



LIETUVOS BANKAS
EUROSISTEMA

Financial Stability Review

2021

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Summary

The COVID-19 pandemic had a strong impact on the global economy in 2020 but Lithuania's economy was among the least scathed across the EU. A strong fiscal and monetary response mitigated the impact of the pandemic on the world and Lithuanian economies, resulting in a smaller than expected economic contraction. Lithuania's real GDP shrank by 0.8% in 2020 and exceeded its year-earlier level in the first quarter of 2021. Overall wage growth in the country remained strong and led to improvements in the financial well-being of many households. The accelerating pace of vaccination should also reduce the uncertainty about further economic growth, which should reach 5.1% this year.

Many Lithuanian businesses managed to adapt to restrictions during the pandemic yet some of them suffered a heavier blow, in particular in the services sector, and the winding up of government support may trigger an increase in bankruptcies. The general situation of the country's businesses remains sustainable and many of them have managed to build up additional liquidity buffers. Nonetheless, the sectors that have faced operational restrictions and a fall in demand, for instance, the accommodation and catering sectors, remain vulnerable and continue to rely on government support. Therefore, the true scale of the so-called zombie firms will come to light and the number of corporate bankruptcies may increase substantially once the effect of government support schemes fades away. This would give rise to the risk of such companies defaulting, lead to disruptions in the chain of mutual corporate debts, which have increased in recent years, undermine the financial well-being of households employed in such businesses and have negative repercussions for public finances.

The government has taken part of the credit risk over from businesses in a bid to mitigate the economic fallout from the outbreak of the COVID-19 pandemic. In 2020, the countercyclical fiscal policy adopted by Lithuania for the provision of financial support to firms and households triggered substantial increases in the general government deficit and debt, which should exceed 50% of GDP this year. Government support schemes help stave off corporate liquidity and solvency risks, which could spill over to households and creditors if they were to materialise. However, it is important not just to ensure adequate targeting of fiscal support measures but also to work out a clear strategy on how to stabilise the debt ratio and follow it closely. Otherwise, lasting growth in the ratio of general government debt to GDP may lead to debt sustainability issues.

Banks operating in Lithuania navigated through 2020 without substantial losses and their robust performance proved their ability to operate in a sustainable manner even under an adverse scenario. The level of non-performing loans of Lithuania's banks remained broadly unchanged in 2020. Moreover, the country's banks recorded barely any deterioration in their performance indicators, which were among the best across the EU last year. Banks remain well capitalised and ready to absorb even the substantial losses estimated under an adverse scenario (of an economic contraction of 6.8%). Increases in household and corporate savings through deposits contributed to the growth of liquidity of the country's banks, which would therefore be capable to withstand a fall in deposits by as much as 40%. The earnings of the banking sector decreased in 2020 on a year-on-year basis but broadly matched the 2012-2017 average.

Lending for house purchase continued at a high pace during the pandemic, whereas lending to businesses turned to a downward path, yet companies operating in Lithuania tapped into their reserves and relied on support provided by the government. Growth in housing loans recovered in the summer of 2020 after a slowdown early in the pandemic. With interest in house purchase continuing unabated, the flow of housing loans should also remain strong in 2021. On the other hand, the portfolio of loans granted by credit institutions to non-financial corporations contracted at the most rapid pace across the EU in 2020, which was due to the shelving of corporate investment and inventory purchases amid heightened uncertainty, substantial cash flows generated from exports and government support as

well as a more cautious approach developed by banks towards certain sectors. Moreover, despite a decline in bank financing, the non-financial corporations sector recorded a slight increase in liabilities due to a rise in short-term liabilities to other undertakings.

The level of house prices in Lithuania remains sustainable but a strong increase in housing demand acts as a catalyst for price growth. Lithuania's housing market has recovered from the impact of restrictions rolled out during the first lockdown and returned to the pre-pandemic level in terms of sales. Activity has been further strengthened by the level of household savings, which increased substantially during the pandemic, and by the consequences of working from home, fuelling interest in bigger homes. At the same time, increasing demand leads to a pickup in the growth of house prices, which has also been observed in other European countries. Nonetheless, rapid wage growth, increasing urban populations and a large share of own funds used in housing purchase transactions indicate that the housing market has remained sustainable thus far, but the situation may change swiftly should the rapid growth of prices drag on. The Responsible Lending Regulations applied by the Bank of Lithuania continue to prevent the emergence of imbalances and unsustainable financing for house purchase. Nonetheless, improving household expectations and supply flexibility should be monitored closely.

Growing vacancy rates of commercial premises and a potential correction of imbalances, which have developed in Sweden, may pose risks to Lithuania's financial system. The vacancy rate of office spaces and commercial premises has increased due to the restrictions on activities and working from home that became prevalent during the pandemic. The office vacancy rate may increase further due to numerous new office developments planned in recent years hence office space owners may face the risk of price correction depending on the changes in working habits. This would also have negative repercussions for the financial system as commercial real estate comprises a significant share of collateral pledged with banks. Even though the links between Lithuania and Sweden's financial system have grown substantially weaker compared to a decade ago, the high level of concentration in the Lithuanian banking sector implies the continuing importance of the risk related to the imbalances that have developed in Sweden's real estate market and in the area of household indebtedness in that country.

Climate change and cyber security continue to pose challenges for Lithuania's financial system. With the financial system becoming increasingly digitalised, the management of cyber risks has been a growing challenge. Meanwhile, the transition to a climate-neutral economy makes it important for both the real and financial sectors to duly assess the risks posed by climate change, such as physical risks related to natural disasters, and transitional risks related to the ability to adapt to new standards and regulation.

The Bank of Lithuania remains proactive in applying measures to maintain financial stability as the COVID-19 pandemic continues. The countercyclical capital buffer rate reduced to 0% a year ago has been left unchanged in view of the negative fallout from the COVID-19 pandemic for the country's economy. Moreover, credit institutions continue to be allowed to derogate from the recommended Pillar 2 capital requirement as well as the combined buffer requirement. Adding to this is an agreement, reached in early 2021, to renew moratoria on loan repayments for businesses and households until 31 March. Amendments to the Capital Requirements Directive will be transposed into national law enabling the Bank of Lithuania to be more flexible with the application of macroprudential requirements to certain lending segments and respond to emerging risks in a more targeted manner in the future. The Bank of Lithuania has been implementing its macroprudential policies actively and is ready to apply measures aimed at mitigating the risks to financial stability.



THE FINANCIAL SYSTEM AND ITS OUTLOOK



Financial markets and the economy

The economy and financial markets have withstood the shock, but the management of the COVID-19 pandemic and its fallout continues to remain a challenge



Banks

Despite an increase in the credit risk of some debtors, the banking sector remains robust, which amplifies the resilience of banks to potential losses



Credit growth and indebtedness

Lending to businesses has decelerated, but lending for house purchase has remained active: further developments will depend on success in managing the COVID-19 pandemic



Real estate market

Activity in the housing market has reached a particularly high level following the recovery from the first shock of the COVID-19 pandemic, but the commercial real estate market remains overwhelmed by uncertainty

SYSTEMIC RISKS TO FINANCIAL STABILITY



Deterioration in the financial standing of businesses affected by lockdown restrictions and the related economic fallout



Risk of value impairment of commercial real estate, in particular offices and commercial premises



Risk of potential overheating in the residential real estate sector at its historical peak of activity



Risk of a potential correction of imbalances in the Nordic countries amid high concentration in the banking sector



STRESS TESTING



Bank solvency

Even under the adverse scenario, the capital adequacy ratio would still safely meet the minimum requirement



Bank liquidity

Banks have enough liquid assets to withstand a slightly more than 40% fall in deposits

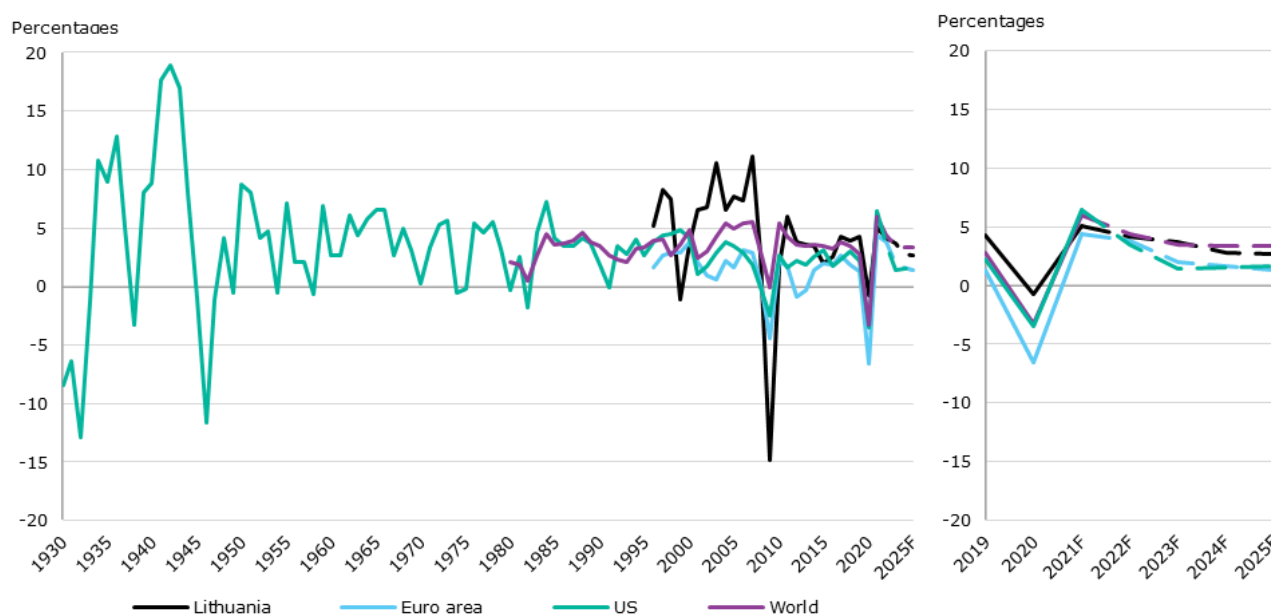
1. Financial system and its outlook

1.1. Financial market and economic developments

Hit by the fallout from the COVID-19 pandemic, in 2020 the global economy fell into the worst recession since the end of World War II; nonetheless, it was less severe than forecasted. As estimated by the IMF in April 2021, the global economy shrank by 3.3% in 2020. The contraction was 1.6 percentage points smaller than projected in June 2020 but larger than during the financial crisis a decade ago. The downturn was triggered by numerous restrictions on movement and social contacts, which were rolled out due to the COVID-19 pandemic and had an adverse effect on international trade flows, supply chains and household consumption. In 2020, US GDP contracted by 3.5%, whereas the euro area's GDP – by 6.6%. The fall of the euro area's economy was more dramatic due to more stringent restrictions and smaller volumes of fiscal support. The IMF expects the global economy to go back to the growth path from 2021 but the pace of recovery will differ across countries. In the United States, GDP is forecast to grow by 6.4%, and in the euro area – by 4.4% in 2021. The recovery in the euro area is expected to be slower due to a slower pace of vaccination and a smaller fiscal response compared to the United States.

In 2020, the global economy fell into the worst recession since the end of World War II.

Chart 1. Actual and projected dynamics of GDP at constant prices



Sources: Eurostat, Bank of Lithuania, St. Louis FED and IMF.

Note: 2021F-2023F are the GDP forecasts released by the Bank of Lithuania and the IMF, 2024F-2025F are the GDP forecasts released by the IMF.

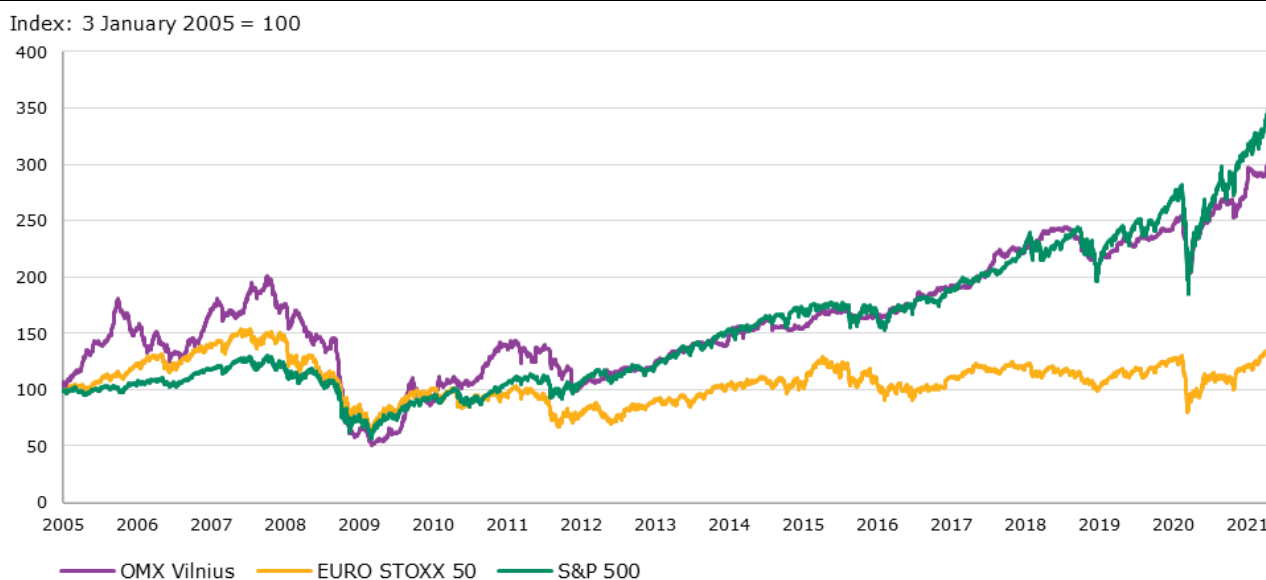
In Lithuania, the economic fallout from the pandemic was less severe compared to many EU countries and the signs of economic recovery appeared in early 2021. In 2020, Lithuania's GDP contracted by 0.8% – much less than expected following the onset of the crisis caused by the COVID-19 pandemic. The country's GDP contraction was among the smallest across the EU member states (the entire EU economy plummeted by 6.1%). In 2020, Lithuania averted a deeper economic downturn thanks to inter alia relatively higher general government support, a relatively small first wave of the COVID-19 pandemic, successful performance of the country's exporters and relatively small dependence of the economy on the most restricted and affected economic activities (such as accommodation and catering). Nonetheless, data from Statistics Lithuania shows that the unemployment rate increased by 2.2 percentage points in 2020 year on year, to 8.5%, hitting its highest level since 2015. Unemployment

growth was mainly driven by layoffs in accommodation and catering services, trade and business services activities, as well as a steep increase in unemployment among younger workers. Despite the growing ranks of the unemployed, wages were unaffected by the fallout from the pandemic: average wages increased by an annual 12.2% by late 2020, hence most households saw their financial situation improve during the pandemic. In the first quarter of 2021, Lithuania’s real GDP increased by 1.8% quarter on quarter and by 1% on a year-on-year basis. This year, Lithuania’s economy is expected to grow by 5.1%.

Global and Lithuanian financial markets have recovered from the shocks suffered in the early stages of the crisis caused by the COVID-19 pandemic (see Chart 2). Euro area investment-grade corporate bond yields rose by 0.8-2 percentage points in March 2020, hitting a peak since 2013, before falling to historic lows of approximately 0.4% in late 2020 and early 2021, which implied that corporate funding costs remained low. The terms of interbank borrowing for European banks have remained favourable as well. In particular, the 6-month EURIBOR rates fell back to historic lows in February 2021 after climbing by 33 basis points between March and April 2020 and hitting the highest level since 2016 (see Chart 3). The EURIBOR rates have been kept low thanks to inter alia the ECB’s deposit facility rate, which has been maintained at -0.5% since September 2019. Global stock indices suffered big hits in the early stages of the COVID-19 crisis but recovered throughout the course of the year. The US and Lithuanian indices have already reached historic peaks, but European stock values have risen less due to the expected slower economic recovery. Growth in stock prices has been driven inter alia by the support measures put in place by governments and central banks (e.g. in early 2020, the overall ECB asset purchase volumes reached the highest level since 2017), a substantial increase in household savings and strong expectations of an economic recovery in the future. Nonetheless, the rapid growth of stock values entails a higher risk of a correction in their prices, which may have a negative effect on the global economy.

Over the year, stock prices have recovered from the fallout triggered by COVID-19.

Chart 2. Global stock indices



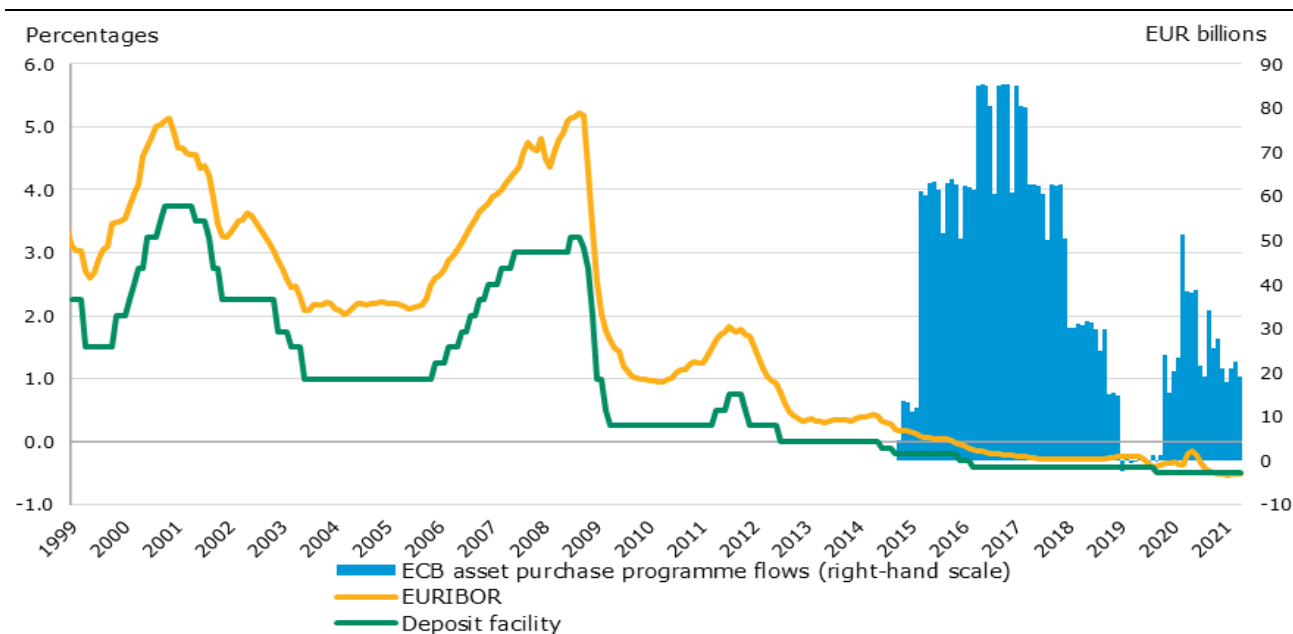
Sources: Nasdaq, Yahoo Finance and Refinitiv.

Central banks have rolled out significant stimulus measures in a bid to mitigate the economic fallout from the outbreak of the COVID-19 pandemic. In March 2020, the ECB announced the €750-billion pandemic emergency purchase programme (PEPP) and then expanded its envelope by €600 billion in June and by a further €500 billion in December, to a new total of €1,850 billion (15% of the euro area’s GDP). The Eurosystem portfolio of securities held for monetary policy purposes increased by a

third in 2020, to €3,695 billion. Moreover, the ECB added the securities that no longer fulfilled minimum credit quality requirements following a downgrade of their ratings to the list of eligible collateral until September 2021. As estimated by the ECB, the measures adopted in response to the crisis reduced the rate of the euro area's economic contraction by 0.4 percentage point in 2020 and will add 0.6 percentage point to its growth in 2021. In Lithuania, the said measures shaved 0.3 percentage point off the rate of economic contraction in 2020 and will contribute extra 0.3 percentage point to its growth rate this year. The US Federal Reserve initially announced a \$700-billion asset purchase programme and then scrapped limits on its volume on 23 March 2020. The Federal Reserve chairman said in April 2021 that a tapering of the central bank's asset purchases would not be considered any time soon. In addition, in March 2020, the Federal Reserve established the target range for the federal funds rate at 0-0.25%, which matched the lowest range that was adopted during the 2008 crisis and remained in effect until 2015.

6-month EURIBOR rates hit historic lows in early 2021.

Chart 3. 6-month EURIBOR and ECB deposit facility rates, ECB asset purchases



Source: ECB.

Governments have provided massive fiscal support to manage the fallout from the COVID-19 crisis and adopted a slew of measures to promote economic recovery. Following the outbreak of the pandemic, the European Commission relaxed state aid rules and fiscal discipline requirements in early 2020, thereby leaving room for the EU member states to provide huge financial support to their economies, which led to a substantial increase in the levels of general government debt but at the same time helped stave off an even bigger downturn and a surge in unemployment. In July 2020, the EU agreed on Next Generation EU, a temporary fiscal instrument of €750 billion (approximately 6% of EU GDP) to jump-start economic recovery and the green transition, and approved it in December. The instrument foresees the allocation of €2.2 billion in grants and up to €3 billion in loans for Lithuania (overall, approximately 10% of Lithuania's GDP). Moreover, the bloc adopted the EU's multiannual financial framework of €1,074 billion (approximately 8% of EU GDP) for 2021-2027, which will contribute to the recovery of the economy in the wake of the COVID-19 pandemic. EU allocations envisaged for Lithuania under this framework would increase by 13.5% compared to 2014-2020. Meanwhile, the United States announced the largest-ever stimulus package, worth \$2,200 billion (11% of US GDP), in March 2020. In December, the country adopted a new fiscal stimulus package, worth nearly \$900 billion, which was followed by an even bigger package, worth \$1,900 billion, or approximately 9% of US GDP, in March 2021.

1.2. Banking sector developments

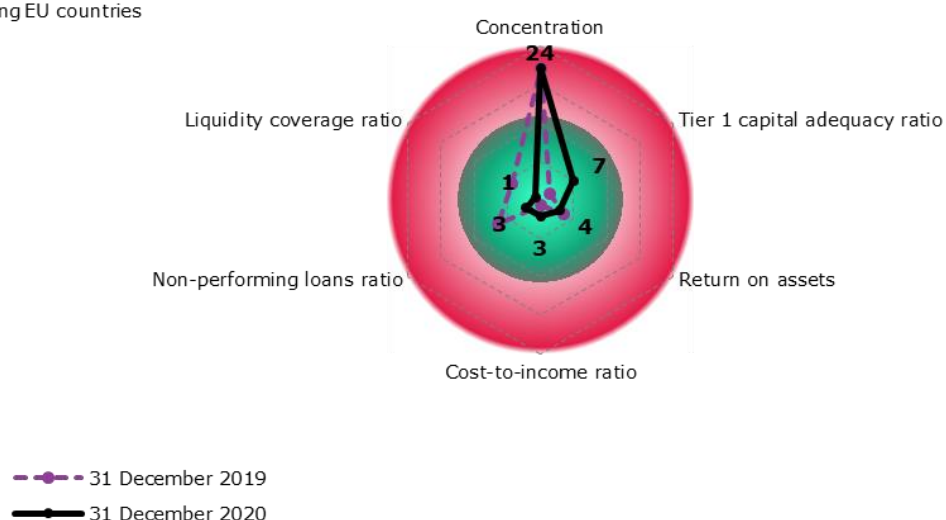
In 2020, the Lithuanian banking sector withstood the initial shock triggered by the COVID-19 pandemic and its performance indicators were among the best across the EU. Banks operating in Lithuania met the pandemic in a more advantageous position compared to the majority of EU banks, some of which then faced profitability and efficiency challenges, in particular in large EU member states. Banks operating in Lithuania recorded barely any deterioration in their performance indicators, which were among the best across the EU in late 2020 (see Chart 4), thanks to a high return on assets of the Lithuanian banking sector, its low cost-to-income ratio and high capital adequacy as well as a relatively minor downturn of the Lithuanian economy. What was particularly noteworthy was the growth of banks' liquidity buffers: with the private sector's deposits in Lithuania increasing at the most rapid pace in the EU, the liquidity coverage ratio surged to 743%, from 272%, over the year, hitting the highest level across the Union.

Performance indicators of Lithuania's banking sector remained among the best across the EU.

Chart 4. Lithuanian banking sector's performance in comparison to other EU countries

(Q4 2020)

Rank among EU countries



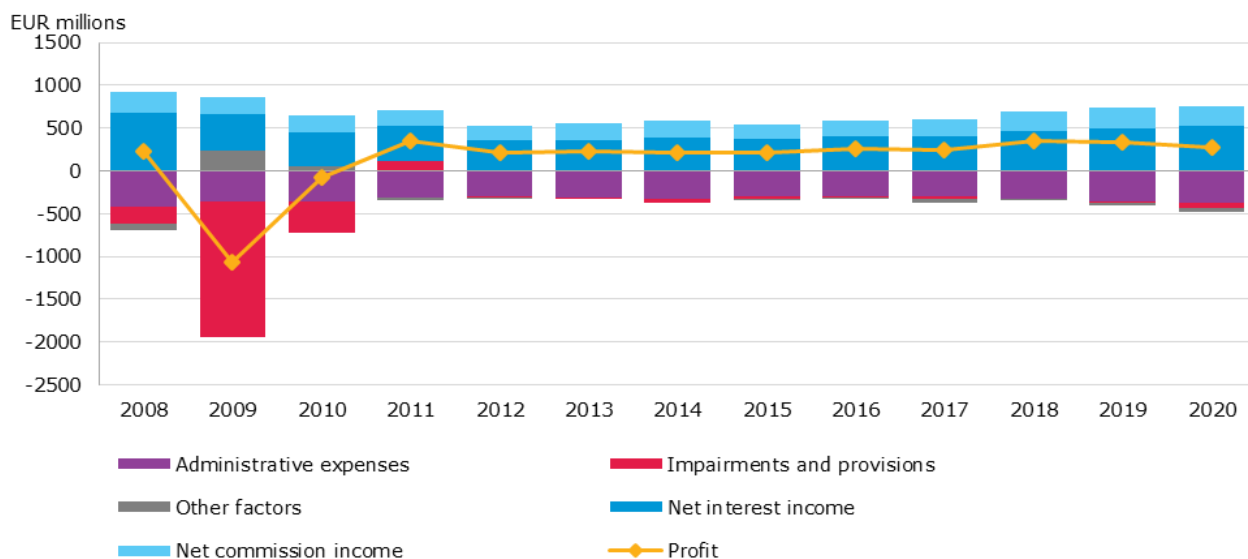
Sources: EBA, ECB and Bank of Lithuania calculations.

Notes: Concentration is measured by the Herfindahl-Hirschman index. The latest concentration data are for 2019. The green colour marks the Lithuanian banking sector indicators surpassing those of most other EU countries, the red colour shows those that were comparatively worse.

The banking sector's profitability decreased due to a slight deterioration in loan quality, but remained among the highest across the EU. In 2020, the banking sector generated €279.7 million in profit, which was down by 16.4% from the previous year but broadly matched the 2012-2017 average (see Chart 5). The sector's profit was mainly driven down by a more than twofold surge in loan impairments, which came close to €57 million (0.2% of assets), as a result of the pandemic. Nonetheless, loan impairments were low compared to the losses triggered by the 2009 financial crisis, when loan impairment losses exceeded €1 billion (6.4% of assets). Businesses and households are likely to face financial hardship with a decrease in state support, which may signal additional losses for the country's banks in the future due to credit risks (for more details, see Section 2.1 "Deterioration in the financial standing of businesses affected by lockdown restrictions and the related economic fallout").

In the face of the pandemic, banks remained profitable and the overall earnings of the banking sector were broadly unchanged from the 2012-2017 average.

Chart 5. Evolution of profits (losses) of the banking sector and contributing factors



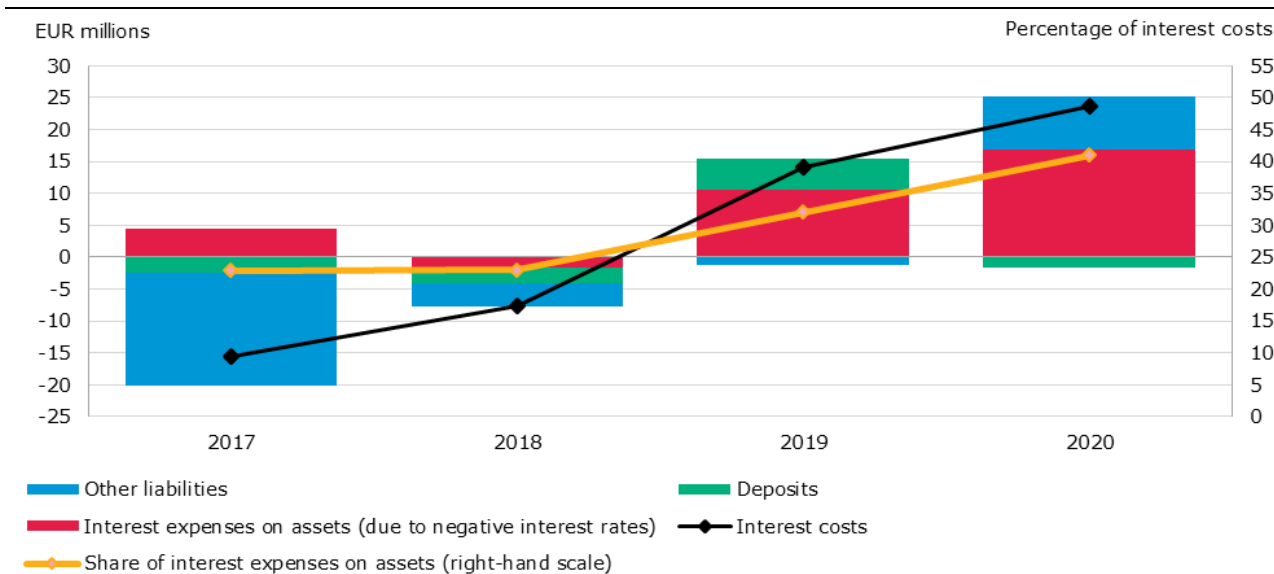
Sources: Bank of Lithuania and Bank of Lithuania calculations.

With interest expenses growing and income from lending decreasing, it becomes increasingly more difficult for banks to boost profitability through net interest income. The corporate loan portfolio has been decreasing in recent years, leading to a decline in the interest income earned by banks from this segment. Even though the rapid growth in lending to households helped stave off a significant decrease in income from interest, the total net interest income of the country's top banks fell by 4.6% in 2020.¹ Net interest income was also driven down by the interest expenses incurred by the country's banks in relation to their deposits with central banks and other financial institutions (€42.6 million). In 2019 and 2020, these payments emerged as the main factor behind the rise in interest expenses and their share increased to 41% of the total interest expenditure in 2020, from 23% in 2017 (see Chart 6). Meanwhile, the interest income earned by banks on deposits or other financial instruments bearing negative interest rates amounted to a meagre €8 million and its share remained virtually unchanged in the same time period (increasing to 1.3% of total interest income, from 1.1%). With private sector deposits growing at a rapid pace and with lending lagging behind, cash held with central banks comprises an increasingly bigger proportion of banks' assets (32%). Therefore, interest costs incurred by banks on assets will remain high amid the prevailing negative interest environment. The sector's profitability may decrease in the future, unless the country's banks find more effective ways to put this money to work.

¹ In 2020, net interest income increased by 4.9%, which, however, was partly due to changes in the comparative base. Excluding these, overall net interest income rose by 0.5%, while net interest income of the country's top four banks decreased by 4.6%. For more details, see the [Banking Activity Review \(2020\)](#).

Banks' interest expenses followed an upward trend due to negative interest rates paid by banks for their funds held with the central bank.

Chart 6. Changes in interest expenses and contributing factors



Sources: Bank of Lithuania and Bank of Lithuania calculations.

Note: Deposit insurance costs and contributions to the resolution fund, which no longer qualify as interest expenses from 1 July 2020, have been included in interest expenses (other liabilities) for the sake of comparison with earlier periods.

An increase in the credit risk of some debtors has not led to a significant growth in non-performing loans thus far. The overall ratios of non-performing corporate and consumer loans increased somewhat in 2020 (by 0.6 percentage point and 2.0 percentage points, respectively). However, the growth rates recorded by many banks were largely limited and the overall increase was mainly triggered by one-off factors related to several banks as well as a lower comparative base resulting from the contraction of corporate and household consumption loan portfolios.² The growth of non-performing loans was also held back by the moratoria signed by banks, which allowed eligible corporate and household borrowers to defer the repayment of their loans. Nonetheless, the share of bank loans under the loan moratoria, signed in accordance with EBA guidelines, was insignificant in Lithuania (2.7% of the loan portfolio) compared to other EU countries³ (see Chart 8). Moreover, the majority of moratoria have already expired reverting customers back to the usual loan repayment schedules. Only approximately 10% of the loans under expired moratoria and other pandemic-related forbearance measures ended up as non-performing.⁴ Even though such figures suggest no significant deterioration in borrowers' financial health, a rise in the share of bank loans with higher credit risk signals a potential worsening of loan quality in the future (for more details, see Section 2.1 "Deterioration in the financial standing of businesses affected by lockdown restrictions and the related economic fallout").

High capital adequacy will help the country's banks withstand potential losses. Banks halted dividend payments following the onset of the pandemic, which led to an increase in the banking sector's

² With the level of non-performing loans being substantially unchanged, the numerator of the non-performing loan ratio remained stable, but the denominator decreased due to a decline in the loan portfolio, which led to an increase in the ratio value.

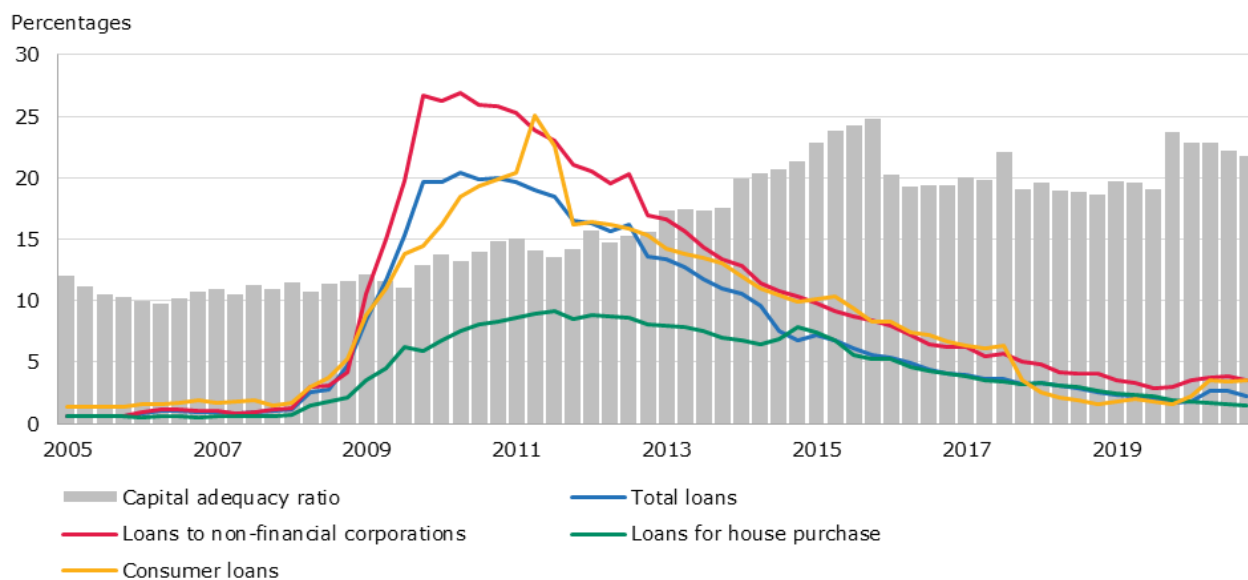
³ Loans under the moratoria signed in accordance with EBA guidelines amounted to approximately €500 million and loans subject to other COVID-19 related forbearance measures – to approximately €300 million during the moratoria period from April 2020 to 31 March 2021. Moreover, the country's banks concluded other individual bilateral agreements with customers during that period, hence, total deferred liabilities amounted to €1.5 billion, according to the [data from the Association of Lithuanian Banks](#). Chart 8 shows the statistics on loans under moratoria collected from EBA reports and compared to other EU countries. However, the scale of loan deferrals in other countries may also exceed that indicated in reports. The EBA's analysis showed that loans granted by banks operating in Lithuania which were not restructured according to the EBA guidelines accounted for a larger share than in other EU countries.

⁴ As regards the loans under moratoria and other COVID-19 related forbearance measures, household loans worth €12.8 million and corporate loans worth €10.8 million ended up as non-performing. These represent 8.4% and 4.1% respectively of the non-performing household and corporate loan portfolios.

capital adequacy ratio that rose by 4.7 percentage points in the fourth quarter of 2019 from the previous quarter, to 23.7%. However, heightened credit risk triggered slight increases in risk weights and risk-weighted assets, which put a downward pressure on the capital adequacy ratio that shrank by nearly 2 percentage points from early 2020. Nonetheless, banks have built up €1.2 billion in capital (which is nearly four times the current value of the non-performing loan portfolio) above the minimum requirements that could be used for loan loss coverage without breaching these minimum standards. It should be noted that 73% of the performing loan portfolio is covered by collateral, which implies much greater real chances for the country’s banks to absorb losses and stay compliant with the requirements. Banks’ preparedness to absorb potential losses has also been proved by stress testing: in an adverse scenario, assuming the banking sector’s credit losses of approximately €665 million between 2021 and 2022, the capital adequacy ratio would decrease to 17.2%, from 20.8%, and the available capital of the banking sector would be sufficient to safely meet the minimum requirements, including Pillar 2 (for more details, see Chapter 4 “Stress testing”).

The capital adequacy ratio of the banking sector improved following the halt of bank dividend payments, while the share of non-performing loans increased somewhat in the reporting period.

Chart 7. Non-performing loans by loan segment and bank capital adequacy



Source: Bank of Lithuania.

The share of loans under moratoria in banks operating in Lithuania was among the smallest across the EU.

Chart 8. Loans under EBA loan moratoria as a share of corporate and household loan portfolios in EU countries

(Q3 2020)



Sources: EBA, Bank of Lithuania and Bank of Lithuania calculations.

Note: Data on Lithuania – the fourth quarter of 2020, data on other EU countries – the third quarter of 2020.

An increase in financial market players engaged in lending for house purchase triggered a decline in interest rates, which moved back to the level observed in 2019. Growth in housing loans subdued following the onset of the pandemic only to recover in summer and reach new highs (for more details, see Section 1.3 “Credit developments and indebtedness”). This acceleration in lending was also driven by market participants that adjusted their credit behaviour and stepped up lending for house purchase, as is apparent from the rapid decline of the Herfindahl-Hirschman Index (HHI)⁵ for housing credit flows, which shows that the overall flow of housing loans has become less concentrated. According to the latest Bank Lending Survey conducted by the Bank of Lithuania, several market participants reported reducing their interest rates on housing loans in late 2020 precisely because of increased competitive pressure.⁶ Increased competition in the market for lending for house purchase reduces the banking sector’s dependence on two major Swedish-owned banks and mitigates the ensuing systemic risks, but at the same time contributes to growth in real estate market activity (for more details, see Section 2.2 “Risk of potential overheating in the residential real estate sector at its historical peak of activity”).

Interest rates on corporate loans moved onto a downward path in late 2020, but the loan portfolio contracted at a rapid pace amid a decline in lending. The average interest rate on corporate loans climbed to 3.0% in late 2019, from 2.1% in late 2017, but then switched to a decreasing trend, apparent since late 2020 (see Chart 9). Nonetheless, lending flows decreased substantially in 2020 (for more details, see Section 1.3 “Credit developments and indebtedness”). Yet, the decline was essentially across the board at the country’s banks hence the indicator measuring the concentration of credit flows remained substantially unchanged year on year. Such tendencies suggest the absence of high credit demand or pressure on interest rates in this loan segment, in contrast to housing loans (for more details about interest pricing see Box 1). Due to the decline in lending, in 2020, the country’s banks

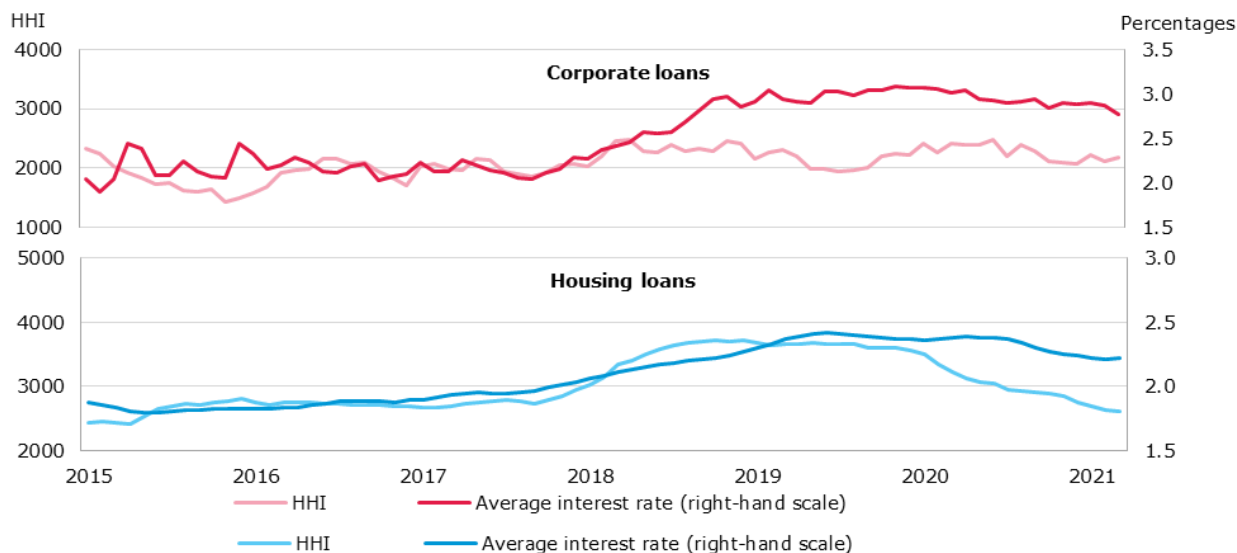
⁵ The Herfindahl-Hirschman Index is calculated according to the following formula: $HHI = \sum_{i=1}^n s_i^2$, where s_i is the share of credit flows by individual banks.

⁶ For more details, see the [Review of the Bank Lending Survey \(2021/1\)](#).

recorded a substantial decrease in the corporate loan portfolio, which contracted by 16% (-€1.3 billion) on a year-on-year basis. As a result, the share of corporate loans in the loan portfolio of banks operating in Lithuania fell to 38%, from 43%, and was overtaken by the share of housing loans, which increased by 9% (+€754 million) year on year and partly offset the overall portfolio decrease.

Interest rates decreased as more banks stepped up lending for house purchase in the period under review.

Chart 9. Evolution of interest rates on new loans and the level of concentration



Sources: Bank of Lithuania and Bank of Lithuania calculations.
Note: 6-month moving sum of lending flows.

Box 1. Understanding the pricing of interest rates applied by banks operating in Lithuania

Through using econometric models, this box aims to determine what factors drive developments in margins on new loans in Lithuania. For the purpose of loan pricing, banks normally take into account the following four components: 1) funding expenses incurred or to be incurred by a bank; 2) administrative and other operating costs of a bank; 3) expected loan losses, i.e. the level of loan or customer risk; and 4) equity price, which also depends on capital requirements and shareholders' return on required equity. The latter depends not only on shareholders' expectations, but also, among other things, on the structure of the market in which the bank operates as well as demand and potential differentiation of the loan product (Maudos, de Guevara, 2004; Gambacorta, 2006).

In order to understand how different pricing elements are related to the price of loans granted, a simplified pricing model for margins on bank loans is constructed. Loan margins ($m_{b,t}$) are defined as the interest rates on new loans minus the EURIBOR⁷ index for a respective term, modelled using the panel regression model.

$$m_{b,t} = a_b + \beta \left(m_{b,t}^D \frac{D_{b,t}}{L_{b,t}} \right) + \delta \left(m_{b,t}^F \frac{F_{b,t}}{L_{b,t}} \right) + \gamma (CR_{b,t} \omega_{b,t}) + \rho X_{b,t} + e_{b,t}$$

⁷ The weighted EURIBOR-VILIBOR indicator, calculated on the basis of loans granted by each bank and denominated in the euro and litas, was used in 2006-2015. Housing loans are subject to a 6-month EURIBOR, while corporate loans are subject to a 3-month EURIBOR. The model assumes the EURIBOR index is not negative, i.e. $EURIBOR = \max(EURIBOR; 0)$.

where: index b – bank, t – quarter, a_b – the individual (fixed) effect of a bank, $m_{b,t}^D$ – the average margin on the deposit rate, $D_{b,t}$ – deposits, $L_{b,t}$ – the total size of the loan portfolio, $m_{b,t}^F$ – European bank bond yield spread, $F_{b,t}$ – liabilities to foreign credit institutions, $CR_{b,t}$ – capital requirements for banks, $\omega_{b,t}$ – the average risk weight of (corporate or mortgage) loans, $X_{b,t}$ – other variables (e.g. customer credit risk, market concentration, growth in loans granted). Margins on loans to non-financial corporations and housing loans are modelled separately.

The analysis covers eight banks operating in Lithuania. In 2019, loans issued by these banks collectively accounted for approximately 90% of the flow of commercial loans granted by banks and (nearly) the entire flow of mortgage loans. The quarterly data of 2006-2020 are used.⁸

The results show that the developments in margins on corporate and mortgage loans are statistically significantly related to bank expenses on funding, credit risk, contributions to the deposit insurance and resolution funds, and market concentration (see Table A). For example, should margins on bank deposits increase by 1 percentage point, the margins on corporate loans would, on average, rise by roughly 0.56 percentage point, while the margins on mortgage loans – around 0.58 percentage point. Due to the increase in loan concentration (1,000-point increase in the Herfindahl-Hirschman Index), the margins on corporate and mortgage loans would pick up by 0.72 percentage point and 0.53 percentage point, respectively.⁹ Growth in loans granted and excess reserve contributions are not statistically significant components of interest margins (at the 0.05 level).¹⁰

Table A. Panel regression results

Model	Loans to non-financial corporations	Mortgage loans
Expenses on funding through deposits	0.56*** (0.06)	0.58*** (0.05)
Expenses on foreign funding	0.32** (0.15)	0.39*** (0.08)
Administrative expenses	0.03 (0.09)	0.30*** (0.07)
Contributions to the Deposit Insurance Fund and the Single Resolution Fund	1.62*** (0.48)	0.96** (0.39)
Capital requirements	0.06*** (0.02)	0.0003 (0.02)
Credit risk/loss	0.06*** (0.02)	0.08*** (0.01)
Concentration	0.72*** (0.22)	0.53*** (0.09)
Payments on excess reserves	0.01 (0.01)	0.02* (0.01)
Growth in loans	-0.003 (0.003)	0.05 (0.14)
Observations	459	388
Corr. R^2	0.35	0.59
Bank's FE	Yes	Yes

⁸ The model includes all observable data on banking costs. Other variables most frequently used in literature are also taken into account, e.g. market concentration and credit risk (see Gambacorta, 2008; Maudos and De Guevara, 2004). Data on new loans, deposits and their interest rates, and banks' foreign liabilities are taken from the database of MFIs. Data on administrative costs, provisions, and loan risk weights are taken from FINREP and COREP reports. Payments on excess reserves, contributions to the Deposit Insurance Fund and the Single Resolution Fund, and capital requirements are Bank of Lithuania data. Bank bond yields are taken from Refinitiv. Concentration measured using the Herfindahl-Hirschman Index, which is calculated on the basis of the balances of loans to non-financial corporations or mortgage loans, – Bank of Lithuania calculations using MFI data. Maudos, J., and De Guevara, J. F. (2004). Factors explaining the interest margin in the banking sectors of the European Union. *Journal of Banking & Finance*, 28(9), 2259-2281. Gambacorta, L. (2008), How do banks set interest rates? *European Economic Review*, 52(5), 792-819.

⁹ In comparison, in 2016-2019, the Herfindahl-Hirschman Index calculated on the basis of the balances of corporate loans increased by 350 points (from 2,000 to 2,350), and the Herfindahl-Hirschman Index of mortgage loans – by 900 points (from 2,260 to 3,160).

¹⁰ It should be noted that the excess reserve contributions included in the model are assessed independently of other monetary policy instruments.

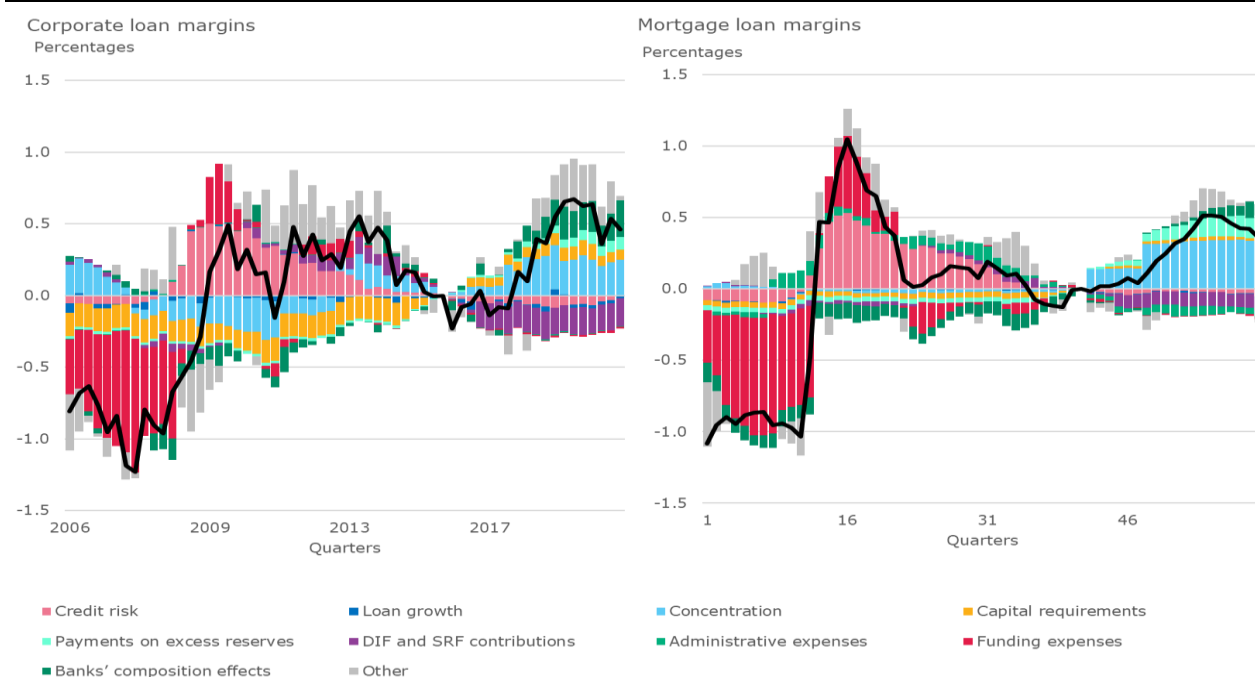
Source: Bank of Lithuania calculations.

Notes: Statistical significance 0 '****' 0.01 '***' 0.05 '**' 0.1, the table gives robust standard errors. FE: fixed (banks') effects. Credit risk is treated as the ratio between provisions and loans, a lead of two quarters is used; concentration is treated as the Herfindahl-Hirschman Index (calculated on the basis of the balance of corporate or mortgage loans). The models were estimated with reference to the size of the portfolio of (corporate or mortgage) bank loans, which is time-varying. The housing loan margin model (the second column) does not include UAB Medicinos bankas, which historically (almost) did not grant housing loans.

The decomposition of loan margins (see Chart A) shows that the factors related to the increase in the margins on corporate and mortgage loans during the crisis (2009-2010) and in recent years (2018-2019) differ. The increase in margins in the crisis period might be related to higher credit risk and funding expenses, while in recent years – to elevated concentration in the banking sector, increased composition effects, and other (unobservable) factors. According to calculations, increased concentration in 2016-2019 pushed the margins on corporate loans up by approximately 0.28 percentage point and the margins on mortgage loans – by approximately 0.34 percentage point. As shown by elevated composition effects, increased borrowing from banks offering pricier loans in the same period raised the margins on corporate loans by approximately 0.2 percentage point, on average, while the margins on mortgage loans – by approximately 0.07 percentage point.

No available data, such as on funding expenses or credit risk, can explain the (recent) increase in the margins on corporate loans of approximately 0.26 percentage point as well as the 0.11 percentage point increase in the margins on mortgage loans (see grey in Chart A). In other words, the share of the rise in margins, which remains unexplained upon controlling all the factors related to the margin increase in the econometric model, might be linked to other factors, such as dwindling credit supply or the seeking of higher returns. It is, in particular, mainly the decrease in other (unobserved) factors that might be linked to the decline in margins on corporate and mortgage loans in 2020. Meanwhile, the effect of observed variables on interest margins in 2020 remains quite close to the level of 2018-2019.

Chart A. Decomposition of interest margins on corporate and mortgage loans



Source: Bank of Lithuania calculations.

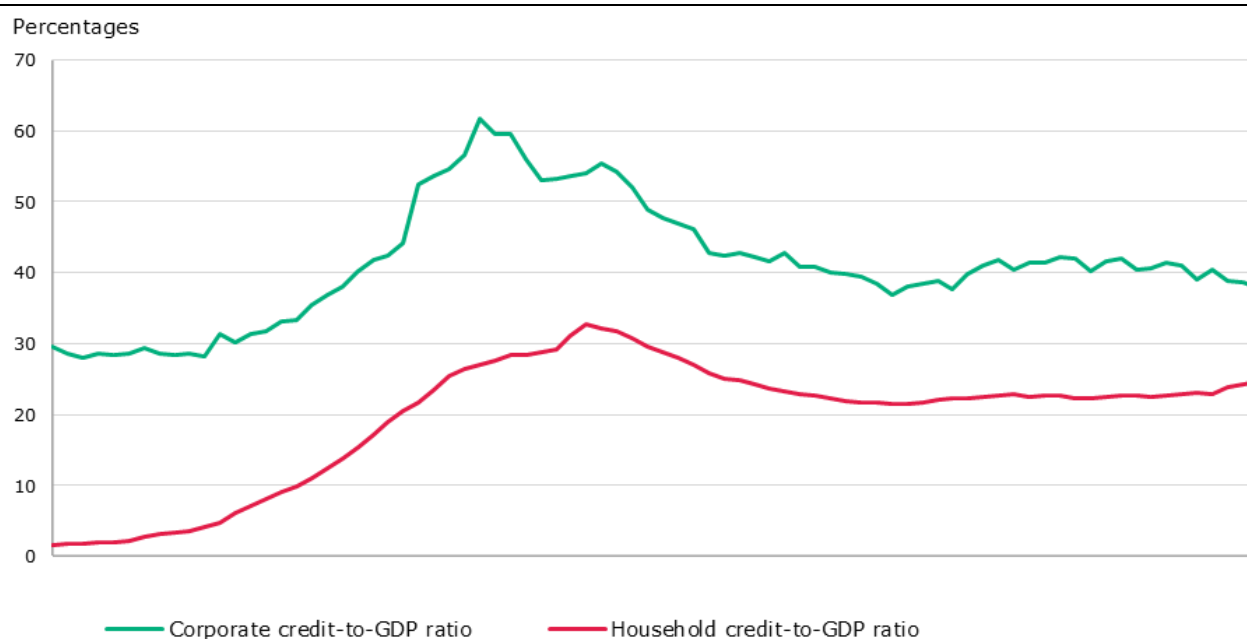
Notes: Reference period – the first quarter of 2016. Banks' composition effects – the individual (fixed) effects of banks, DIF – the Deposit Insurance Fund, SRF – the Single Resolution Fund, other – residuals. Concentration is measured using the Herfindahl-Hirschman Index (calculated on the basis of the balance of bank loans to non-financial corporations or mortgage loans). The models were estimated with reference to the size of the portfolio of (corporate or mortgage) bank loans, which is time-varying.

1.3. Credit developments and indebtedness

In 2020, credit growth in Lithuania decelerated substantially, mainly due to a contraction in lending to non-financial corporations. In late 2020, the annual pace of growth in credit, comprising all types of sources of financing,¹¹ slowed down to 0.6%, mostly due to a decrease in the portfolio of loans granted by credit institutions to the private non-financial sector. As a result, despite a decline in economic activity, the overall level of indebtedness remained stable: the credit-to-GDP ratio edged up to 62.3%, while the ratio between loans granted by credit institutions and GDP decreased to 39.5% at the end of the first quarter of 2021. However, the indebtedness of non-financial corporations and households followed different paths as the ratio between credit granted to households and GDP headed upward, while the respective ratio for non-financial corporations moved in the opposite direction (see Chart 10). This was due to inter alia the continuing decline in the portfolio of loans granted by credit institutions to non-financial corporations, which contracted by an annual 11.2% in March 2021 (see Chart 11). On the other hand, the pace of growth in the household loan portfolio remained stable, at 6.6%, as it was supported by the continued active lending for house purchase, which more than offset a decline in the portfolio of consumer and other loans. General government institutions continued to reduce their financial liabilities to credit institutions, albeit at a slower pace than in the previous year: their loan portfolio contracted by 3.2% over the course of the year, mainly due to a decrease in municipal debts to credit institutions.

The level of indebtedness of non-financial corporations followed a downward path, while that of households moved in the opposite direction.

Chart 10. Ratios of corporate credit and household credit to GDP

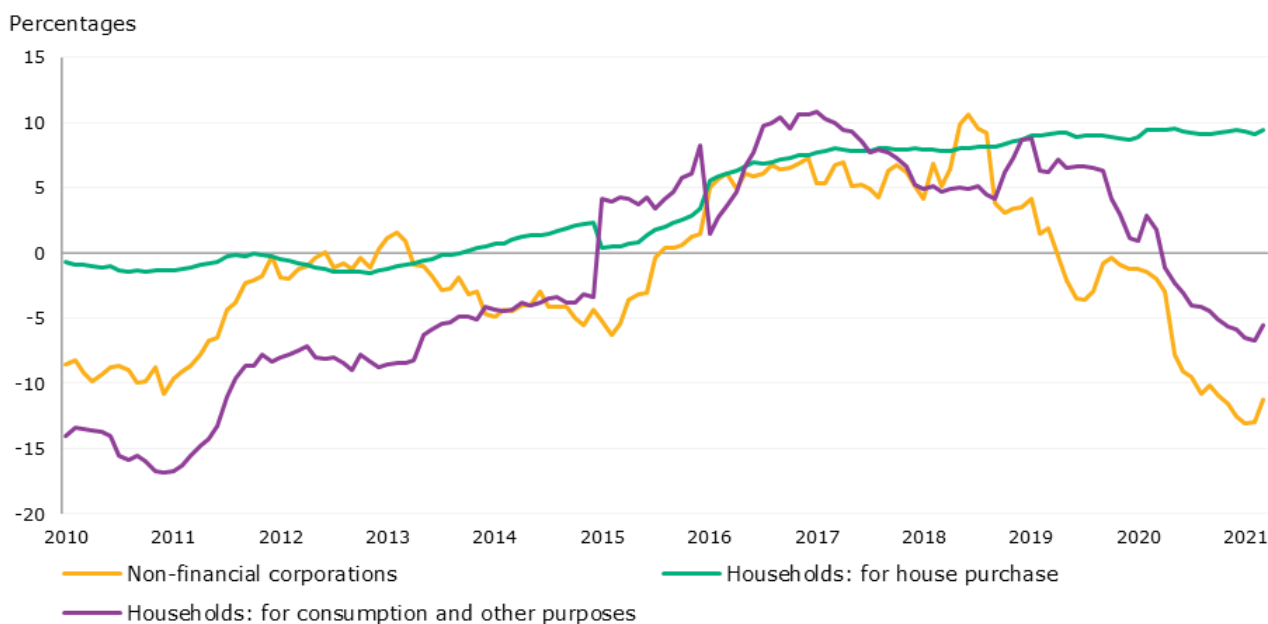


Sources: Statistics Lithuania and Bank of Lithuania calculations.

¹¹ In this case, credit includes loans granted by all lenders (credit institutions, other financial institutions, non-financial corporations, foreign residents, etc.) to the private non-financial sector.

Lending by credit institutions to businesses continued to decrease but lending for house purchase stayed on a rapid growth path.

Chart 11. Annual change in the MFI loan portfolio



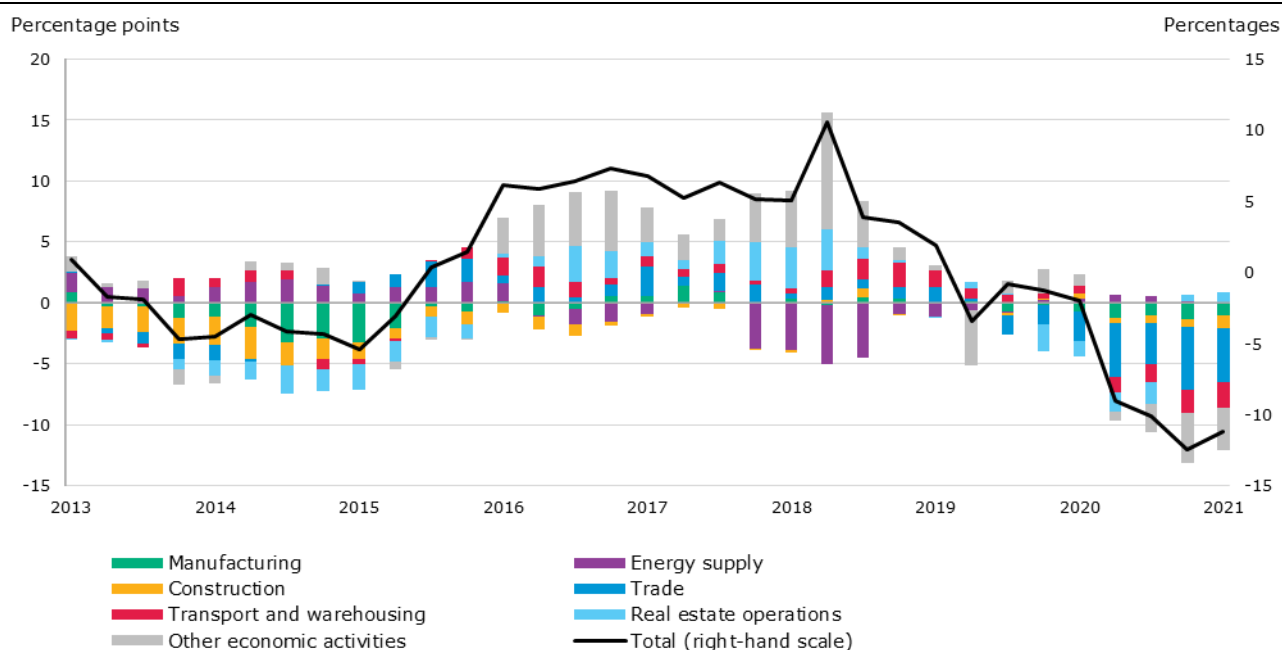
Source: Bank of Lithuania.

The portfolio of loans granted by credit institutions to non-financial corporations contracted at the most rapid pace across the EU and, in terms of economic activities, the decline was observed almost across the board. The portfolio of MFI loans to businesses fell by more than €1.1 billion in 2020. This was mainly due to a decrease in loans to large companies, whose loan portfolio decreased by an annual 13.4%¹² (slightly more than €800 million). The loan portfolio of almost all economic activities also declined. Substantial falls were recorded in the portfolios of loans issued to wholesale and retail trade (€470 million), professional activities dominated by holding companies (€300 million), as well as manufacturing and transport activities (€120 million and €160 million, respectively, see Chart 12). On the other hand, this trend reversed in the first quarter of 2021 and the corporate loan portfolio increased by €77 million during that quarter. The first lockdown triggered an increasing trend in the volume of loan renegotiation: in 2020, loan renegotiations soared by 50% year on year (not including loans forbore in accordance with the terms of moratoria), while the total amount renegotiated during the first lockdown alone twice exceeded the long-term average (see Chart 13).

¹² Data from the Loan Risk Database.

Loan portfolios followed a decreasing trend across almost all non-financial corporate economic activities in 2020.

Chart 12. Contributions to the annual growth in loans to non-financial corporations



Source: Bank of Lithuania calculations.

Notes: Based on data for 14 May. The names of some activities have been abbreviated.

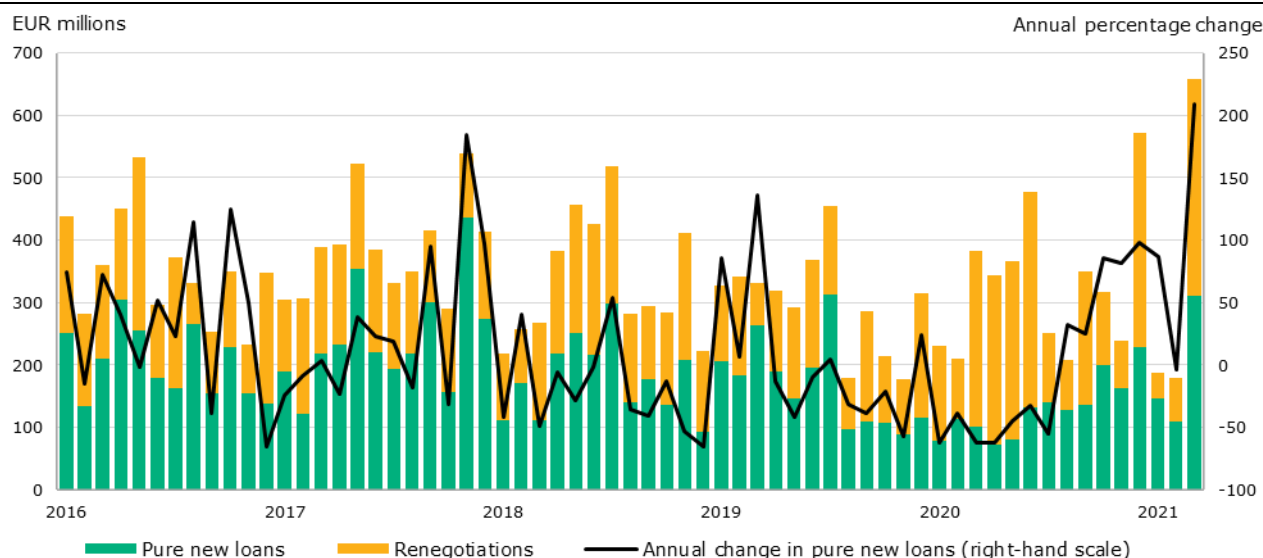
Signs of recovery in new lending to non-financial corporations have become apparent since late 2020.

New lending to non-financial corporations picked up in the fourth quarter of 2020 and the first quarter of 2021. As a result, the annual flow of pure¹³ new loans, covering the period of the first lockdown that saw a contraction in the flows of new loans, increased by 11.6% in March 2021 on a year-on-year basis. Loans above €1 million (including loan renegotiations) showed a more rapid pace of growth as their flow rose by 22.2% year on year, whereas loans under €1 million increased by an annual 17.6%. According to the data available from the Loan Risk Database, the bulk of new lending went towards real estate operations (19% of new loans), manufacturing (13%), trade (13%) and transport (12%) activities in the first quarter of 2021. Credit providers stepped up lending to nearly all sectors, except for accommodation and catering services, arts, entertainment and recreation, information and communications as well as healthcare activities, i.e. some of the activities most affected by lockdown restrictions. New loans that originated in the first quarter of 2021 mainly consisted of direct loans (57%) and financial leasing (21%).

¹³ Pure new loans include contracts that specify, for the first time, the terms and conditions of the loan, and the extended amounts of renegotiated loans.

Even though the loan portfolio has been reducing, a pickup in the flow of new lending to businesses has become apparent.

Chart 13. Flows of lending to businesses and renegotiations of existing corporate loans



Source: Bank of Lithuania.

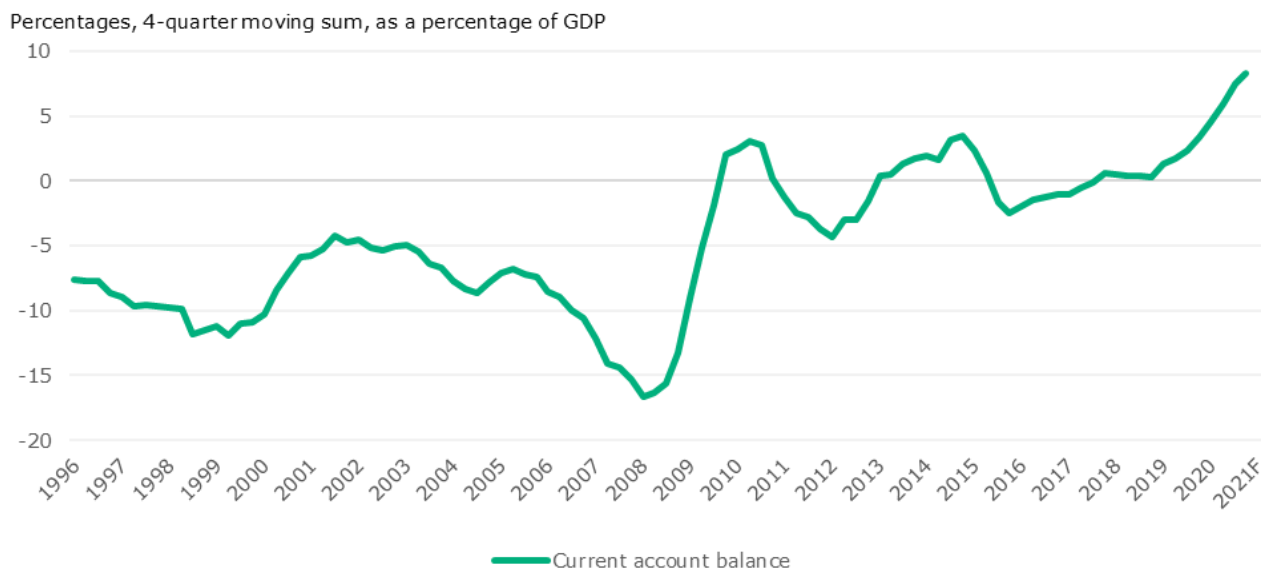
In 2020, total liabilities of the country's businesses showed a limited increase and their growth was underpinned by debts related to short-term purposes. Existing liabilities of non-financial corporations rose by an annual 3.3% in late 2020, which was mostly due to an increase of 7.5% (or €1.8 billion) in short-term liabilities, such as deferred tax arrears, or higher corporate reciprocal debts in the form of trade credits. On the other hand, long-term liabilities decreased by 3.6% (or €0.5 billion), mainly due to a decline in the loans granted by credit institutions, which was driven inter alia by the rapid amortisation of corporate loans, most of which had not been replaced with new loans. For instance, tangible investment, which is at least 30% financed with loans, fell substantially, in particular during the first lockdown amid high uncertainty, due to shelving or scrapping of investment plans. Despite that, the overall volume of investment did not diminish in 2020 thanks to the recovery of investment late in the year, which was mostly driven by the public sector's investment.

In addition to heightened uncertainty and shelved investment plans, borrowing might also have been dampened by the current account surplus, government support and the tightened standards of lending to the sectors more affected by the pandemic. In 2020, Lithuania's current account balance reached its all-time best and exceeded €3 billion, which showed that the country's businesses and households had received much more funds from abroad than spent in the recent year (see Chart 14). Accordingly, this created the conditions for building liquidity buffers and likely contributed to a lower demand for borrowing. A rapid decline in the use of credit lines was also observed during the first lockdown. Apart from increased income from abroad, the decline in corporate borrowing demand for working capital might also have been due to government support schemes, such as subsidies, compensations and preferential loans, which provided businesses with additional liquidity and added more than €1 billion of solvency capacity in the short term, as well as tax deferrals worth nearly €1 billion. Hence the overall flow of government support measures and new credit provided in 2020 exceeded the amount of new loans granted by credit institutions in 2019 (see Chart 15). On the supply side, a temporary tightening of credit standards on loans to businesses was observed in the reporting period. Even though the cost of lending was rather stable in 2020 and even tended downward in early 2021, some of the [banks reported](#) tightening their collateral requirements and reducing the amounts of loans or credit lines after the rollout of the first lockdown in the country. The fallout from the COVID-19

pandemic also led to more limited lending to higher-risk economic activities, in particular accommodation and food services.

Lithuania's current account became surplus during the pandemic.

Chart 14. Lithuania's current account balance

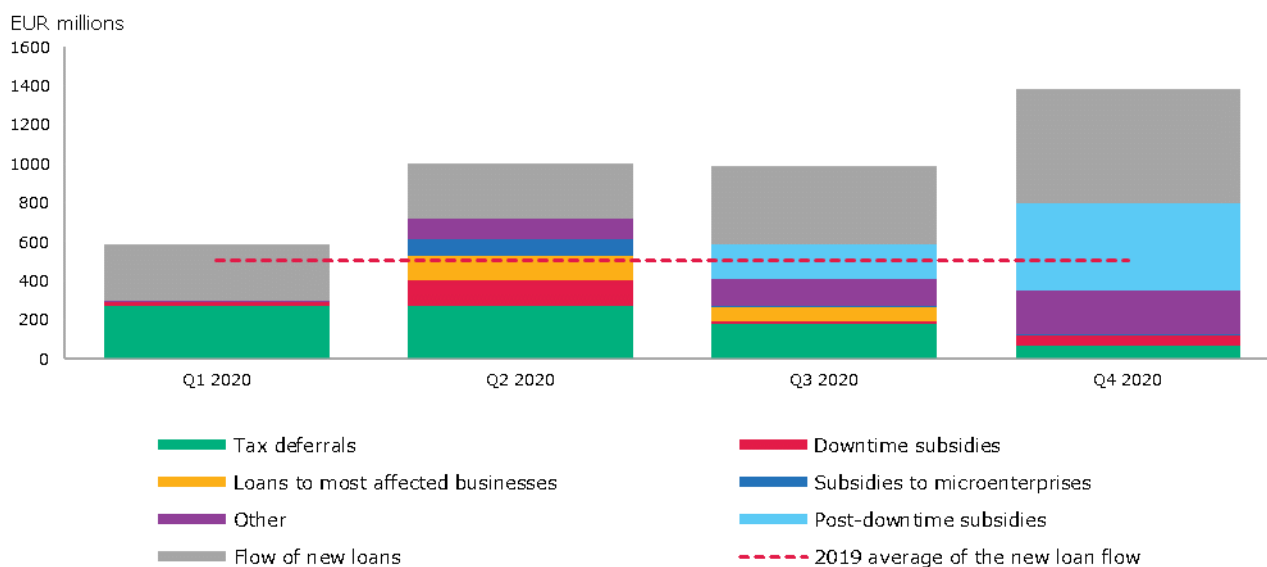


Sources: Statistics Lithuania and Bank of Lithuania calculations.

Note: 2021F is the current account balance forecast released by the Bank of Lithuania.

In 2020, the flow of support measures and credit well exceeded the credit flow of 2019.

Chart 15. Flow of government support measures and pure new loans to non-financial corporations



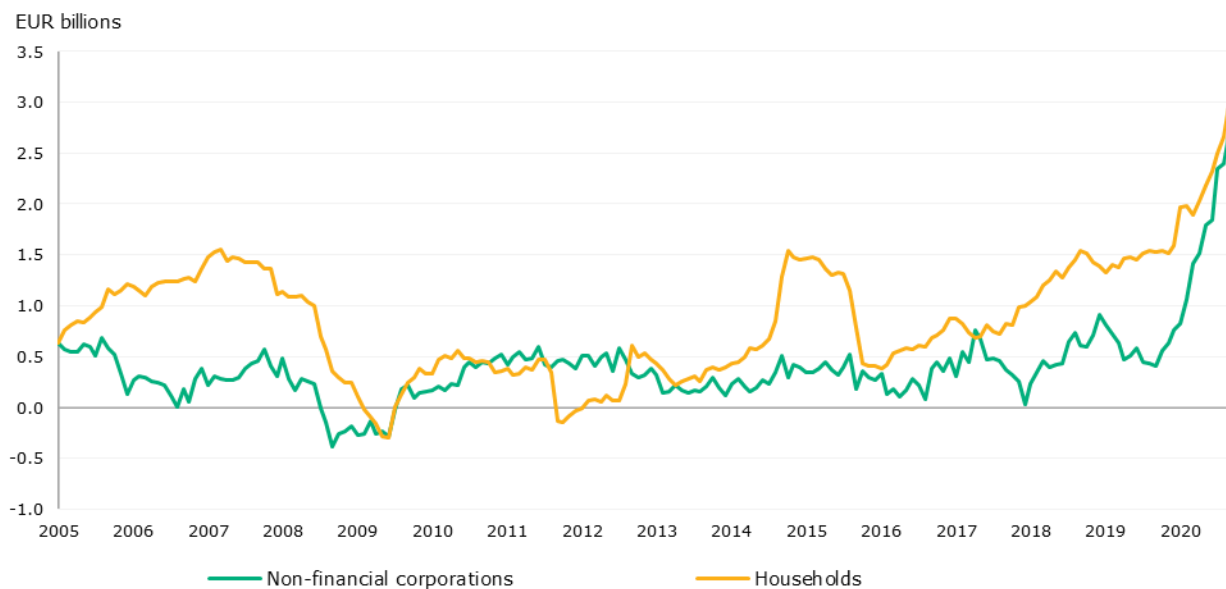
Sources: Bank of Lithuania, INVEGA, Ministry of Social Security and Labour, State Tax Inspectorate, koronastop.lrv.lt and Bank of Lithuania calculations.

Overall resilience of the country's businesses to liquidity shocks has improved despite an economic downturn triggered by the COVID-19 pandemic. Corporate deposits rose by an annual 38% in the first quarter of 2021, whereas gross liquidity increased by slightly more than 5 percentage

points to an all-time high of 168% (see Chart 16). Growth in corporate liquidity was driven by a couple of factors: firstly, the favourable financial standing of the country’s businesses in 2019, which saw rapid growth in revenue and profit before the onset of the pandemic, and, secondly, robust performance of some businesses less affected by the fallout from the COVID-19 pandemic, which boosted their resilience to potential financial shocks even during the lockdown.¹⁴ Total corporate profits followed an upward trend in 2020, including its second quarter, when trade, manufacturing and construction companies contributed to the growth of earnings following the disposal of nearly 8%, or approximately €700 million worth, of inventories built up in previous periods (see Chart 17). These factors, coupled with government support schemes, further enhanced the overall resilience to liquidity shocks. According to survey data, 14-19% of firms faced financial difficulties during the worst period of 2020 and this rate decreased thereafter, whereas in 2009 and 2010, the share of companies in difficulty was in some cases as high as 52% (see Chart 18).

The volume of deposits has increased substantially since the beginning of the first lockdown.

Chart 16. Annual dynamics in deposits of non-financial corporations and households

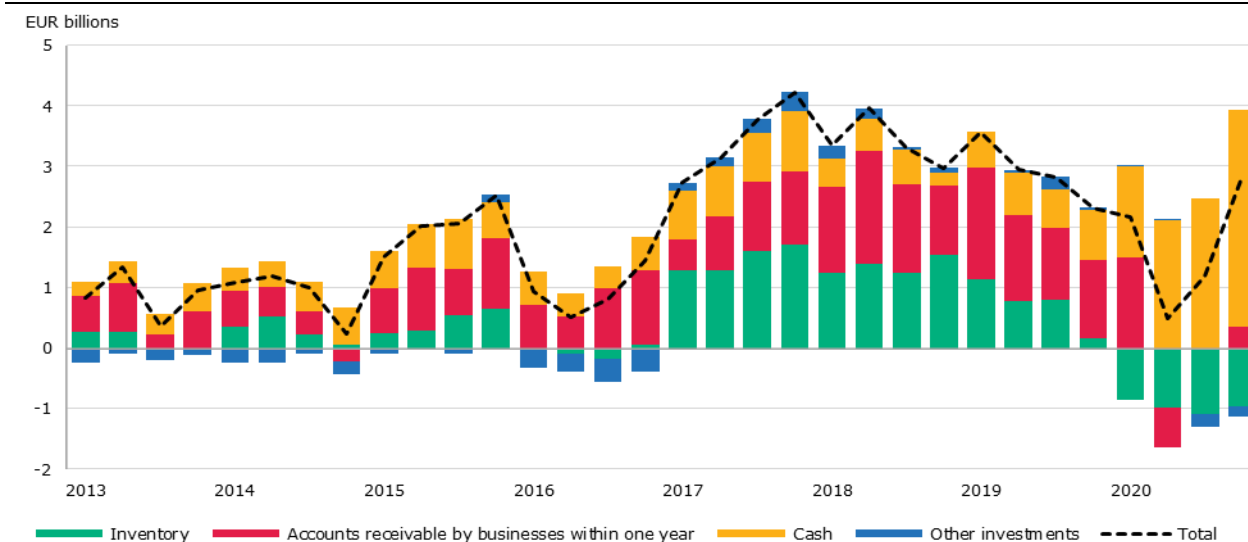


Source: Bank of Lithuania.

¹⁴ For more details, see Section 2.1 “Deterioration in the financial standing of businesses affected by lockdown restrictions and the related economic fallout”.

During the pandemic, businesses sold off parts of their inventories and postponed the replenishment of new stocks.

Chart 17. Annual dynamics in corporate short-term assets by type of asset

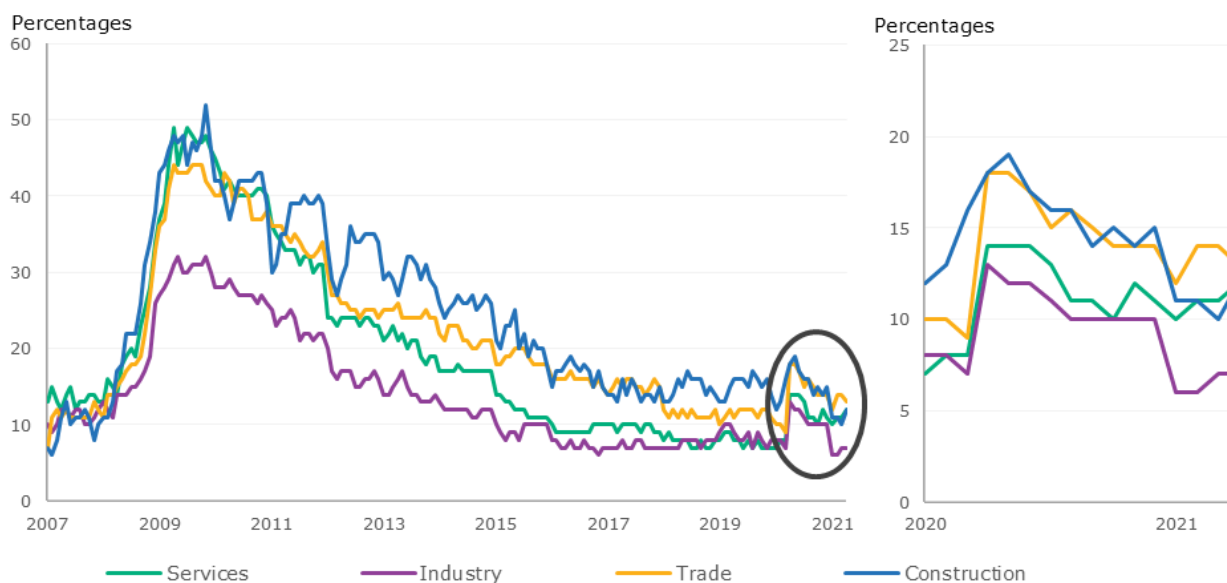


Sources: Statistics Lithuania and Bank of Lithuania calculations.

Further lending to non-financial corporations will depend inter alia on the course of the COVID-19 pandemic and its containment. According to the Bank Lending Survey conducted by the Bank of Lithuania, the decline in demand for bank loans in the non-financial corporations' sector might have been triggered by a fall in capital investment amid heightened uncertainty and the alternative sources of funding. However, the vaccination campaign under way points to further improvements in household and business expectations as recent data suggests that recently the indicators of consumer and business expectations in Lithuania have exceeded the respective euro area's rates, even though they have not yet fully recovered. Hence the upcoming year may likely bring in a recovery of consumption and exports, growth in the purchase of inventories, the replenishment of which has been postponed, for instance, due to supply chain disruptions, and an increase in corporate investment, which should accordingly contribute to a stronger demand for credit.

The share of companies, which had to limit their operations due to financial hardship, increased but not much.

Chart 18. Share of companies in financial difficulty



Source: Statistics Lithuania.

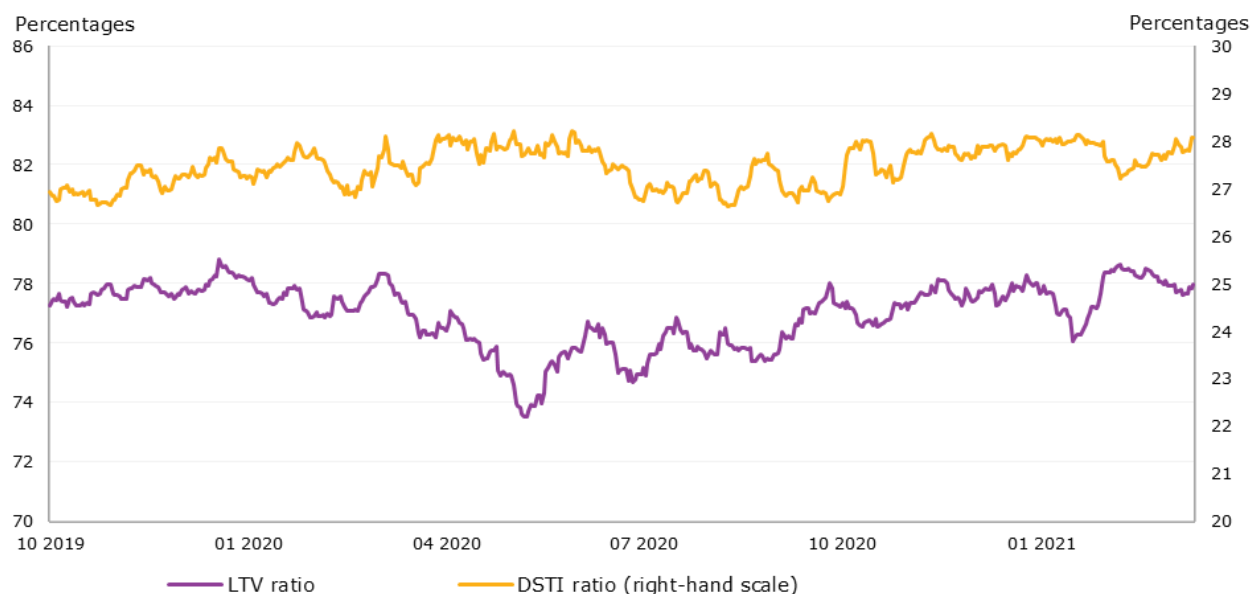
Lending for house purchase remained robust despite the restrictions rolled out due to the COVID-19 pandemic. In late March 2021, the annual growth of the portfolio of housing loans granted by credit institutions¹⁵ accelerated to 9.4%. Even though the flow of pure new housing loans subsided during the first lockdown, it recovered and moved to a growth path as early as in the second half of the year. As a result, the annual flow of loans for house purchase came close to €1.5 billion in late March 2021, which implied an increase of 8.8% on a year-on-year basis. The annual flow of renegotiated housing loans (not including loans under moratoria and other COVID-19 related forbearance measures) also followed an upward trend and increased by 15.5% on a year-on-year basis. Vilnius County accounted for half of new loan agreements signed in 2020 although, in general, housing loan portfolios trended upward across almost all regions.¹⁶ Lending terms were favourable, too, as the average annual interest rate edged down to 2.3% (by 0.1 percentage point year on year), the average DSTI ratio remained broadly unchanged, while the average LTV ratio got back to the growth path and stabilised, recovering to the pre-pandemic level in the second half of the year after a slight decrease during the first lockdown (see Chart 19).

¹⁵ Based on MFI data.

¹⁶ Including the largest cities.

The terms and conditions of housing loans have remained favourable: the LTV ratio has recovered and stabilised after a decline during the first lockdown, while the DSTI ratio has remained broadly unchanged.

Chart 19. Average DSTI and LTV ratios



Source: Bank of Lithuania.

Even though the total flow of new consumer loans has moderated in recent years, this has not been the case with peer-to-peer lending platforms, which have been increasingly attracting interest. In 2020, the value of new consumer loans granted by non-bank consumer credit providers fell by 25% year on year to €390 million, while the portfolio contracted by 11.6%. Although the decline of the portfolio was also driven by other factors,¹⁷ the declining tendency in loans in this segment remained in place, even net of the said factors. Consumer lending by banks was also more subdued: the annual flow of new consumer loans granted by MFIs decreased by 7.6% year on year, to €223 million, in March 2021. The portfolio of consumer and other loans granted by MFIs also turned to a downward path and shrank by an annual 5.5% in March 2021. Nonetheless, the flows of new consumer loans were showing tentative signs of recovery in late first quarter of 2021. Even though lending for consumption decreased overall during the lockdown, this was not the case with peer-to-peer lending platforms, which attracted somewhat increased interest: the value of consumer loans granted by peer-to-peer lending platform operators increased by 3.8% year on year, to €35.4 million, in 2020 and the respective portfolio soared by 23%.

Uncertainty about the future dampened borrowing for consumption, whereas increased savings and expectations fuelled demand for housing loans in the period under review.

Subdued borrowing for consumption was likely affected by the uncertainty heightened by the COVID-19 pandemic as households shunned new financial liabilities, while the restrictions put in place due to the lockdown likely dampened their borrowing needs. Even though some residents lost their jobs due to the COVID-19 restrictions and suffered a substantial decrease in income, others saw their financial situation remain unchanged or even turn to the better.¹⁸ Growing wages widened the scope for making savings, which translated inter alia into an increase of slightly more than 20% in the volume of deposits. Increased savings, expectations and favourable lending terms likely contributed to the growth in demand

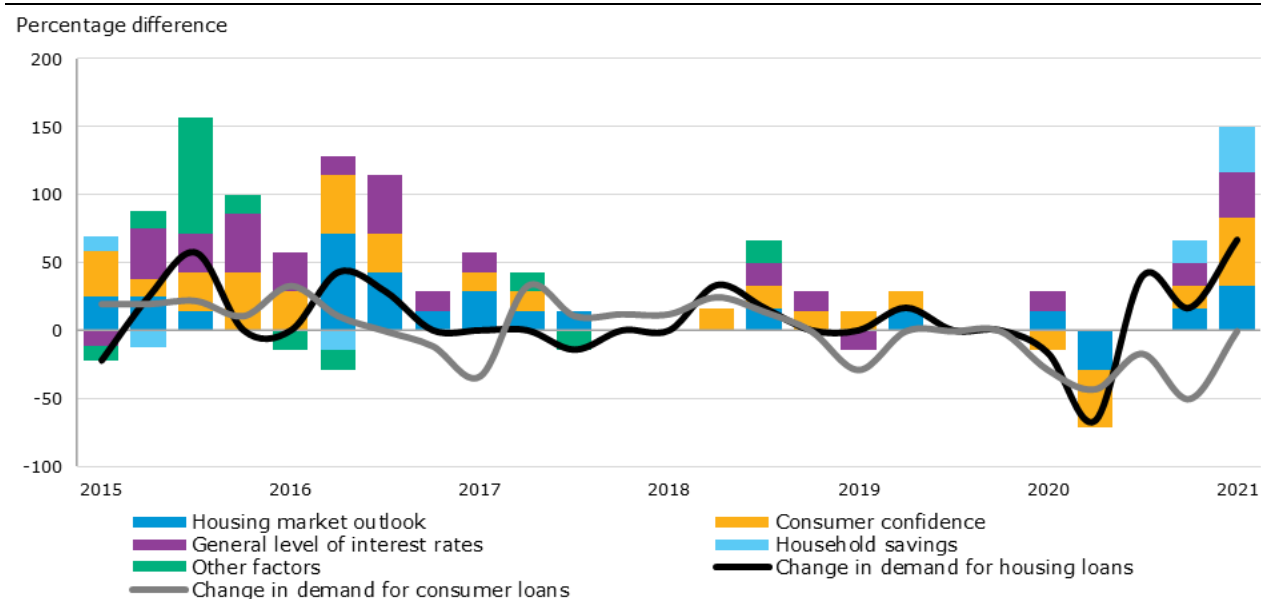
¹⁷ Changes in the nature of activities of two consumer credit providers.

¹⁸ For more details, see Section 2.1 "Deterioration in the financial standing of businesses affected by lockdown restrictions and the related economic fallout".

for housing loans (see Chart 20). The consumer confidence index moved back into the positive territory in April, reversing a decline recorded following the onset of the second lockdown, even though household expectations about the future outlook have yet to fully recover to the level observed in 2019. This, coupled with the further easing of the restrictions in place, may likely encourage households to step up consumption and borrow for consumption purposes, whereas demand for housing loans is likely to remain robust.

Demand for housing loans followed an upward trajectory, while demand for consumer loans moved in the opposite direction.

Chart 20. Contributions to housing loan demand and the dynamics of demand for housing and consumer loans



Sources: Bank Lending Survey and Bank of Lithuania calculations.

Box 2. What drives the flow of small loans: corporate demand or bank credit supply?

This box seeks to draw a quantitative assessment of the factors related to the demand for and supply of small corporate loans (loans up to €1 million). The econometric model to assess the supply of and demand for bank credit was developed on the basis of G. S. Maddala and F. D. Nelson (1974).¹⁹ The model assumes that supply and demand are not necessarily balanced, i.e. disequilibrium occurs, and actual lending equals to the lower of either demand or supply (see Equations 1, 2, and 3). The quantities of demand and supply are not observed. In order to determine them, it is assumed that the interest margin rises in the case of excess demand and falls in the case of excess supply. The amount of change in the margin is directly proportional to the gap between demand and supply (see Equation 4).

$$(1) D_t = c_D + \alpha_0 X_t - \alpha_1 R_t + u_t,$$

$$(2) S_t = c_S + \beta_0 Z_t + \beta_1 R_t + v_t,$$

$$(3) Q_t = \min\{D_t, S_t\},$$

¹⁹ Maddala, G. S., Nelson, F. D. (1974). Maximum likelihood methods for models of markets in disequilibrium. *Econometrica: Journal of the Econometric Society*, 1013-1030.

$$(4) \Delta^4(R_t - e_t^i) = \gamma(D_t - S_t),$$

where: loan demand D_t and supply S_t are unobserved quantities, Q_t – the actual quantity of new corporate loans (loans up to €1 million), EUR millions, X_t – demand factors, Z_t – supply factors, R_t – the interest rate on corporate loans, e_t^i – the EURIBOR index. The model assumes the EURIBOR index to be not negative, i.e. $EURIBOR = \max(EURIBOR; 0)$. Constants are marked by c_D and c_S , and residuals of the model – by u_t and v_t . Demand factors X_t include the unemployment rate, inflation, the ratio of corporate deposits to assets, and the ratio of corporate non-bank (alternative)²⁰ funding to assets. Supply factors Z_t comprise provisions for bad corporate loans, real estate prices, banks' capital adequacy ratio, and banks' market structure²¹, which is measured using the Herfindahl-Hirschman Index²². Data for the fourth quarter of 2004-the fourth quarter of 2020 are used.

The results obtained (see Table A) show which factors contributed to the increase and which to the decrease of the demand for and supply of small corporate loans in 2004-2020. Corporate credit demand is waning with companies having more funds in their accounts or favouring borrowing from other alternative (non-bank) financing sources. The decreasing credit demand is also linked to the deteriorating macroeconomic environment, for example, rising unemployment and declining inflation (which also raises real interest rates). Meanwhile, the link between corporate demand and loan interest rates is not statistically significant. Contrary to credit demand, credit supply is positively and statistically significantly related to interest rates. In other words, in their capacity of applying higher interest rates, banks replenish credit supply. Credit supply also increases with the decline of credit risk (provisions), banks having more equity, rising real estate prices (which contribute to the greater value of the collateral), and diminishing market concentration.

Table A. Disequilibrium model results

Equation	Demand equation (D_t)	Supply equation (S_t)
Constant	814.5*** (185.8)	602.9*** (164.0)
Corporate deposits with banks	-13.9 (10.3)	
Corporate alternative funding	-10.6** (4.5)	
Unemployment	-20.1*** (3.4)	
Inflation	15.4*** (3.9)	
Credit risk (provisions)		-27.2*** (3.2)
Real estate prices		1.9*** (0.6)
Banks' capital adequacy ratio		8.3*** 3.1
Market concentration		-0.27*** (0.06)
Interest rates on loans	13.8 (11.8)	45.5*** (8.8)

²⁰ Non-bank (alternative) funding comprises loans to non-financial corporations, households, and other (non-monetary) financial institutions, debt securities, trade credits, and advance payments.

²¹ The variables were selected after the examination of many economic factors related to credit demand and supply (see Vouldis, 2018; Everaert et al., 2015). The selected model provides a good description of credit demand and supply: the determination coefficient of the model ($R^2 = 0.53$, see Table A) and the correlation between the change in the margin and the gap between demand and supply (see Equation 4) $\text{corr}(\Delta^4(R_t - e_t^i), (D_t - S_t)) = 0.78$ are relatively high. Vouldis, A. T. (2018). Measuring Credit Demand and Supply: A Bayesian Model with an Application to Greece (2003-2011). *Journal of Economics and Statistics*, 238(1). Everaert, G., et al. (2015) Does supply or demand drive the credit cycle? Evidence from Central, Eastern, and Southeastern Europe. International Monetary Fund.

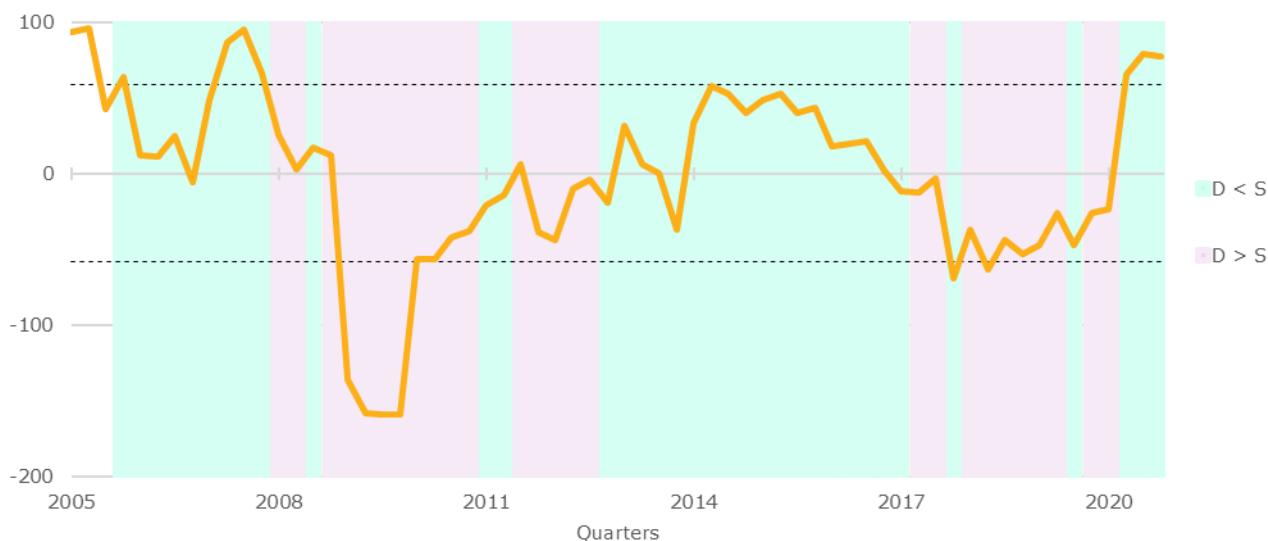
²² Indicators of new loans, their interest rates, and corporate deposits with banks are taken from the MFIs database, while the indicators of unemployment, inflation, real estate prices, and corporate assets are taken from Statistics Lithuania. Corporate alternative funding – data accumulated by the Bank of Lithuania, provisions – data from FINREP (financial reporting) reports, the Herfindahl-Hirschman Index (calculated on the basis of the balance of bank loans to enterprises) – Bank of Lithuania calculations.

Source: Bank of Lithuania calculations.

Notes: Statistical significance 0 '****' 0.01 '**' 0.05 '*' 0.1. Corporate deposits with banks are measured as the ratio of corporate deposits to assets, alternative funding – the ratio of funding through non-bank funds to assets, credit risk – the ratio of provisions to corporate loans (using a lead of two quarters), market structure – the Herfindahl-Hirschman Index (calculated on the basis of the balance of bank loans granted to enterprises).

Chart A. Excess (+) or shortage (-) of supply

(EUR millions)



Source: Bank of Lithuania calculations.

Notes: $D < S$ ($D > S$) – quarters, in which annual growth in interest margins on loans is negative (positive); the confidence interval of 68% calculated as the standard deviation of ± 1 . Positive values – excess of supply (shortage of demand), negative values – shortage of supply (excess of demand).

The econometric assessment shows that the excess and shortage of the supply of small corporate loans (up to €1 million) occur rather cyclically in the market (see Chart A).²³ On the basis of the model, it was calculated that both the credit demand of firms and credit supply of banks (see the grey line in Chart B) were following an upward trend in the years of booming economic growth, i.e. 2004-2008, yet supply was increasing at a more rapid pace, resulting in the formation of a statistically significant excess of supply in the market. Such rapid growth in supply was related to the improving macroeconomic environment, increasing lending interest rates, and low banking losses. After the marked decline in credit supply in the period of economic recession, i.e. in 2009, the increased customer credit risk and deteriorating macroeconomic environment provoked the formation of the greatest credit shortage observed in the market in the period under review (see Chart B).

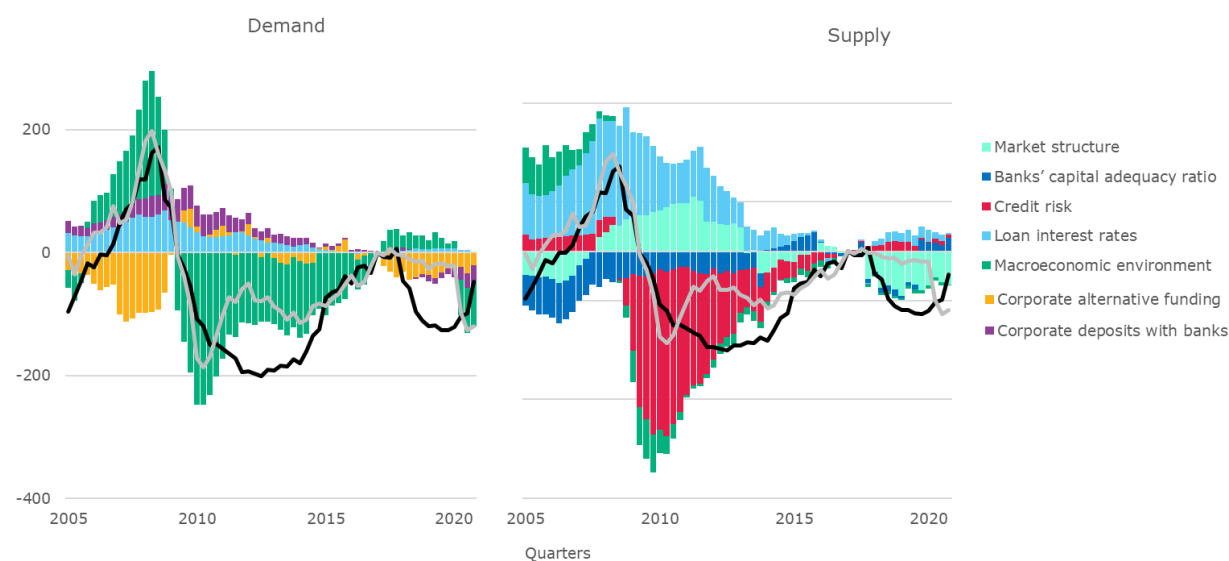
Although corporate demand and bank credit supply were relatively balanced after the crisis, i.e. in 2011-2014, the statistically significant imbalance in the market occurred again at the end of 2017-beginning of 2018. The calculations of the model show that the sharp decrease in the supply of bank loans led to the formation of a shortage of supply at the end of 2017. This decrease in supply was statistically significantly affected by the increased concentration in the banking sector (see pale green in Chart B). Finally, as predicted by the model, the decline of corporate demand due to the restrictions of the

²³ The results shown in Chart A can be respectively interpreted as the excess and shortage of demand. In other words, positive values stand for the excess of supply (shortage of demand), negative values – shortage of supply (excess of demand).

lockdown in the second to fourth quarters of 2020 caused deterioration in the macroeconomic environment, thus forming a shortage of demand (excess of supply).²⁴

Chart B. Contributions of the supply of and demand for small loans

(loans up to €1 million)



Source: Bank of Lithuania calculations.

Notes: Base period – the first quarter of 2017. Black line – small loans (loans up to €1 million) granted to enterprises, grey line – calculations of the model. Macroeconomic environment includes unemployment, inflation, and real estate prices. Credit risk is measured as the ratio of provisions to loans, corporate deposits with banks – the ratio of corporate deposits to assets, and market structure – the Herfindahl-Hirschman Index of the banking sector (calculated on the basis of the balance of bank loans granted to enterprises).

1.4. Real estate market developments

Having completely halted as a result of the restrictions during the first lockdown, the housing market has quickly rebounded and did not react much to the introduction of the second lockdown. According to the Centre of Registers, the number of housing purchase and sale transactions²⁵ registered in Lithuania in 2020 dropped by 4.2% on a year-on-year basis. Based on the data provided by real estate market participants (UAB Inreal), the new apartment markets of the country's biggest cities were less active in 2020: the number of new apartments bought in these cities was 13.4% lower year on year. The most marked change was observed in terms of the ratio of housing classes, as the sales of mid-range housing have shown the most significant increase, while the popularity of economy class housing has declined. Overall, detached houses attracted more interest (in 2020, the number of the purchase and sale transactions of detached houses was 8.5% higher than in 2019), whereas demand for flats declined (in 2020, the number of flats sold was 8.4% lower than in 2019). At the beginning of 2021, activity in the housing market started to pick up: the number of transactions, which somewhat declined as a result of the second lockdown, picked up in March, increasing by 10.1% in the first quarter of 2021 year on year, yet 11.4% less than in the fourth quarter of 2020.

The share of housing acquired without mortgage remains stable: in 2020, the share of mortgage transactions by the number of objects amounted to 42.8% in Lithuania (a year-on-year decrease of 1

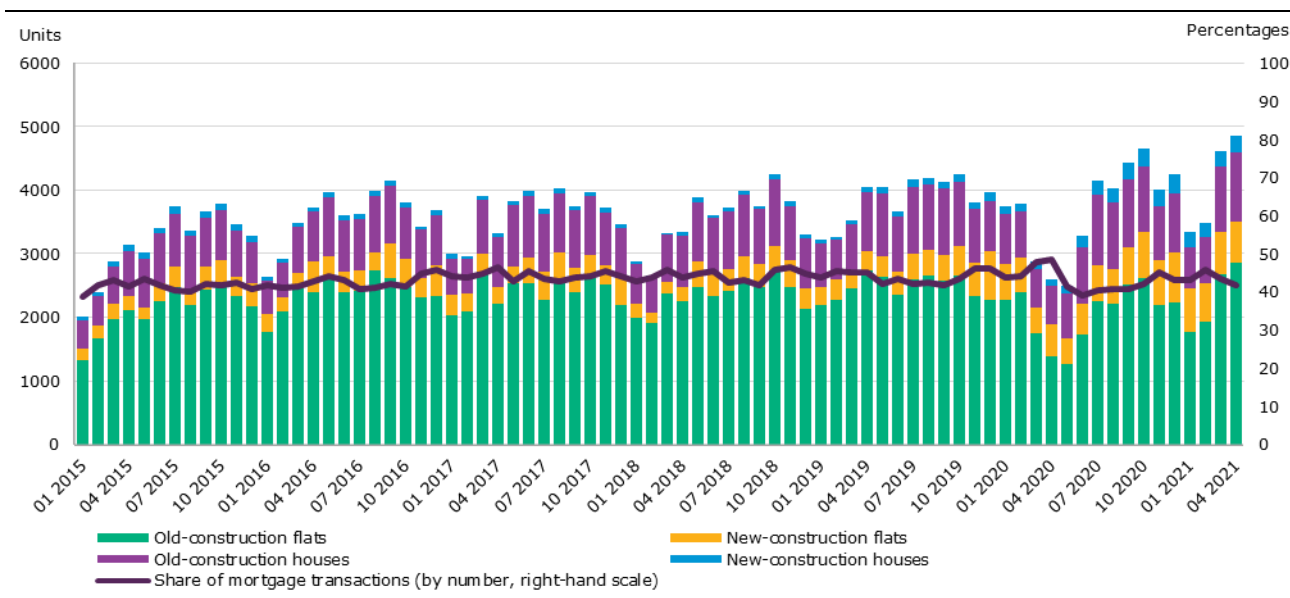
²⁴ It is to be noted that the atypical nature of the 2020 crisis makes it complicated to model recent trends. For example, a sharp rise in the flows of corporate loans (loans up to €1 million) was observed with the macroeconomic environment deteriorating in the period of the pandemic and the lockdown (see the black line in Chart B). The model can be assessed more accurately in the future when there are more observations available.

²⁵ Buyers and sellers – natural and legal persons, roughly 5% of housing is bought by legal entities.

percentage point), 56.4% in Vilnius (a year-on-year decrease of 0.8 percentage point); the share of mortgage transactions by the value of transactions amounted to 60.1% in Lithuania (a year-on-year decrease of 1.1 percentage points), 60.5% in Vilnius (a year-on-year decrease of 1.3 percentage points). The share of loans for purchasing secondary housing grew in 2020, but the number of persons having more than one housing loan did not change in 2020 and continues to account for approximately 10% of the value of new housing loans.

The housing market continues to be active and the share of mortgage transactions remains stable.

Chart 21. Dynamics of housing transactions

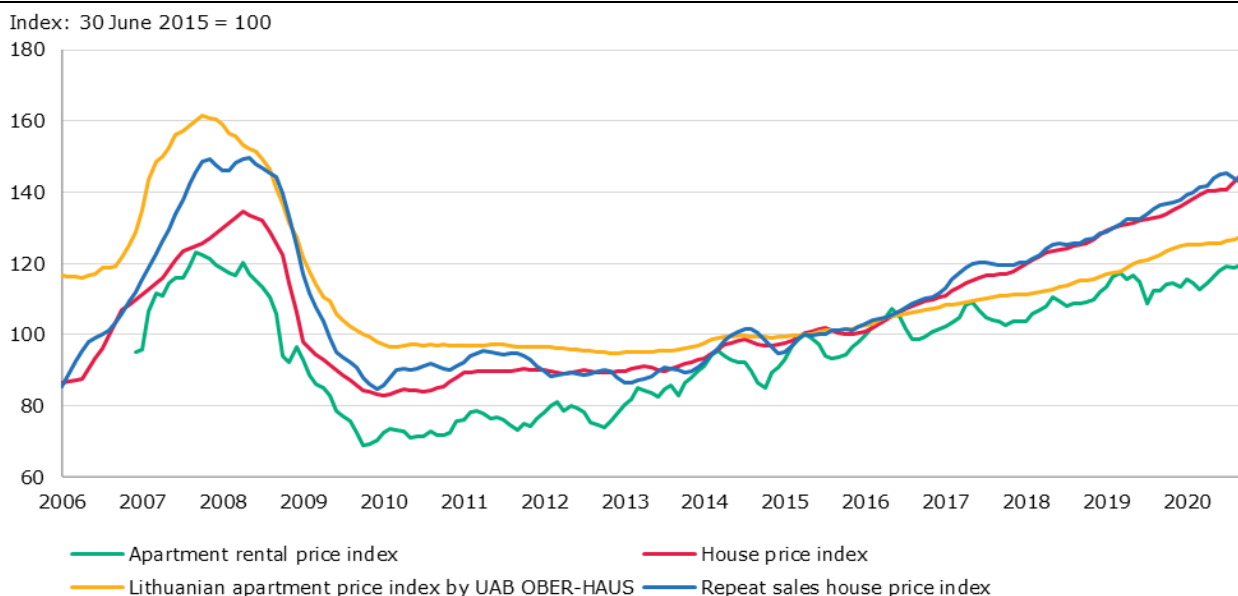


Source: Centre of Registers.
Note: Based on data for 27 May.

In the second half of 2020 and the beginning of 2021, house sale prices started to pick up more rapidly. With activity in the housing market on the rise, house and rental prices increased by, respectively, 9.4% and 7.4% in 2020 (see Chart 22). According to the data of UAB OBER-HAUS, house prices started to rise faster at the end of the first quarter of 2021, accounting for 7.2% in Lithuania's five largest cities (the growth rate of prices picked up by 3.2 percentage points over the quarter). Prices picked up in all Lithuanian towns and housing segments, as prices of both flats and detached houses increased. According to Statistics Lithuania, house prices in Vilnius grew at a slower pace than the rest of Lithuania (respectively, 9.3% and 9.5% year on year). House prices have been recently growing fastest in the territory of Lithuania excluding three largest city municipalities where the prices of old-construction detached houses significantly increased in 2020. With such rapid spikes in house prices, the risk of overheating in the market increases (for more details, see Section 2.2 "Risk of potential overheating in the residential real estate sector at its historical peak of activity").

In 2020, house sale prices and apartment rental prices markedly increased.

Chart 22. Indices of house sale and rental prices²⁶



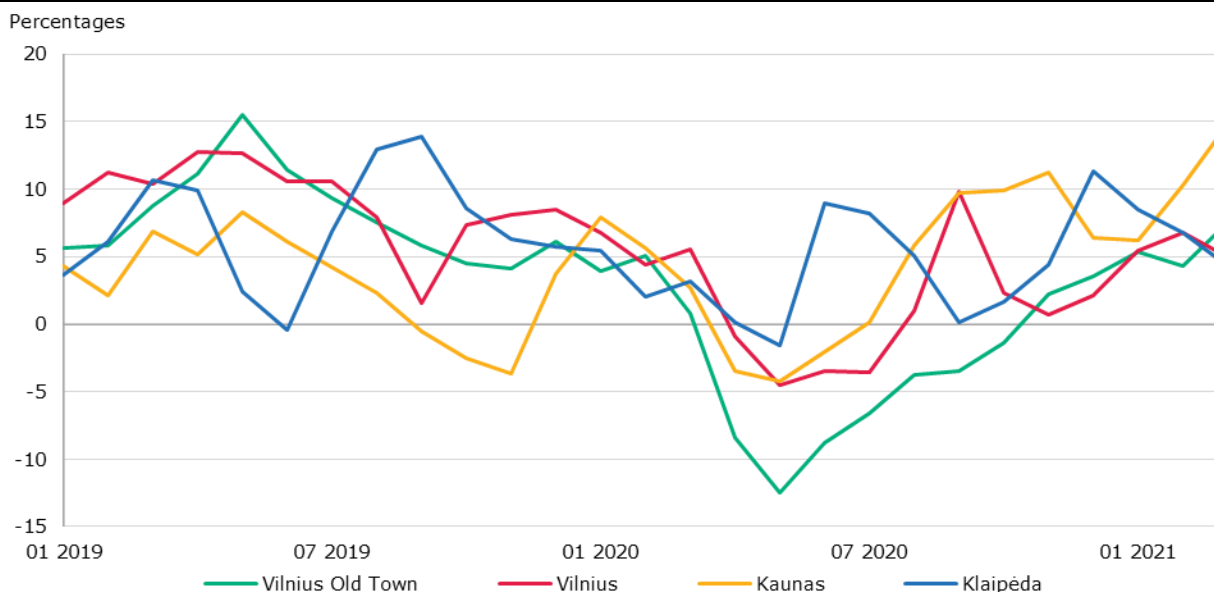
Sources: Aruodas.lt, Statistics Lithuania, UAB OBER-HAUS, Centre of Registers, and Bank of Lithuania calculations.

Having dropped sharply during the first lockdown, apartment rental prices stabilised quickly after the lockdown and reached their pre-pandemic growth rate at the end of 2020 (see Chart 23). Apartment rental prices, as well as house sale prices, grew at a more rapid pace in the first quarter of 2021. According to the data of Aruodas.lt, apartment rental prices were 10% higher in March 2021 than a year ago (growth in prices accelerated by 2.6 percentage points over the quarter). Spiking rental prices, amid the prevailing low interest rate environment, resulted in lessees finding long-term lease less attractive in 2020, both in Vilnius and the rest of Lithuania. At the end of 2020, the ratio of house sale prices to average wages and the ratio of house sale prices to house rental prices have nearly converged. Since in the environment of low interest rates the monthly rental price often exceeds the monthly loan payment, those able to obtain a loan are more interested in acquiring own property than renting it for a long-term period.

²⁶ For more information on the repeat sales house price index calculated by the Bank of Lithuania, see Box 3.

Growth in apartment rental prices in the largest cities published in the classifieds returned to its pre-pandemic level.

Chart 23. Annual change in apartment rental prices published in the classifieds



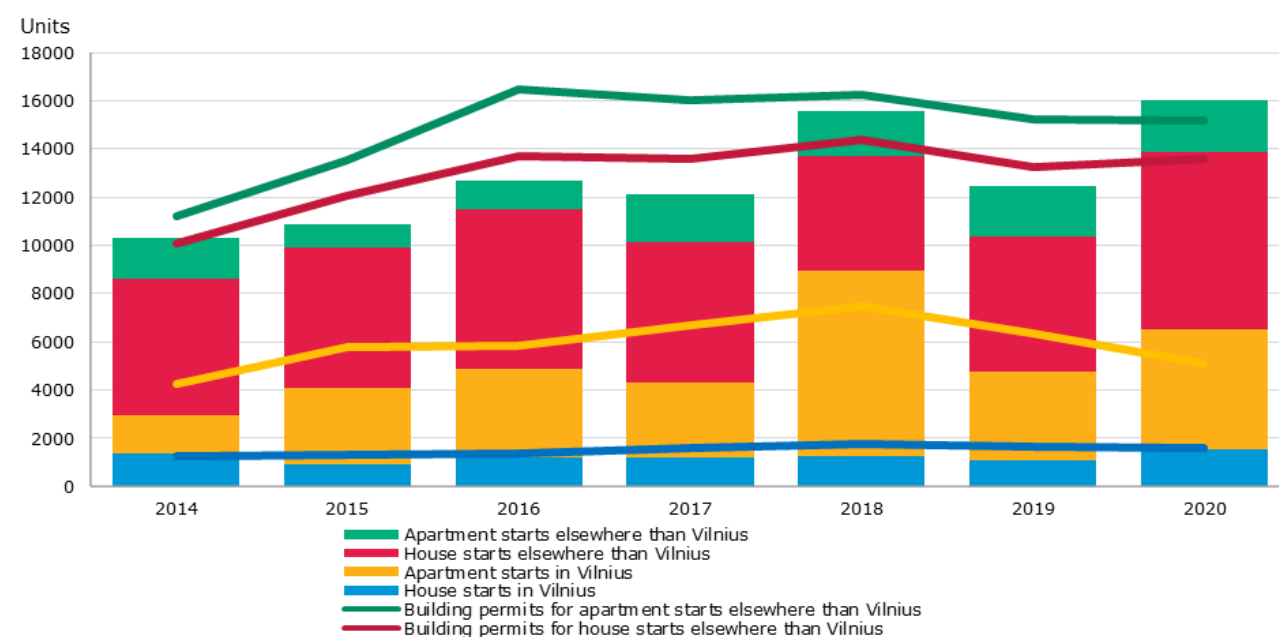
Source: Aruodas.lt.

In 2020, the number of housing completions was historically high, however, supply in Vilnius is projected to decrease. According to Statistics Lithuania, housing completions in Lithuania rose by an annual 10.6% in 2020. The number of housing completions was strongly impacted by the completion of several stages of a large apartment block construction project in Vilnius at the end of 2020. In 2020 the number of building permits for new homes in Vilnius City Municipality was 20% lower than a year ago.²⁷ The number of building permits for new homes was also smaller compared to the number of housing starts (see Chart 24), hence in the short term supply of new housing in Vilnius may decline. The increased activity of buyers after the first lockdown resulted in the decline of unsold new build apartments.

²⁷ Data by Statistics Lithuania.

The number of building permits exceeds the number of housing starts.

Chart 24. Building permits and number of housing starts



Source: Statistics Lithuania.

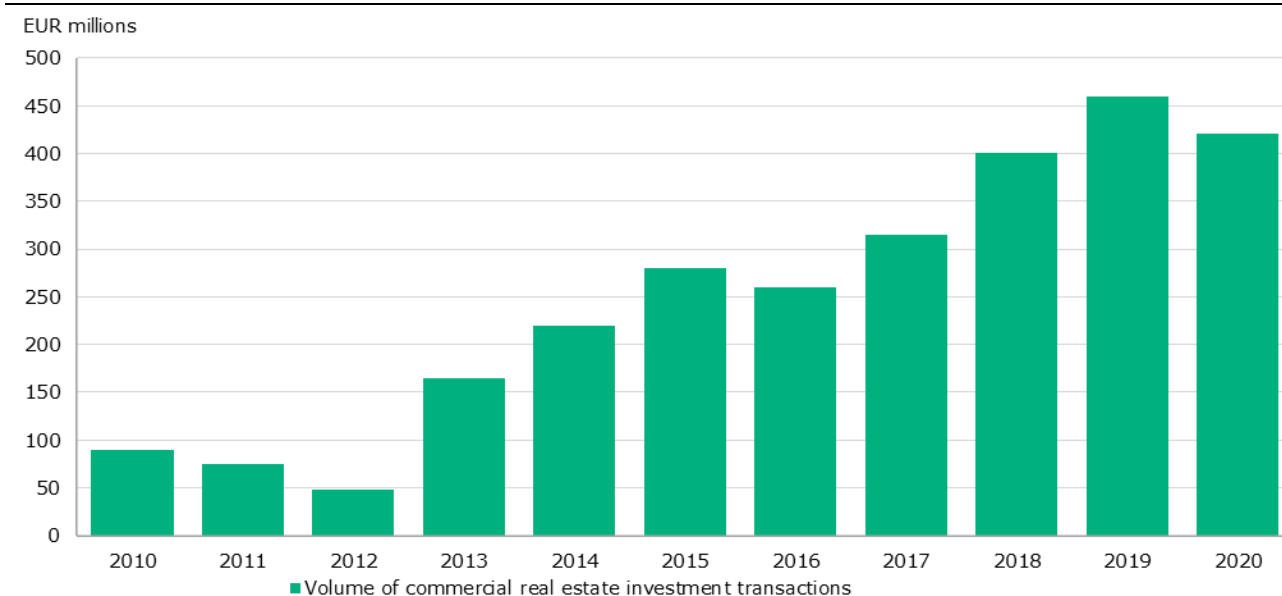
At the beginning of 2021, new flat reservations reached historic levels. In April 2021, the number of new flats reserved in Vilnius was at historic highs. Meanwhile, the number of unsold new flats in buildings that are already built or under construction decreased by 29.5% in Lithuania's largest cities. Should the current activity in the primary market persist in the upcoming months, the entire current reserve of new apartments in Lithuania's largest cities would be sold out in less than a year. Regardless of the 22.1% increase in the number of new housing starts in 2020, a shortage of supply could form in the market should this interest in housing acquisition remain as high, which, in turn, could lead to an upsurge in prices and market overheating (for more details, see Section 2.2 "Risk of potential overheating in the residential real estate sector at its historical peak of activity").

The search for yield spurred investor activity in Lithuania's commercial property market and the supply of real estate widened. Before the beginning of the COVID-19 pandemic, the stable growth of the economy drove the demand for commercial real estate. Therefore, real estate developers continued to boost their supply, whereas investors stepped up investment in commercial properties in a bid to maximise yields. In the midst of the pandemic, the flow of investments in commercial real estate objects shrank by 8.5% in Lithuania, amounting to €421 million²⁸ (see Chart 25). Return on investment in commercial property in Lithuania remained among the highest in the euro area and reached approximately 6-9% in end-2020 (roughly 3 percentage points higher than in Western European members of the euro area).

²⁸ According to Colliers International.

The market of investment transactions remains active.

Chart 25. Volume of commercial real estate investment transactions in Lithuania

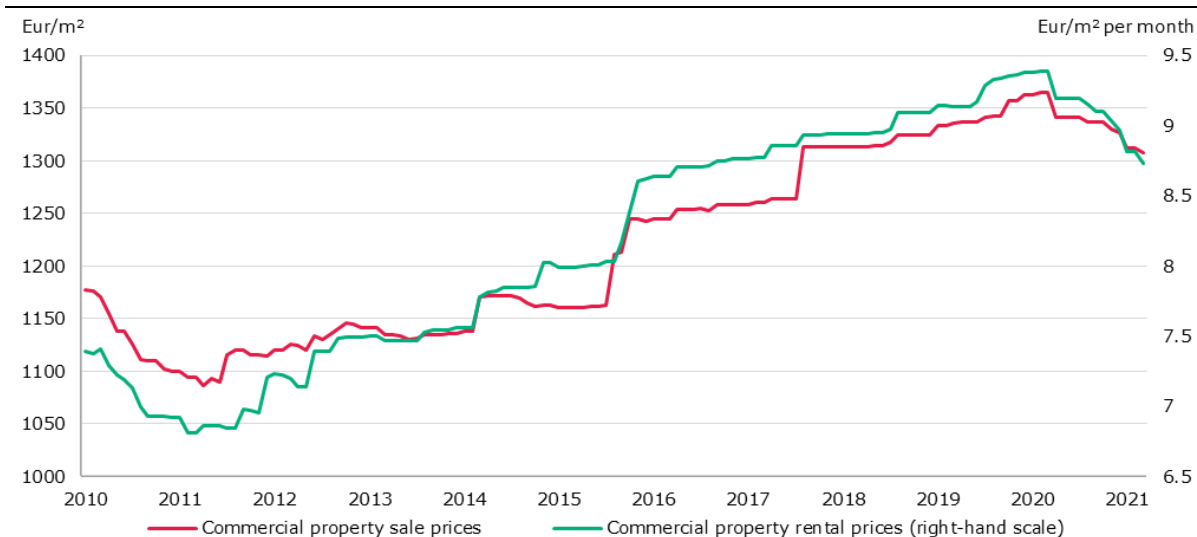


Source: UAB OBER-HAUS.

Commercial real estate yields are likely to fall, notably because of the activity restrictions imposed on the trade sector during the COVID-19 pandemic. Since the introduction of the first lockdown commercial property rental prices started to decrease, with sale prices also following a downward trend at the end of 2020 (see Chart 26). The level of non-performing loans collateralised by commercial real estate has already increased. All respondents (27 percentage points more than a year ago) of the Survey of the Real Estate Market Participants conducted by the Bank of Lithuania have indicated that banks' lending conditions for investment in development or acquisition of commercial property in Vilnius have been tightened (for more details, see Section 2.3 "Risk of value impairment of commercial real estate, in particular offices and commercial premises").

The COVID-19 pandemic dragged commercial property rental and sale prices down.

Chart 26. Commercial property rental and sale price developments



Sources: UAB OBER-HAUS and Bank of Lithuania calculations.

Note: The chart shows the averages of rental and sale prices for commercial premises in Lithuania.

Box 3. The Bank of Lithuania's repeat sales house price index

Until now, house price indices have been calculated without differentiating between housing with different characteristics. The repeat sales house price index of the Bank of Lithuania solves this problem. The Bank of Lithuania monitors the situation in the Lithuanian real estate market and assesses its trends on a regular basis. Developments in house prices are assessed on the basis of several data sources. The official statistics on house price developments and price indices are published by Statistics Lithuania and the Centre of Registers. Private participants of the real estate market also announce their own house price index (e.g. UAB OBER-HAUS, Aruodas.lt). The main problem encountered while calculating the aforementioned house price indices is the comparability of the real estate objects included in the indices, as the calculation of these indices is based on the comparison of housing with different characteristics. Still, house prices are influenced by the qualitative characteristics of that housing (e.g. floor, number of rooms), many of which are not fully considered in the calculation of these indices. Seeking to improve the quality of house price monitoring and to increase the diversity of indicators used, in December 2020 the Bank of Lithuania published the repeat sales house price index (RSHPI), which is based on the Case and Shiller (1987) index²⁹.

Compared to other indices, the RSHPI has several strong and weak points. Its main advantage is that, in the calculation of the index, the housing transactions of the reporting period are compared to the transactions of the same real estate objects of the previous periods. The RSHPI thus solves the comparability problem: the change in prices is calculated by comparison of the same housing. Furthermore, the quantity of data necessary for the calculation of the RSHPI is relatively small compared to the aforementioned indices, as no comprehensive details on the qualitative characteristics of housing are required. The small quantity of required data also means that the RSHPI can be calculated more quickly than other types of indices. The main drawbacks of the index include the fact that its calculation might fail to use a significant proportion of housing transactions if housing is transferred for the first time. Moreover, the calculation of the RSHPI does not consider the net depreciation of every real estate object (depreciation expenses minus the expenses of housing enhancements or repairs) and housing with a higher turnover rate has a relatively higher weight in the index, which might result in sample deviation. It is however to be noted that the last two drawbacks are also characteristic to other types of house price indices.

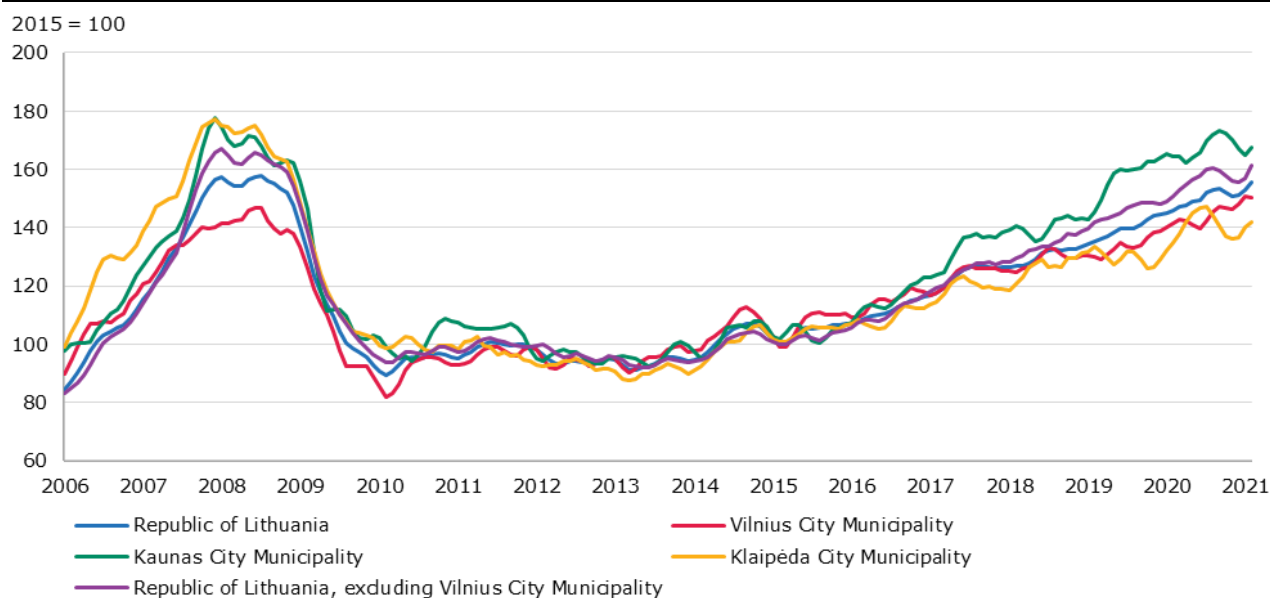
The RSHPI includes only apartment transactions. The index is calculated on a monthly basis and covers the entire territory of Lithuania and its largest cities. The index covers only flats as the number of repeat sale transactions of houses has so far been low. The index is calculated on a monthly basis using 3-month moving totals: the value of the index of each reporting period is obtained through assessing the transactions of the reporting month and two previous months. This ensures a sufficient sample of repeat transactions. The calculation of the index covers the entire territory of Lithuania, Vilnius, Kaunas, Klaipėda, Lithuania excluding Vilnius, and Lithuania excluding the three biggest cities. The term between the transactions included is no shorter than 6 months. The index includes all sizes of flats, transactions of up to €1,000 are excluded. Transactions where the characteristics of flats have significantly changed (changes in the state of completion, surface area, number of rooms, etc.) and transactions where the price has changed by at least five standard deviations are also excluded. With new data available, the index is recalculated and changes are recorded and monitored. The methodology for calculating the index is described in Annex 2 to the [public consultations](#) regarding the index.

House price trends are similar according to the RSHPI and other indices. Based on the RSHPI, house prices showed the fastest growth in Kaunas over the last five years. Since 2015, apartment prices in Lithuania have been slightly elevated, compared to other indices (see Chart 22). The

²⁹ Case, K. E. & Shiller, R. J. (1987). Prices of single-family homes since 1970: New indexes for four cities. *New England Economic Review*, 2393, 45-56.

RSHPI captures the increase in house prices prior to the financial crisis of 2008 somewhat earlier than other indices. The average annual changes from the beginning of 2006 to the end of 2020 are similar, i.e. between 4.1% and 4.2%, except for the UAB OBER-HAUS index, according to which the average annual change approximately stands at 1.3%. The standard deviation of the RSHPI is the highest, while that of the UAB OBER-HAUS index is the lowest. According to the RSHPI, prices have been increasing the most in Kaunas and the least in Klaipėda. Furthermore, prices in Vilnius pick up at a slower pace than the rest of Lithuania (see Chart A).

Chart A. Monthly RSHPI by region



Source: Bank of Lithuania.

1.5. Insurance market, investment and pension funds

In 2020, the total amount of insurance premiums collected remained broadly unchanged year on year, as did their share in the assets of households and non-financial corporations.

Insurance undertakings registered in Lithuania and branches of insurance undertakings of other EU countries established in Lithuania collected nearly €955 million in premiums in 2020, up by 1% on a year-on-year basis. The restrictions put in place due to the COVID-19 pandemic led to a decline in new insurance contracts in 2020 but a rise in life premiums stemming from growth in new life assurance contracts signed in previous periods left the total amount of premiums broadly unchanged. Insurance premiums as a share of total assets of the country's households and non-financial corporations also remained unchanged in 2020, at approximately 2.4% and 0.4% respectively. Profits earned by insurance undertakings registered in the Republic of Lithuania rose by approximately 10% year on year due to technical factors³⁰ and amounted to €50 million. The solvency ratio³¹ of the country's insurance market improved somewhat over the year to reach 186% at the end of 2020 (up from 182% a year earlier) but nonetheless remained below the EU median of approximately 200%.

Lithuania's insurance undertakings choose safer investment options, but a significant overlap in investment portfolios implies that price changes in financial markets may pose a risk to the

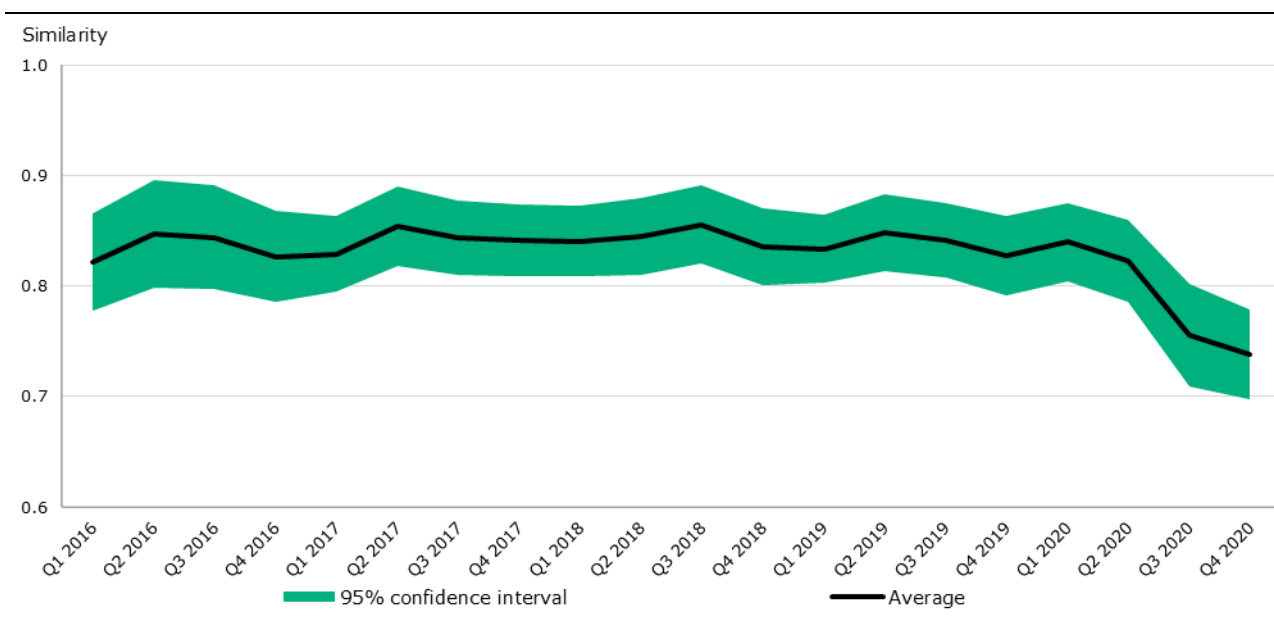
³⁰ Larger technical provisions set aside by non-life insurance undertakings in earlier periods for unearned premiums.

³¹ In line with the requirements of the Solvency II Directive, the solvency ratio of insurance undertakings has been calculated as a ratio between eligible own funds and the solvency capital requirement.

entire insurance market. Total assets managed by insurance undertakings amounted to approximately €1.7 billion (3.5% of Lithuania’s GDP) in the fourth quarter of 2020, while equity investments accounted for 63% of the assets under management. Government securities comprised approximately 62% of the insurers’ equity investments, whereas stocks and collective investment undertakings accounted for a meagre 7%. The proportion of investment in riskier assets in Lithuania has been well below the EU average: according to the data from EIOPA, investment in corporate equity and collective investment undertakings comprised approximately 32% of assets of EU insurance undertakings in 2019. However, the investment portfolios of Lithuania’s insurance undertakings are very similar in structure. The investment similarity index fluctuated between 0.80 and 0.85 until 2020, before falling to approximately 0.73 at the end of that year (see Chart 27) due to inter alia a merger between two insurance undertakings.³² Hence, even though Lithuania’s insurance undertakings choose safer investment options, a significant overlap in investment portfolios may trigger a downfall of the entire market in the event of price corrections in certain asset classes, for instance, in government securities, which comprise the bulk of the insurers’ investment portfolios and may undergo changes in value due to an increase in sovereign debt.

Similarity between the investment portfolios managed by insurance undertakings has been slightly decreasing.

Chart 27. Similarity between investment portfolios of insurance undertakings



Source: Bank of Lithuania.

Notes: Similarity may range from 0 (the state of complete dis-equality) to 1 (the state of equality), a higher similarity index indicates a greater overlap in investment portfolios. The similarity score of 1 implies that investment portfolios are identical.

Assets managed by investments funds operating in Lithuania increased substantially in 2020 and most investment went to real estate funds.

The value of assets managed by investment funds operating in Lithuania came close to €1.6 billion (approximately 3% of Lithuania’s GDP) in February 2021, implying a year-on-year increase of 15%. Net assets of investment funds saw their value reach nearly €1.4 billion in February 2021, with the assets of real estate funds comprising approximately 52% of the total. The value of shares issued by real estate investment funds plunged in the middle of 2020 before recovering in the fourth quarter. The ratio between the value of real estate investment funds and the outstanding amount of loans granted by MFIs for real estate operations had been growing in recent

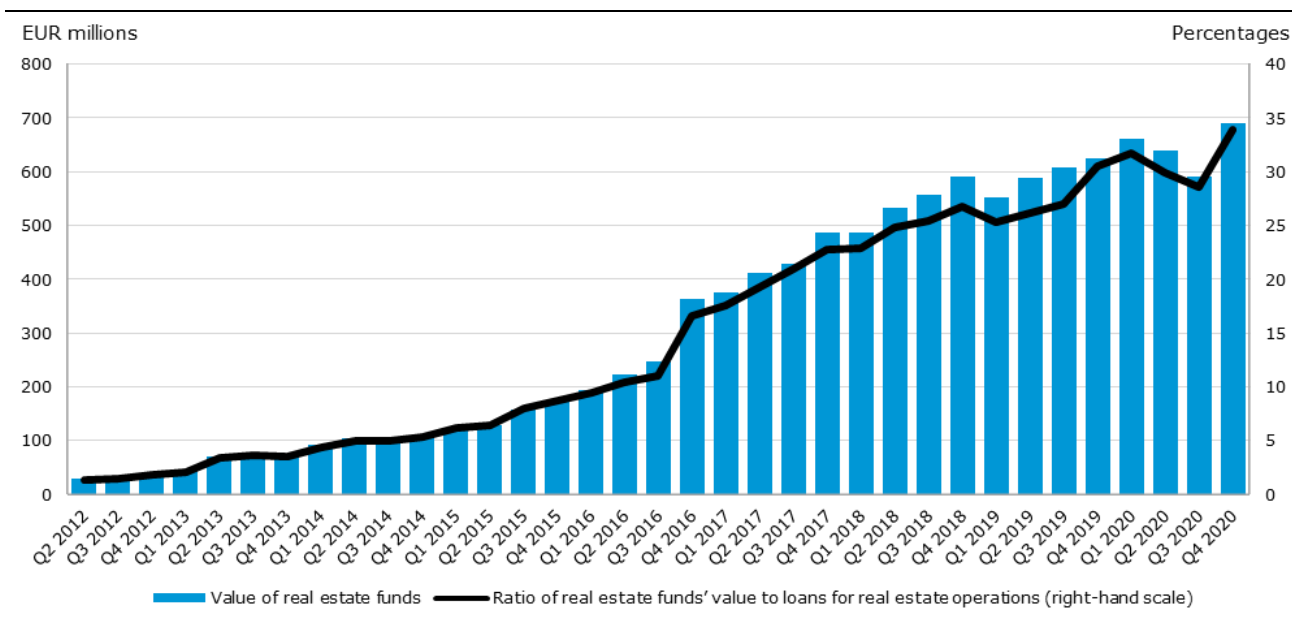
³² Seesam Insurance AS, registered in the Republic of Estonia, was merged with Compensa Vienna Insurance Group, ADB, registered in the Republic of Lithuania, on 1 July 2020.

years, until reaching a historic peak in the final quarter of 2020 (see Chart 28). This implies that real estate investment funds are significant market players involved in the financing of real estate projects.³³

In 2020, the country’s pension funds recorded increases in the value of savers’ assets under their management and in the number of participants, and generated positive returns. The value of assets accumulated by savers in pension funds increased by 16% year on year, to €4.7 billion (approximately 10% of GDP) as of late 2020. Second pillar pension funds account for more than 96% of the sector’s total assets and approximately 95% of participants. Even though market fluctuations triggered by the COVID-19 pandemic led to a slump in the unit values of the country’s pension funds in early 2020, financial markets recovered during the year and, as a result, annual returns generated by pension funds broadly matched the average over the preceding ten years. In the first quarter of 2021, the assets of those saving for retirement in the pension funds targeting groups of younger participants recorded the biggest year-on-year increase thanks to the growing income and involvement in the labour market of those savers as well as rising stock prices. The participants who have the least time left until the retirement age or have already reached that age and belong to the target groups of those born in 1954-1960 and 1961-1967 as well as the asset preservation target groups, have accumulated 27% of the total assets of second pillar pension funds. The pension funds of these groups generated positive returns in 2020, which implied zero fallout from the COVID-19 pandemic on the retirement savings of those who are set to retire the soonest.

Investment in real estate investment funds has continued to grow.

Chart 28. Value of real estate investment funds and its ratio to loans granted by MFIs for real estate operations



Source: Bank of Lithuania.













Note: The geographical scope of investment activity of the real estate funds operating in Lithuania is not limited to the country.

³³ Some of the real estate funds have been established by real estate developers and are not intended for the pooled investment of investors’ funds, but this does not constitute a dominant factor.


2. Risks to the financial system



SYSTEMIC RISKS TO FINANCIAL STABILITY

 <p>Deterioration in the financial standing of businesses affected by lockdown restrictions and the related economic fallout</p> 	<p>A potential increase in corporate bankruptcies and the ensuing rise in unemployment may lead to difficulties with the discharge of financial obligations</p> 
 <p>Risk of potential overheating in the residential real estate sector at its historical peak of activity</p> 	<p>High market activity and expectations may lead to overheating of house prices</p> 
 <p>Risk of value impairment of commercial real estate, in particular offices and commercial premises</p> 	<p>Changes in habits driven by the pandemic increase the likelihood of higher vacancy rates for commercial properties and lower rental prices</p> 
 <p>Risk of a potential correction of imbalances in the Nordic countries amid high concentration in the banking sector</p> 	<p>Growing imbalances in the real estate market increase the risks faced by Swedish banks; their decisions may affect lending in Lithuania</p> 

CHALLENGES TO THE FINANCIAL SYSTEM

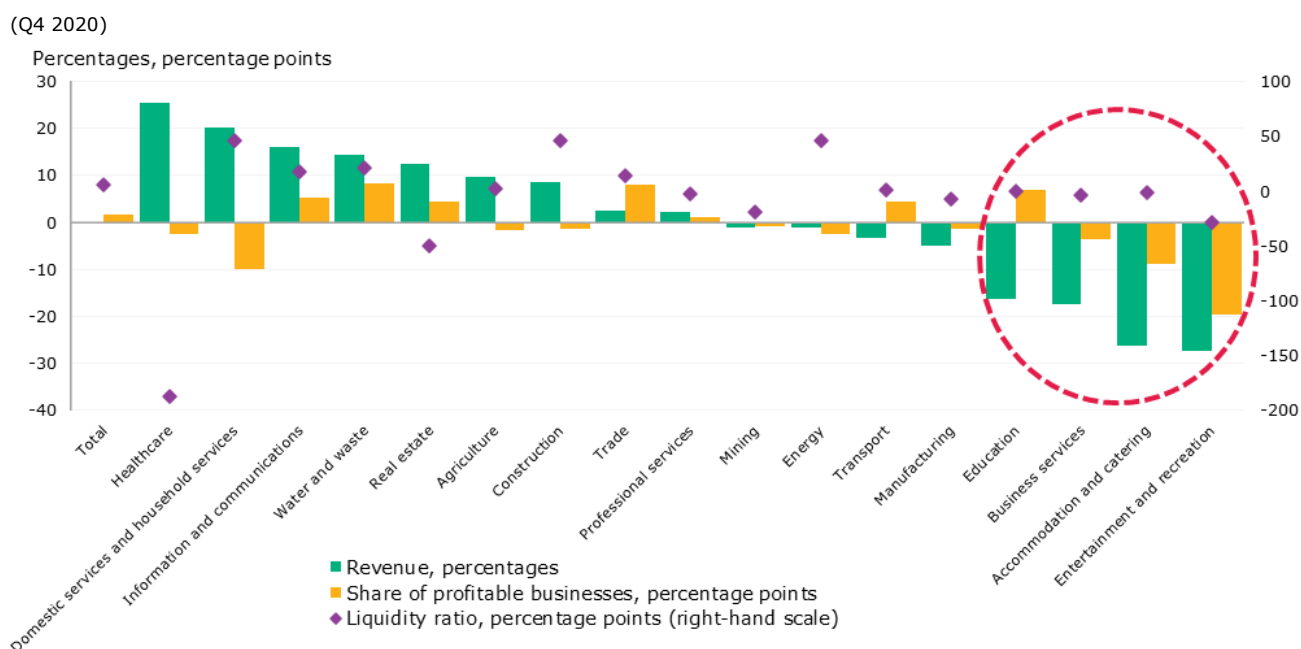
 <p>Cyber security</p>	<p>The number of cyber-attacks suffered by financial institutions has increased since the onset of the pandemic</p>
 <p>Climate change</p>	<p>The transition to the green economy will affect the most polluting businesses, which will pose challenges to the financial system</p>

2.1. Deterioration in the financial standing of businesses affected by lockdown restrictions and the related economic fallout

Businesses and households most affected by the COVID-19 restrictions experience a deterioration in their financial standing, which leads to an increase in their credit risk and implies higher potential losses for lenders. Even though, overall, the position of firms has remained relatively stable, the impact of the pandemic fallout on economic activities has nonetheless been very uneven. Sectors facing operational restrictions and a fall in demand are more vulnerable. The most sensitive activities continue to include services, such as accommodation and catering, administrative and support services, arts, entertainment and recreation as well as education. In 2020, the financial indicators of these activities were hit the hardest as their revenue plunged by 16-27%, the share of profitable businesses, not including education, decreased by 4-20 percentage points, and the liquidity ratio – by 4-28% (see Chart 29). There is still a risk that, following the expiry of government support measures and despite the easing of lockdown restrictions, some of the most affected businesses may not recover, become insolvent and go bankrupt, which would accordingly push the unemployment rate higher. Even though an increase in the overall share of non-performing corporate loans in banks was rather limited in 2020 (0.6 percentage point), loans granted by MFIs to businesses more sensitive to lockdown restrictions might account for nearly 10% of the total loan portfolio (see Chart 30). Hence the effect of this risk on companies is very asymmetric and has a direct strong impact on a smaller part of businesses and households. Even though the easing of lockdown restrictions and the gradual recovery of corporate and household expectations signal a positive impetus, the scale of bankruptcies in the future remains highly uncertain, in particular as businesses that have so far relied on government support measures as their only lifeline will be unable to continue operations after the expiry of support schemes, which would accordingly have an adverse spillover effect on other sectors.

The services sector has been hit the hardest by the pandemic.

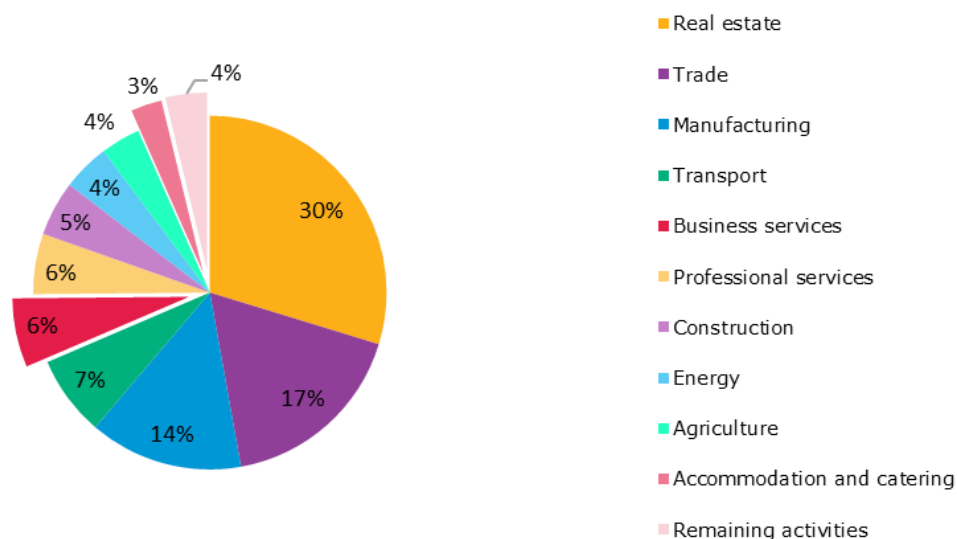
Chart 29. Annual dynamics of corporate financial performance indicators by economic activity



Sources: Statistics Lithuania and Bank of Lithuania calculations.

Loans granted to the most affected economic activities account for approximately 10% of the total MFI loan portfolio.

Chart 30. MFI portfolio of loans to non-financial corporations broken down by economic activity

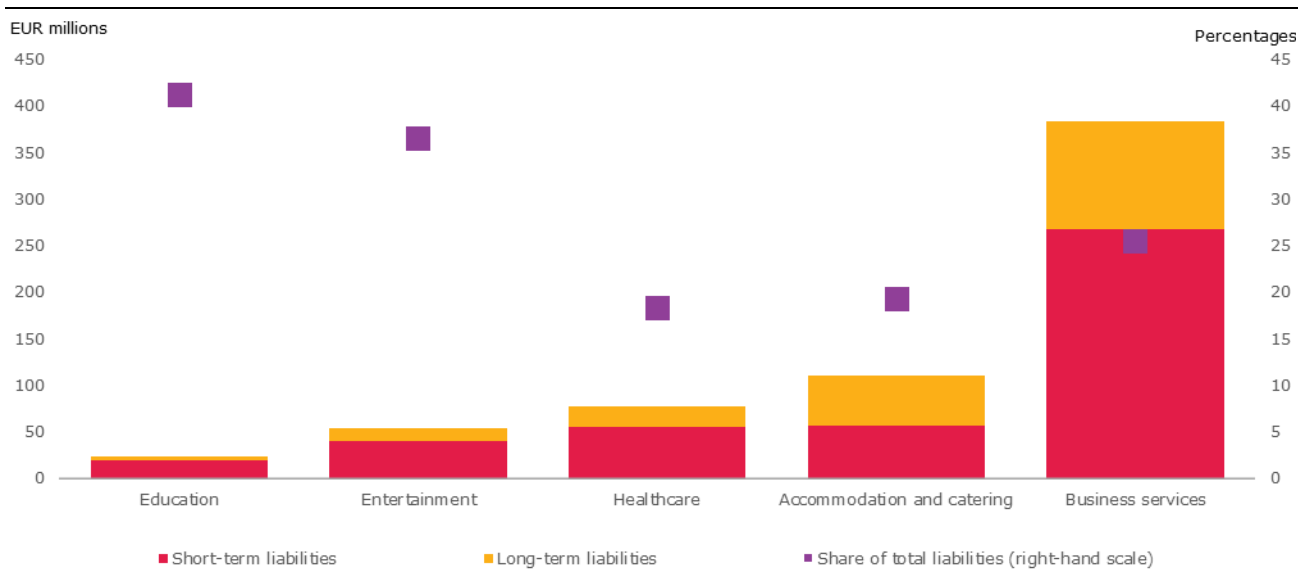


Source: Bank of Lithuania.
Note: Based on data for 14 May.

Even though the impact from affected businesses on the financial system remains limited thus far, losses arising from reciprocal corporate debts may heighten the risk. During the lockdown, business liquidity has been maintained through a range of government support schemes. However, the expiry of these instruments is likely to trigger an increase in bankruptcies, given that it would reveal the true scale of the so-called zombie firms. This entails a risk that difficulties faced by some businesses might spill over rapidly to other undertakings. The ECB estimates that prior to the pandemic alone the level of such firms could have averaged just **over 3%** in the euro area. These types of companies can put pressure on the economy and financial stability if their numbers rise sharply, for example, due to an unexpected adverse economic shock, a weaker-than-expected economic recovery or an unbalanced and abrupt withdrawal of state aid measures. In such a case, mutual corporate liabilities, which have reached an all-time high of €15.3 billion and account for 35% of total liabilities, in particular short-term liabilities (€14 billion), may lead to disruptions in the chain of such reciprocal debts and losses for financial institutions. For instance, the above-mentioned most affected economic activities owe approximately €640 million to other companies in the form of trade credits or loans, which accounts for approximately 25% of their total liabilities (see Chart 31).

Among the most affected sectors, businesses dealing in administrative activities have the largest liabilities to other companies.

Chart 31. Debts owed by businesses engaged in selected activities to other companies

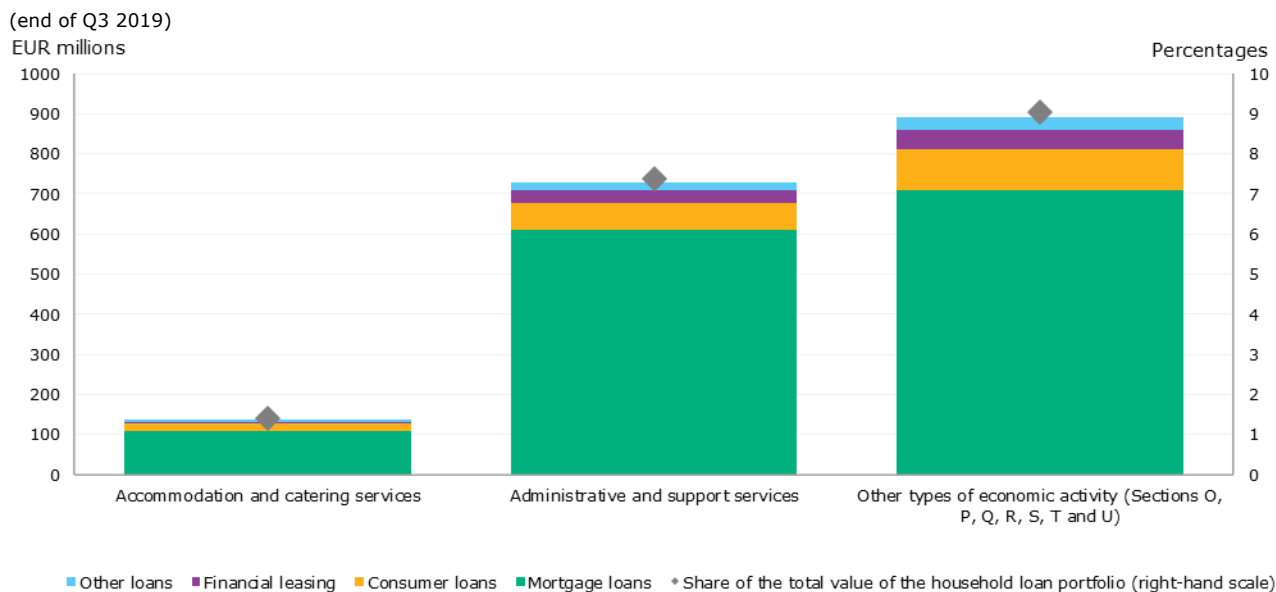


Sources: Statistics Lithuania and Bank of Lithuania calculations.

Potential corporate bankruptcies, which may occur in the future due to the deterioration in the financial well-being of the country’s businesses, could lead to an increase in household credit risk. Companies most affected by COVID-19 restrictions may run into financial difficulties, in particular after the expiry of financial support schemes, which may contribute to growth in unemployment and a deterioration in the financial standing of the country’s households. According to the latest data available from the Household Financial Monitoring Information System (HFMS), households, which generate their primary income from accommodation and catering as well as administrative and support services, i.e. activities which experienced the fastest growth in unemployment during the lockdown, account for nearly 10% of the total value of outstanding loans to households (see Chart 32), while the group of activities covering some other affected sectors – education, arts, entertainment and recreation – accounts for another 10%. The overall value of these loans slightly exceeds €1.7 billion, including €1.4 billion in mortgage loans, which implies that a significant rise in unemployment in these sectors could undermine the ability of these borrowers to discharge their financial obligations.

Households generating their primary income from the sectors most affected by the lockdown account for at least 10% of the total value of outstanding loans to households.

Chart 32. Value of loans broken down by type of loan and most affected economic activities



Sources: Bank of Lithuania and HFMS data.

An increase in youth unemployment and the fact that this age group accounts for a significant share of consumer loans may lead to a deterioration in the quality of this loan portfolio.

According to the data available from Statistics Lithuania, the general rate of unemployment in the country reached 9% in the fourth quarter of 2020 (up by 2.6 percentage points year on year), while youth unemployment (among people aged up to 29 years) was as high as 13.9% (up by 3.5 percentage points compared to the year earlier) (see Chart 33). The more rapid growth in unemployment among young people has been driven inter alia by the fact that many people in this age group are more likely to work in the sectors more vulnerable to the lockdown. Even though labour demand in these sectors has picked up following the onset of a more favourable season and improvements in the epidemiological situation, the deterioration in the financial standing of the country's businesses and potential bankruptcies may contribute to a further rise in unemployment among young adults, in particular those with less work experience and less skilled, and negatively affect the financial well-being of these individuals. In late 2020, younger residents (aged up to 29) accounted for slightly more than 10% of housing loans and 16% of consumer loans as measured by value. The latter loans carry a higher risk as they are granted without collateral, hence a deterioration in the financial situation of respective households may trigger losses for lenders that have provided these loans.

Unemployment among younger adults increased at the most rapid pace during the pandemic.

Chart 33. Unemployment rate



Source: Statistics Lithuania.

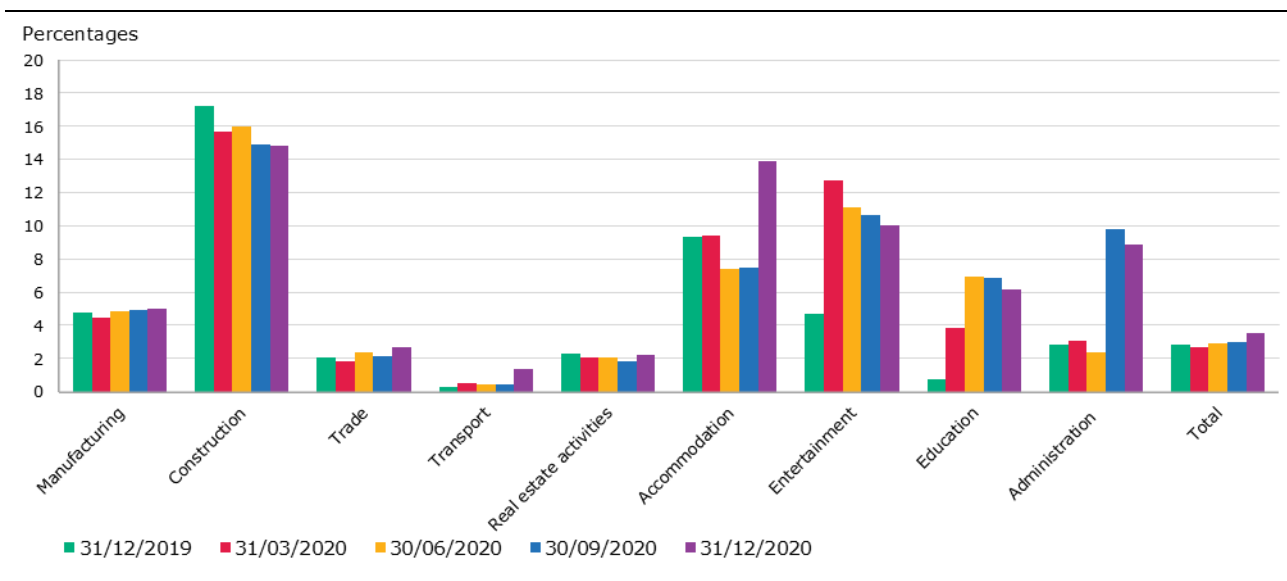
Even though a rise in the non-performing loan ratio has been limited, the volume of forborne loans has increased as has the volume of lower quality loans. The country's banks stepped up the use of restructuring measures³⁴ following the onset of the pandemic, most likely in a bid to support borrowers in financially harder times. In particular, the share of forborne loans in the total loan portfolio soared nearly twofold in the reporting period to reach 3.1% in late 2020. This also led to a slight decline in loan quality manifested by an increase in the share of stage 2 loans, i.e. loans that have a heightened credit risk but do not yet generate losses for lenders, in the portfolio of loans granted to non-financial corporations. According to data for the fourth quarter of 2020, such loans accounted for 11.6% of the total portfolio of loans to non-financial corporations, which implied an annual increase of 5.3 percentage points. On the other hand, the share of such loans in the household loan portfolio decreased somewhat year on year (by 1 percentage point), to 8.5%. The share of stage 2 loans in the total portfolio of Lithuania's banks (8.7%) is close to the EU average (9.1%³⁵). Even though the year-on-year rise in the overall non-performing loan ratio was also limited, in late 2020 somewhat higher levels of non-performing loans could be seen in the segments of household loans for consumption (+2 percentage points) and of loans granted to certain businesses, in particular those in sectors more vulnerable to the lockdown (see Chart 34).

³⁴ Mostly for loans outside the scope of EBA moratoria.

³⁵ Based on data for the fourth quarter of 2020 available from the [EBA Risk Dashboard](#).

Credit risk has increased in particular in arts, entertainment and recreation, as well as education and administrative activities.

Chart 34. Non-performing corporate loans as a share of the total loan portfolio broken down by economic activity



Source: Bank of Lithuania.

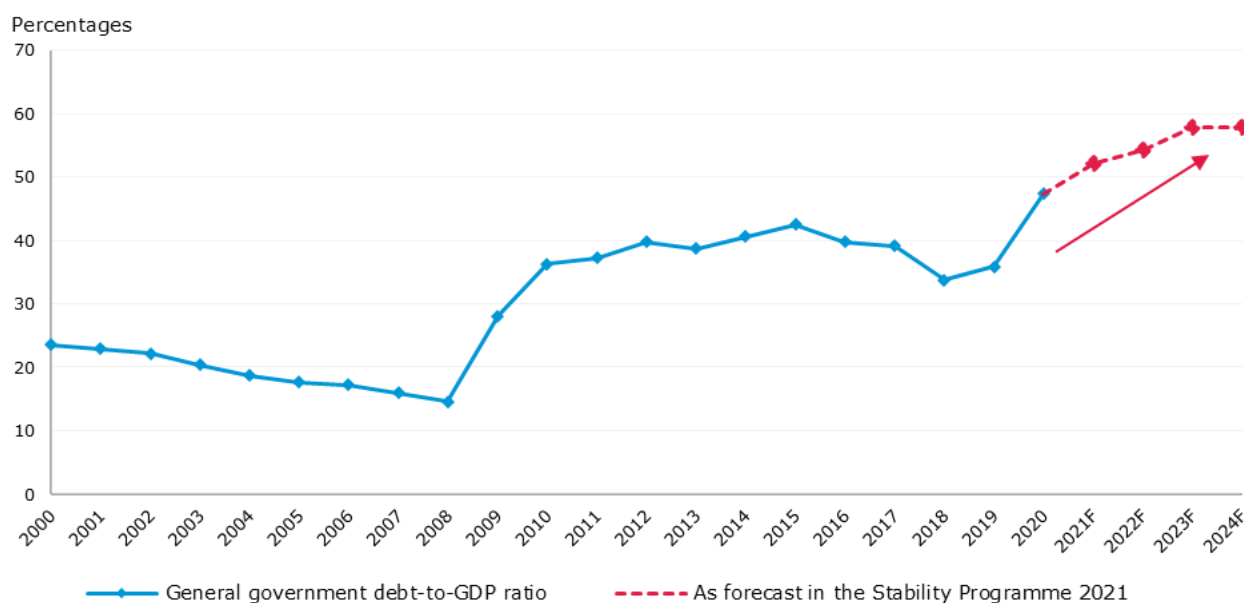
Even though government support has been instrumental in staving off a significant deterioration in the financial standing of the country’s businesses and households, lasting growth in the ratio between general government debt and GDP may lead to debt sustainability concerns. In 2020, the countercyclical fiscal policy adopted by Lithuania for the provision of financial support to businesses and households triggered substantial increases in the general government deficit and debt. Lithuania’s general government debt rose by more than 10 percentage points in 2020 and its ratio should exceed 50% of GDP in 2021 (see Chart 35). The growth of the debt-to-GDP ratio was mainly driven by the package of government support schemes for businesses and households, which led to increases in unemployment benefits and other social allowances as well as a loss of tax revenue. Given that the general government debt indicator already reflects support to businesses in the form of tax loans, potential non-performance of such loans will not have any additional implications for the debt ratio. However, should the pandemic situation continue longer than currently expected and economic growth be slower than forecast, financial markets may start questioning the sustainability of Lithuania’s debt in view of the country’s population ageing. It is therefore particularly important to work out a clear strategy on how to stabilise the debt ratio and follow it closely once the pandemic is over. Moreover, going forward, it is necessary to ensure the responsible and rational use of borrowed funds as well as the RRF funds that would be additionally obtained from the EU (for instance, by choosing appropriate investment options), thus enabling the return of the economy to sustainable growth, which is one of the key factors necessary to stabilise the debt-to-GDP ratio.

Activities most affected by the lockdown continue to rely on government support hence its abrupt termination could set off a wave of corporate bankruptcies. The number of corporate insolvency proceedings commenced in 2020 fell by nearly 50% compared to 2019 and by nearly 63% compared to the previous seven-year average (see Chart 36); the trend of a significant decline in bankruptcies continued in early 2021. This phenomenon may have several important causes. Firstly, the fall in bankruptcies was due to the suspension of the obligation of the legal entity’s manager to file for insolvency or for the initiation of bankruptcy proceedings during the lockdown and for 3 months after its [revocation](#). Secondly, government support measures, in particular post-downtime subsidies, tax deferrals

and easy loans, have made an important contribution to maintaining business liquidity. Therefore, the existing number of insolvent businesses, the so-called zombie firms, whose bankruptcy has been thus far postponed to the future, is highly uncertain. However, support provided to businesses, in particular those companies that have been hit the hardest during the pandemic, but still have potential, is essential for restoring operations. For example, in April 5 thousand firms still received subsidies for downtime, and there were almost 20 thousand workers in downtime. Thus, support for the most affected businesses should be terminated smoothly and in a timely manner.

Government measures aimed at mitigating the economic fallout of the COVID-19 pandemic push government debt significantly higher.

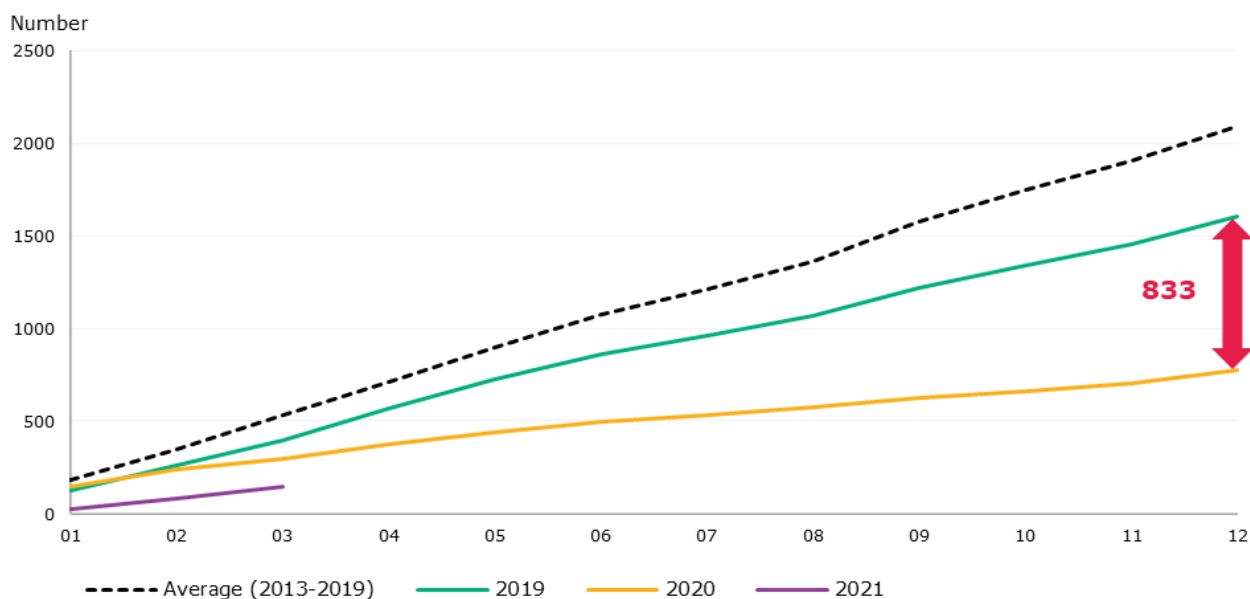
Chart 35. Lithuania’s general government debt



Sources: Statistics Lithuania and Bank of Lithuania calculations.
 Note: 2021F, 2022F, 2023F and 2024F are the forecasts for respective years.

The number of corporate insolvency proceedings initiated in 2020 fell by half compared to 2019.

Chart 36. Number of insolvency proceedings opened against legal entities

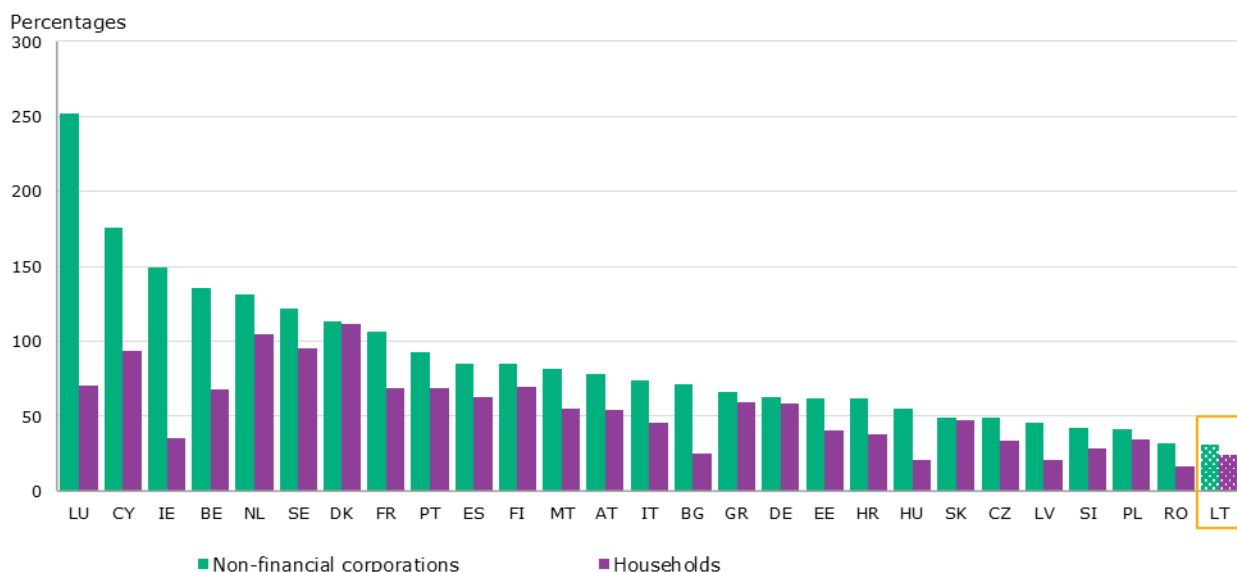


Sources: Authority of Audit, Accounting, Property Valuation and Insolvency Management and Bank of Lithuania calculations.
Note: X-axis shows months.

Rapid economic recovery, a substantial increase in savings during the pandemic and a relatively low level of indebtedness of Lithuania's businesses and households have led to a lower risk of default. After a slight slowdown in 2020, the Lithuanian economy continues to show resilience this year. One of the contributing factors has been the structure of the economy. For example, travel-related activities, such as tourism, rental services, air transport, accommodation and catering services, created more than 3% of GDP in Lithuania prior to the pandemic, and about 8% of GDP in some southern European countries. In addition, the further rise in income and domestic demand as well as acceleration in the tradable sector are conducive to business growth, which in turn reduces the likelihood of the so-called zombification. In late 2020, the level of indebtedness of Lithuania's private non-financial sector was among the lowest across the EU (see Chart 37), which implies a smaller potential scale of materialisation of the credit risk and a lower impact on the economy. Moreover, some businesses and households, which avoided the fallout from lockdown restrictions on their financial standing, built up significant stocks of savings in the reporting period. In late March 2021, deposits of the private non-financial sector with credit institutions exceeded the year-earlier level by 26.3%. In particular, household deposits increased by €3.3 billion and those of non-financial corporations – by €2.5 billion, which was due to inter alia the continued rapid wage growth in most activities, limited spending possibilities and robust performance – higher revenue and profits – of the businesses less affected by the fallout from the COVID-19 pandemic.

The level of indebtedness of Lithuania’s non-financial corporations and households is among the lowest across the EU.

Chart 37. Debt-to-GDP ratios of non-financial corporations and households



Source: ECB.

The government has taken part of the credit risk over from businesses in a bid to mitigate the economic fallout from the outbreak of the COVID-19 pandemic. Last year, the support provided by the government to business was particularly significant and exceeded €2 billion. Government support schemes helped stave off corporate liquidity and solvency risks, which could spill over to households and creditors if they were to materialise. Hence, the government’s response to the emergency can be viewed as positive. However, it is important to ensure adequate targeting of fiscal support measures when both dealing with the fallout of the COVID-19 pandemic and facing challenges in the future. For instance, the most generous government support measures, such as subsidies, should be earmarked for the businesses most affected by the pandemic. In this case, the scope of support schemes and the burden of the debt allocated to support measures could be smaller, in particular in the event of changes in the low interest rate environment.

2.2. Risk of potential overheating in the residential real estate sector at its historical peak of activity

Excessive activity in the housing market may disrupt the balance between demand and supply and lead to unsustainable growth in prices, the correction of which would have negative implications for households, real estate developers, and credit institutions. Increased activity in Lithuania’s real estate market has been observed for several years now. In the first months of 2021, demand for housing continued to grow. This might lead to an imbalance between demand and supply, which would be amplified by overly optimistic expectations, stronger households’ purchasing power as a result of an increase in household savings during the pandemic, growth in lending and insufficient housing supply in the short term. The emergence of imbalances would lead to unsustainable growth in house prices and would magnify the possibility of price correction. Against such background, risks triggered by a contraction of the previously active housing market may manifest themselves through several different channels, such as (i) an excessive burden of liabilities, which residential mortgage borrowers might face due to a deterioration in their financial well-being; (ii) an increase in losses of real estate developers and construction firms as a result of falls in demand for real estate and business

financing; and (iii) losses sustained by credit institutions due to solvency issues of their customers and value impairment of real estate collateral. At the same time, this could have a negative impact on the real economy.

Historically high interest in house purchase heightens the probability of unsustainable demand.

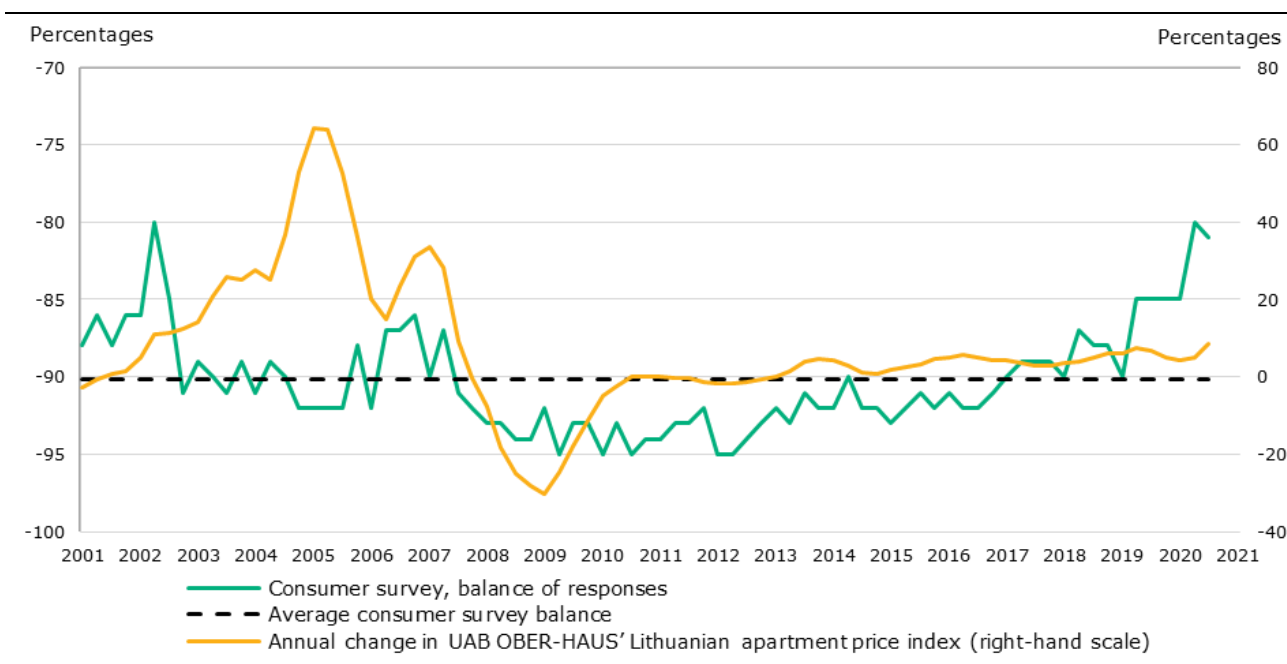
Elevated activity in the country’s housing loan and real estate markets has been observed for several years now. In early 2021, the level of activity in the housing market was similar to that observed a year earlier, when the housing market was at the historical peak of activity (for more details, see Section 1.4 “Real estate market developments”). Following the end of the first lockdown, the number of Google searches about real estate increased substantially, as did the number of views of property listings. Of particular interest were the listings of detached houses (in 2020, the number of purchase and sale transactions involving single-family houses increased by 8.5% year on year) and apartments in new builds in the country’s capital. Such a strong interest in house purchases leads to a higher probability of demand becoming partly unsustainable, implying that some households will purchase housing, driven by house purchases made by other persons instead of actual need for new homes.

Overly optimistic expectations of the country’s households about house purchases may speed up the rise of house prices.

Despite the massive lingering uncertainty regarding the economic outlook, the share of households contemplating a house purchase has reached a historically high level (see Chart 38). The balance of respondents has been improving mostly due to increases in the ranks of households that plan to purchase a home but still have doubts (those who answer “Perhaps”) and decreases in the number of those who do not plan to buy a house (those who answer “No”). At the same time, the household surveys conducted by the Bank of Lithuania in 2020 showed increasingly stronger expectations for a more rapid growth in house prices. At the beginning of 2021, there are already signs of an acceleration in price growth and, with such expectations staying firm, housing demand may exceed supply and give an extra impetus for growth in prices, which may drive the level of house prices away from fundamental factors.

Household expectations have been changing, with increasingly more households contemplating a house purchase.

Chart 38. Household expectations about house purchase and changes in apartment prices



Sources: Statistics Lithuania, UAB OBER-HAUS and Bank of Lithuania calculations.
 Note: Based on data for 10 May.

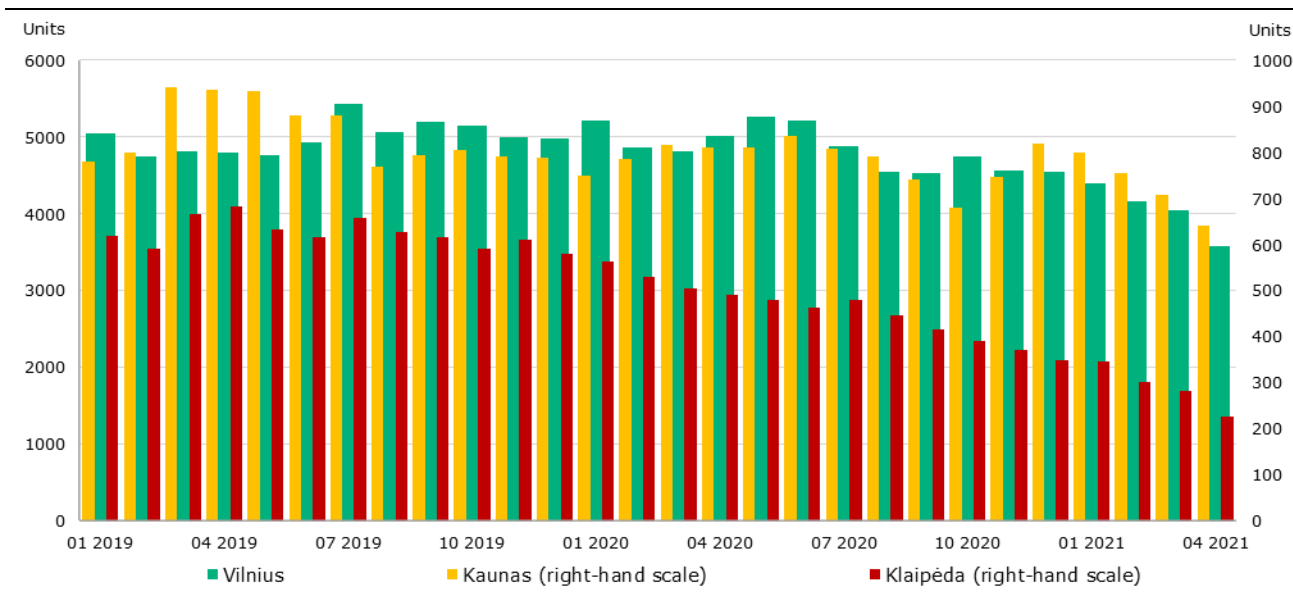
Good housing affordability creates preconditions for further growth in demand. While house prices rose quite rapidly in 2020, the rise in prices still lagged behind wage growth, hence housing affordability became historically good (house prices in Lithuania have risen by roughly 19% since 2008, and the net income of the population has almost doubled). However, this situation may change quickly if house prices start to grow much faster than wages, and supply will not meet the increased demand, especially in individual houses in and around cities and new construction apartments in Vilnius.

A substantial increase in the level of housing demand in the primary market in early 2021 has led to a growing gap between demand and supply, which is likely to be short-term. New apartment reservations in the primary market were particularly numerous in the first months of 2021, while the stock of unsold apartments reached several years' lows across all major cities, which pointed to a shortage of new housing supply (see Chart 39). This shortage was further exacerbated by the postponement or temporary suspension of new projects by some housing developers amid the uncertainty that emerged early in the pandemic. Nonetheless, the number of building permits issued for housing in 2020 remained broadly unchanged and the number of housing starts exceeded its year-earlier level, therefore, the shortage of supply is likely to decrease in the longer term.

Growing purchases of housing “from drafts” also point to a mismatch between demand and supply and give rise to certain risks. Reservations of housing in the primary market under pre-contracts entail a small down payment (of up to 10-15% of the housing value) and buyers do not send mortgage loan inquiries to credit institutions, which implies a risk that such buyers will not get a loan (e.g. due to insufficient income to ensure loan repayment) once the housing is completed in 1.5 or 2 years' time and will be forced to terminate their purchase-sale agreements. A substantial increase in such cases could bring housing project developers into difficulties with discharging their financial liabilities.

The stock of unsold apartments in Lithuania’s three major cities has been decreasing rapidly.

Chart 39. Stock of unsold apartments in Vilnius, Kaunas and Klaipėda



Source: UAB Inreal.
Note: Based on data for 3 May.

As demand for housing continues to grow faster than supply, the risk of market overheating increases. Good housing affordability and expectations of rapid price increases in the future could lead to imbalances between supply and demand, which could lead to market overheating: house prices may deviate from the levels implied by their fundamental determinants, speculative transactions may become more prevalent and housing may become unaffordable for average income households or prompt them to

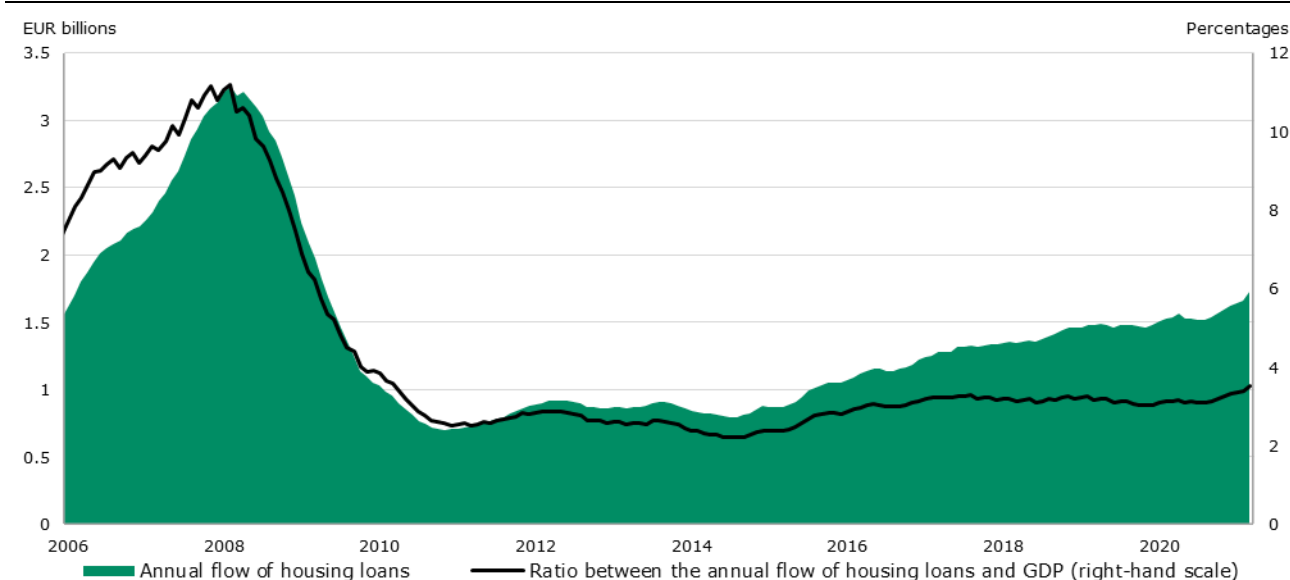
take unsustainable financial obligations for a house purchase. Price bubbles and a high prevalence of speculative transactions in the market where many transactions are financed by loans may push credit institutions into bigger losses in case of a market correction.

Although no more than in previous years, the rapid growth of the housing loan portfolio significantly contributes to the historically active real estate market.

Between 2016 and 2020, the annual growth³⁶ of the housing loan portfolio ranged between 7% and 9.4% and its pace was among the fastest across the EU. The growth of Lithuania’s housing loan portfolio has been outpacing the euro area’s average since as early as 2014,³⁷ but the difference between the paces of growth in these portfolios has been stable for some time and remained unchanged in 2020. So far, the dynamics in the flow of housing loans in Lithuania has broadly matched the pace of GDP growth and can therefore be considered sustainable (see Chart 40). However, the increase in new housing reservations suggests that the housing loan portfolio may continue to accelerate in the future. In 2020, the share of mortgaged house transactions remained largely unchanged year on year, accounting for 42.8% of the total number of housing transactions and 60.1% of their total value.

The flow of housing loans has been growing, but its growth pace has broadly matched the pace of economic growth in the last few years.

Chart 40. Ratio between the flow of loans for house purchase and GDP



Sources: Statistics Lithuania and Bank of Lithuania calculations.

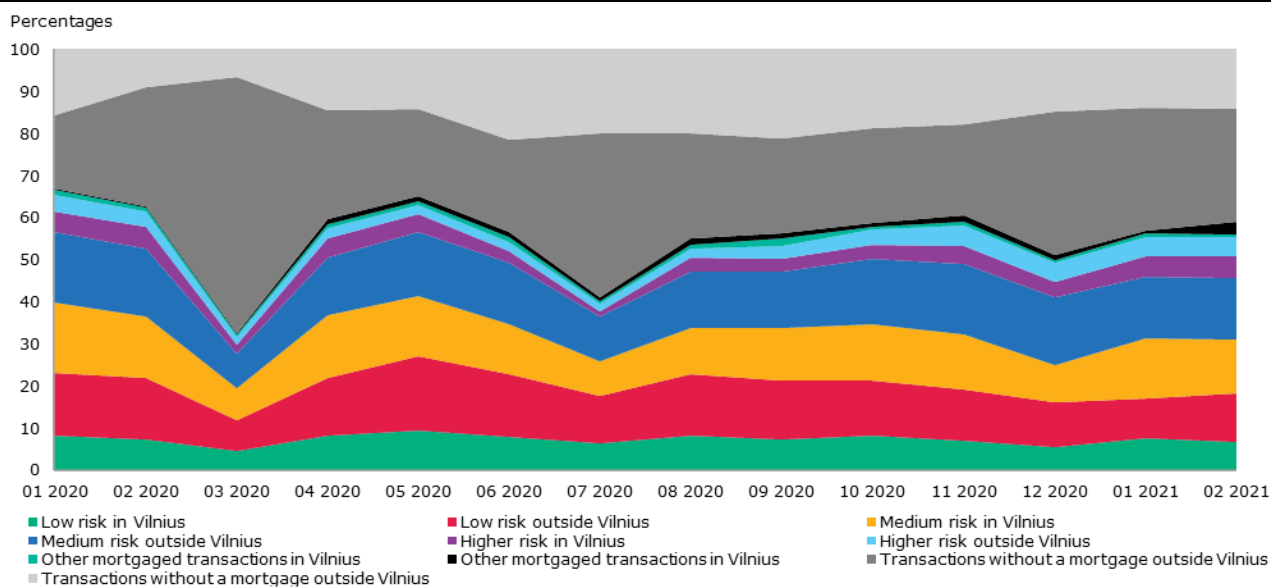
The Responsible Lending Regulations limit the risks related to housing loans. The share of provisions for housing loans in the portfolios of banks operating in the country followed a downward path in 2020, while the share of housing loans financed by higher risk loans remained unchanged (see Chart 41). The level of risks related to housing loan portfolios and speculative opportunities for mortgaged home purchases are limited substantially thanks to the Responsible Lending Regulations applied by the Bank of Lithuania, which establish a minimum down payment of 15% for mortgaged home transactions, the debt service-to-income ratio of no more than 40% and the maximum credit maturity of 30 years.

³⁶ Based on MFI data.

³⁷ According to the data from the “Euro Area Statistics” website, the annual growth pace of Lithuania’s housing loan portfolio has been exceeding the respective pace of growth of the respective euro area’s portfolio by approximately 4 percentage points since 2016 and until now (<https://www.euro-area-statistics.org/>).

The share of housing transactions financed by higher-risk loans remained unchanged in 2020, but the number of low- and medium-risk transactions increased in the middle of the year.

Chart 41. Housing transactions broken down by the level of financing risks



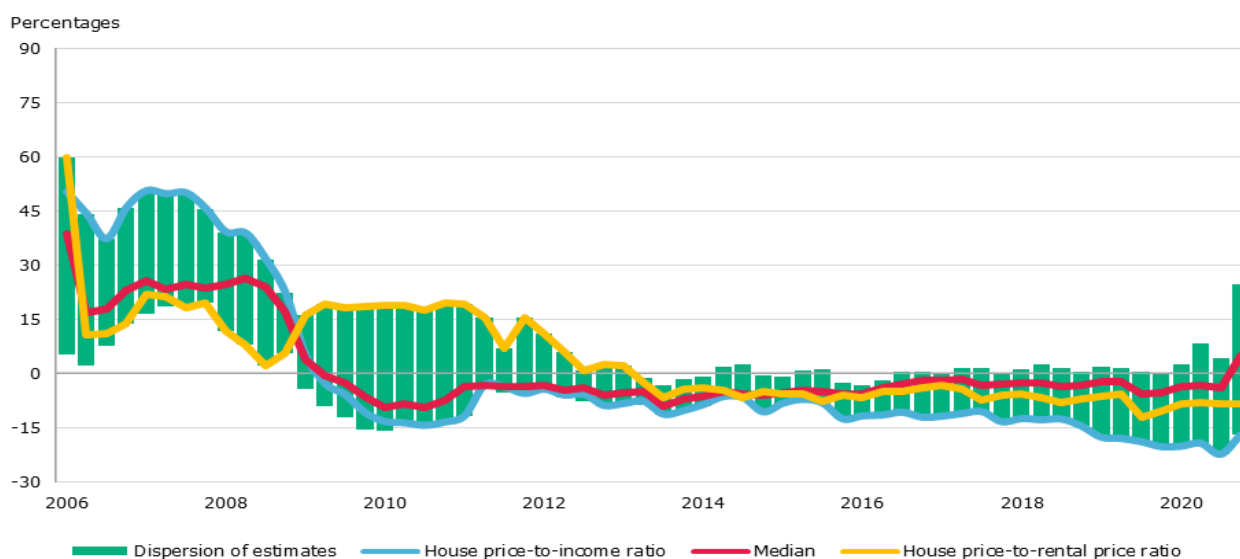
Sources: Centre of Registers, Loan Risk Database and Bank of Lithuania calculations.
 Notes: Low-risk transaction: LTV <80% and DSTI <30%. Medium-risk transaction: LTV <80% and DSTI 30-40%. Higher-risk transaction: LTV 80-85% and DSTI 30-40%.

Various benchmarks suggest that house prices in Lithuania were close to their fundamental values in late 2020, yet the acceleration of price growth in 2021 may lead to their deviation from fundamental values. Even though the housing market demonstrated a high level of activity, the median of housing market benchmarks and econometric models suggested that house price overvaluation in Lithuania reached approximately 4.9% in the fourth quarter of 2020, hence house prices in Lithuania were not significantly inflated (see Chart 42). Nonetheless, uncertainty about the future evolution of real estate prices has risen sharply, which is evident from a substantial increase in the dispersion of estimates.

House prices may deviate from fundamental values in certain segments of the housing market due to uneven growth in prices. According to the latest data available, prices for apartments in downtown Vilnius and prices for detached houses close to Lithuania’s major cities have been rising at a particularly rapid pace. Hence, even if house prices in Lithuania are, in general, not inflated, prices in these market segments may deviate from fundamental housing values and give rise to price bubbles. In such a case, the Bank of Lithuania may take certain steps to tighten lending requirements for the buyers of these particular types of homes in order to limit the losses that might be sustained by financial institutions in case of a correction in prices.

Since 2010, house prices have been close to their fundamental values.

Chart 42. Gap between house prices and their fair value



Sources: Statistics Lithuania and Bank of Lithuania calculations.

Note: Estimates were made using the house price-to-rental price ratio, the house price-to-income ratio, the econometric model and the HP filter.

Box 4. Which factors determine housing demand and supply?

This box discusses the results of econometric modelling aimed at determining which factors influence the demand for flats, their supply and price changes as well as comparing the differences of the potential causes behind housing market activity seen recently and observed in 2006-2008. An econometric model to assess the demand for and supply of flats was developed on the basis of G. S. Maddala and F. D. Nelson (1974) and is given in Equations 1 to 4.

$$(1) D_t = c_D + \alpha_0 X_t + \alpha_1 P_t + u_t$$

$$(2) S_t = c_S + \beta_0 Z_t + \beta_1 P_t + v_t$$

$$(3) Q_t = \min\{D_t, S_t\}$$

$$(4) \Delta^{12}(P_t - VKI_t) = \gamma(D_t - S_t)$$

where: D_t – demand for flats, S_t – supply of flats, c_D , c_S – constants, X_t – demand factors, Z_t – supply factors, P_t – house prices, u_t – demand shocks, v_t – supply shocks, Q_t – the actual number of housing transactions, VKI_t – the consumer price index. Demand factors X_t include the flow of new housing loans, interest rates on housing loans, growth in net wages and salaries, growth in disposable income, indicators reflecting the variety of consumer expectations, the deposit-to-GDP ratio and its growth, remittances, the birth rate, and the urbanisation indicator defined as a share of population in the largest cities (Vilnius, Kaunas, and Klaipėda). Supply factors Z_t include interest rates on corporate loans, banks' credit standards on corporate loans, construction input prices, and the number of homes under housing permits and house completions.

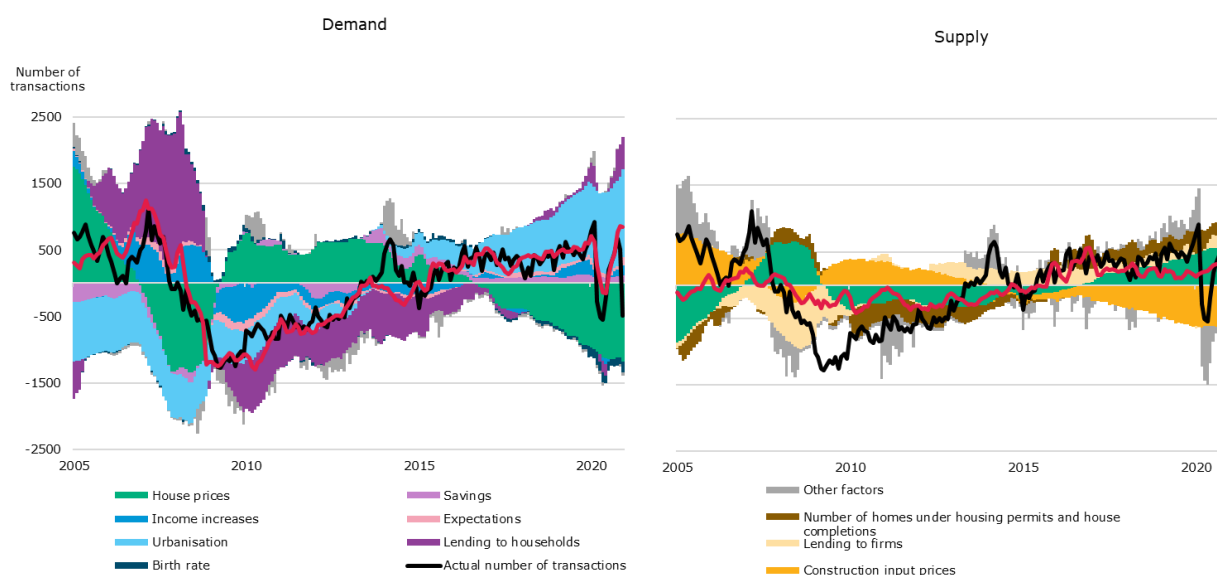
The model assumes that there is an imbalance between the demand for and supply of flats, and actual number of housing transactions equals to the lower of either demand or supply (see Equation 3). Since demand and supply are not observed in order to determine them, it is assumed that the real house price

increases in the case of excess demand and decreases in the case of excess supply. It is also assumed that the change in real house prices is proportional to the gap between demand and supply (see Equation 4). 23 thousand different specifications of the model, including different combinations of demand and supply factors, have been drafted in total. The box presents summarised results for 36 best models³⁸.

The decomposition of the demand and supply equations (see Chart A) shows that high house prices were the main contributor to the decrease in apartment demand in 2006-2008 and 2016-2019, whereas factors that increased demand varied in both periods. In 2006-2008, demand for flats was mostly driven by lending to households and increasing household income. In 2016-2019, the impact of these factors on demand was also positive, albeit considerably smaller. During this period, demand was stimulated by urbanisation as well as remittances and increasing household savings. The decline in demand at the beginning of 2020 reflects the impact of the first lockdown imposed in March and is related to suspended lending, reduced growth in household income, and worse expectations. In the second half of 2020, improved expectations, recovered lending, and growth in household income had once again a positive impact on demand.

The main catalyst of apartment supply is house prices. Supply is also driven by the low interest rate environment and the increasing number of homes under housing permits and house completions; it is negatively affected by high construction input prices.

Chart A. Contributions to apartment demand and supply



Sources: Statistics Lithuania, Centre of Registers, Bank of Lithuania and Bank of Lithuania calculations.

Notes: Compared to averages over the period. Savings include remittances and the deposit-to-GDP ratio. Expectations include the consumer confidence indicator, expected inflation, house price growth expectations, residents' intentions to acquire real estate property, and the forecast of change in households' financial situation. Lending to households includes the flow of new housing loans and interest rates on housing loans. Lending to firms includes banks' credit standards on corporate loans and interest rates on corporate loans.

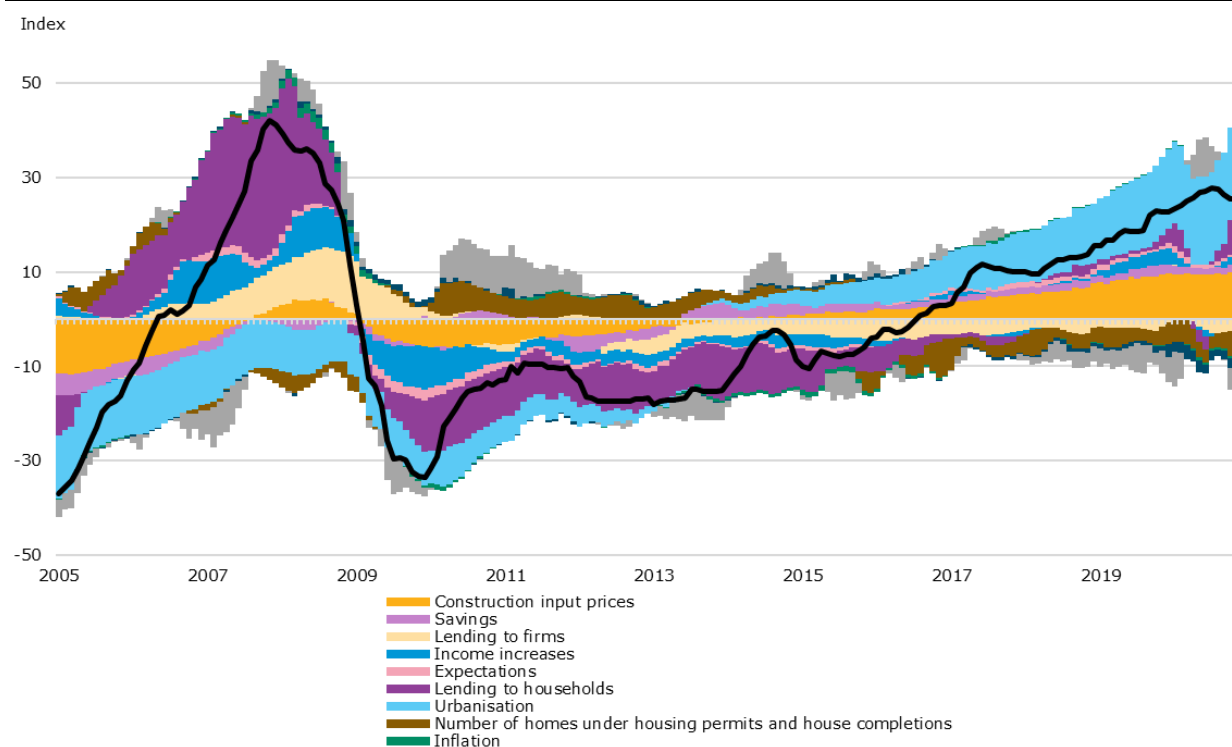
The decomposition of the pseudo change in house prices³⁹ (see Chart B) shows that the recent growth in house prices is related to urbanisation and increasing construction costs. The increasing flow of housing loans, growth in household income and savings are contributing factors as well. Growth in house prices is limited by the number of homes under housing permits and house completions, lending to firms and low birth rates. Based on the results of the models, growth in house

³⁸ The selected models provided valuation results that meet the assumptions and for which the correlation between the change in real house prices and the difference between supply and demand estimated by the model (Equation 4) is greater than 0.5.

³⁹ The pseudo change in house prices, described in the equation $P_t - \frac{1}{\delta} P_{t-12} = \frac{1}{\delta} \Delta^{12} VKI_t + \frac{\gamma}{\delta} (\alpha_0 X_t - \beta_0 Z_t) + \frac{\gamma}{\delta} u_t - \frac{\gamma}{\delta} v_t + \xi_t$ is greater than the actual change in the house price index.

prices in 2006-2008 was stimulated by other factors. During this period, the rise in prices was mainly driven by extensive lending to households, growth in household income, high interest rates on corporate loans, and banks' tight credit standards on corporate loans.

Chart B. Contributions to house price dynamics



Source: Bank of Lithuania calculations.

Notes: Compared to averages over the period. Savings include remittances and the deposit-to-GDP ratio. Expectations include the consumer confidence indicator, expected inflation, house price growth expectations, residents' intentions to acquire real estate property, and the forecast of change in households' financial situation. Lending to households includes the flow of new housing loans and interest rates on housing loans. Lending to firms includes banks' credit standards on corporate loans and interest rates on corporate loans.

2.3. Risk of value impairment of commercial real estate, in particular offices and commercial premises

Because of its size and links with financial institutions, the commercial real estate market is important for financial system stability given that commercial real estate is the main type of collateral used by non-financial corporations. Most investors in commercial property for rent and commercial property development make use of credits. Thus in the past, sudden adverse developments in prices for commercial property used to be one of the major sources of losses for the entire financial system. Lithuanian banks' holdings of loans collateralised by commercial real estate comprise around 20% of the total volume of loans (see Chart 43). This share is significantly lower than that of house loans, yet the commercial real estate market tends to be more volatile than the residential real estate market. Should the level of activity and prices in the commercial property market start to fall and the vacancy rate begin to increase, commercial real estate developers and corporate investors may suffer

significant losses, which, given the leverage of these enterprises, may drive them into insolvency and pose risks to the entire financial system.⁴⁰

Banks have been more reserved regarding funding for the development of commercial real estate since the beginning of the COVID-19 pandemic. The number of loans collateralised by commercial real estate is scarce, therefore, their share in the overall credit flow is markedly fluctuating. However, looking at the average of several months, the share of loans collateralised by commercial real estate granted to real estate and construction companies in the flow of new bank loans has not changed from the beginning of the COVID-19 pandemic and amounts to 2% of the total flow of new bank loans. Margins on new loans by type of collateral (offices, commercial property or production and warehousing spaces) do not significantly differ and stand at 3.5-4.5%, according to the Bank of Lithuania.

The share of loans collateralised by commercial real estate has declined in the portfolios of banks operating in Lithuania.

Chart 43. Share of loans collateralised by commercial real estate in the bank loan portfolio



Source: Loan Risk Database.

Changes in consumption and teleworking possibilities during the pandemic could lead to significant imbalances in the commercial real estate market. The supply of commercial real estate has increased substantially in Lithuania over the past several years. In a period of strong economic growth, companies increased the supply of office, retail and warehousing spaces in Lithuania’s biggest cities by a third in 2016-2019 in order to satisfy the need for commercial real estate required to accommodate economic development. In 2020, a record surface area of new offices was offered, with a total of 115.9 thousand m² of new surface area in Vilnius market (see Chart 44). Currently, the compressed-spring effect is still being felt in the office market, as decisions on office rental needs that were postponed during the pandemic should be implemented at the second half of 2021. In 2020, the total surface area of rented premises surpassed the average of the last five years by as much as 16%, exceeding 100 thousand m². An increasing number of companies have been recently reviewing their future needs of office spaces. A number of firms expect 60% to 70% employees to return to offices and are thus considering reducing the surface area of occupied office spaces. Meanwhile, others, on the

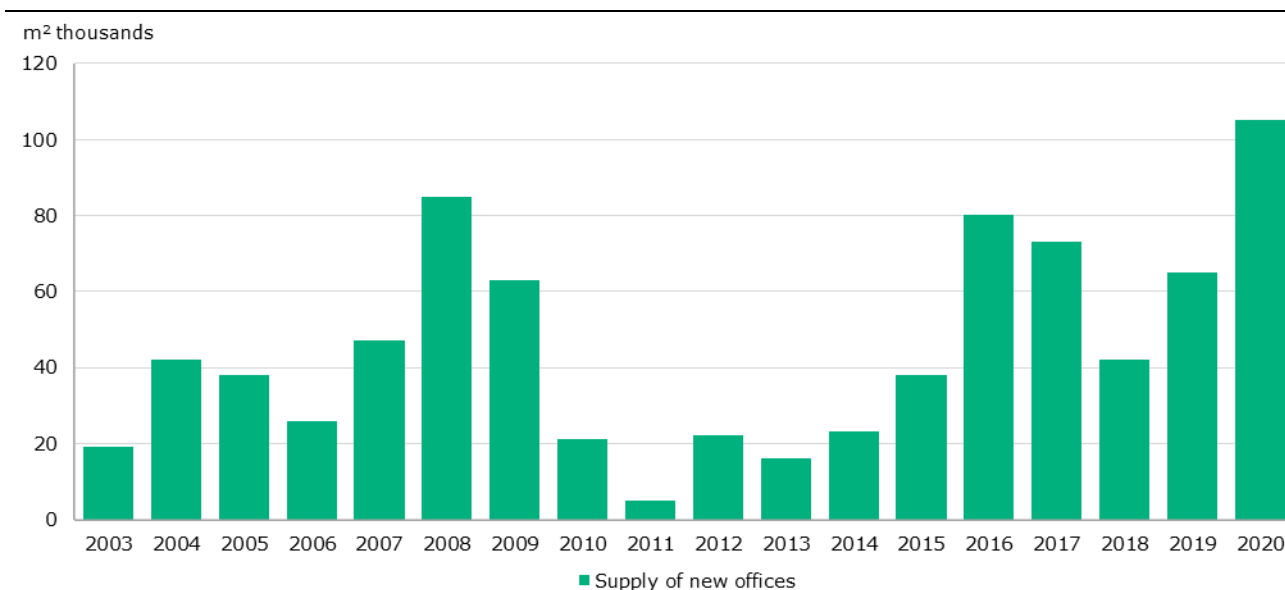
⁴⁰ The IMF analysis shows a close link between the situation in the commercial real estate market and banks’ capital adequacy. For example, should commercial real estate vacancy increase by 5 percentage points (permanent change), banks’ capital reserves would decrease twice the time (<https://www.imf.org/en/Publications/GFSR/Issues/2021/04/06/global-financial-stability-report-april-2021#chapter3>, p. 62).

contrary, are planning to expand due to the need to increase the area per employee in order to minimise the potential of spreading the virus in the workplace. While the impact of the pandemic on offices is ambiguous, the pace of enlargement of e-commerce has multiplied several times during the lockdowns. The increasing turnover of e-commerce exacerbates the need for warehousing spaces. With increasingly more businesses moving their activities online and restrictions on indoor trade activities still persisting due to the COVID-19 pandemic, the vacancy rate of commercial property has markedly increased and the first-year rental prices of commercial property in prestigious streets have decreased to 50% of the level observed in 2019.⁴¹ However, the expansion of commercial property is not interrupted and the supply of commercial property in Vilnius should increase by 200-300 thousand m² in the next two to three years should all currently planned projects enter the market.⁴²

Increasingly more real estate market participants note imbalances related to the oversupply of offices in Vilnius, while the Klaipėda region faces a shortage of warehousing spaces. 25% of the respondents of the survey conducted by the Bank of Lithuania assessing the segment believed the supply of offices rented in the capital to have exceeded their demand at the beginning of 2021 (the number of those sharing this opinion increased by 5 percentage points over the half-year). The share of the respondents noting a shortage of warehousing spaces in Klaipėda has increased by 7.5 percentage points over the six months: while half a year ago every fourth respondent felt warehouse supply was lacking, all the respondents this year claimed the demand for warehouses was exceeding their supply.

A record surface area of offices was offered in Vilnius in 2020.

Chart 44. Dynamics of the supply of new offices in Vilnius



Source: UAB OBER-HAUS.

The vacancy rate of office spaces is projected to increase. According to Statistics Lithuania, in 2020 the supply (surface area) of retail and office space completions in Lithuania was similar to 2019. However, real estate market participants expect the office space vacancy rate in Vilnius to rise as a result of the increasing supply, changing corporate needs, and the increasing popularity of the hybrid work model after the COVID-19 pandemic (see Chart 45), which, in turn, would apply a downward pressure on office rental prices and the office building value. The majority of the respondents of the Survey of Real Estate Market Participants conducted by the Bank of Lithuania (53%) expected less surface area of

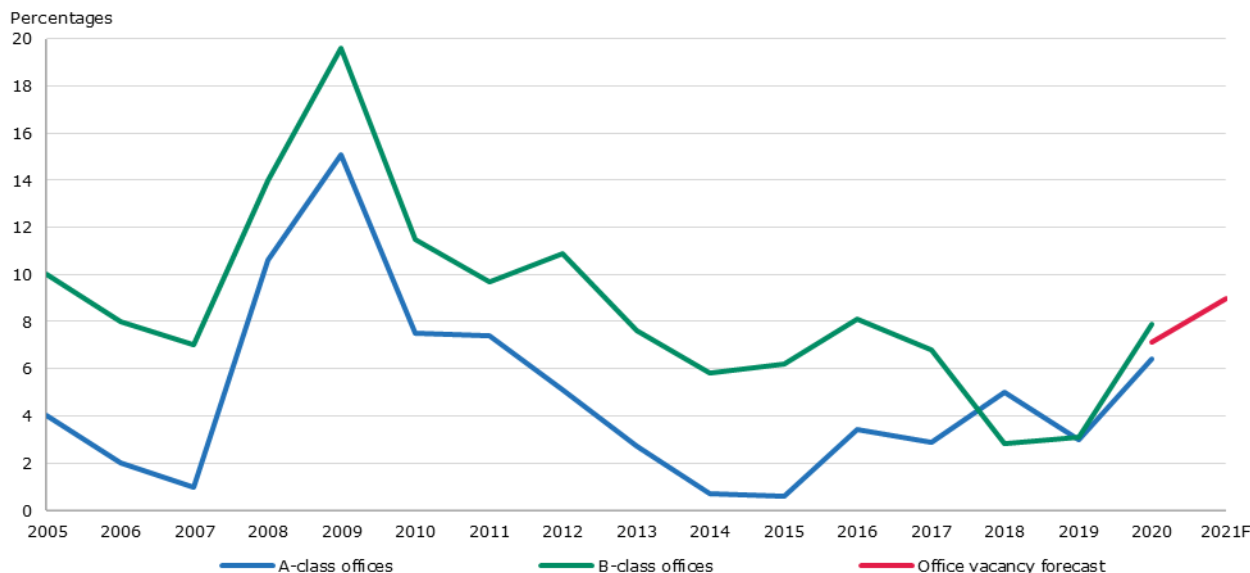
⁴¹ According to UAB OBER-HAUS.

⁴² According to Made in Vilnius.

modern offices to be leased in Vilnius in the next 12 months under new agreements than the previous 12 months. The decline in the rental rates of A- and B-class offices in Vilnius was expected by, respectively, 33% and 47% of the respondents, while 25% of the respondents believed the supply of offices to have exceeded their demand. Still, office investment yields have remained stable so far, at 6.5-8.5% (see Chart 46).

The share of vacant offices is expected to significantly increase in Vilnius in 2021.

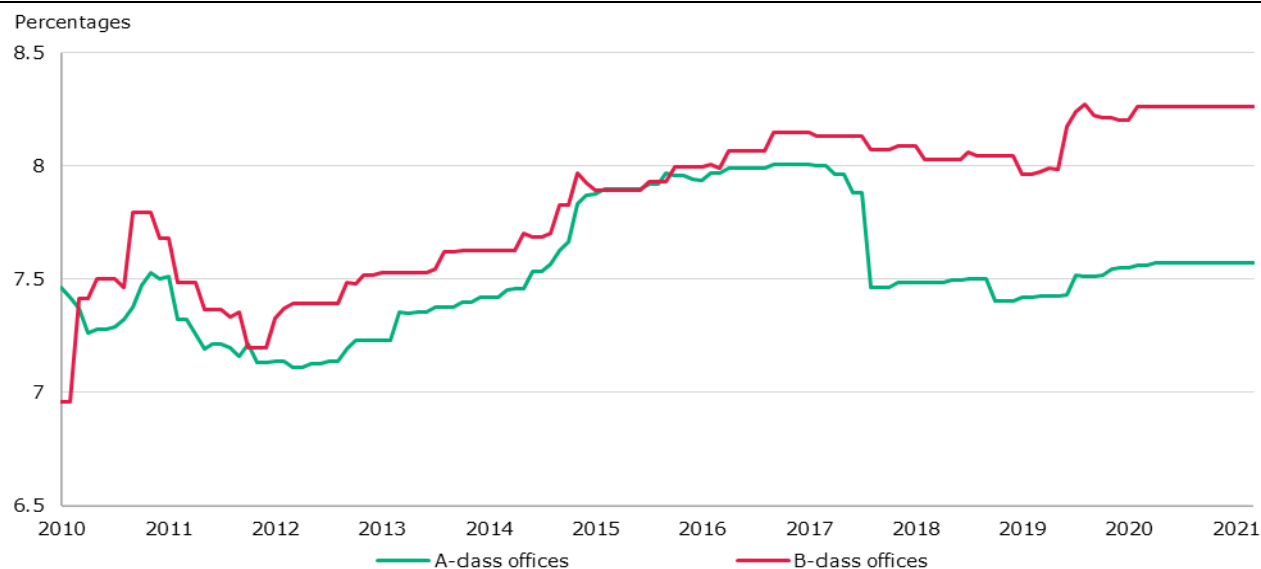
Chart 45. Office space vacancy rate in Vilnius



Sources: UAB OBER-HAUS, CBRE Baltics, and Newsec.
 Note: 2021F is the projection by Newsec.

So far, office investment yields remain stable.

Chart 46. Office investment yields in Lithuania



Sources: UAB OBER-HAUS and Bank of Lithuania calculations.
 Notes: Yields on offices are calculated as the ratio (%) between the average office rental price (Eur/m² per month) multiplied by 12 and the average office sale price (Eur/m²). A-class offices mean offices located in the centre of the cities or in business districts; B-class offices mean offices located in residential or industrial districts.

The growing supply of commercial real estate in individual segments of the market will further enhance the downward pressure on rental prices and the value of properties. So far, the majority of developers continue to implement their planned projects. According to real estate market participants⁴³, the office space vacancy rate in Vilnius will increase from 7% to 18% in 2021-2022. Yet it is expected that Belarusian companies transferring their businesses to Lithuania as well as companies moving out of co-working spaces due to business expansion will ensure sufficient occupation of premium-class offices. Meanwhile, old-construction offices in less attractive locations might face serious difficulties in maintaining their lessees. The lack of demand will be even more pronounced in the retail space segment, which has been hit by overdue payments by firms unable to continue operations amid the lockdown as well as payment deferrals and rental discounts granted to these businesses. Even though this segment has been lagging behind the segments of office or warehousing space in terms of the rate of expansion in recent years, the per-capita supply of modern retail spaces in Lithuania exceeds the average rate for advanced Western European economies by as much as 23.6%. Meanwhile, the indices of shares traded on the Baltic stock exchanges and real estate funds have markedly stood out because of the expectations of value impairment of commercial real estate (see Chart 47).

At the second half of 2020, prices of real estate funds traded in the Baltic States stabilised at pre-pandemic levels, while share prices continued to rapidly grow.

Chart 47. Price index of Baltic real estate funds and shares traded in the Baltic stock exchanges



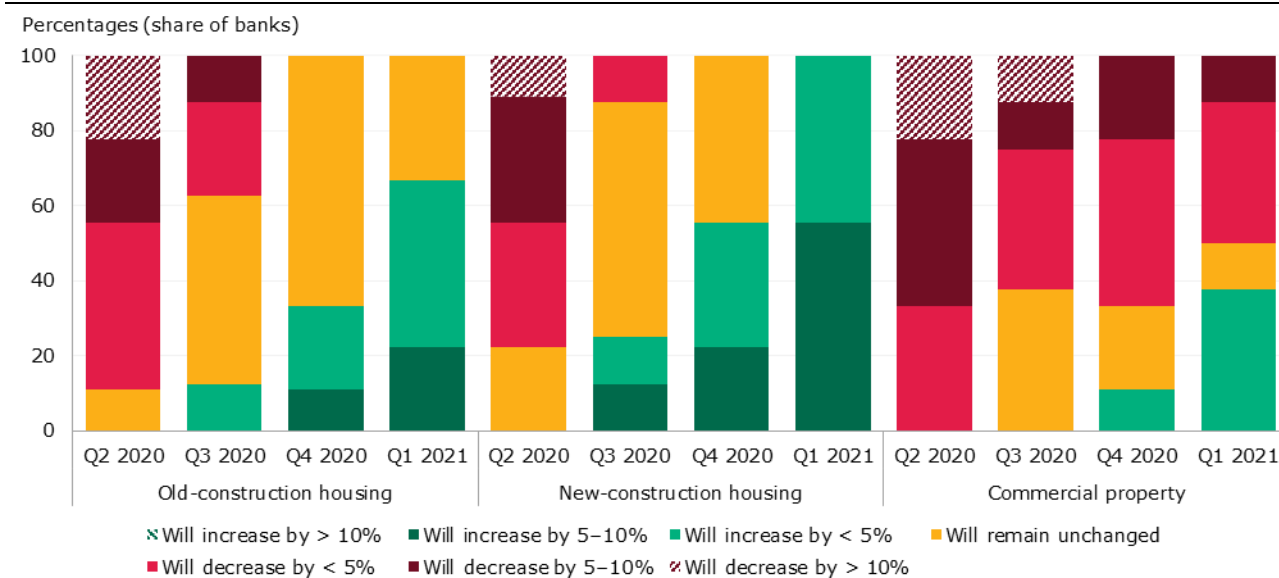
Sources: Nasdaq Baltic and Bank of Lithuania calculations.

Banks are more pessimistic about the future outlook of commercial real estate than residential real estate. The results of the latest Bank Lending Survey conducted by the Bank of Lithuania confirm that the majority of banks operating in Lithuania do not expect the value of commercial real estate to increase (see Chart 48). Still, these expectations have improved since the beginning of the COVID-19 pandemic: during the first lockdown banks expected a sharp decline in the value of commercial real estate, but at the beginning of 2021 not a single one expected a bigger impairment than 10% over the upcoming year. Lithuania's commercial real estate market significantly depends on the flow of foreign investments, which was active even in the face of the pandemic. On the one hand, this reduces the vulnerability of the domestic financial system. On the other hand, it undermines the resilience of Lithuania's commercial property market to global economic shocks.

⁴³ CBRE Baltic.

Banks' future outlook of commercial real estate is improving, yet is worse than that of residential real estate.

Chart 48. Banks' expectations for real estate price developments in the upcoming year



Sources: Bank Lending Survey and Bank of Lithuania calculations.

In the midst of the COVID-19 pandemic, the volume of non-performing loans collateralised by commercial real estate increased and now once again exceeds the volume of non-performing loans collateralised by residential real estate. The share of non-performing loans collateralised by commercial real estate in banks operating in Lithuania has increased during the pandemic and stands at 2.5% of the total portfolio of bank loans to non-financial corporations (a year-on-year increase of 0.5 percentage point). By comparing the volumes of non-performing loans, it appears that the volumes of non-performing loans collateralised by commercial real estate and residential real estate roughly converged in 2019 and turned separate directions during the pandemic: the volume of non-performing loans collateralised by residential real estate declined, whereas the volume of non-performing loans collateralised by commercial real estate markedly increased. Still, even the increased share of non-performing loans collateralised by commercial real estate in the bank loan portfolio remains historically small.

The recent tightening of credit standards on loans for commercial property development or acquisition will mitigate the fallout of commercial real estate value impairment for the financial system. Surveys reveal that credit standards for the development or acquisition of commercial real estate were tightened in 2020. 67% of the respondents of the Survey of Real Estate Market Participants conducted at the beginning of 2021 claimed it was more complicated to borrow for the development or acquisition of offices in Vilnius over the last 12 months. All real estate market participants surveyed also indicated that banks' borrowing conditions for investment in the development or acquisition of commercial property in Vilnius were tightened from March 2020 (the number of those sharing this opinion increased by 27 percentage points year on year).

2.4. Risk of a potential correction of imbalances in the Nordic countries amid high concentration in the banking sector

During the COVID-19 pandemic, concentration in the Lithuanian banking sector continued to increase, hence the banking sector has remained dependent on the decisions made by

individual banking groups and their wellbeing. As housing credit growth picked up, the country's major banks expanded their loan portfolios at a more rapid pace compared to smaller market participants, which, accordingly, led to an increase in their share of the banking sector's assets. In late 2020, three major foreign-owned banks held 85% of Lithuania's market in terms of assets and their combined market share increased by 2.5 percentage points year on year. Moreover, two banks that are part of Swedish groups, namely, Swedbank, AB, and AB SEB bankas,⁴⁴ had a combined market share of as much as 64%, which rose as well on a year-on-year basis (by 3.3 percentage points). Such growth in assets also led to an increase in concentration in the sector (see Chart 49). The high level of concentration makes the Lithuanian banking sector sensitive to the credit policy decisions of individual banks, while the sector's dependence on Swedish capital banks entails higher sensitivity to this country's imbalances given that their correction or the financial hardship faced by parent banks might also affect lending in Lithuania. As smaller banks and new entrants become more active in lending, concentration in the banking sector is expected to decline.

Funding of Lithuania's banks through deposits of their parent institutions followed a downward trend but the level of concentration showed an increase.

Chart 49. Funding of Lithuania's banks through deposits of foreign credit institutions and the level of concentration



Sources: Bank of Lithuania and Bank of Lithuania calculations.

Notes: The level of banking sector concentration has been measured using the Herfindahl-Hirschman Index. Market shares have been calculated based on banks' assets.

A correction of imbalances in Sweden could have a spillover impact on the Lithuanian financial system through several channels: 1) an increase in bank funding costs; 2) an increase in deposit volatility; and 3) changes in the lending policy of parent banks. Compared to the period preceding the great financial crisis of 2009, the first channel has lost its significance as the deposits of foreign credit institutions account for a meagre 4.5% of lenders' assets.⁴⁵ This implies that the direct impact stemming from the parent institutions would be limited.⁴⁶ The second channel would likely activate during a particularly deep crisis in the event of heightened distrust in the operational sustainability of Swedish banks. This might trigger an increase in deposit withdrawals from Lithuanian banks, which would pose them liquidity challenges. However, the country's banks now have historically high levels of deposits. Meanwhile, the third channel looks the most likely. Banks that operate in

⁴⁴ Hereinafter, this section will analyse SEB and Swedbank, i.e. the parent banks of AB SEB bankas and Swedbank, AB.

⁴⁵ In late 2008, this share was as high as 43%. For more details, see Box 4 "Evaluation of the impact of the adverse scenario in Sweden on Lithuania's economy and banking sector" of the [Financial Stability Review \(2020\)](#).

⁴⁶ The withdrawal of deposits by parent banks would not leave Lithuania's banks short of funds, therefore, funding costs should not increase, either.

Lithuania and are part of foreign banking groups must pursue operational and profitability targets set by their parent institutions hence an intragroup decision to modify lending policy and restrict lending across the board or to individual sectors would entail a decrease in lending volumes and/or an increase in borrowing costs in Lithuania. This would accordingly put a brake on Lithuania's economic growth and could trigger corrections in the real estate market due to fallen demand.

In Sweden, the pandemic has provided a further boost to the growth of residential real estate prices and the level of household indebtedness, leading to a heightened risk of a potential correction of imbalances. Due to its exceptional nature, the crisis brought by the COVID-19 pandemic further fuelled the growth of real estate prices in Sweden, as in many other countries, instead of triggering their correction in the period under review (see Chart 50). In February 2020, the annual pace of growth in house prices in Sweden hit 12.6%, its highest level since 2016, while the prices for detached houses went up even more, by as much as 17%. Such growth pushed the level of prices to all-time highs, notwithstanding that housing in the country was already among the most overpriced in the EU before the onset of the pandemic.⁴⁷ The more rapid rise in residential real estate prices was also driven by a pickup in housing credit growth, which pushed the already high level of household indebtedness to an even higher plateau. Meanwhile, a decrease in household income reversed the earlier trend of a decline in the household debt-to-annual income ratio, which increased by 9.2 percentage points during the year, to reach 195.5% in late 2020 – one of the highest levels across the EU.⁴⁸ Inflated house prices and high household indebtedness are sensitive to shocks, in particular amid the prevailing uncertainty over the path of the pandemic and its economic fallout, which heightens the likelihood of a correction in real estate prices and its risks for the Swedish financial system.

Companies directly affected by the pandemic account for a minor share of Swedish banks' portfolios but the exposures of the country's lenders to the commercial real estate market give rise to risks. The pandemic has not yet hit the Swedish banks hard and the country's lenders have thus far avoided bigger losses or an increase in non-performing loans due to inter alia a comparatively limited impact of the first two waves of the pandemic on the Swedish economy. The country's GDP contracted by 2.8% in 2020 – less than the EU's economy (-6.2%)⁴⁹ – and its economic growth forecasts have been revised up.⁵⁰ It should also be noted that companies engaged in the economic activities most sensitive to the pandemic account for a meagre 20% of banks' corporate loan portfolios, which is one of the smallest rates across the EU where loans granted to such companies comprise 39% of the portfolio on average. Nonetheless, loans granted to construction and real estate companies account for as much as 60% of corporate loans (see Chart 51) and as much as 51% of total corporate loans have been collateralised by commercial real estate.⁵¹ An increase in remote work amid the pandemic and the ensuing downturn in demand for commercial premises heighten the level of uncertainty and the likelihood of a price correction in this real estate segment. This, accordingly, gives rise to a systemic risk for Swedish banks, which would likely affect the decisions of the subsidiary banks operating in Lithuania if it were to materialise.

⁴⁷ For more details, see Chart 3.12 of the [ESRB Risk Dashboard](#).

⁴⁸ As regards the ratio of household indebtedness to gross income, Sweden (159%) only lagged behind Denmark (214%) and the Netherlands (193%) in 2019. In the euro area, the average household indebtedness was 94%, and in Lithuania – 36% (based on data from Eurostat).

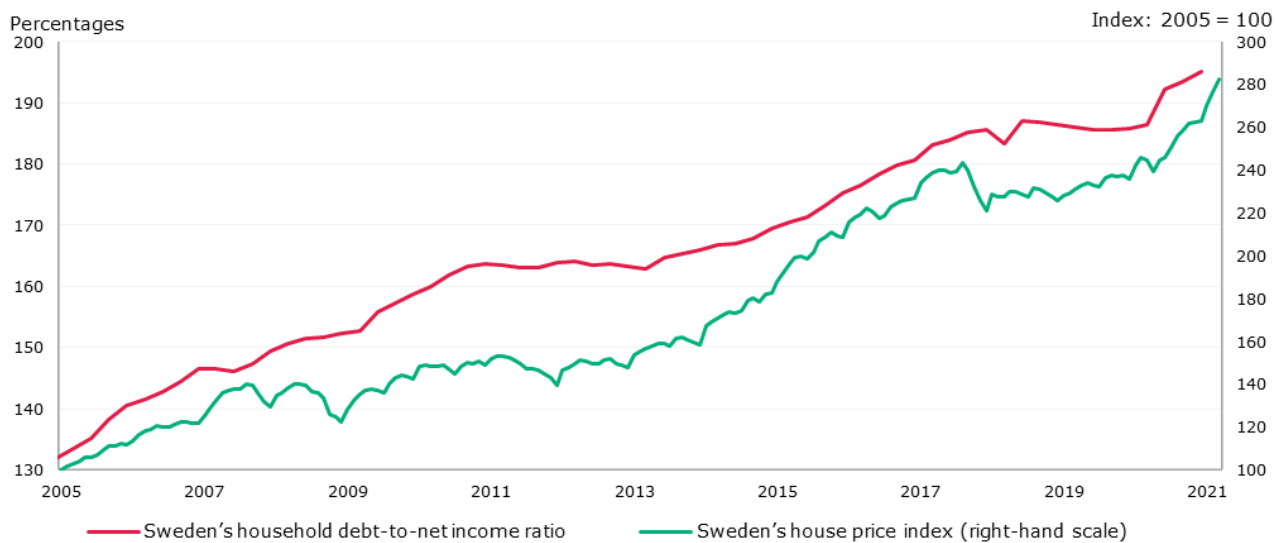
⁴⁹ Based on the European Commission's data.

⁵⁰ Sveriges Riksbank forecasts 3% growth for 2021, according to its [Monetary Policy Report](#) of February 2021.

⁵¹ Based on the ECB's data for 2019.

The pandemic has provided a further boost to the rise in real estate prices and the level of household indebtedness in Sweden.

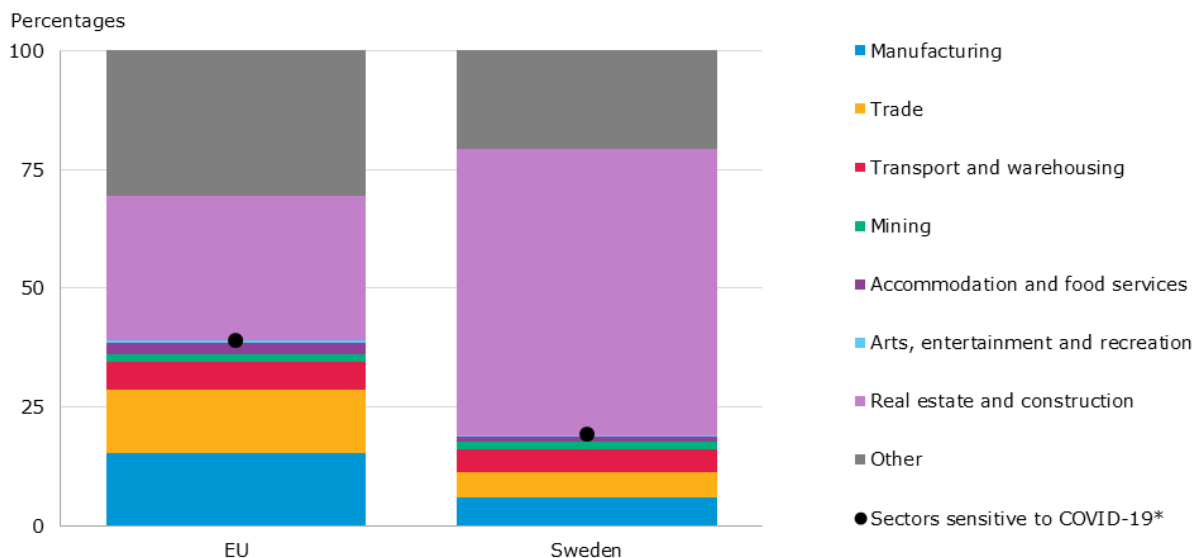
Chart 50. Dynamics of household indebtedness and real estate prices in Sweden



Sources: Statistics Sweden and Valueguard.

The volume of lending by Swedish banks to companies most sensitive to COVID-19 was comparatively limited before the pandemic but loans were highly concentrated in the real estate sector.

Chart 51. Lending to companies most sensitive to COVID-19 in 2019



Sources: ECB and Bank of Lithuania calculations.

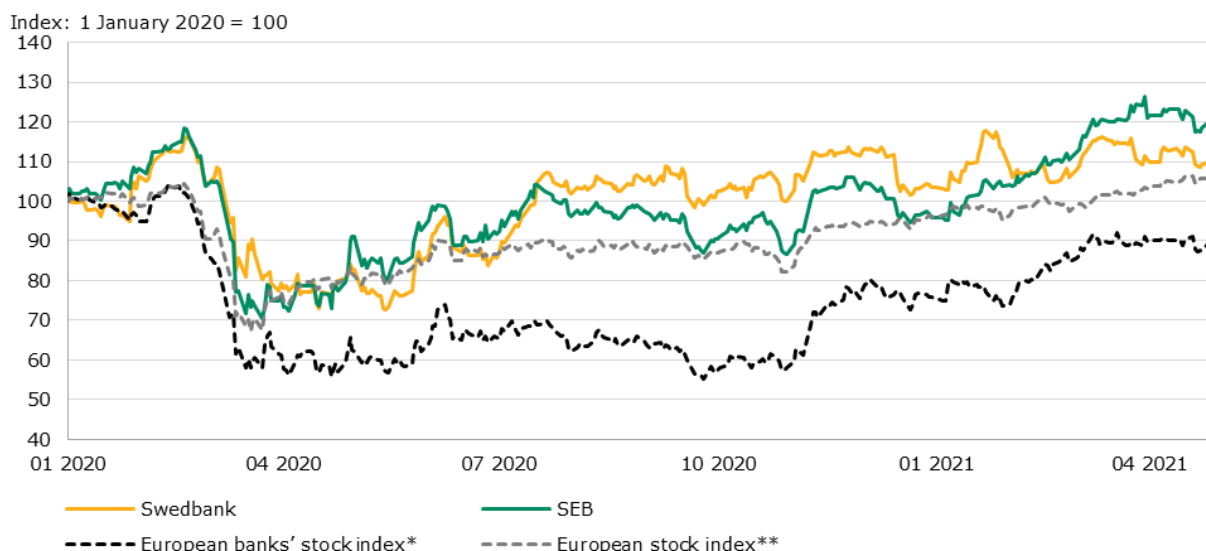
* According to the definition provided in the ECB's Financial Stability Review of May 2020: sensitive sectors comprise manufacturing, retail and wholesale trade, transport and warehousing, mining, accommodation and food services as well as arts, entertainment and recreation.

The situation in financial markets has recovered after the initial COVID-19 shock, but the Swedish banking sector remains sensitive to potential market fluctuations due to a high share of market funding and heightened uncertainty. Following a correction early in the pandemic, the stock prices of Swedbank and SEB reversed losses and recovered to pre-pandemic levels (see Chart 52).

The recovery of stock prices of the two banks outpaced the European banking stock index as well as the overall European stock index, despite a more cautious approach taken by investors with respect to the stocks of the European banking sector in recent years. Such a positive approach to stocks shows investor confidence in the wellbeing of these lenders, which is also corroborated by the recovery of bond yields to the pre-pandemic level.⁵² Hence the Swedish banks have withstood market fluctuations, yet the share of market funding of these lenders has remained among the highest across the EU (see Chart 53), which leaves them sensitive to potential fluctuations in the prices for financial instruments. Parent banks would attempt to offset a surge in funding costs, if it were to occur, and therefore would likely demand higher returns from their Lithuanian subsidiaries thus affecting their lending policy.

Stock prices of Swedish banks have recovered to pre-pandemic levels.

Chart 52. Dynamics of SEB and Swedbank stock prices and European stock indices



Sources: Refinitiv and Bank of Lithuania calculations.

* STOXX EUROPE 600 BANKS.

**STOXX EUROPE 600.

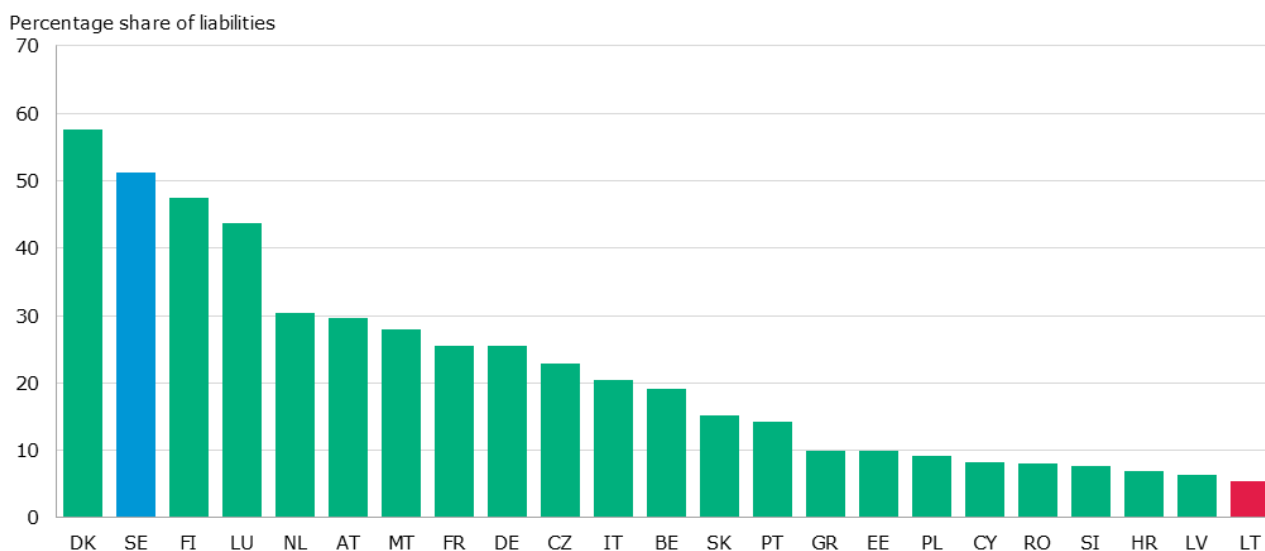
Swedish banks remained robust and their losses related to credit risk stayed limited in the period under review. Loan impairment losses incurred by Swedish banks have not been significant thus far – approximately 0.3% of their total loan portfolio.⁵³ The non-performing loan ratio remained flat year on year, at 0.5%. High profit margins, limited losses and the suspension of dividend payments helped the country's banks improve their capital adequacy ratios even further: the sector's overall ratio increased by 1.2 percentage points on a year-on-year basis, to 22.5%. The high level of capital will enable banks to absorb potential loan losses and to continue unrestricted lending to the private sector thus contributing to economic recovery. However, the financial leverage and liquidity coverage ratios decreased somewhat in Sweden during the pandemic, standing below the EU average and relatively close to the minimum requirements. Therefore, if facing a bigger shock, the country's banks may run into difficulties, which would accordingly spill over to the Lithuanian banking sector.

⁵² Compared to late February 2020, bond yields of Swedish banks rose by approximately 1.7 percentage points (to 1.9%) and the yields of covered bonds, which comprise a substantial share of bank funding, – by approximately 0.4 percentage point (to 0.1%) in March 2020. Yields recovered back to the pre-pandemic level as early as in autumn.

⁵³ Sveriges Riksbank and banks' reports.

The share of market funding by Swedish banks is among the highest across the EU.

Chart 53. Share of market funding by European banking sectors in 2019



Source: ECB.

Generous government support and proactive macroprudential policy have helped mitigate the impact of the COVID-19 pandemic. According to the IMF data, the package of government support measures amounted to 16% of Sweden's GDP in 2020 and made a significant contribution to the mitigation of the economic fallout from the COVID-19 pandemic. The government also plans to provide support worth approximately 2% of GDP⁵⁴ per year in 2021 and 2022, which will help Swedish businesses get back to normal and will reduce the likelihood of a sudden wave of bankruptcies. Even though the sovereign debt will increase, Sweden is likely to avoid a deterioration in government debt sustainability and the related potential crisis, given that the country's government debt-to-GDP ratio (36%) was among the smallest across the EU at the onset of the pandemic. The impact of the pandemic was also limited by accommodative monetary policy and the easing of macroprudential policy instruments, including the reduction of the countercyclical capital buffer for banks to zero, a possibility for banks to breach the LCR requirement, the suspension of amortisation requirement, and a recommendation for financial institutions to halt dividend payments. Moreover, the Swedish Financial Supervisory Authority last year put in place higher capital requirements for banks' exposures in lending to the commercial real estate sector in view of the risks arising for the country's banks due to commercial real estate.

⁵⁴ As a share of 2019 GDP.

3. Challenges to the financial system

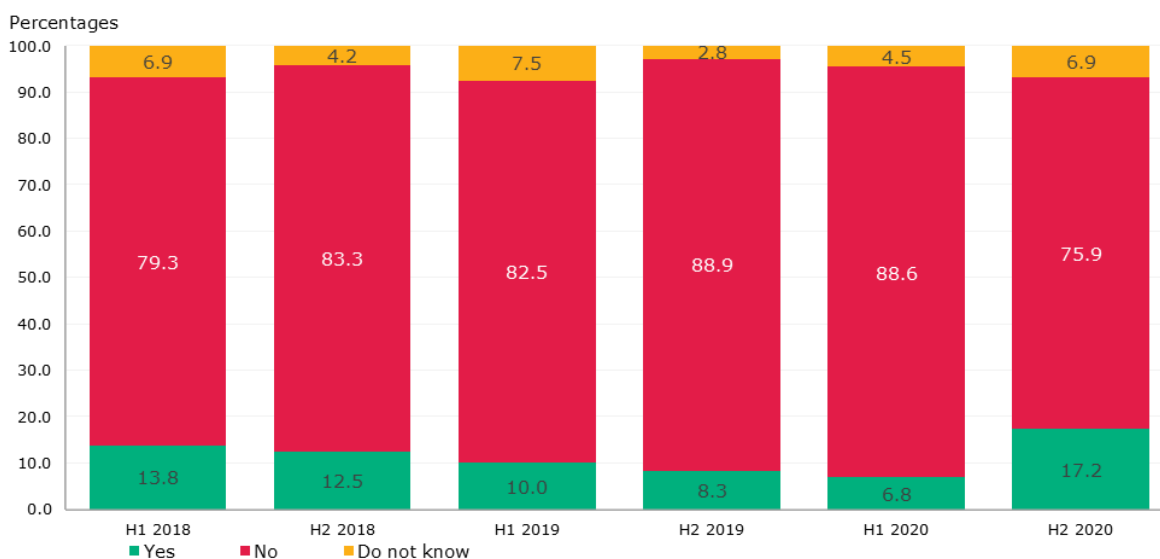
3.1. Cyber security: increasing number of cyber-attacks

The increasing digitalisation of the financial system poses a greater challenge to managing new cyber threats and their potential impact on financial stability. The yearly increases in the number of electronic and mobile banking users and the rising volume of non-cash payments show that increasingly more daily financial operations are moved online. Furthermore, the rapid expansion of the fintech sector has been already observed in Lithuania for some time and recent years are no exception: 40 new fintech companies were registered in 2020, with the overall number reaching 230. The pandemic resulted in an increased need for digital projects – the growing volume of online sales, user authorisation services, etc. The rapid expansion of the fintech sector, the increasing number of services moving online and their growing volume bring increasingly more opportunities to disrupt the functioning of separate market participants or even the entire financial system. Successful cyber-attacks could affect trust in individual market participants or the entire market, which could trigger fund runs and cause a liquidity shock. The inter-connectedness of market participants and lacking substitutability of the supply of critical services, should these be interrupted, could also exert a negative impact on financial stability. This shows that it is becoming of utmost importance to ensure cyber security across the entire financial system.

Cyber-attacks have increased in number since the start of the COVID-19 pandemic. Increasingly more services and operations have since the onset of the pandemic been moved online to contain the spread of the virus. The flow of potentially vulnerable information and the quantity of data have been also growing accordingly, therefore, managing cyber risks is becoming challenging. Due to the malevolent acts aimed at exploiting the situation, there has been an upsurge in the number of cyber-attacks. According to the data of the Survey of Risks to Lithuania’s Financial System conducted by the Bank of Lithuania, there has recently been an increase in the share of financial institutions subjected to cyber-attacks (see Chart 54). The institutions claimed there had been an increase in the number of cyber-attacks during the lockdown, yet no institution indicated any financial loss incurred as a result. Several institutions claimed cyber-attacks to have become a daily phenomenon during the lockdown, which prompted to invest more in ensuring security of electronic systems.

There has been an increased number of cyber-attacks during the lockdown.

Chart 54. Dynamics of the share of financial institutions subjected to cyber attacks



Source: Bank of Lithuania.

Various initiatives at the international and national levels are being conducted in order to manage the danger and potential outcomes of cyber risks. As a result of the rapid digitalisation of the market, the risk profile of the financial market is changing, and cyber security assurance is getting more prominent. Various institutions are taking respective measures both at the international and national level: they are publishing guidelines and recommendations on increasing cyber resilience, sharing best practices of cyber risk management, organising cyber security training for developing cyber security skills and verifying procedures and inter-institutional communication. In response to the increasing importance of cyber security, the Bank of Lithuania introduced organisational changes as well: the Supervision Service was reorganised and the Operational and IT Risk Division was established with an aim to strengthen the supervision and management of operational, information technology, and payment security risks.

3.2. Climate change challenges to financial stability

Smooth adaptation of the financial system to the risks posed by climate change is one of the key challenges that the financial system will encounter in the future. Two types of climate risk, i.e. physical risk and transition risk, are relevant in terms of financial stability.⁵⁵ First, physical risks are associated with increasing losses due to the consequences of temperature changes, storms, rainfall or drought. These events can bring direct losses to financial market participants by causing damages to their property and infrastructure, as well as their clients, thus affecting their balance sheets. The second risk, i.e. transition risk, arises due to the overly rapid transition to a climate-neutral economy, including the impact of the measures taken to combat climate change, reputational damages, technological advances, social norms, and changes in the trends of market investments. Seeking to ensure financial stability, it is important to take into account the challenges posed by both of these risks to Lithuania's financial system, yet due to great uncertainty over future changes to temperature, the frequency and scope of natural disasters, the impact of future political decisions, and lacking data, calculating climate risks is extremely complicated.

Physical risks are mostly relevant for insurance undertakings, while their effect on financial stability would be limited. Out of all participants of the financial system, insurance undertakings suffer the greatest losses due to climate change, as they have to cover the damages caused by climatic events. Frequent natural events affect insurance undertakings' decisions regarding the level of risks assumed and might result in a narrower supply of products targeted at less risky segments. Should a natural disaster affect many clients of insurance undertakings or should several natural disasters occur at once, the losses incurred could be systemic and cause insolvency in insurance undertakings.⁵⁶ The losses of firms and households would resonate to credit institutions as they would add to credit risk and affect the value of the collateral. Thanks to its favourable geographic location, Lithuania is projected to incur a lower negative climate risk, compared to other EU countries⁵⁷, and the effect of physical risks to financial stability is also likely to be limited due to the low systemic importance of insurance undertakings (for more details, see Section 1.5 "Insurance market, investment and pension funds").

Transition risk causes greatest uncertainty and challenges to the financial system. Lithuania is lagging behind the EU in terms of several factors of key importance to reducing the impact of climate change: its lower energy efficiency, higher GHG intensity, and lower pollution taxes. Therefore, for the purposes of transitioning to a climate-neutral economy, Lithuania will be obliged to implement reforms that will significantly affect high GHG-emitting enterprises. One euro of the value added created in

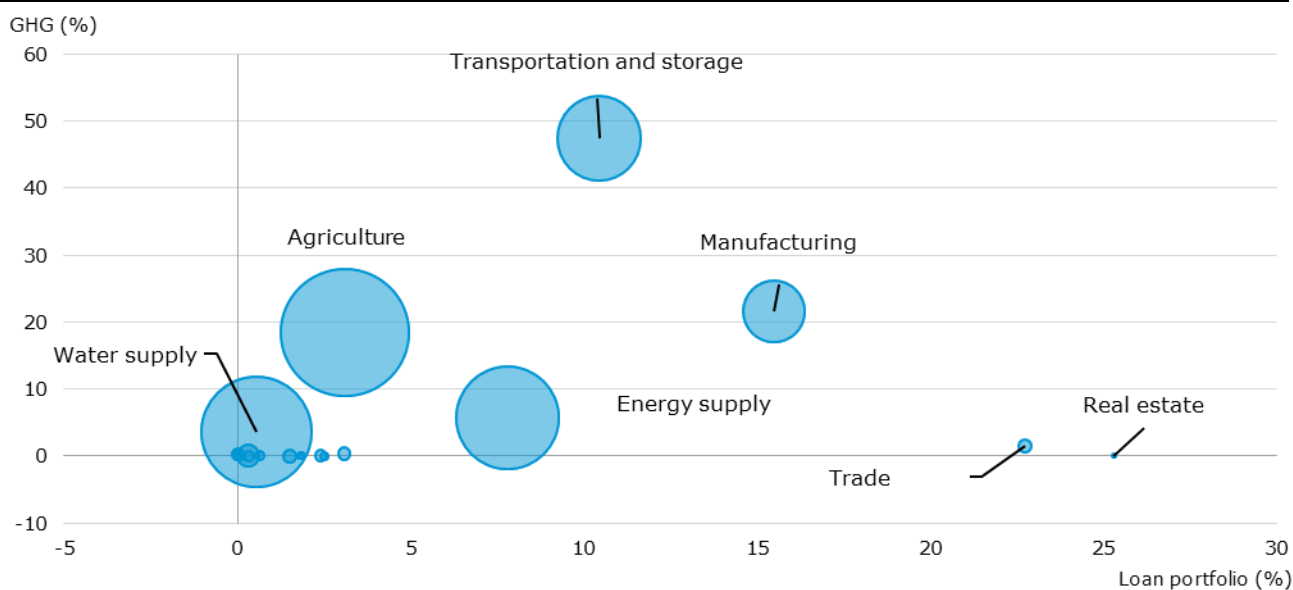
⁵⁵ For more details see the [Guide for Supervisors: integrating climate-related and environmental risks into prudential supervision](#) (NGFS, 2020), [The green swan - Central banking and financial stability in the age of climate change](#) (BIS, 2020).

⁵⁶ With the recent increase in extreme weather conditions, EU insurance undertakings have suffered the largest weather-related losses ([Positively green: Measuring climate change risks to financial stability](#), ESRB, 2020).

⁵⁷ [Climate change, impacts and vulnerability in Europe 2016 — An indicator-based report](#) (EEA, 2017).

Lithuania accounts for nearly double GHG than the EU average. Although GHG intensity was decreasing over the recent decade, Lithuania remains among the worst performing EU countries. Attention is drawn to the transportation sector where GHG intensity increased by 78% with the rapid expansion of the sector since 2013. In 2019, the transportation sector was responsible for more than a third of GHG emissions in Lithuania. The expansion of transport companies also widened the links between the main participants of the financial system, i.e. banks, and this sector. Lending to real estate and trade companies, i.e. activities that are of low GHG intensity and are responsible for a relatively small share of GHG emissions in Lithuania, constitute the largest share of the bank loan portfolio. Meanwhile, lending to transport and manufacturing companies expose banks to the greatest transitory risk. Loans to enterprises engaged in these activities total 25% of the bank loan portfolio, yet the activities of these enterprises account for more than 60% of all GHG emissions in Lithuania (see Chart 55) and are nearly two times more GHG-intensive than respective sectors in the EU.

Chart 55. Links between lending to enterprises and their GHG emissions by economic activity



Sources: Statistics Lithuania, Eurostat, Bank of Lithuania and Bank of Lithuania calculations.

Note: The size of bubbles represents GHG intensity by economic activity. Latest data: 2019 – GHG emissions and GHG intensity, 2020 – the corporate loan portfolio.

4. Stress testing

4.1. Bank solvency testing

The main purpose of bank solvency stress testing is to assess the capital adequacy levels of the domestic banking sector and its constituent banks⁵⁸ under adverse economic conditions. It should be noted that the stress test is a scenario-based analysis and the results obtained are not forecasts.

The stress test exercise is based on an adverse economic development scenario. The adverse scenario assumes that, due to a protraction in the coronavirus pandemic, the lockdown and low vaccination rates, in 2021 internal demand would decrease by 5.6% (2022 – 2.8%), the unemployment rate would rise to 12.1% (2020 – 13.2%), and the exports of goods and services would decline by 7.8%. Under an adverse scenario, Lithuania's real GDP would contract by 6.8% in 2021 and by 1.8% in 2022. Other key macroeconomic indicators used for testing purposes and their developments are shown in Table 1 and Chart 56.

Evolution of the key macroeconomic indicators under stress test scenarios.

Table 1. Changes in indicators

	Actual indicator	Baseline scenario		Adverse scenario	
	2020	2021	2022	2021	2022
GDP (annual change)	-0.8	2.9	5.1	-6.8	-1.8
Exports (annual change)	-1.3	5.9	5.9	-7.8	0.0
Private consumption expenditure (annual change)	-1.4	4.8	6.7	-5.6	-2.8
Unemployment rate (annual average)	8.5	8.4	7.0	12.1	13.2
Wages (annual change)	6.4	6.6	7.1	-5.0	-4.2
Average annual inflation (measured by the HICP)	1.1	1.6	1.9	-0.1	-0.4
Real estate price index (annual change)	7.3	9.3	7.5	-19.4	-7.1

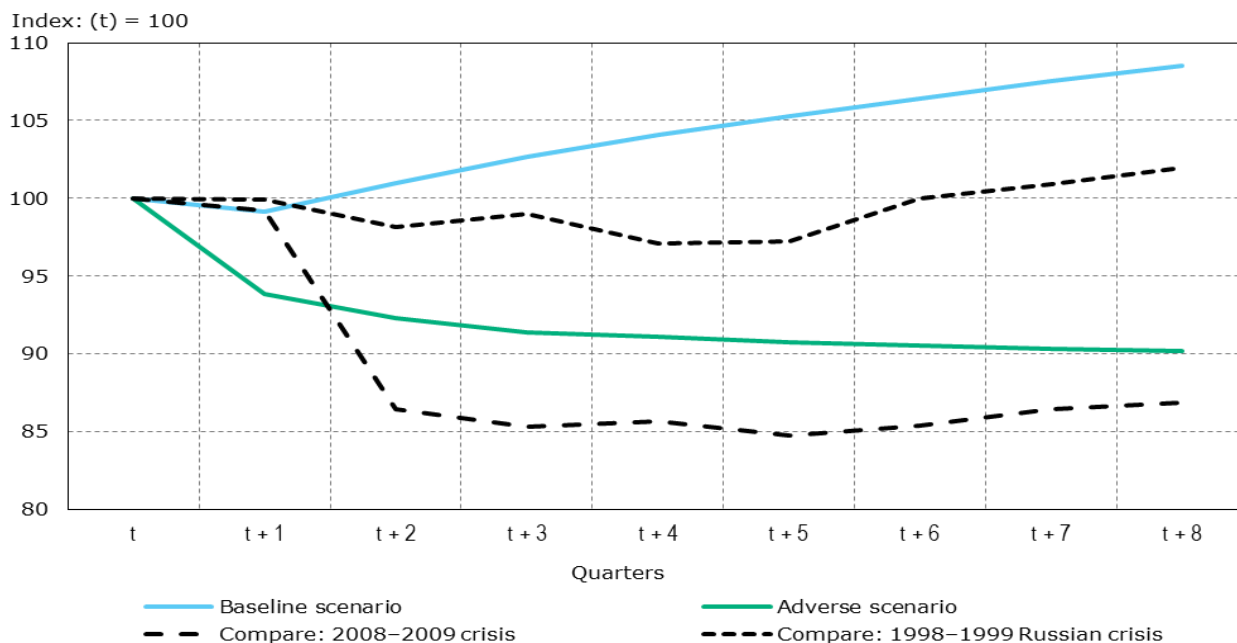
Sources: Statistics Lithuania and Bank of Lithuania calculations.

Notes: The baseline scenario was constructed according to the official macroeconomic projections (baseline scenario) of the Bank of Lithuania published in March 2021. This scenario is used to assess the sustainability of banking activities in the case of the baseline economic development. Data on GDP, exports of goods and services, and private consumption expenditure are at constant prices.

⁵⁸ The following banks were assessed: AB SEB bankas, AB Šiaulių bankas, Swedbank, AB, and UAB Medicinos bankas.

Under the adverse scenario, in 2022, the country's GDP would be 19 percentage points lower than under the baseline scenario.

Chart 56. Development of Lithuania's real GDP by scenarios and in periods of economic recession



Sources: Statistics Lithuania and Bank of Lithuania calculations.
Note: t = the fourth quarter of 2020.

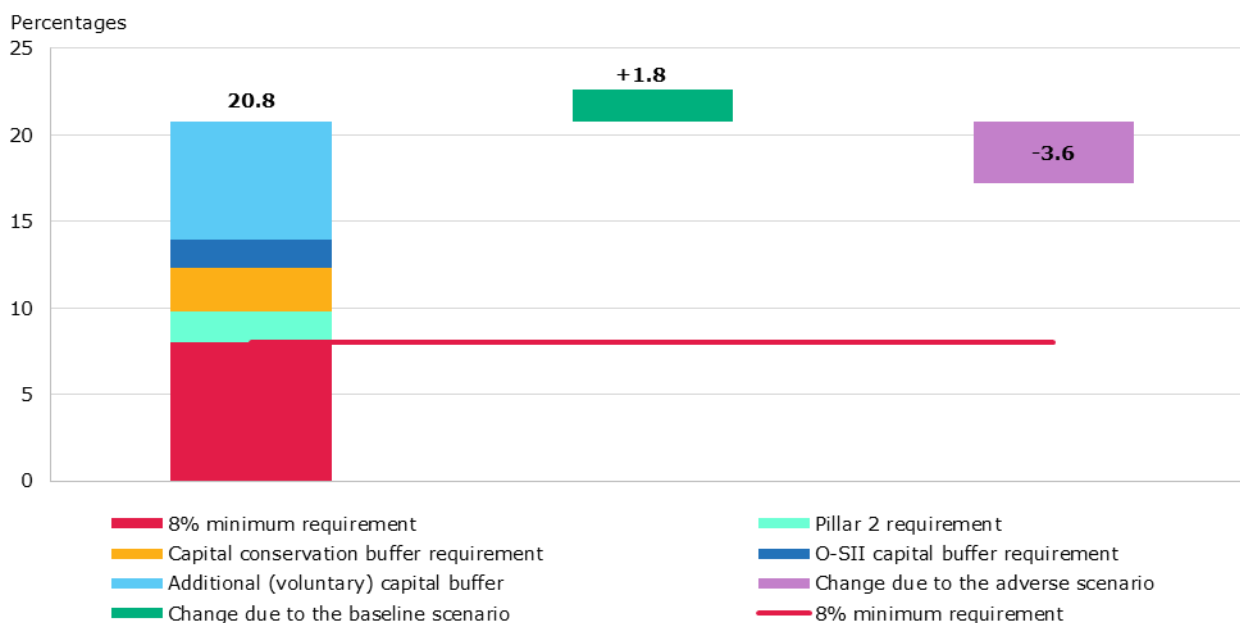
Stress test results show that the banking sector is sufficiently capitalised and remains resilient to potential shocks (see Chart 57). Under the adverse scenario, the weighted capital adequacy ratio would in the 2021-2022 testing period decline from 20.8% to 17.2%, with the difference from the baseline scenario being -5.4 percentage points. Still, the available capital would be sufficient to satisfy the minimum requirements, including Pillar 2 requirements, with a margin.⁵⁹ Good profitability indicators and macroprudential capital requirements allowed banks to accumulate solid capital buffers. The capital depletion assessed during the stress test does not entail any risks to the sector's stability.

Under the adverse scenario, credit losses incurred by the banking sector in 2021-2022 would amount to approximately €665 million, or approximately 4.3% of the total loan portfolio at the end of 2020. Most of credit losses (around 65%) would come from loans to non-financial corporations. Between 2021 and 2022, as compared to 2019-2020, banks' operating income could fall by around 20-38%. It should be noted that state guarantees for loans to companies can significantly reduce bank credit losses and mitigate the loss of interest income, thus reducing the negative impact on the capital adequacy ratio.

⁵⁹ Currently banks are subject to the 8.0% Pillar 1 requirement and a Pillar 2 requirement set on an individual basis. In response to the coronavirus outbreak, the ECB and the Bank of Lithuania allowed directly supervised institutions to temporarily derogate from the combined capital buffer requirement, which consists of the countercyclical capital buffer requirement (0.0%) and the other systemically important institutions (O-SII) capital buffer requirement.

The banking sector is resilient to economic shocks.

Chart 57. Decline in the capital adequacy ratio by scenario



Sources: banking data and Bank of Lithuania calculations.

4.2. Bank liquidity testing

The banking sector is sufficiently well equipped to withstand short-term liquidity shocks. Bank liquidity stress testing involves the analysis of short-term liquidity shocks, which would trigger a fall in the value of liquid bank assets, a larger than usual deposit withdrawal and a decline in bank cash inflows.⁶⁰ In March 2021, the sector's actual LCR was 452⁶¹, yet under an adverse scenario it would fall to 274, thus the banking sector would meet the 100% liquidity coverage requirement with a margin (see Chart 58). The LCRs of individual banks would also meet this requirement. It is worth noting that one of the measures taken by the Bank of Lithuania after the introduction of the lockdown restrictions in Lithuania was the temporary exemption from the LCR requirement.

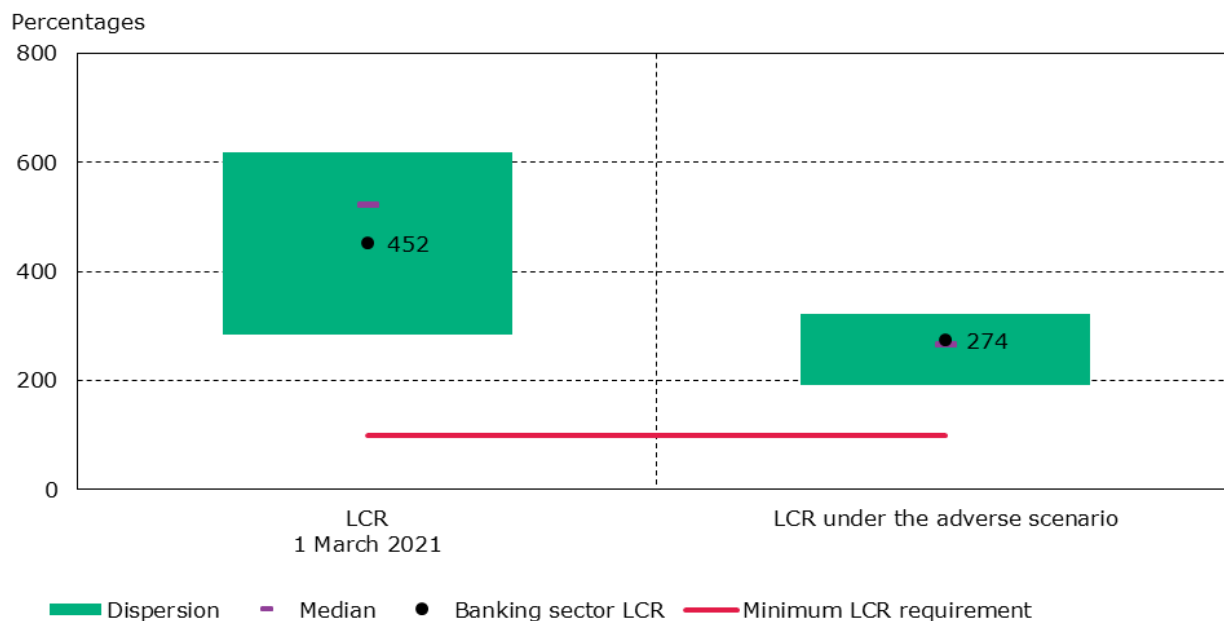
Using their liquid assets, banks could cover a 41.5% decline in deposits, but their liquidity situation is not equal (see Chart 59). The results of individual banks fluctuate from 21.6% to 58.7%. For comparison: the largest monthly decline in deposits in the banking sector (6.2%) was recorded in October 2008, when depositors started to have doubts regarding the sustainability of one bank (deposits in the said bank dropped by 9.3%). Looking at individual banks, the largest unexpected decline in deposits over a month (28.7%) was registered in November 2008 in AB Parex bankas (currently – AS Citadele banka Lithuanian branch), when its parent bank came into liquidity difficulties and the Government of Latvia had to provide it financial support.

⁶⁰ Assumptions for testing bank liquidity are presented in the [Financial Stability Review \(2017\)](#).

⁶¹ The LCR is calculated as the ratio of liquid assets to net cash outflow. The LCR of banks operating in Lithuania is sufficiently high because the structure of bank liabilities and inflows is relatively stable. It should be noted that the main bulk of liabilities held by banks operating in Lithuania consists of corporate and household deposits, which are considered to be stable liabilities.

Should the adverse scenario materialise, not a single bank would breach the LCR requirement.

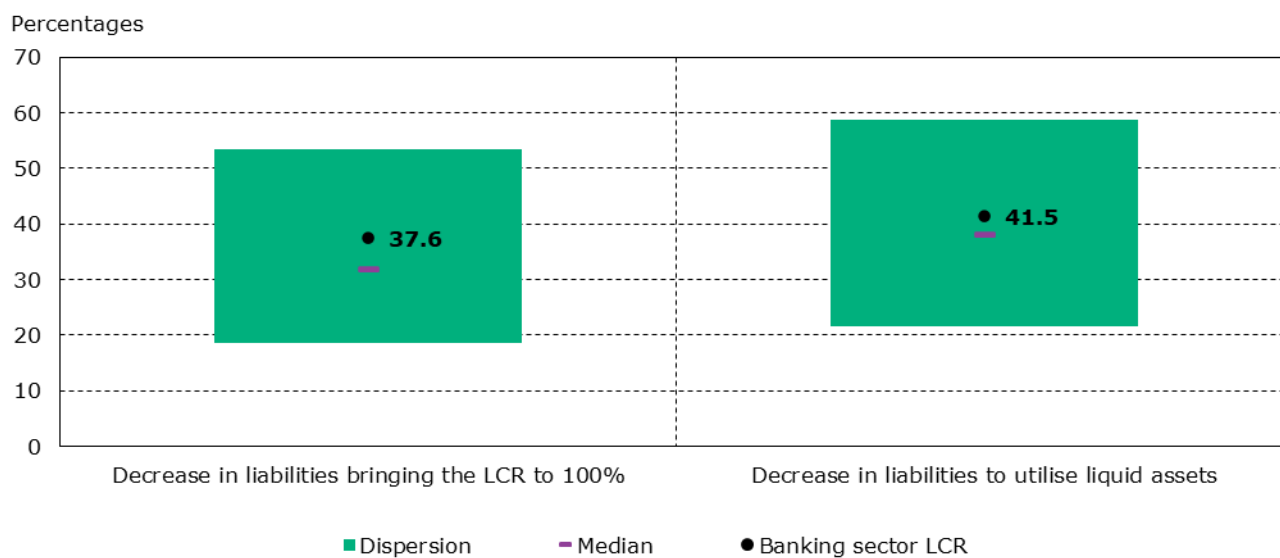
Chart 58. Bank liquidity stress testing results



Sources: banking data and Bank of Lithuania calculations.
 Note: The preliminary LCR estimate calculated by the Bank of Lithuania is based on the data provided by banks.

The banking sector would be able to cover a 41.5% decline in deposits.

Chart 59. Decline in deposits that banks would be able to withstand

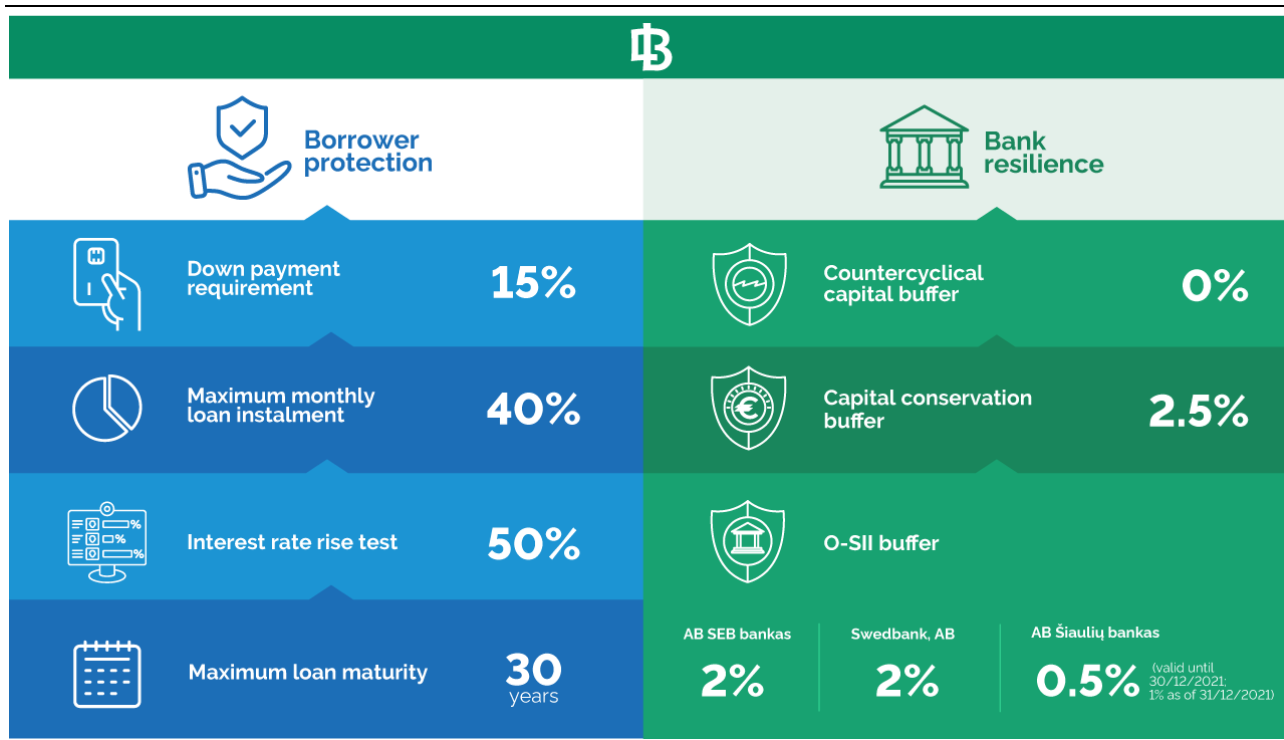


Sources: banking data and Bank of Lithuania calculations.

5. Financial stability strengthening

Instruments applied and regularly reviewed by the Bank of Lithuania improve financial stability.

Chart 60. Macroprudential policy instruments effective in Lithuania⁶²



Source: Bank of Lithuania.

Notes: The maximum monthly loan instalment may in exceptional cases (no more than 5% of new mortgage credit agreements concluded by credit issuers over the calendar year) amount to as much as 60% of sustainable revenue. The interest rate rise test implies that the maximum monthly loan instalment shall not exceed 50% of sustainable revenue when the interest rate equals 5%. The down payment for the second and subsequent loan should be higher than 15%. Capital buffer requirements apply to banks, central credit unions, and groups of central credit unions (on a consolidated basis).

In light of the negative impact of the COVID-19 pandemic on Lithuania's economy, credit institutions remain subject to lower capital requirements, which were reduced as a result of the major increase in uncertainty in March-April 2020. The countercyclical capital buffer rate, which in the first quarter of 2020 was reduced from 1% to 0% to provide further assistance to credit institutions to respond to the challenges of the deteriorated financial situation of firms and households, was left unchanged in subsequent quarters⁶³. The exemption from the recommended Pillar 2 guidance and the combined capital buffer remains valid.⁶⁴ The exemption from the recommended Pillar 2 guidance is planned to be effective at least until the end of 2022.⁶⁵ The reduced capital requirements make it easier for banks to continue to plan credit provision and increase their resilience to potential losses.

Banks' capital adequacy ratios remained sustainable throughout the course of 2020, underpinned by the decisions of banks' shareholders not to pay dividends. In spring 2020, the Bank of Lithuania, as well as other supervisory authorities, such as the ECB, ESRB, and EIOPA, recommended not to pay dividends due to increased uncertainty. As the level of uncertainty remained

⁶² Information regarding decisions on macroprudential policy instruments is constantly updated on the Bank of Lithuania's [website](#).

⁶³ The Bank of Lithuania reviews the countercyclical capital buffer rate on a quarterly basis.

⁶⁴ The combined capital buffer consists of a capital conservation buffer (2.5% of risk-weighted assets) and the O-SII capital buffer for the three largest systemically important banks.

⁶⁵ For more information, see Section 1.2 of the ECB [SREP 2020 aggregate results](#) published on 28 January 2021.

high, banks and insurance undertakings were recommended to limit their dividend payments in 2021 as well.⁶⁶ Therefore, after the decisions on the distribution of profits will be taken in the meetings of shareholders, the largest part of the profits earned in 2020 should be allocated to capital strengthening.

Following the invitation of the Bank of Lithuania, in spring 2020, the members of the Association of Lithuanian Banks agreed on the temporary moratoria,⁶⁷ according to which all eligible borrowers could apply for loan repayment deferrals of up to 6 or 12 months without changing the terms and interest rates of their contract. Loans in the amount of approximately €0.5 billion were postponed under these moratoria. Credit institutions postponed an additional €1 billion in loans under separate bilateral agreements. With respect to the unfavourable epidemiological situation, an agreement was made at the beginning of 2020 to renew the moratoria for firms and households until 31 March this year. At the beginning of the pandemic in 2020, having regard to the pertaining circumstances and recommendations of international bodies, the Bank of Lithuania took measures to reduce the administrative burden on financial market participants and to ensure flexibility: inspections and investigations were postponed, the deadlines for eliminating deficiencies were prolonged, establishing other reporting deadlines, when deemed necessary, KYC procedures were temporarily simplified. Furthermore, more flexibility was provided to changing the terms and conditions for consumer loans and assessing creditworthiness.

The aim of the Responsible Lending Regulations applied from 2011 is to ensure that lending and borrowing practices are responsible and the debt level of households is sustainable. The Responsible Lending Regulations oblige credit providers to fully assess the creditworthiness of borrowers, define other responsible lending factors, and establish the limits of borrower-based macroprudential policy measures (see Chart 60). Non-compliance with these limits is possible only in exclusive cases defined by the Responsible Lending Regulations, e.g. when changing housing, it is possible to obtain a credit without the down payment, i.e. with the LTV up to 100%, upon obligation to repay part of the loan within a reasonable time following the sale of the previously owned housing, eventually ensuring an LTV of up to 85%; credit providers might issue up to 5% of new loans for house purchase with the DSTI not exceeding 60%, provided that the application of the higher DSTI in each particular case is not in prejudice with the principles of responsible lending.

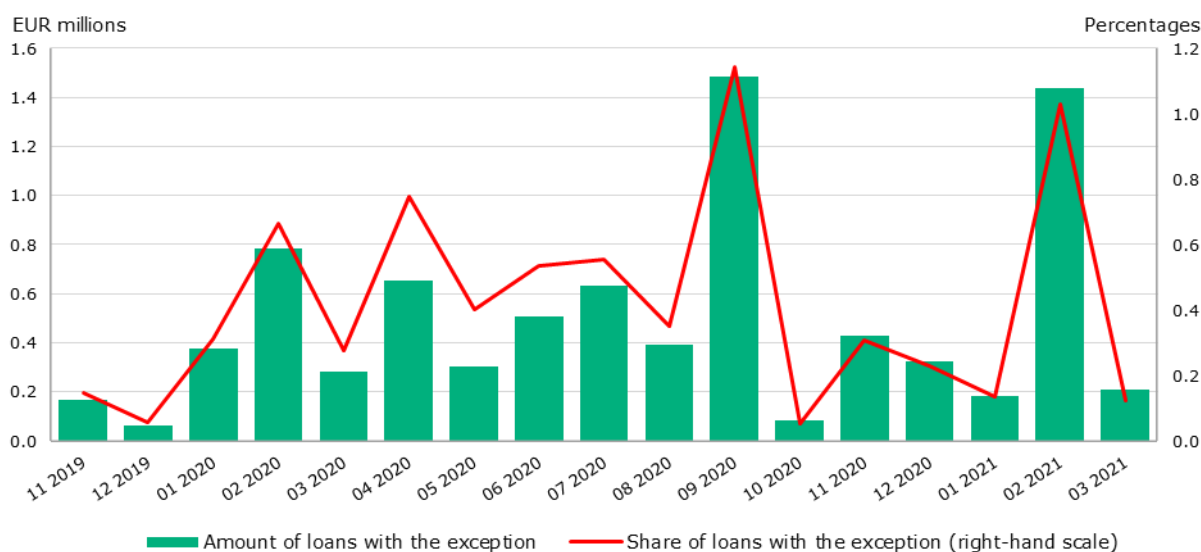
Although the housing loan market showed rapid growth at the end of 2020, credit standards did not exceed the levels observed before the lockdown. The announcement of the first lockdown resulted in a significant decrease in loans with a high LTV and/or maturity. Such change in lending practices, especially in the case of LTV, was possibly triggered by credit providers' increased concerns over the possibility of house prices spiralling down. Yet in the second half of the year, with increased activity in the market of housing loans, the share of loans with high LTV, DSTI or long maturities returned to their pre-lockdown levels. This shows that the exceptionally high activity in the housing loans market as observed at the end of 2020 was not incited by the overly loosened credit standards. Furthermore, the establishment of the responsible lending practices in the market is also attested by the fact that credit providers use the possibility of issuing loans with the higher DSTI, but not exceeding 60%, as defined by the Responsible Lending Regulations, only in exceptional cases – loans with the DSTI exception issued in a quarter account for up to 1% of new housing loans (see Chart 61).

⁶⁶ <https://www.lb.lt/en/news/banks-are-called-on-to-consider-dividend-distribution-responsibly>

⁶⁷ Later, more financial institutions providing lending and financial leasing services joined the moratoria.

The DSTI exception continues to be rarely used.

Chart 61. Volume of new housing loans granted with the DSTI exception



Source: Loan Risk Database.

With the national transposition of the Capital Requirements Directive (CRD), the Bank of Lithuania will have more flexibility in the application of macroprudential requirements for specific lending segments, should these significantly contribute to systemic risk growth. CRD amendments will be implemented with the update of the Bank of Lithuania Rules for the Formation of Capital Buffers. The implementation of these amendments will place the conditions for the application of a systemic risk buffer, which is one of the additional capital requirements, for lending to specific segments – this will improve the ability to react to structural and cyclical risks that arise in certain segments. The dimensions based on which the Bank of Lithuania will be able to establish subsectors subject to the systemic risk buffer are established under the guidelines approved by the EBA⁶⁸. For example, these segments may include loans secured on residential or commercial real estate in all parts or a specific part of Lithuania that pose a systemic risk to the financial sector. Furthermore, the maximum size of the capital buffer set for O-SIIs will be increased from 2% to 3%. The O-SII buffer and the systemic risk buffer will have to be used to address different risks, while their aggregate amount will not be allowed to exceed 5% of the risk-weighted assets.⁶⁹

Furthermore, the majority of the provisions of the revised Capital Requirements Regulation will come into effect as of 28 June 2021, including the requirements of the minimum leverage ratio of 3% and the net stable funding ratio of 100%. Banks established in Lithuania are already prepared to comply with the requirements and their ratios exceed future requirements with a margin.

As of July 2021, the procedure for the calculation of the contributions of deposit insurance system participants to the Deposit Insurance Fund will change following the enactment of the amendments to the Republic of Lithuania Law on Insurance of Deposits and Liabilities to Investors. The amount of the contributions will be calculated on a quarterly basis (rather than the yearly basis as before), thus better adapting the amount of the contributions to the amount of insured deposits and paying regard to the emergence of new market participants more expediently. The Bank of Lithuania will continue to calculate the operating risk weights of deposit insurance system participants, which are

⁶⁸ EBA/GL/2020/13 [Final guidelines on the appropriate subsets of sectoral exposures to which competent or designated authorities may apply a systemic risk buffer in accordance with Article 133\(5\)\(f\) of Directive 2013/36/EU](#).

⁶⁹ A combined buffer requirement exceeding 5% is subject to the approval of the European Commission.

one of the components for the calculation of the contributions of VĮ Indėlių ir investicijų draudimas, once per year, yet the rules will be set up on the yearly determination of the ratios to be applied to new system participants. Respectively, in 25 May 2021 the Board of the Bank of Lithuania approved the revised Description of the Procedure for Determining the Operating Risk Weights of Deposit Insurance System Participants.⁷⁰

Seeking to consistently strengthen banks' preparedness for crises and to protect the State budget in case of crises, the MREL requirements for credit institutions were revised. Having regard to the changes in the EU regulation enacted at the end of 2020, the Single Resolution Board, which is the central resolution authority of the euro area countries, together with the Bank of Lithuania, carried out the review of the MREL requirements for three systemically important banks operating in Lithuania, namely AB SEB bankas, Swedbank, AB, and AB Šiaulių bankas. In order to enable banks to gradually accumulate the funds necessary to comply with this requirement, a two-stage binding MREL, i.e. intermediate and final, was set. The average of the newly defined interim MREL imposed on Lithuania's three systemically important institutions, which shall be complied with as of 1 January 2020, comprises 17.4% of the total amount of the risk position and 6.25% of the overall risk position ratio, while the average of the final MREL to be complied with as of 1 January 2024 stands at, respectively, 21.8% and 6.25%. This year the compulsory MREL requirement was defined or accordingly revised with respect to three Lithuanian credit institutions that are not systemically important, namely, UAB Medicinos bankas, the Lithuanian Central Credit Union, and the United Central Credit Union.

⁷⁰ [Resolution](#) No 03-87 of the Board of the Bank of Lithuania of 25 May 2021.

Abbreviations

AB	public limited liability company
BIS	Bank for International Settlements
CRD	Capital Requirements Directive
DSTI ratio	debt service-to-income ratio
EBA	European Banking Authority
ECB	European Central Bank
EEA	European Economic Area
EIOPA	European Insurance and Occupational Pensions Authority
ESRB	European Systemic Risk Board
EU	European Union
EURIBOR	Euro Interbank Offered Rate
FED	Federal Reserve System
GDP	gross domestic product
GHG	greenhouse gas
HICP	Harmonised Index of Consumer Prices
IMF	International Monetary Fund
KYC	know your customer
LCR	liquidity coverage ratio
LTV ratio	loan-to-value ratio
MFI	monetary financial institution
MREL	minimum requirement for own funds and eligible liabilities
NGFS	Network of Central Banks and Supervisors for Greening the Financial System
O-SII	other systemically important institution
PEPP	pandemic emergency purchase programme
RRF	Recovery and Resilience Facility
RSHPI	repeat sales house price index
SREP	Supervisory Review and Evaluation Process
UAB	private limited liability company
US	United States
VĮ	state enterprise
VILIBOR	Vilnius Interbank Offered Rate

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Gedimino pr. 6, LT-01103 Vilnius, Lithuania

www.lb.lt

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The cut-off date for data used in the review was 1 May 2021, unless otherwise specified.
The analysis of the banking sector was based on consolidated data on banks operating in Lithuania, including foreign bank branches, unless otherwise specified.

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