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BORROWING ALTERNATIVES FOR HOUSEHOLDS IN LITHUANIA: CURRENT SITUATION, TRENDS AND CHALLENGES

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Abstract. *Purpose* – to analyse the main borrowing alternatives available to Lithuanian households and the credit market as a whole, focusing on its peer-to-peer (P2P) segment, the forecast of its growth, and possible challenges.

Research methodology – the research methods applied were scientific literature analysis, statistical data analysis, comparative analysis, correlation-regression analysis, linear trend forecasting method.

Findings – the prevailing borrowing alternative for Lithuanian households still remain bank credits. Besides, borrowing from P2P market is becoming more and more popular. Although the macroeconomic environment for all the credit market segments is the same, the P2P segment is developing significantly faster. If this trend remains unchanged, the whole credit market is likely to face challenges, such as the growth of overdue loans, insolvent customers, the rising share of non-performing-loans (NPL), etc., that may affect its overall stability.

Research limitations – the empirical study relies on the country's macroeconomic indicators that influence household borrowing. Such factors as borrower's age, income level, marital status and others were not taken into account in this study. The forecast of the P2P segment growth of the consumer credit market and comparison with its banking segment is based on the analysis of 4 years of real monthly statistics for both segments.

Practical implications – the performed analysis and its results can be useful for the future research within the household borrowing trends, especially in Peer-to-Peer platforms, and specifically for the Central Bank, the Ministry of Finance and other institutions that regulate the credit market, as it provides information on modern borrowing trends and the challenges it might bring. Also, for P2P platforms themselves, planning and further developing their activities and adjusting lending conditions with the aim to attract higher-quality customers.

Originality/Value – household borrowing, the credit market and the P2P platforms are widely analysed by both academics and financial institutions, such as central banks. However, it is mainly limited to the analysis of statistical data and does not pay attention to possible market development issues. This study focuses on the analysis of the growth trends of the P2P market and the potential challenges that may arise thereafter.

Keywords: household borrowing, modern borrowing trends, credit market, commercial banks, P2P segment, overdue loans, non-performing loans.

JEL Classification: D10, D53, G17, G21, C12, C15, C32.

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Introduction

Household needs are unlimited, as opposed to their financial capacity to meet them, so households often lack money. Therefore, households tend to borrow. Many papers and researches have been analysing the household borrowing process: what are households as credit receivers, why do they borrow, what are the borrowing purposes and opportunities, how changes of interest rate might influence households borrowing process, etc. (Dorfleitner et al., 2021; Cloyne et al., 2020; Oh et al., 2020; Loukoianova et al., 2019; Gilchrist & Mojon, 2018; Faia & Paiella, 2017; Fuster & Willen, 2017; Zabai, 2017).

Not only researchers analyse household borrowing, but also international organisations investigate related topics as well (OECD, 2021; European Central Bank, 2021a, 2021b; The World Bank, 2021; Federal Reserve Bank, 2021; Federal Reserve Bank of New York, 2021; UK Parliament, 2021; Bloomberg, 2021; International Monetary Fund, 2019, etc.).

The financial services market is nowadays becoming very dynamic due to newly emerged IT technologies and technology-based innovative business ideas, which among other services offer new borrowing possibilities. As a result, households can borrow not only from traditional financial institutions, like commercial banks, but also from such fast-growing alternative sources as Peer-to-Peer (P2P) platforms. Foo et al. (2017) described Peer-to-peer (P2P) lending as a fast-growing financial technology (FinTech) trend that can displace traditional retail banking. This issue is being analysed by other scientists as well (Lenz, 2016; Navaretti et al., 2018a). However, some researches, as de Roure et al. (2018); Tang (2019) claim that P2P platforms serve a low-quality borrower segment that is underserved by banks and is a risky business model.

FinTech based P2P credit market has grown rapidly around the world in recent years, but its size still varies greatly across economies. Differences reflect economic development and financial market structure: the higher the country's income and less competitive its banking system, the larger is FinTech credit activity (Claessens et al., 2018). Demirgüç-Kunt et al. (2017) claim that P2P market growth depends on a country's economic growth, its level of economic and financial development, and the quality of its legal and other institutions. Feginn et al. (2019) empirically found a negative relationship between the economies macroeconomic condition and the default rate on P2P loans. These findings show that P2P lending does not appear to be less risky in the future.

The future development perspectives of the P2P platforms are thus the subject of many researches as well. Interesting that development forecasts vary widely depending on the author. Valuates Reports (2020) foresees growth of volume to ~0.5 tn $ by 2027, while expectations in Robocash (2019) are that the aggregate volume should reach $0.9 tn by 2024. Notable that the capitalisation of world banking was ranging from $7 to 8 tn over the past 3–4 years demonstrating relative stability of the sector, which may mean a kind of "standstill" before a possible reversal of the trend line". They note that given the active development of alternative lending, there will hardly be a rapid rise.

Deficiency of researches with the latest data on loan volumes in the Peer-to-Peer platforms (P2P) and its dependency of macroeconomic indicators, is noticeable, especially in Lithuania, as there is not much research done in this area. The Central Bank of Lithuania

(2021c) collects statistical data on the P2P market in the country. However, there is a lack of scientific papers analysing the future development of the credit market and the correlation of the volume of loans issued to households by mutual borrowing platforms (P2Ps) operating in Lithuania, with the main country's macroeconomic indicators such as GDP, wages and unemployment rate. Besides, it would be relevant to compare Peer-to-Peer platform indicators with the ones in commercial banks and to forecast P2P market future development. The requirements to financial soundness of households applied by the P2P platforms appears to be less stringent than in commercial banks, therefore it might be that Peer-to-Peer platforms are issuing loans to financially vulnerable households. Detailed analysis of statistics on non-performing loans and the latest trends would provide an opportunity to better perceive the situation, however information on this subject is currently very limited.

Therefore, the purpose of this research is to analyse the main borrowing alternatives available to Lithuanian households and the credit market as a whole with a focus on its peer-to-peer (P2P) segment, the forecast of its growth trends, and possible challenges.

Methods applied in the research comprise analysis of scientific literature and statistical data, comparative and correlation-regression analysis and linear trend forecasting method. The latest information submitted by the creditors as well as the statistical data for the period of years 2016–2020 was used for the analysis and performed statistical calculations.

The performed analysis could be useful for future research within the household borrowing trends in Peer-to-Peer platforms, and specifically for the Central Bank, the Ministry of Finance and other financial institutions that regulate the credit market, as the results of the research provide information on the latest borrowing trends and the challenges it might bring. Also, for P2P platforms themselves, planning and further developing their activities and adjusting lending conditions to attract higher-quality customers.

1. Review of related scientific investigations on household borrowing and the main borrowing alternatives

Household (HH) borrowing process is examined in numerous of scientific papers. Lusardi (2008) analysed the importance of teaching financial literacy from an early age and its relationship with personal finance management habits in the future. Lusardi and Mitchell (2014) examined the impact of HH financial literacy on economic decision-making in the United States and other countries and its connection with borrowing process. Angelucci et al. (2015) has analysed why, how much and how people borrow and has evaluated the efficiency of choices according to the debt terms, etc. Situation in Lithuania has been analysed by Alisauskaite-Seskiene et al. (2015). The authors examined, what factors influence households to borrow from financial institutions such as commercial banks. Murauskas and Kregždė (2015) analysed which factors influence the size of the interest rate that is offered for households. Fuster and Willen (2017) researched how current low interest rates affect the level of households borrowing in financial institutions. Zabai (2017) has pointed out that household borrowing has direct impact on country's financial system and its stability: "The way in which household indebtedness affects the sensitivity of aggregate expenditure matters for both macroeconomic and financial stability. Financial institutions can suffer balance

sheet distress from both direct and indirect exposure to the household sector." Gilchrist and Mojon (2018) analysed how commercial banks had to tighten credit rating criteria after the 2008 crisis and how this affected household financial condition. Cloyne et al. (2020) analysed how households respond to changing interest rates.

Some researchers point to the growing trend of household indebtedness. Almenberg et al. (2020) has found that household indebtedness is high in many countries, and continues to rise. People, who feel comfortable with debts, have more of them. Their parents were comfortable with debt as well. Son and Park (2019) have presented the research about the issues of household debt sustainability in South Korea and noted that according to various macroeconomic scenarios, "the ratios of vulnerable households over total indebted households, which has been growing since 2012, will likely expand".

Federal Reserve Bank of New York (2021) notes that "according to the latest Quarterly Report on Household Debt and Credit, total household debt rose by $313 billion (2.1%) to reach $14.96 trillion in the second quarter of 2021. Mortgage balances – the largest component of household debt – rose by $282 billion and auto loans increased by $33 billion". In Lithuania, the credit market situation is quite similar. According to the Central Bank of Lithuania (2021b), despite the fact that loans for HH with a term less than 1 year has declined by 13% (from 318 million EUR 2020 Q1 to 279 million EUR 2020 Q4), but there is a clear 7% growth in loans for HH with a term more than 1 year (from 10964 million EUR 2020 Q1 to 11742 million EUR 2020 Q4).

Nowadays households have many alternatives from where to borrow. These can be not only commercial banks, but also credit unions, peer-to-peer (P2P) platforms, etc. The latest incarnation of information technology has led to a "FinTech revolution" where banks face new competitors with different – more specialised – business models forcing a disaggregation of the value chain. With technology-driven solutions they offer alternatives to key banking services including payments and lending (Boot, 2017).

Peer-to-peer (P2P) lending, which matches borrowers and lenders directly without reliance on deposits and eliminates an intermediating bank, has gained traction in recent years in both Europe and the U.S (de Roure et al., 2018). FinTech start-ups "are nimble piranhas, each focusing on a small part of a bank's business model to attack" (Financial Times, 2015). FinTechs, such as P2P platforms, in reality provide the same services as banks, but possibly more efficiently because of technologies, and in a different and unbundled way. Yet, differently from banks, the information they use is based on big data not on long term relationships; access to services is only decentralised through internet platforms; risk and maturity transformation is not carried out; lenders and borrowers or investors and investment opportunities are matched directly without the intervention of bankers (Navaretti et al., 2018b).

Recently a number of studies has emerged, which compare commercial banks with P2P platforms and admit an increasing competition between them in the area of settlement and consumer loans. de Roure et al. (2017) examined, whether P2P loans to HHs can replace consumer loans provided by commercial banks, Faia and Paiella (2017) analysed how increased management risk of commercial banks affects the lending volumes of P2P platforms. Zeng et al. (2017) analysed the borrowing process on P2P platforms. Ding et al. (2018), Dorfleitner et al. (2021) analysed how credit recipients are evaluated on P2P platforms. Navaretti et al. (2018b) claim that "FinTechs enhance competition in financial markets, provide services that

traditional financial institutions do less efficiently or do not do at all, and widen the pool of users of such services. But they will not replace banks in most of their key functions. In most cases, FinTechs provide a more efficient way to do the same old things". This idea is also confirmed by other authors Yeo and Jun (2020), who claim that "P2P lending platforms operate in the low-credit segment and banks' involvement in P2P lending is restricted – so that the growth of P2P lending is not adverse for bank stability".

Some researches state that P2P loans are riskier than bank loans and less profitable. de Roure et al. (2018) investigated the consumer credit market in Germany and proved that "when banks are faced with higher regulatory costs, the riskiest bank loans will migrate to P2P lenders first, causing both a decline in average risk in bank lending as well as a decline in overall bank lending, and that this happens more when the unaffected banks in the region are not financially strong, and consumers are more aware of P2P lending". Tang (2019) claim that P2P platforms complement banks by addressing a low-quality borrower segment underserved by banks. "In that case, the borrower pool of P2P platforms is of worse quality than banks. Upon the shock to bank credit supply, the borrowers switching from banks to P2P platforms will improve the quality of the P2P borrower pool. As a result, the average P2P borrower quality will increase, and the quantiles of the distribution of P2P borrower quality shift right". Wright and Feng (2020) highlight that "Economic fallout from the COVID-19 outbreak now threatens to intensify the financial risks arising from the increase in household borrowing, with implications for financial stability, consumption growth, and the broader economy".

Therefore, it might happen that Peer-to-Peer platforms are issuing loans to financially vulnerable households. Analysts, such as de Roure et al. (2018) remark that "P2P lending is substituting the banking sector for high-risk consumer loans since banks are unwilling or unable to supply this slice of the market", also claim that "P2P lending increases and total bank lending declines when some banks face higher regulatory costs. Besides, P2P borrowers are riskier and less profitable than bank borrowers".

There are many studies conducted in the field of Peer-to-Peer lending in different countries: Ding et al. (2021) reviewed the rise of Peer-to-Peer (P2P) in China and the prospects for its future, Kurniasari and Utomo (2021) analysed Peer-to-Peer lending growth in Indonesia in line with the advanced of digital technology, Siemionek-Ruskań and Fanea-Ivanovici (2021) portrayed evolution, trends in P2P lending and legislation in Europe, Chishti (2016) analysed P2P sector growth in Great Britain. Vives (2018) proved that P2P lending is growing fast in the United States, China, United Kingdom, Germany, France and other countries. Papoušková and Hajek (2020) argue that P2P lending platforms are one of the fastest growing segments in finance industry.

Compared to many other countries, the household borrowing field in Lithuania seems to be under researched and obviously needs to be paid more attention.

The growth rate of P2P segment can serve as an indicator of specific qualitative changes in the lending market and as a tool for forecasting. Consequently, analysis of P2P segment and non-performing loan indicator would provide an opportunity to analyse the current situation and to forecast the future development and challenges of this segment.

Thus, in this study an attempt was made to investigate the dynamics of the development of credit market and what challenges these trends may bring in the future.

2. Current situation and trends in the Lithuanian credit market

2.1. Overview of the credit market

In Lithuania, households can borrow from commercial banks, credit unions, P2P platforms and other financial institutions. According to the Central Bank of Lithuania (2021a), assets of financial corporations engaged in lending activities is growing and comparison of years 2016 and 2020, indicates the growth rate of 49%. The total volume of loans is also increasing significantly (Figure 1). During the period 2016–2020, it has increased by 46%. In particular, the share of loans granted to households grew even faster. In 2020, compared to 2016, it has increased by as much as 91%. Remarkably rapid growth was registered in 2019, where the increase has reached 33%. The onset of the coronavirus pandemic somewhat corrected the rapid growth. The increase in 2020 went down to 6% compared to 2019. Thus, it can be reasonably stated that the volume of loans issued to households is still growing, but the growth rate is no longer as sharp and high as it was in previous years. The total household loan volume expressed in EUR in 2019 made 2.25 billion and has increased to 2.39 billion in 2020.

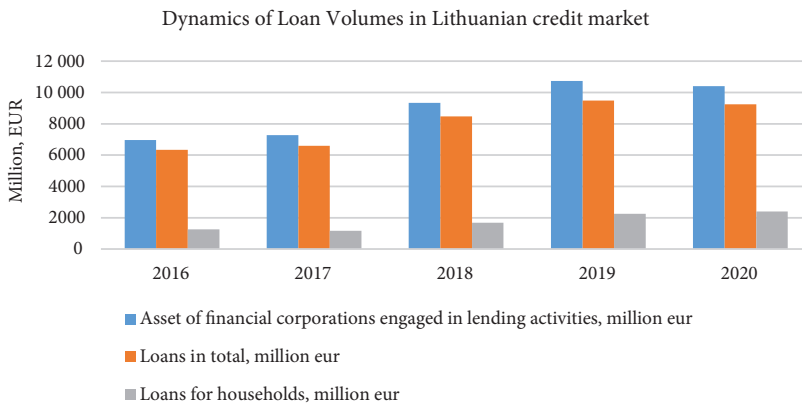Dynamics of Loan Volumes in Lithuanian credit market

Figure 1. Dynamics of the total loan volume in Lithuanian credit market 2016–2020
(created by authors, according to the Central Bank of Lithuania, 2021b)

On the other hand, if we analyse the loan dynamics by quarters, we see that the volume in the first quarter of 2021 is 19% higher than in the same quarter of 2020 (Figure 2).
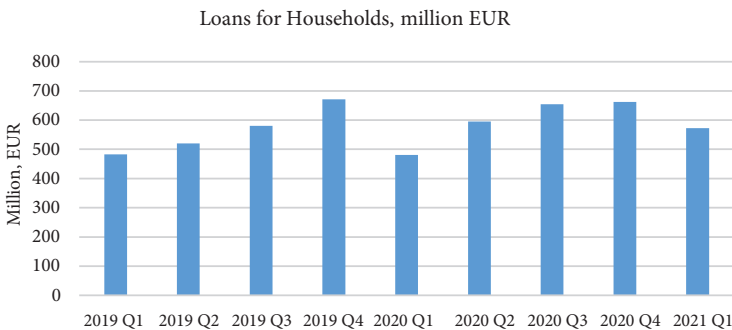
Loans for Households, million EUR

Figure 2. Dynamics of loans for households 2019–2021
(created by authors, according to the Central Bank of Lithuania, 2021a)

According to the Banking Review of the Central bank of Lithuania (2021b), the total assets of the banking sector amount to 38.3 billion EUR, where 75.2% belong to 3 major banks – Swedbank (38.1%), AB SEB bankas (26.5%), AB Siauliu bankas (8.2%) and the rest 24.8% to branches of foreign banks and small local banks.
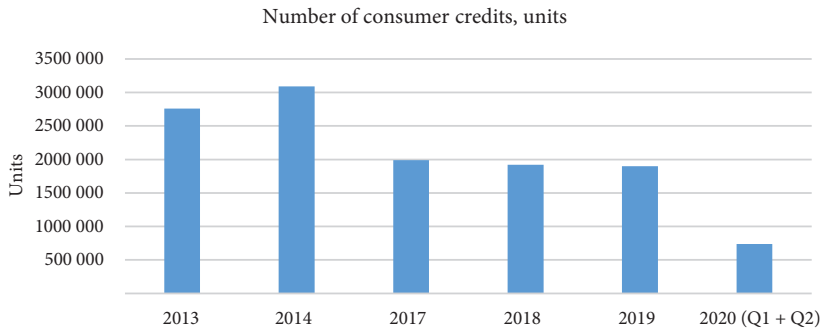

Figure 3. The number of consumer credits in 2013–2020
(created by authors, according to the Central Bank of Lithuania, 2021c)

The different situation is with consumer credits. Although, the total number according to statistics is decreasing, its volume, instead, is slightly growing. Figure 3 shows that the highest number of issued consumer credits was in 2014, but from 2017 it started to shrink. It has decreased by approx. 40% in 2019 compared to 2014.

Peer-to-Peer (P2P) segment of the consumer credit market. P2P segment represents a part of the consumer credit market. Mutual lending or P2P is a process that takes place on a platform where, through an information system, payments are made directly, without intermediaries, between those who have free funds and those who lack them (Hartmann et al., 2019). According to Zagunis (2018), a member of the Board of SEB bank, there is a modern tendency that HHs start borrowing for smaller expenses from modern institutions, such as mutual lending platforms, because the lending procedure is much faster compared to commercial banks.

According to the Central Bank of Lithuania (2019), 6 mutual lending platforms have been registered in Lithuania and have been granted the Central Bank of Lithuania's permission to operate as crowdfunding platform operators: UAB Bendrasis finansavimas or Savy (2014), AB Neo Finance or Paskolų Klubas (2014), UAB Finansų bite or FinBee (2016), UAB LSV Intergroup or Eurocredit (the year since the company officially started to operate as a P2P platform is not provided), UAB Oz Finance (2019), UAB Procentas (2019).

It is relevant to compare the registration period of P2P platforms in other countries as well. United Kingdom was the first country, which set up a system of mutual lending platforms and launched the first platform in 2005. Later, these institutions have been developed in other countries too. According to P2P Market Data (2021), P2P platform "Zopa" in the United Kingdom was registered in 2005; "Lending Club" in USA – 2006; "Finansinspektionen" in Sweden – 2007; "SocietyOne" in Australia – 2012; "Harmoney" in New Zeland – 2014; "Mintos" in Latvia – 2015; "WeLab" in China – 2016. It's worth noting that in Latvia, the first platform was registered even a year later than in Lithuania, but its Mintos platform

has been growing very fast and is now considered to be one of the largest lending platforms (P2P Market Data, 2021) on international scale.

The two longest operating P2P platforms in Lithuania are "Savy" and "Paskolų Klubas", therefore analysis in this study will be based on their data. Statistics show (the Central Bank of Lithuania, 2020) that the number of both borrowers and investors on Lithuanian P2P platforms is permanently growing, see Figure 4.
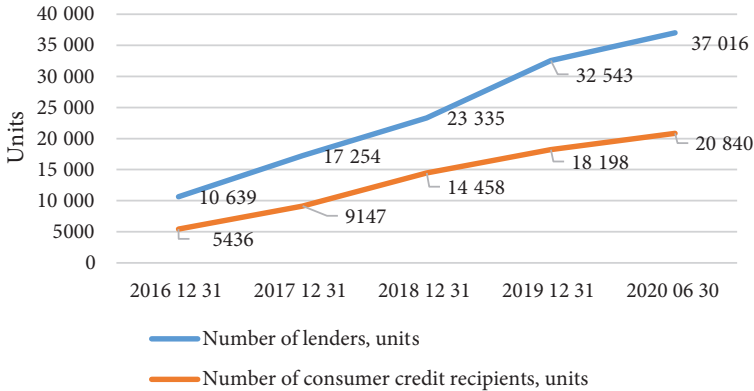

Figure 4. The popularity of P2P platforms in Lithuania (created by authors according to Tarasevičienė, 2019; the Central Bank of Lithuania, 2020)

Figure 4 shows that during the period from 2016 till 2020, both the number of lenders and the number of credit recipients in P2P platforms have increased 4–5 times, while the number of loans and volume (Figure 5) rose 2.5–3 times and 6–8 times respectively. So, it is clear that HHs are increasingly choosing P2P platforms as credit providers.
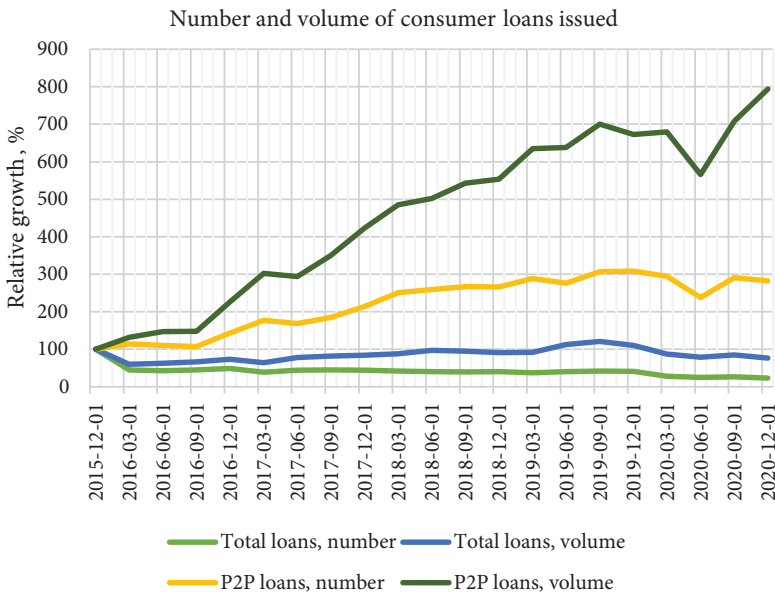

Figure 5. The growth of consumer loans in the whole credit market and P2P segment (created by authors, according to the Central Bank of Lithuania, 2021c)

It is obvious that the growth rate of P2P segment is much higher than the rest of the market, therefore the consequences of such a development need to be analysed in order to predict its possible impact specifically on the P2P segment and the whole consumer credit market as well. According to the Central Bank of Lithuania (2021c), in 2019 the volume of consumer loans issued to households made 520 million EUR, while loans in P2P platforms were 34 million EUR or approximately 6.5%. In 2020 under the influence of Covid-19 pandemic the situation has changed significantly – the share has increased from 6.5% to 9% (total volume has decreased to 390 mln EUR, while in P2P platforms increased to 35 mln EUR).

2.2. Issues with Borrowing in P2P Platforms

When analysing the P2P lending sector, the share of non-performing loans (NPL) should be used as a key indicator of the soundness of the borrowing process. European Central Bank (2020) describes that "a loan becomes non-performing when the bank considers that the borrower is unlikely to repay, or when the borrower is 90 days late on a payment". According to Hartmann et al. (2019), platforms such as P2P tend to provide credits to those HHs that commercial banks refuse to serve because their credit recipient's evaluation criteria is not met. Therefore, the consequences of such attitude of P2P's should be carefully analysed.

Figure 6 illustrates the trend of the NPL indicator in banks operating in Lithuania during years 2008–2020.
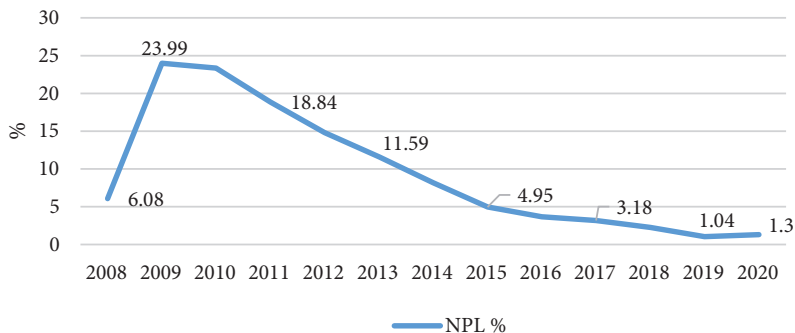

Figure 6. Dynamics of non-performing loans (NPL) in Lithuanian banking sector 2008–2020
(created by authors according to the World Bank, 2020a; CEIC Data, 2021)

Figure 6 shows that the level of NPL in Lithuania's banks market increased sharply during the crisis in 2008–2009. In 2009, the indicator reached 23.99%. However, after a gradual recovery of the economy, this indicator decreased and in 2020 reached only 1.3% (CEIC Data, 2021).

The level of non-performing loans in P2P sector is not included in Figure 6 since P2P platforms, which operate in Lithuania, do not share their NPL indicator.

Figure 7 presents a comparison of share of total overdue loans in P2P and banking segments of the consumer credit market indicating a permanent growth of overdue loans in the P2P segment contrary to its decrease in the whole credit market. Overdue loans include all the loans that are due to pay more than 30 days.
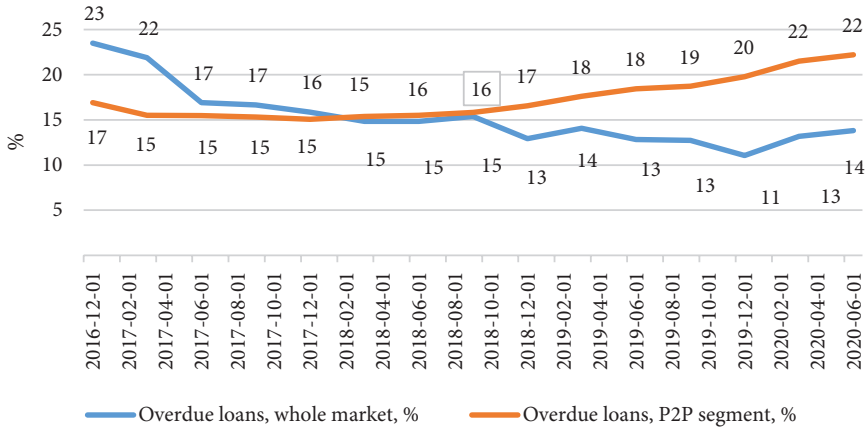
Figure 7. Overdue loans in P2P platforms and commercial banks, %
(created by authors according to the Central Bank of Lithuania, 2021c)

Figure 7 highlights that during the period 2016–2020 overdue loans ratio in the whole credit market has been shrinking, but the different situation is in P2P segment – this ratio from 2018 is increasing quite fast. It is obvious that in this segment the share of clients, who face financial problems and take the liabilities less responsibly, is higher than in the rest of the market. The share of households with vulnerable budgets is subject to the macroeconomic situation of the country. This was evidently demonstrated during the 2008-10 financial crisis. Figure 8 shows how the NPL level in % was changing in several countries, including Lithuania.
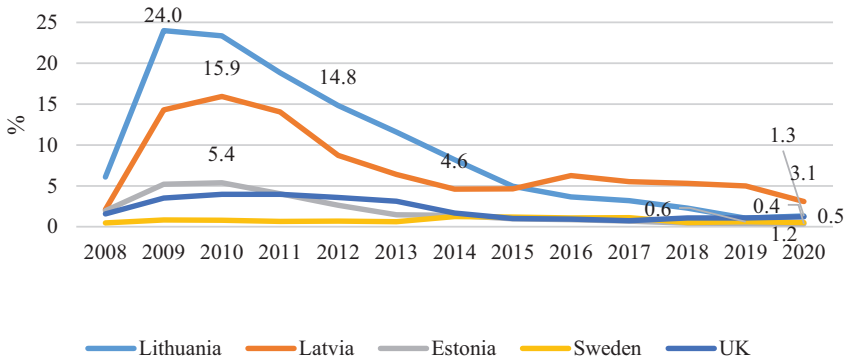

Figure 8. NPL in EU Countries % (created by authors according to the World Bank, 2020b)

A review of NPL trends in various countries shows that previous crisis had an impact on NPL's in almost all of them, although its range was quite different.

Given the current economic uncertainty because of Covid-19 pandemic, it is likely that the volume of borrowing by HHs may increase in all the market and especially in P2P platforms, where requirements for the borrowers seem to be less stringent than in commercial banks. Talking about available statistics, it has been observed that P2P platforms do not distinguish clearly the NPL rate as a separate indicator, providing instead the data on loan overdue time – 30, 60 or 90 days. This makes it complicated to judge unambiguously on the

soundness of lending as it leaves space for interpretations. Given the growing risk that HH may have financial difficulties because of the pandemic, potentially increasing the burden of financial obligations on households, it is important to analyse not only the current overall level of the country's NPL, but also to predict how this indicator might change in the future.

3. Methodology of the research

Relationship between the performance indicators of P2P and the banking segments of the consumer credit market with the main factors that influence their dynamics in this research was established by using correlation-regression analysis tools, while MS Trend tool was used for the forecast of development trends in both segments.

There is a consensus about the link between macroeconomics and household consumption – growing economy triggers optimism about the future, consumption starts growing too followed by increased borrowing.

The state of the economy is determined by certain macroeconomic indicators such as GDP, unemployment rate, wage growth, inflation, and so on. Therefore, any changes in GDP, wages and unemployment rate are expected to affect the volume of loans issued. Consequently, these factors have been selected as independent variables for further analysis.

Research steps:

1. Setting research limitations: in this study, household borrowing is linked only to macroeconomic indicators. Other relevant factors, such as the age of the borrower, income level, gender, place of residence, the purpose of the loan, etc., were not taken into account in this study. These indicators could be used for further investigations in the future. Also, the forecast of the P2P segment growth of the consumer credit market and comparison with its banking segment is based on the analysis of 4 years of real monthly statistics for both segments.

2. Correlation-regression analysis in order to determine the correlation between the selected macroeconomic indicators and the dynamics of the volume of loans issued for households in commercial banks and P2P.

3. Construction of regression equation using the set regression coefficients.

4. Forecast of loan volume till 2025 in commercial banks and P2P segment by using the designed regression equation and the selected macroeconomic indexes, calculated by using MS Excel Trend function. Trend function was used as a universal tool applicable for the calculation of both current and future trends.

Data used:

a) statistical data about consumer credits from two commercial banks: Swedbank (2021) and SEB (2021), and two P2P platforms: Savy (2021) and Paskolų klubas [PK] (2021), each representing as a key market player in own segment.

b) actual statistical data on the selected key macroeconomic indicators: GDP, wages and unemployment rate;

c) 48 time series were used for each institution (two banks and two P2P platforms) and each indicator (GDP, wage, unemployment). Total 192 data lines were used for

the regression analysis (monthly data from 2016 01 till 2019 12) for each financial institution.

    d) the predicted values of these indicators from 2020-01 were calculated by using MS Trend function.

    e) to verify the creditworthiness of the prediction, the predicted and actual values of the volume of issued loans were compared for 2020 in both the P2P and bank segments.

5. Identifying potential threats and issues to the whole credit market based on the obtained forecast results.

In the research, two hypotheses were raised:

H_1: P2P platforms can replace commercial banks in the credit market over time.

This hypothesis is accepted or rejected based on the data obtained from the forecast. To make a forecast, the results of the correlation-regression analysis will be calculated using the statistical SPSS program. If the correlation between the analysed data of P2P platforms and commercial banks is relatively strong with macroeconomic indicators, such as GDP, wages and unemployment rates, the obtained coefficient of determination will be greater than 0.2, Student's p value less than 0.05 (Cekanavicius & Murauskas, 2014), there will be no multicollinearity problem between the data, there will be no exceptions, the graphs and performed tests will show that the standardised residual satisfy the standards, then it will be possible to make a data prediction. The received results will be presented in the graph, which will show the probable change of HH modern borrowing trends in P2P platforms and commercial banks. This will allow to confirm or reject the first hypothesis.

It is also important to analyse and compare the NPL indicator in those institutions from which HHs borrow the most – these are commercial banks and the increasingly popular P2P platforms. In the second section of the paper, it was mentioned that the NPL indicator of P2P platforms is not publicly available. Therefore it is useful to calculate it and evaluate how this indicator differs in comparison with commercial banks.

This leads to the second hypothesis:

H_2: The NPL level of P2P platforms is much higher than that of commercial banks.

During the analysis, the indicator of the NPL in P2P segment will be calculated by using formula (1) (European Central Bank, 2017) based on the collected statistical data. According to the calculations and general statistics from commercial banks, this hypothesis will be accepted or rejected.

$$Non-performing\,loan\,(NPL) = \frac{Non-performing\,loans}{Total\,loans} \times 100. \tag{1}$$

The obtained results should show the current situation in the credit market, what percentage of loans HHs are not able to repay. If the performed calculations show that in the analysed P2P platforms, the NPL ratio will be higher than in commercial banks, the second hypothesis will be accepted. Otherwise, it will be rejected. The accepted or rejected hypothesis will allow to draw conclusions about the reliability of such lending platforms compared to commercial banks and what challenges such situation may bring in the future.

4. The forecast of P2P segment development in Lithuania and related issues

Using the correlation regression analysis, it was found out how the volume of loans (EUR) issued for HH by two mutual lending platforms, Savy and Paskolų klubas (PK), and two commercial banks, Swedbank and SEB, depends on the main macroeconomic indicators: gross domestic product (GDP, EUR), wages (Gross, EUR) and the unemployment rate (%). During the analysis, statistical problems were encountered as multicollinearity, exceptions in the data and insignificance of statistical regressors. High multicollinearity between GDP and Unemployment rate was observed. Since GDP *p-value* was identified as not significant, it was removed from the analysis.

The final results, with processed data, are shown in Table 1.

Table 1. Results of correlation – regression analysis (source: authors)

	Savy	PK	Swedbank	SEB
Correlation coefficients	Wage 563.24 Unemployment rate –51912.97	Wage 1352.20 Unemployment rate –338689.95	Wage 50457.42 Unemployment rate –4209637.78	Wage 66492.78 Unemployment rate –14878427.9
Coefficients of determination	$R^2 = 0.828$	$R^2 = 0.905$	$R^2 = 0.853$	$R^2 = 0.898$
ANOVA *p*-value	$p < \alpha = 0.05$	$p < \alpha = 0.05$	$p < \alpha = 0.05$	$p < \alpha = 0.05$
Multicollinearity	VIF < 2	VIF < 2	VIF < 2	VIF < 2
Cook's measure	0.204	0.100	0.114	0.099
Standardised residual	Normality satisfied	Normality satisfied	Normality satisfied	Normality satisfied
Kolmogorov–Smirnov and Shapiro–Wilk tests	p ≥ 0.05	p ≥ 0.05	p ≥ 0.05	p ≥ 0.05

The received coefficients of correlation and determination of the final models were obtained large enough, the regressors which were left in the equations were statistically significant, multicollinearity indicator was obtained less than 2 and received data of residuals showed that the assumptions of model normality are satisfied.

Based on the received results, it can be stated that the amount of loans issued by the P2P platform Savy for HH is most influenced by wages. Unemployment is also a significant regressor, dependence is reversed.

The correlation between the amount of issued loans by the PK and the regressors was received as quite strong, the coefficient of determination – very high (value of R^2 are very close to 1 (Cekanavicius & Murauskas, 2014)), and residual errors of the data did not contradict the assumption of normalcy when exceptions were removed. Based on the results, the amount of loans issued by the PK depend quite strongly on both variables: wages and unemployment rate.

In commercial banks, Swedbank and SEB, wages were the most significant variable. Coefficients of determination were admitted as reliably high.

The obtained regression equations are presented in Table 2.

Table 2. Regression equations (source: authors)

Financial institution	Regression equations
Savy	$Y = 270102.790 + 563.241\ Wages - 51912.975\ Unemployment$
PK	$Y = 1934598.175 + 1352.198\ Wages - 338689.951\ Unemployment$
Swedbank	$Y = 217555903.6 + 50457.417\ Wages - 4209637.781\ Unemployment$
SEB	$Y = 245882656.5 + 66492.785\ Wages - 14878427.9\ Unemployment$

Regression equations (Table 2) show the relationship between the volume of issued loans and wages, unemployment rates.

Forecast of loan volume dynamics in commercial banks and P2P segment was performed by using the designed regression equations (Table 2) and MS Excel Trend function, based on the expected macroeconomic indicators. This MS function projected wages and the unemployment rate for the next six years, starting from 2020 to 2025.

All predicted values of the variables were inserted into regression equations (Table 2). The obtained results of P2P platforms are shown in Figure 9, and the results of commercial banks are presented in Figure 10.

The forecast line is highlighted in blue colour (Figures 9, 10). According to the data provided, the number of loans issued by commercial banks will grow from 2016 until 2025: Swedbank by 38%, SEB by 64%. Meanwhile, the numbers of P2P platforms will grow faster. Savy from 2016 until 2025 will grow by 304% and PK by 1156%. It is noticeable that the volume of loans issued by PK grew the fastest until 2020, therefore such a further growth trend is probable in future.

To verify the creditworthiness of the prediction of macroeconomic indicators by using the MS Excel Trend function, the predicted and actual values of the volume of issued loans were compared for 2020 in both the P2P and bank segments. The obtained results of P2P platforms are presented in Figure 11 and the results of commercial banks in Figure 12.
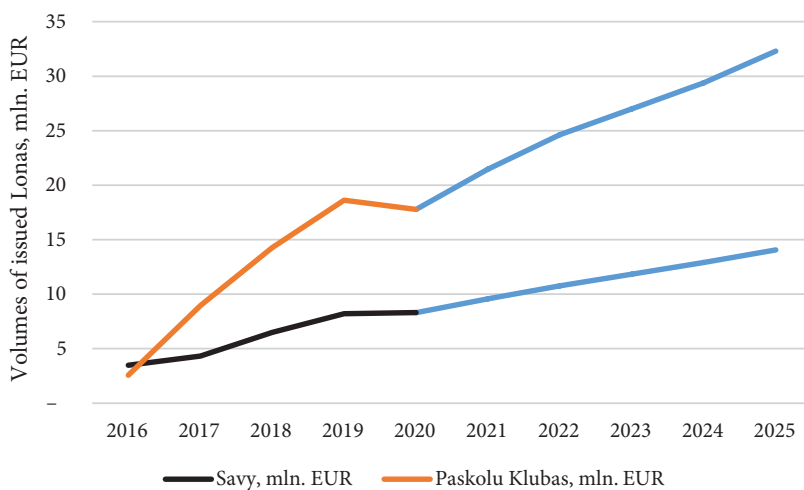

Figure 9. Forecast of the volume of issued loans by P2P platforms (source: authors)
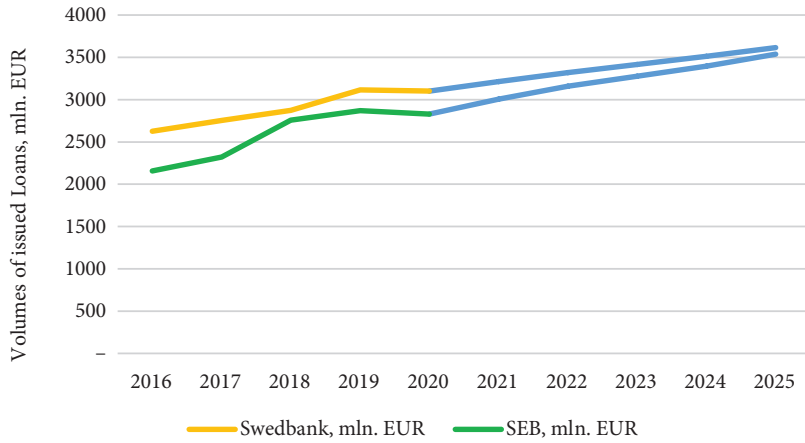
Figure 10. Forecast of the volume of issued loans by commercial banks (source: authors)
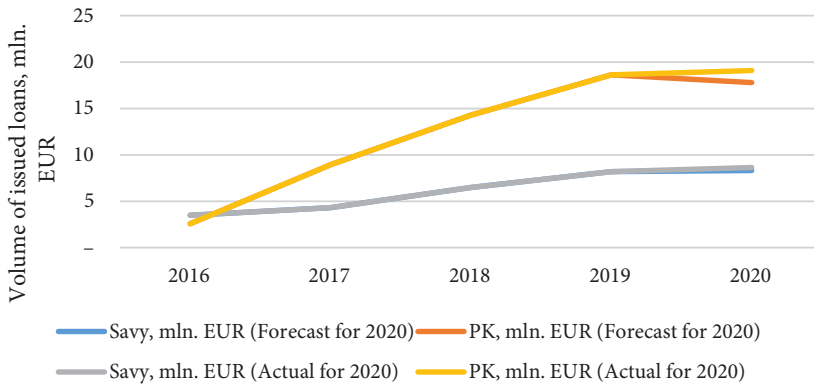

Figure 11. Comparison of forecasted and actual volumes of issued loans by P2P platforms for year 2020 (source: authors)
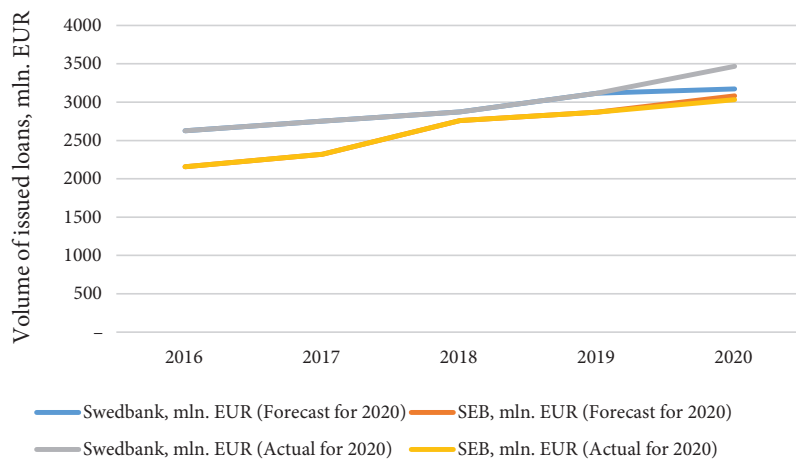

Figure 12. Comparison of forecasted and actual volumes of issued loans by commercial banks for year 2020 (source: authors)

A satisfactory or almost identical (e.g. Savy and SEB) correlation of the forecasted and actual volumes of loans issued by P2P platforms and commercial banks for the year 2020 supports the legitimacy of the selected methodology of the research. Thus, the first hypothesis was accepted.

For the second hypothesis, NPL indicator was calculated based on the given formula (1). Once the NPL indicator on P2P platforms was obtained, it was compared to the ones in commercial banks.

The total amount of loans issued by the PK over six years makes 40,775,185.00 EUR. More than half of all issued loans are not overdue and repaid – 67.59%. Overdue loans account for 32.41% of all issued loans (details are provided in Table 3). Currently, the largest amount of loans are issued for persons with B credit rating (Savy.lt, 2021; PK, 2021). Credit ratings are given to prospective borrowers and show if a person is able to meet financial commitments. The credit rating system is ranked from A (high level of creditworthiness) to D (has a high degree of risk) (Miknevicius, 2021).

Table 3. Overdue loan statistics of PK (created by authors according to statistics of PK, 2021)

Delay	Percentage calculated on all P2P platform overdue loans
1–30 days	7.98%
31–60 days	2.30%
61–90 days	1.05%
91–720 days	13.13%
>720 days	7.95%

The level of non-performing loans at PK is calculated based on data given in Table 3 and Equation (1). The obtained result shows that the NPL level of the PK reaches about 32%.

The total amount of loans issued by Savy during six years seek 42,981,662.00 EUR. Non overdue and repaid loans account for as much as 69.4 percent of all loans issued. Overdue loans account for 30.6% of all loans issued. Details are provided in Table 4.

Table 4. Overdue loan statistics of Savy (created by authors according to statistics of Savy, 2021)

Delay	Percentage calculated on all P2P platform overdue loans
>210 days	30.6%

It was noted that Savy does not allocate the amount of overdue loans in the standard way, which is a detailed allocation of how many loans are overdue by 30 or 90 days (a non-performing loan in Savy is considered to be overdue for 210+ days).

The obtained results show that the level of Savy NPL reaches 31 percent. The NPL indicators on P2P platforms were ~24 times higher compared to the general level of the Lithuanias' NPL indicator (in 2020 it reaches 1.3% (CEIC, 2021)).

All counted results are presented in Table 5.

Table 5. NPL of financial institutions (created by authors according to the results of analysis)

Financial institutions	NPL, %
PK	32%
Savy	31%
Swedbank	1.3%
SEB	1.4%

The results of the analysis showed that the NPLs rates between P2P platforms and banks differ a lot. The most important remark is that Savy and PK platforms have ~22–24 times higher rate of non-performing loans compared to Swedbank and SEB. Therefore, the second hypothesis was accepted.

Using MS Excel TREND function and statistical data of Lithuanian NPL indicator, the forecast of change of this indicator was made. Prognosis was made from 2021 to 2026. The obtained results are presented in Figure 13.
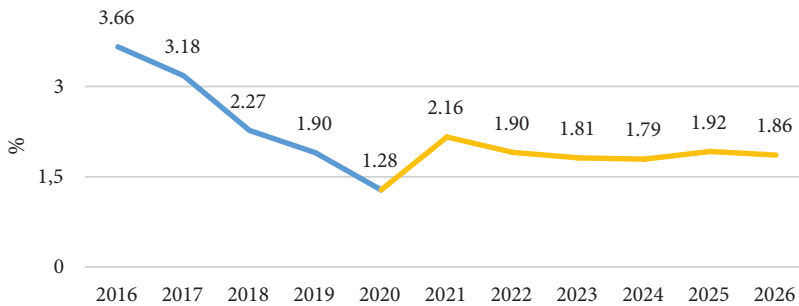

Figure 13. Forecast of non-performing loans (NPL) level change in Lithuania, % (created by authors according to the results of analysis)

The forecast curve in Figure 13 is coloured in two colours. Actual NPL data are presented in blue, and from 2020, the colour of the curve is chosen to be yellow, which shows the results obtained during the forecast. The NPL rate is expected to increase in 2021. This change seems realistic given the uncertainty of the economic situation in the current period. From 2021, the indicator should start to decrease again and reach 1.86% in 2026. It should be noted that data of P2P platforms are not presented in this indicator, as the data is not published. NPL indicator on P2P platforms that is available today can only be calculated, and it was done in this paper.

5. Discussion

In this research, an attempt was made to analyse the most popular borrowing alternatives available for households in Lithuania, such as commercial banks and P2P platforms. The article focuses on the prediction of the growth trends of P2P market for the future period until 2025 and what challenges accelerated growth can bring, particularly for this segment and the whole credit market.

Analysis shows that P2P market in Lithuania is still limited by its volume and made 6.5% in 2019 and 9% in 2020 of the consumer credit market. Despite of this, the forecast indicates that there is a clear trend for the sharp growth of this segment in the future. If this growth rate comes true in reality, problems that are relevant to this market segment now, such as a much higher non-performing loan ratio than in commercial banks, could become a problem for all the credit market. The growth of the number of insolvent clients could stimulate the need to borrow more from other financial institutions and it may affect the whole credit market and its stability, if market monitoring system is not efficient enough.

There are many discussions in scientific literature, whether and how the growth of P2P market could affect the whole credit market and commercial banks. For example, in the World Economic Forum (2017), there was a discussion on this topic, and the main idea was that "FinTech is "disruptive", "revolutionary" and armed with "digital weapons", that will "tear down" barriers and traditional financial institutions".

Alternatively, Navaretti et al. (2018a) note that FinTech companies, such as P2P platforms, provide the same services for customers as commercial banks, but in a more effective and modern way. As a result, P2P platforms enhance competition in the credit market, widen the pool of customers, but they will not supplant commercial banks in future. These predictions are consistent with the results of this study that show that despite the sharp growth of P2P segment, commercial banks still will have a fairly solid market share.

Other authors pay attention to the fact that P2P market is much more risky than other credit market sectors and it can reduce financial stability. The analysis made by de Roure et al. (2017) showed that P2P platforms are servicing customers that are neglected by banks. Usually, these are high-risk and small-sized loans. The main idea of these authors was that "P2P lending is substituting the banking sector for high-risk consumer loans since banks are unwilling or unable to supply this slice of the market. The study serves to show where the institutionalisation of credit provision has left a slice of the market unsupplied". These results fit to the general idea of this article that P2P segment is much riskier, as a result there are much more overdue loans. It is possible that unrespectable clients tend to borrow not from commercial banks, but from P2P platforms.

There are scientists that highlight the importance of more regulation in the P2P segment. José Manuel Mansilla-Fernández (2018) analysed the regulation of P2P market and highlighted that P2P platforms escape prudential supervision, thus this fact reduces financial stability. Financial Stability Board (2017) has analysed the implications of the current Fintech sector and has not found a reason to worry about financial stability at this stage, because this sector is small in size, but Demertzis et al. (2018) note that despite the fact that Fintech sector is quite small in European Union, "the fundamental question is whether FinTech can disrupt Europe's financial system". Other authors, such as Ferrarini and Macchiavello (2017) note that "moreover, a further question is whether the disruption will follow at the European Union level or at the national". According to the results in this article, it was identified that NPL ratio in P2P segment is 22–24 times higher than in the whole market and it means that credit market regulators should pay close attention to this and, if necessary, tighten up the relevant regulations.

Xavier Vives (2018) has analysed the FinTech sector, and one of his research conclusions was that "FnTech has a large and potentially welfare-enhancing disruptive capability. However, for the new technology to deliver the benefits for consumers and firms without endangering financial stability, regulation needs to rise to the challenge".

Taking everything into account, it is obvious that the borrowing process nowadays is much more dynamic. Households can borrow not only from commercial banks, but also from P2P platforms. The emergence of platforms is driving competition in the credit market, making the borrowing process faster and more efficient, however, there are some threats. The development of P2P is significant and more attention should be paid to the market regulation. Otherwise, the growth of P2P can affect the stability of the credit market as a whole.

Conclusions

The study aims to clarify the current situation of the credit market, trends and the prospects for future development in Lithuania. According to the research results, the most popular alternatives for Lithuanian households from where to borrow are commercial banks and P2P platforms.

Although the macro environment is the same for all market segments, the P2P growth rate is the highest in all the credit market, and it shows the growing popularity for households to borrow from P2P platforms. This could be explained by the fact that P2P platforms have lower requirements for the borrowers, the borrowing process is faster and much easier.

As the P2P market is characterised by rapid growth, this should be noted by other market participants in the credit market. It is obvious that it is becoming more attractive for households to borrow not from a universal commercial bank, but from a new player who has recently appeared on the market and offers more favourable conditions. Compared to banks, P2P platforms do not have a well-developed regulatory framework, the P2P platform acts more as an intermediary between the borrower and the lender, and the latter themselves "ensure" their own solvency opportunities when signing contracts.

The results of the forecast suggest that P2P market will grow faster than the commercial bank sector in future. If the projected growth rates remain at this level and will be confirmed in reality, it is likely that this segment may gain a significant market share in the future and may bring some threats not only to the P2P market, but also to the consumer credit market as a whole. It is likely that there will be not only a growing number of new clients, but also the growth of insolvent customers and non-performing loans. Investors who lend money through the platform may face losses. Development in P2P segment could affect the other sectors and overall stability of the credit market.

The performed analysis could be useful for the future research related to the household borrowing in Peer-to-Peer platforms, specifically for the Central Bank, the Ministry of Finance and other institutions responsible for setting rules that regulate the credit market, as well as for P2P platforms themselves and other players within the credit market, who plan their activities and adjust lending conditions with the aim to attract higher quality customers. The study highlights problematic issues within the loan sector that need future research and further in-depth analysis.

References

Alisauskaite-Seskiene, I., Remeikiene, R., & Gaspareniene, L. (2015). The factors that determine physical entities' borrowing: Lithuanian case. *Procedia Economics and Finance*, *26*, 616–622. https://doi.org/10.1016/S2212-5671(15)00798-4

Almenberg, J., Lusardi, A., Säve-Söderbergh, J., & Vestman, R. (2020). Attitudes toward debt and debt behavior. *The Scandinavian Journal of Economics*, *123*(3), 780–809. https://doi.org/10.1111/sjoe.12419

Angelucci, M., Karlan, D., & Zinman, J. (2015). Microcredit impacts: Evidence from a randomised microcredit program placement experiment by Compartamos Banco. *American Economic Journal: Applied Economics*, *7*(1), 151–182. https://doi.org/10.1257/app.20130537

Bloomberg. (2021). *Mortgage boom drives biggest jump in household debt since 2013*. https://www.bloomberg.com/news/articles/2021-08-03/mortgage-boom-drives-biggest-jump-in-household-debt-since-2013

Boot, A. W. A. (2017). The future of banking: From scale & scope economies to fintech. *European Economy: Banks, Regulation and the Real Sector*, (2), 77–95.

CEIC Data. (2021). *Lithuania non-performing loans ratio*. https://www.ceicdata.com/en/indicator/lithuania/non-performing-loans-ratio

Cekanavicius, V., & Murauskas, G. (2014). *Taikomoji regresine analize socialiniuose tyrimuose*. Vilniaus universiteto leidykla.

Claessens, S., Turner, G., Frost, J., & Zhu, F. (2018). Fintech credit markets around the world: size, drivers and policy issues, *BIS Quarterly Review*.

Cloyne, J., Ferreira, C., & Surico, P. (2020). Monetary policy when households have debt: New evidence on the transmission mechanism. *Review of Economic Studies*, *87*(1), 102–129. https://doi.org/10.1093/restud/rdy074

Chishti, S. (2016). *H*ow peer to peer lending and crowdfunding drive the FinTech revolution in the UK. In P. Tasca, T. Aste, L. Pelizzon, & N. Perony (Eds.), *Banking beyond banks and money. New economic windows.* Springer, Cham. https://doi.org/10.1007/978-3-319-42448-4_4

de Roure, C., Pelizzon, L., & Tasca, P. (2017). *How does P2P lending fit into the consumer credit market?* SSRN. https://doi.org/10.2139/ssrn.2848043

de Roure, C., Pelizzon, L., & Thakor, A. V. (2018). *P2P lenders versus banks: Cream skimming or bottom fishing?* SSRN. https://doi.org/10.2139/ssrn.3174632

Demertzis, M., Merler, S., & Wolff, G. B. (2018). Capital markets union and the Fintech opportunity. *Journal of Financial Regulation*, *4*(2), 157–165. https://doi.org/10.1093/jfr/fjx012

Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2017). *The Global Findex Database 2017 – measuring financial inclusion and the fintech revolution*. World Bank Group. https://doi.org/10.1596/978-1-4648-1259-0

Ding, C., Kavuri, A. S., & Milne, A. (2021). Correction to: Lessons from the rise and fall of Chinese peer-to-peer lending. *Journal of Banking Regulation*, *22*(2), 144. https://doi.org/10.1057/s41261-020-00142-0

Ding, J., Huang, J., Li, Y., & Meng, M. (2018). Is there an effective reputation mechanism in peer-to-peer lending? Evidence from China. *Finance Research Letters*, *30*, 208–215. https://doi.org/10.1016/j.frl.2018.09.015

Dorfleitner, G., Oswald, E. M., & Zhang, R. (2021). From credit risk to social impact: On the funding determinants in interest-free peer-to-peer lending. *Journal of Business Ethics*, *170*(2), 375–400. https://doi.org/10.1007/s10551-019-04311-8

European Central Bank. (2017). *Guidance to banks on non-performing loans*. https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance_on_npl.en.pdf

European Central Bank. (2020). *What are provisions and non-performing loan (NPL) coverage?* https://www.bankingsupervision.europa.eu/about/ssmexplained/html/provisions_and_nplcoverage.en.html

European Central Bank. (2021a). *Household sector report.* https://sdw.ecb.europa.eu/reports.do?node=1000004952

European Central Bank. (2021b). *Volumes of new euro-denominated loans to euro area households.* https://sdw.ecb.europa.eu/reports.do?node=1000002888

Faia, E., & Paiella, M. (2017). *P2P Lending: Information externalities, social networks and loans' substitution* (CEPR Discussion Paper, DP12235, 65).

Federal Reserve Bank. (2021). *Household debt overview.* https://www.federalreserve.gov/releases/z1/dataviz/household_debt/

Federal Reserve Bank of New York. (2021). *Household debt and credit report.* https://www.newyorkfed.org/microeconomics/hhdc

Feginn, T., Udnesseter, M., & Einfeldt, T. (2019). *An analysis of the future of peer-to-peer lending.* https://research-api.cbs.dk/ws/portalfiles/portal/59799302/682675_An_Analysis_of_The_Future_of_Peer_to_Peer_Lending.pdf

Ferrarini, G., & Macchiavello, E. (2017). *Fintech and alternative finance in the CMU: The regulation of market place investment.* Mimeo. https://doi.org/10.1093/oso/9780198813392.003.0010

Financial Stability Board. (2017). *Financial stability implications from fintech: Supervisory and regulatory issues that merit authorities' attention.*

Financial Times. (2015). *Start-ups aim at banks' income streams.* https://www.ft.com/content/55049480-61cb-11e5-9846-de406ccb37f2

Foo, J., Lim, L.-H., & Wong, K. S.-W. (2017). *Macroeconomics and FinTech: Uncovering latent macroeconomic effects on peer-to-peer lending.* http://arxiv.org/abs/1710.11283

Fuster, A., & Willen, P. S. (2017). Payment size, negative equity, and mortgage default. *American Economic Journal: Economic Policy*, *9*(4), 167–191. https://doi.org/10.1257/pol.20150007

Gilchrist, S., & Mojon, B. (2018). Credit risk in the Euro area. *The Economic Journal*, *128*(608), 118–158. https://doi.org/10.1111/ecoj.12427

Hartmann, M., Hernandez-van Gijsel, L., Plooij, M., & Vandeweyer, Q. (2019). *Are instant payments becoming the new normal? A comparative study* (ECB Occasional Paper Series 229). https://doi.org/10.2139/ssrn.3441654

International Monetary Fund. (2019). *Household debt, consumption, and monetary policy in Australia.* https://www.imf.org/en/Publications/WP/Issues/2019/04/05/Household-Debt-Consumption-and-Monetary-Policy-in-Australia-46685

Kurniasari, F., & Utomo, P. (2021). Determinants of effectiveness repayment apps at P2P lending platform during Covid 19 pandemic in Indonesia. *Ultimaccounting: Jurnal Ilmu Akuntansi*, *13*(1), 156–172. https://doi.org/10.31937/akuntansi.v13i1.2094

Lenz, R. (2016). Peer-to-peer lending: Opportunities and risks. *European Journal of Risk Regulation*, *7*(4), 688–700. https://doi.org/10.1017/S1867299X00010126

Loukoianova, E., Wong, Y. C., & Hussiada, I. (2019). *Household debt, consumption, and monetary policy in Australia* (IMF Working Papers 076). https://doi.org/10.5089/9781498303767.001

Lusardi, A. (2008). *Financial literacy: An essential tool for informed consumer choice?* SSRN. https://doi.org/10.2139/ssrn.1336389

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, *52*(1), 5–44. https://doi.org/10.1257/jel.52.1.5

Mansilla-Fernández, J. M. (2018). A bird eye (re)view of key readings. In *Fintech and banking: Friends or foes. European economy: Banks, regulation, and the real sector.* https://european-economy.eu/wp-content/uploads/2018/01/EE_2.2017-2.pdf

Miknevicius, M. (2021). *Credit history and rating: how not to damage, but to restore if damaged.* https://www.vz.lt/mano-pinigai/2021/01/19/kredito-istorija-ir-reitingas-kaip-nesusigadinti-o-sugadinus-atstatyti

Murauskas, G., & Kregždė, A. (2015). Impact of sovereign credit risk on the Lithuanian interest rate on loans. *Ekonomika*, *94*(2), 113–128. https://doi.org/10.15388/Ekon.2015.2.8236

Navaretti, G. B., Calzolari, G., & Pozzolo, A. F. (2018a). *European economy banks, regulation, and the real sector fintech and banking. Friends or foes?* SSRN. https://european-economy.eu/wp-content/uploads/2018/01/EE_2.2017-2.pdf

Navaretti, G. B., Calzolari, G., & Pozzolo, A. F. (2018b). *Fintech and banking. Friends or foes?* SSRN. https://doi.org/10.2139/ssrn.3099337

OECD. (2021). *Household debt.* https://data.oecd.org/hha/household-debt.htm

Oh, E.Y., & Rosenkranz, P. (2020). *Determinants of peer-to-peer lending expansion: The roles of financial development and financial literacy* (Working Paper No. 613). Asian Development Bank Economics. SSRN. https://doi.org/10.22617/WPS200107-2

Robocash. (2019). *How does P2P lending affect banking?* https://robo.cash/articles/how_does_p2p_lending_affect_banking

Papoušková, M., & Hajek, P. (2020). Modelling loss given default in peer-to-peer lending using random forests. In I. Czarnowski, R. Howlett, & L. Jain. (Eds.), *Intelligent Decision technologies 2019*. Springer, Singapore. https://doi.org/10.1007/978-981-13-8311-3_12

Paskolų Klubas. (2021). *Statistics.* https://www.paskoluklubas.lt/statistika

P2P Market Data. (2021). *Top 70 financing platforms by funding volumes.* https://p2pmarketdata.com

Savy.lt. (2021). *Statistics.* https://gosavy.com/lt/statistika/

SEB. (2021). *Financial information for investors.* https://www.seb.lt/en/about-seb/investors

Siemionek-Ruskań, M., & Fanea-Ivanovici, M. (2021). Peer-to-peer lending: evolution and trends. In D. Procházka (Eds.), *Digitalization in finance and accounting. ACFA 2019. Springer proceedings in business and economics*. Springer, Cham. https://doi.org/10.1007/978-3-030-55277-0_2

Son, J. C., & Park, H. (2019). U.S. Interest rate and household debt sustainability: The case of Korea. *Sustainability*, *11*(14), 1–16. https://doi.org/10.3390/su11143759

Swedbank. (2021). *Financial results.* https://www.swedbank.lt/about/swedbank/about/financialResults

Tang, H. (2019). Peer-to-Peer lenders versus banks: Substitutes or complements? *Review of Financial Studies*, *32*(5), 1900–1938. https://doi.org/10.1093/rfs/hhy137

Tarasevičienė, J. (2019). *Tarpusavio skolinimas: ką reiktų žinoti investuojant ir skolinantis? Kas yra tarpusavio skolinimas?* Lietuvos Bankas.

The Central Bank of Lithuania. (2019). *Financial market participants – list of mutual lending platform operators.* https://www.lb.lt/finansu-rinku-dalyviai?list=63

The Central Bank of Lithuania. (2020). *Mutual lending platform operator performance review.* https://www.lb.lt/uploads/publications/docs/26837_a473fa339f299946cb1226cb1d62400c.pdf

The Central Bank of Lithuania. (2021a). *Assets of financial corporations engaged in lending.* https://www.lb.lt/en/assets-of-financial-corporations-engaged-in-lending

The Central Bank of Lithuania. (2021b). *Banking review.* https://www.lb.lt/lt/leidiniai/banku-veiklos-apzvalga-2021-m-i-ketv

The Central Bank of Lithuania. (2021c). *Consumer credit statistics.* https://www.lb.lt/lt/vkd-veiklos-rodikliai

The World Bank. (2019). *Household overindebtedness in Russia.* https://openknowledge.worldbank.org/handle/10986/33495

The World Bank. (2020a). *Bank non-performing loans to total gross loans (%) – Lithuania.* https://data.worldbank.org/indicator/FB.AST.NPER.ZS?locations=LT

The World Bank. (2020b). *Bank non-performing loans to total gross loans (%) – all countries and economies.* https://data.worldbank.org/indicator/FB.AST.NPER.ZS

The World Bank. (2021). *Domestic credit to private sector.* https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS

The World Economic Forum. (2017). *Beyond FinTech: a pragmatic assessment of disruptive potential in financial service.* https://www.weforum.org/reports/beyond-fintech-a-pragmatic-assessment-of-disruptive-potential-in-financial-services

UK Parliament. (2021). *Household debt: key economic indicators.* https://commonslibrary.parliament.uk/research-briefings/sn02885/

Valuates Reports. (2020). *Peer to peer lending market by business model: global opportunity analysis and industry forecast, 2020–2027.* https://reports.valuates.com/market-reports/ALLI-Manu-3B23/peer-to-peer-lending

Vives, X. (2018). The impact of Fintech on banking. Fintech and banking: Friends of foes. In *European economy: Banks, regulation and the real sector.*

Wright, L., & Feng, A. (2020). *COVID-19 and China's household debt dilemma.* https://rhg.com/research/china-household-debt/https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS

Yeo, E., & Jun, J. (2020). Peer-to-peer lending and bank risks: A closer look. *Sustainability*, *12*(15), 1–17. https://doi.org/10.3390/su12156107

Zabai, A. (2017). Household debt: recent developments and challenges. *BIS Quarterly Review*, (December), 39–54.

Zagunis, V. (2018). *Penki lietuvių skolinimosi ypatumai.* https://www.seb.lt/naujienos/2018-12-21/penki-lietuviu-skolinimosi-ypatumai

Zeng, X., Liu, L., Leung, S., Du, J., Wang, X., & Li, T. (2017). A decision support model for investment on P2P lending platform. *PLoS ONE*, *12*(9), 1–18. https://doi.org/10.1371/journal.pone.0184242