

For other expenses, 56% were not able to answer this question regarding the next four years and the time after four years. Although the question was conducted to exclude the actual implementation costs of the PCR itself, all the rest 44% answered to the open question that the other expenses are related to the PCR

and particularly the query costs that are incurred when using it. 25% of the respondents agreed that these costs will increase to some extent over the next four years and after four years and 19% agreed that there is no effect from these over the next four years or after four years.

Table 1. Survey results on a question of the effect to the costs

	1 Increases a lot	2 Increases to some extent	3 No effect	4 Decreases to some extent	5 Decreases a lot	6 I can not answer
personnel costs over the next four years	%	38%	14%	10%	%	38%
personnel costs after four years	%	%	24%	29%	%	48%
system costs over the next four years	29%	48%	14%	%	%	10%
system costs after four years	%	52%	29%	5%	%	14%
other expenses over the next four years, what expenses?	%	25%	19%	%	%	56%
other expenses after four years, what expenses?	%	25%	19%	%	%	56%

4.4   Risks

In the last section, the respondents were asked about the risks. The question was how significant risks they see in introducing the PCR as part of the lending process. Due to the complexity of the lending process and the diversity of the respondents it is obvious that the possible risks for the respondents' businesses can be very different. Because of this, the actual risks where not precisely defined, but the riskiness was divided into five different degrees: "no significant risks", "slightly significant risks", "significant risks", "very significant risks" and "risks seriously affecting the business".

38% of the respondents see that there are slightly significant risks, 19% see no significant risks, 14% see significant risks and 5% see very significant risks. None of the respondents see risks seriously affecting the business and 24% were not able to answer this question. The results for this question are presented in figure 19.

How significant risks do you see in introducing the Positive credit register as part of the lending process?

Figure 19. Survey results on a question of how significant risks respondents see in introducing the PCR as part of the lending process.

In the results of this question between the two groups, there is a small difference. When none of the respondents sees "risks seriously affecting the business", only respondents from group 2 see "very significant risks". However, 25% of the respondents from group 2 sees "no significant risks" and 15% of the respondents from group 1 have chosen that option as well. See results in figure 20.

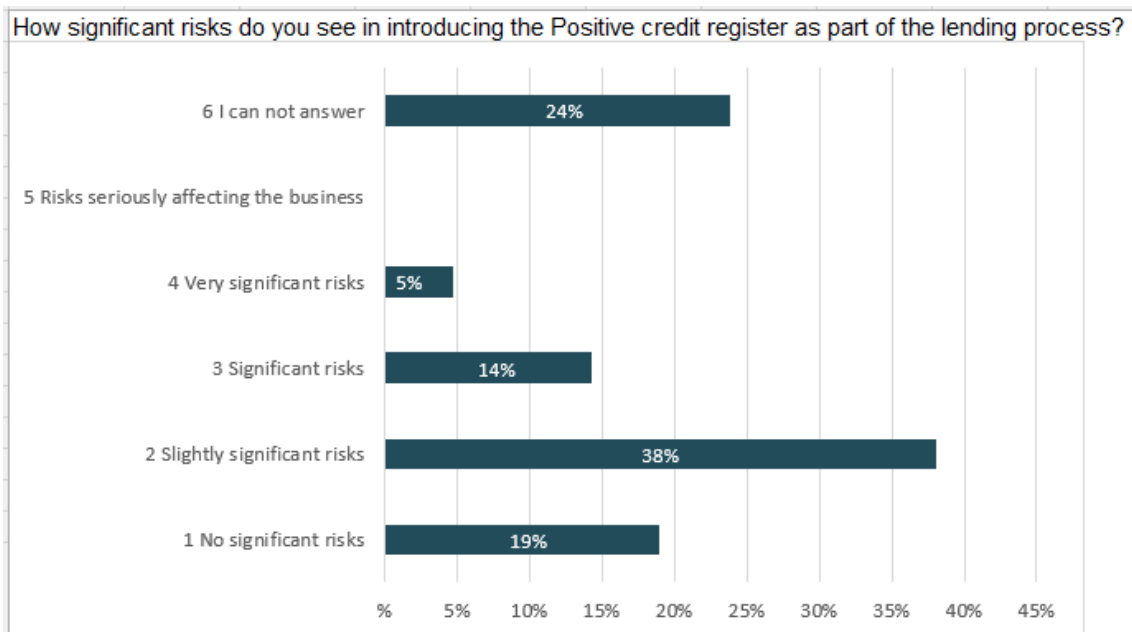How significant risks do you see in introducing the Positive credit register as part of the lending process?
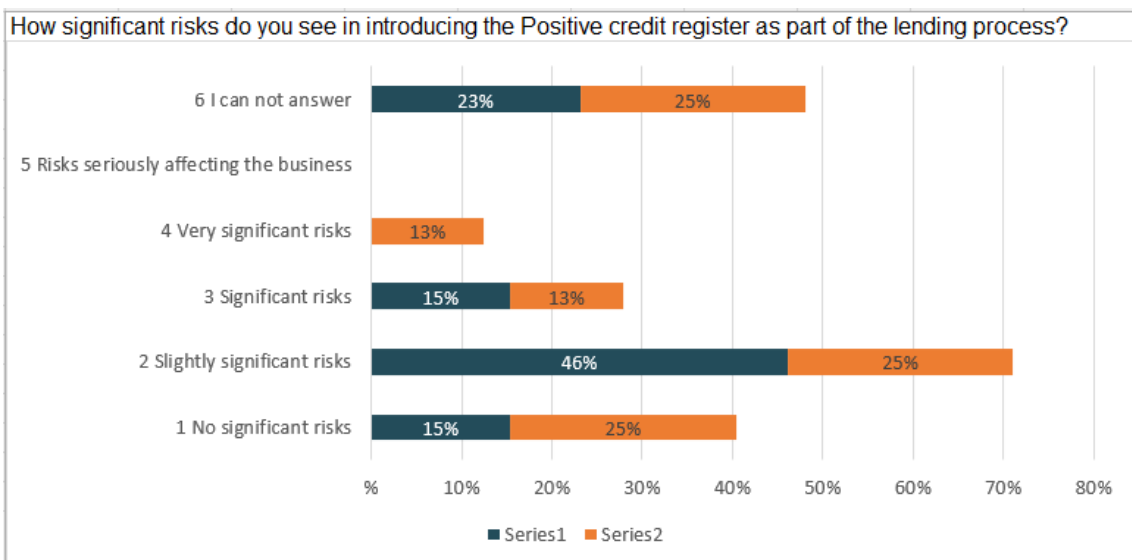
Figure 20. Survey results on a question of how significant risks respondents see in introducing the PCR as part of the lending process by comparing groups by the law that they are operating under

5   DISCUSSION

The research was conducted as a quantitative survey and the purpose was to gather responses from the lenders on a Finnish retail credit market, providing loans and credit for consumers. The target group of the respondents was contacted directly by The Income Register Unit of the Tax Administration by email, and they were reminded about the survey by two times. The target group consists of approximately 100 companies, providing loans and credit for consumers in the Finnish market. Getting responses to the survey was challenging and therefore the number of responses was limited. Altogether, there were 21 respondents who answered to survey. This research only covers consumer credit granting and therefore the survey and results exclude the corporate part. Most of the previous research on this field also covers the corporate borrowers or are only focusing on those. It is also important to state, that this research and the survey as a part of it, has been done proactively about the PCR that will be used in the future, and therefore the results and replies from the respondents are based on their expertise and expectations.

Based on the background information questions, it can be stated that the respondents are a quite diverse group of lenders providing products for consumers. Most of the respondents are a supervised entities referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1, a branch in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 by 62% and the rest 38% are credit providers or credit intermediaries according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016).

When measuring the size of the respondents by the balance sheet total, most of the respondents are considerably big; 60% of the respondents' balance sheet total is over 500 million euros. It can also be stated that – as it can be expected – the most offered products all together are loans and credits that are not covered by collateral. This is not surprising, due to the fact that all the lenders who offer secured loans are also offering unsecured loans but not vice versa.

What comes to the lending process itself, there are parts of the process that the upcoming register is affecting, but also parts that the respondents see as unchanged in the future. When comparing the results of the question what sources of data the respondents are using now and, in the future, it seems the upcoming register is not affecting the process. However, 67% of the respondents agrees that they will change the current sources of information when the PCR is in production. It is reasonable to note, that the new law requires lenders to use PCR as a part of their processes in the future. Therefore, the question regarding the sources of information was worded as following: "*The law requires credit providers in the future to check the credit applicant's information from the Positive credit register. Will you change the current sources of information when the Positive credit register is in pro-*

duction". This was done to point out that it is asked if the respondents are changing their current sources of information and not if they are going to follow the law, but there is of course possibility that some of the respondents have not understood this correctly. 48% agrees that the information requested in the loan application will change and most of the respondents were from the group 2 by 62%.

One part, that the PCR is affecting, is the automated credit decision. The results shows that the number of automated credit decisions are rising due the PCR. The average for the question of how many percentage (%) of the final credit decisions are made with an automated system was 56% and 67% for the same question but then when the PCR is in use.

Also, as part of the process, lenders need to identify their customers. Today, most of it is done electronically. 38% of the respondents are identifying their customers before staring the loan application. All the respondents choosing that option were from the group 1.

62% of the respondents agrees that they are going to change their processes where only 14% are not going to do that. Most of the respondents that are going to change their processes were from group 2 and many from the 1 were not able to answer this question. The results show, the respondents are changing their processes in many ways. According to the answers by the respondents, they can reduce the documentation requested from customers and increase the automation of their processes and therefore to short their lead times. They also state that the process will be easier for their customers but at the same time they will receive better quality data for risk management purposes. A few of the respondents underlined that they would renew their system in a few years and after that the information obtained from the PCR will be even more efficiently utilized.

> *"The Positive credit register will affect to the entire end-to-end credit granting process and all the components and process steps used in it. Including applications, systems that support credit risk analysis, to ensure the final credit decision (incl. manual decision and customer communication) and dataflow monitoring and reporting capability" – A respondent*

The above reply to the open question shows, how comprehensively the PCR affects the entire credit granting and lending process. This is important to understand also in the light of the findings from Liberti et al. (2022) where they stated that lenders' business models and the information structure of credit markets are crucial to understanding information sharing technology adoption.

For the pricing and costs, the standard deviation of the loan margins was used to measure the effect of the PCR to the pricing. Most of the respondents were not able to answer this question which indicates that there is still a lot of uncertainty related to the PCR and its effects on loan process. Still, 29% of the respondents agreed that the register has no effect to the standard deviation of the loan margins and 19% agreed that it will increase in some extent, which is in line with the previous research by Pagano et al. (2002). Their results showed, that

when introducing credit register the pricing gets more accurate, meaning that the creditworthy customers may be able to get lower interest rate and the riskier customers higher rates. It can be concluded that the effect of the PCR to the pricing is considerably small or close to none.

What comes to the costs, according to the results it seems that the PCR is slightly increasing the costs, for the next four years, but also after the four years. Only personnel costs are slightly decreasing. Systems costs over the next four years are standing out by 29% agreeing that those will increase a lot. According to Liberti et al. (2022), the research found that the register promotes competition which means that the registers have some effect to either pricing or cost or both.

To measure the evaluation of creditworthiness, the total amount of expected credit losses was used. The results shows that the PCR will decrease the total amount of expected credit losses. It can be concluded that the register will improve the evaluation of creditworthiness. This is also in line with the previous research (Pagano et al. 2002), which shows that credit register makes the assessment of creditworthiness more accurate.

Last, the respondents see slightly significant risks when introducing the PCR as part of their lending processes. This is also somehow inconsistent with previous research results, tough it is understandable that the respondents see more risks just at the threshold of this change which the introduction of the PCR brings. Where the previous studies (Pagano et al. 2002) shows that both pricing of the loan products and the evaluation of creditworthiness become more precise and accurate due to credit registers, this also reduces the risk associated with granting credit, which, however, is one of the biggest risks in this industry. What comes to evaluation of the risks it is needed to state that the research by Ruggeri et al. (2018) underlines that in the bank lending process the risk can be assessed differently among different actors in the organization. It can be concluded that the risks seen by the individuals who responded the survey can be very different compared to someone other in the same organization but in a different role.

6   CONCLUSION

This thesis examined how the PCR affects the lending process of the lenders who are operating in the Finnish retail credit market. The research covered lenders who are providing loans and credit for consumers. The Income Register Unit of the Tax Administration acts as the developer and administrator of the register and this study is conducted in a collaboration with them. The upcoming register will have many impacts on lenders who operate on the Finnish retail credit market. Already at the beginning of the study, it was clear that the group of respondents, the products they offer, laws they are regulated by and their processes are diverse and complex (Ministry of Justice; 2021 & Raijas; 2019). This research focused on the lenders point of view on the lending process and on the three following aspects of it: evaluation of the creditworthiness, pricing and costs. As this thesis focused on the Finnish market, the questions as well the results of this survey were analysed from local perspective. All the respondents are offering products in the Finnish market.

The theoretical framework of this study was based on existing scientific literature. The theory behind most of the previous research is based on the theory of asymmetric information. Asymmetric information occurs when one party does not know enough about the other party to make accurate decisions on the market (Frederick Mishkin, 2019). What comes to the lending process itself, there is no previous research made exactly on this topic and therefore the literature review of this thesis is mostly about the topic in general and connected to credit registers and asymmetric information overall.

As it was expected, the results of this thesis show that the upcoming PCR will affect the lending processes of the lenders in the Finnish retail credit market and that the affects vary between different type of lenders. Most of the previous research from this topic were in line with the results.

Even in this complex group of respondents, most of the results were fairly consistent. Overall, it seems that although the lenders see costs and some risks in the PCR, most of them are optimistic and see lot of potential to upgrade their lending processes and systems in connection with this change. This is in line with the previous research (Pagano et al. 1993) where it was concluded that credit registers have both benefits and costs for the lenders. The benefit is that the lenders have more accurate information about the borrowers but at the same time, the cost is the loss of the lender's informational advantage relative to its competitors

Regarding the results in terms of pricing, costs and evaluation of creditworthiness there were also some previous research done (Pagano et al. 2002; Liberti et al. 2022). The results were in line with these previous studies, but not as strongly as might have been expected. However, it is important to note, the

individuals who answered the survey are specifically experts related to the technical process of lending and thus may not have been the best possible people to answer questions related pricing and evaluation of creditworthiness.

There are many possible future research topics in this area that would be intriguing. First, as this thesis has been done proactively about the PCR that will be used in the future and the expectations regarding it, it would be interesting to know how the respondents' expectations have been fulfilled when the PCR has already been in use. Second, since in 2026, information on loans granted to natural persons for business activities will also be added to the register and because there are already a lot more research about this topic including the corporate borrowers, it would be fascinating to conduct same type of study for this group of lenders as well. Third, the results of this research would be interesting to compare with some other countries which has similar type of credit registers already in use.

REFERENCES

Ali, A. I., & Smith, D. T., 2019. Blockchain and mortgage lending process: A study of people, process, and technology involved. Online Journal of Applied Knowledge Management. Vol 7, No. 1. 53-66.

Akerlof, G.A. 1970. The Market for "Lemons": Quality Uncertainty and the Market Mechanism. The Quarterly Journal of Economics, Vol. 84, No. 3, 488-500

Allen, F. 1990. The Market for Information and the Origin of Financial Intermediation. Journal of Financial Intermediation 1, 3-30

Altman, E. 1980. Commercial Bank Lending: Process, Credit Scoring, and Costs of Errors in Lending. The Journal of Financial and Quantitative Analysis, Vol. 15, No. 4, 813-832

Bank of Finland. 2022. https://www.suomenpankki.fi/fi/Tilastot/korot/kuviot/korot_kuviot/euriborkorot_pv_chrt_fi/Referred 26.10.2022.

Bank of Finland. 2022. https://www.suomenpankki.fi/fi/Tilastot/rahalaitosten-tase-lainat-ja-talletukset-ja-korot/rahalaitoslista/ Referred 26.10.2022

Brealey, R., Leland, H. E., & Pyle, D. H. 1977. Informational Asymmetries, Financial Structure and Financial Intermediation, the Journal of Finance, Vol 32, No. 2, 371-387

Brown, M., & Zehnder, C. 2010. The emergence of information sharing in credit markets. J. Finan. Intermediation, Vol. 19, No. 2, 255–278

Cheng, X., & Degryse, H. 2010. Information Sharing and Credit Rationing: Evidence from the Introduction of a Public Credit Registry. European Banking Center Discussion Paper No. 2010-34S

Consumers' Union of Finland. 2022. https://www.kuluttajaliitto.fi/materiaalit/maksuhairiomerkinta/. Referred 5.8.2022

Euribor rates.eu. 2023. https://www.euribor-rates.eu/en/euribor-rates-by-year/2022/ Referred on 22.6.2023

Finnish Competition and Consumer Authority. 2022. https://www.kkv.fi/en/consumer-affairs/debt-collection-and-payment-arrangements/payment-default-entry/. Referred 5.8.2022

Freixas, X., & Rochet.J-C. 2008. Microeconomics of Banking, The MIT Press, 30

Greenbaum. S.I., Thakor. A.V., & Boot. A.W.A. 2019. Contemporary Financial Intermediation, Academic Press, 10, MIT Press

Hertzberg, A., Liberti, J. M., & Paravisini, D. 2011. Public Information and Coordination: Evidence from a Credit Registry Expansion, The Journal of Finance, Vol 66, No. 2, 379-412

Ioannidou, V., Pavanini, N., & Peng, Y. 2022. Collateral and asymmetric information in lending markets. Journal of Financial Economics, Vol 144, 93–121.

Liberti, J., Sturgess, J., & Sutherland, A. 2022. How voluntary information sharing systems form: Evidence from a U.S. commercial credit bureau. Journal of Financial Economics, Vol 145, 827–849

Love, I., & Mylenko, N. 2003. Credit Reporting and Financing Constraints. World Bank Policy Research Working Paper 3142

Ministry of Justice. Kontkanen, E., & Lång, J. 2018. Selvitys positiivisia luottotietoja koskevan järjestelmän edellytyksistä

Ministry of Justice. Mäkelä, L. 2021. Positiivistaluottotietorekisteriä koskeva lainsäädäntö – Työryhmän mietintö, 6

Mishkin, F.S. 2019. The economics of money, banking and financial markets, Pearson, 86-87

OECD. 2010. Discussion Paper on Credit Information Sharing

Pagano, M., & Jappelli, T. 1993. Information sharing in credit markets, Journal of Finance, 48(5): 1693-1718

Pagano, M., & Jappelli, T. 2000. Information Sharing in Credit Markets:

The European Experience, Centre for Studies in Economics and Finance, Working Paper no. 35

Pagano, M., & Jappelli, T. 2002. Information sharing, lending and defaults:

Cross-country evidence. Journal of Banking & Finance, Vol. 26, 2017-2045

Raijas, A. 2019. Pikavippimarkkinoiden kehitys ja sääntely Suomessa, Kansantaloudellinen aikakauskirja 115(4): 620-637

Ruggeri, D., & Rizza, C. 2018. The Bank Lending Process: Accounting Information Role in Constructing Realities or Illusions. International Journal of Business and Management, Vol. 13, no. 2, 53-64

Rothschild, M., & Stiglitz, J. 1976. Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information. The Quarterly Journal of Economics, Vol 90, No. 4, 629-649

Statistics Finland. 2021. https://www.stat.fi/til/velk/2020/velk_2020_2021-12-17_tie_002_en.html. Referred 12.2.2022

Stiglitz, J. E., & Weiss, A. 1981. Credit Rationing in Markets with Imperfect Information, American Economic Review, Vol. 71, no. 3, 393-410

Vero. 2021. https://www.vero.fi/positiivinenluottotietorekisteri/tietoa-positiivisesta-luottotietorekisterista/ Referred on 28.6.2023

Watson, R. 2015. Quantitative research. Nursing Standard (2015), Vol 29 No. 31, 44.

World Bank. 2019. Credit Reporting Knowledge Guide 2019. World Bank, Washington, DC.

APPENDIX 1: Questionnaire

Survey on the effects of the Positive credit register on the lending process

This survey is conducted as part of a Master's thesis, which examines the effect of the Positive credit register on the lending process regarding consumer loans from the point of view of creditors. The study is carried out in cooperation with the Incomes Register Unit of the Tax Administration, which implements and maintains the register.

The Positive credit register is a new information register, which gathers information about Finnish individuals' credits and income. When an individual applies for a loan, the lender has the obligation to check the creditworthiness of the loan applicant. In the future, the creditor will have the obligation to request a credit register extract from the Positive credit register for this purpose. The extract contains up-to-date information about the credit applicant's credits entered in the register and their income.

The law regarding the Positive credit register entered into force on August 1st, 2022. In the spring of 2024, the register will include consumer loans, and in the spring of 2026, the register will include loans granted to natural persons for business activities.

All the questions are related to consumer credits and lending processes for loans granted to consumers. The survey is anonymous and does not collect any personal data. All responses will be treated confidentially. It is hoped that all questions will be answered. The response time is approximately 15 minutes.

Researcher's contact details:

Petra Valtonen
Student, MSc in Banking and International Finance
petra.ik.valtonen@student.jyu.fi
University of Jyväskylä

Juha-Pekka Junttila
Thesis supervisor, professor
juha-pekka.j-p.junttila@jyu.fi
University of Jyväskylä

Anniina Korhonen
Quality and risk manager
anniina.korhonen@vero.fi
Income Registration Unit of the Tax Administration

1. Before responding the survey, please read the Research Notification (only in Finnish) using the link below

◯ I agree to Research Notification

https://link.webropolsurveys.com/S/5A5FBA8F7FDB4308

Background information

2. Which of the following operators are you?

○ A supervised entity referred to in the Act on Financial Supervisory Authority (878/2008) section 4§, subsection 1, a branch in Finland of a foreign EEA supervised entity referred to in section 4§, subsection 5 or a foreign supervised entity that offers services in Finland without establishing a branch

○ A credit provider or credit intermediary according to the Act on the Registration of Certain Credit Providers and Credit Intermediaries (853/2016)

3. The balance sheet total of the organization in 2021 was

○ Less than 500 000 €

○ 500 000 - 999 999 €

○ 1 000 000 - 199 999 999 €

○ 200 000 000 - 500 000 000 €

○ Over 500 000 000 €

4. Which of the following products do you offer to consumers?

☐ Home loans

☐ Secured loan where the house/apartment is collateral

☐ Other secured loans

☐ Unsecured loans

☐ Credit cards/credit accounts

☐ Installment payments

☐ Leases (long-term rental of fixed assets)

The process of granting credit

5. What sources of data do you use to assess the creditworthiness of loan applicant?

☐ Credit reporting companies

☐ Loan application

☐ Loan negotiation, discussion with the customer

☐ Documents requested from the applicant

☐ Own systems, already existing information about the applicant

☐ Something else, what? _____

6. In the future, what sources of information will you use in addition to the Positive credit register to assess creditworthiness?

☐ Credit reporting companies

☐ Loan application

☐ Loan negotiation, discussion with the customer

☐ Documents requested from the applicant

☐ Own systems, already existing information about the applicant

☐ Something else, what? _____

7. The law requires credit providers in the future to check the credit applicant's information from the Positive credit register. Will you change the current sources of information when the Positive credit register is in production?

○ Yes

○ No

○ I can not answer

8. Will the information requested from the customer in the loan application change when the Positive credit register is in use?

○ Yes

○ No

○ I can not answer

○ We do not use loan application

9. Strong identification refers to identity verification electronically. At what stage in the loan application process do you identify the loan applicant?

○ Before starting the loan application

○ At the stage of sending the loan application

○ In the loan application processing stage, before information has been retrieved from external sources

○ During the loan application processing stage, after information has been retrieved from external sources

○ During the loan approval stage

○ Other stage, which?   _____

10. Automated credit decision refers to a system that, based on the information of the credit applicant, makes the decision of the final credit grant automatically.

How many percentage (%) of the final credit decisions are made with an automated system?

11. In the future, when using the Positive credit register, how many percentage (%) of the final credit decisions are made with an automated system?

12. As part of the credit granting process, the credit provider must assess the creditworthiness and repayment ability of the credit applicant. Expected credit losses refer to the lender's estimate of the amount of the loan that borrowers may not pay.

	1 Increases a lot	2 Increases to some extent	3 No effect	4 Decreases to some extent	5 Decreases a lot	6 I can not answer
Will the positive credit register affect to the total amount of expected credit losses?	○	○	○	○	○	○

13. When introducing and adapting the Positive credit register, are you changing the processes related to applying for a loan and granting credit?

○ Yes

○ No

○ I can not answer

If you answered "Yes" to the previous question, how are you changing the processes?

_____
_____
_____
_____
_____

Pricing & Costs

14. As a part of the lending process, the credit provider prices the credit product individually. Standard deviation of the loan margins refers to the variation of margins from the average margin.

	1 Increases a lot	2 Increases to some extent	3 No effect	4 Decreases to some extent	5 Decreases a lot	6 I can not answer
Will the positive credit register affect to the standard deviation of the loan margins?	○	○	○	○	○	○

15. The introduction of the Positive credit register incurs costs for the lender. In addition to these actual implementation costs, will this change affect to...

	1 Increases a lot	2 Increases to some extent	3 No effect	4 Decreases to some extent	5 Decreases a lot	6 I can not answer
personnel costs over the next four years	○	○	○	○	○	○
personnel costs after four years	○	○	○	○	○	○
system costs over the next four years	○	○	○	○	○	○
system costs after four years	○	○	○	○	○	○
other expenses over the next four years, what expenses? _____	○	○	○	○	○	○
other expenses after four years, what expenses? _____	○	○	○	○	○	○

Risks

16. How significant risks do you see in introducing the Positive credit register as part of the lending process?

	1 No significant risks	2 Slightly significant risks	3 Significant risks	4 Very significant risks	5 Risks seriously affecting the business	6 I can not answer
.	○	○	○	○	○	○