Financial Stability Report

Autumn 2022

Czech National Bank —— Financial Stability Report —— Autumn 2022

CNB CZECH NATIONAL BANK

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The Financial Stability Report – Autumn 2022 was discussed by the CNB Bank Board at its regular meeting on financial stability issues on 30 November 2022 and published on 16 December 2022. With a few exceptions, it contains information available as of 30 June 2022. It is available in electronic form on the CNB website, where the underlying data for the tables and charts used in this publication are also published.

The mandate of the CNB

Maintaining financial stability is defined as one of the CNB's main objectives in Act No. 6/1993 Coll., on the Czech National Bank, as amended:

Article 2

(2) The Czech National Bank shall perform the following tasks:

...

e) set macroprudential policy by identifying, monitoring and assessing risks jeopardising the stability of the financial system and, in order to prevent or mitigate these risks, contribute by means of its powers to the resilience of the financial system and the maintenance of financial stability; where necessary, it shall cooperate with the relevant state authorities in setting macroprudential policy,

...

The CNB defines financial stability as a situation where the financial system operates with no serious failures or undesirable impacts on the present and future development of the economy as a whole, while showing a high degree of resilience to shocks. The CNB's definition is based on the fact that financial stability may be disturbed both by processes inside the financial sector that lead to the emergence of weak spots, and by strong shocks, which may arise from the external environment, domestic macroeconomic developments, large debtors and creditors, economic policies or changes in the institutional environment. Any interaction between weak spots and shocks can result in the collapse of systemically important financial institutions and in disruption of the financial intermediation and payment functions of the financial system.

The CNB's aim with regard to financial stability is to ensure a degree of resilience of the system that minimises the risk of financial instability. To fulfil this aim, the CNB as the central bank and supervisory authority uses the instruments made available to it by the Act on the CNB, the Act on Banks and other applicable laws. Cooperation with other national and international institutions is also very important in this area. In order to maintain financial stability, the CNB focuses on prevention and broad communication with the public regarding the potential risks and factors posing a threat to financial stability. This Financial Stability Report is an integral part of such communication.

The global financial crisis led to a strengthening of the importance of the objective of financial stability in central banks. Macroprudential policy, which is intended to contribute to the maintenance of financial stability, was formally introduced in the Czech Republic in 2013 through an amendment of the Act on the CNB No. 227/2013 Coll. In line with the CNB's Strategy, the main aim of macroprudential policy is to mitigate systemic risk, i.e. the risk of instability of the financial system as a whole. A debate about the tools of macroprudential regulation, i.e. the set of pre-emptive measures intended to prevent financial instability, is going on at international level. The European Systemic Risk Board (ESRB) has been operating at the European level since the start of 2011. Together with three pan-European sectoral supervisory authorities (EBA, ESMA and EIOPA) it makes up the European System of Financial Supervision (ESFS). If it identifies increased risks of a systemic nature, the ESRB issues warnings and recommendations to mitigate those risks. CNB representatives are involved directly in the ESRB's work; the CNB Governor and another board member are members of the General Board of the ESRB, and CNB experts participate in its working groups. Since 2011, the CNB has also been represented in the Regional Consultative Group of the Financial Stability Board established by the G20.

The CNB regularly monitors and closely analyses developments in all areas relevant to financial stability. The members of the CNB Bank Board meet with experts from key sections at regular meetings on financial stability issues. A wide range of information on developments of risks in the domestic financial system and abroad is presented at these meetings. The position of the Czech economy in the financial cycle is assessed and – if any risks to financial stability are identified – discussions are held regarding the use of regulatory, supervisory and other economic policy tools to suppress such risks or their potential effects.

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Governor’s foreword

Dear Readers,

Let me present the autumn edition of the Financial Stability Report. This Report serves as one of the main inputs to the Bank Board’s assessment of risks in the domestic financial sector and its decisions on the configuration of CNB macroprudential policy. At our November meeting on financial stability issues, my Bank Board colleagues and I kept the countercyclical buffer rate and the upper limits on the LTV, DTI and DSTI ratios unchanged. At a time when our main objective is to reduce inflation substantially, we have to be very firm and unrelenting in requiring banks and their clients to create less debt. The measures we have taken will also help keep the financial system strong and stable in this difficult economic situation.

Most countries are currently facing similar difficulties to the Czech Republic. These include elevated inflation and market volatility, uncertainty regarding future economic developments and rapid growth in debt. The causes of these difficulties are also similar: the consequences of the COVID-19 pandemic, tightening financial conditions and the energy crisis related to geopolitical tensions. Various government support programmes are helping firms and individuals overcome the difficult economic situation, though often at the cost of sharp growth in public debt.

Firms and households in the Czech Republic are already feeling the adverse effects of the higher inflation and weaker economic activity in their budgets. This is also apparent from their rapidly deteriorating sentiment and from declining real household consumption. Corporate insolvency and unemployment have so far risen only marginally against the backdrop of the fading effect of the political support measures. However, as the costs go up and financial conditions tighten, there is an increasing risk of rising vulnerability, especially among more heavily indebted firms and households.

You will read in this report that the domestic financial system is well prepared for such risks and is maintaining a strong capital and liquidity position in the current conditions. This is also due in part to active use of the CNB’s macroprudential instruments, which help ensure that the financial sector is sufficiently prudent and resilient, especially at times of heightened financial stress. The autumn stress tests confirmed that the largest sector in the financial system – the banking sector – is highly resilient to significantly adverse developments.

I would like to assure the public that the actions taken by the Bank Board are sufficient to maintain financial stability. The CNB will continue to carefully monitor and evaluate the impacts of the difficult economic and financial conditions on the various domestic sectors and on the stability of the financial system as a whole. The Bank Board also stands ready to respond appropriately with macroprudential instruments to any strengthening of the risks to the domestic financial sector.

On behalf of the Czech National Bank

Aleš Michl

Governor

I. DECISIONS AND ASSESSMENT OF RISKS TO FINANCIAL STABILITY

The CNB Bank Board decided at its meeting on financial stability issues on 30 November 2022 to leave the countercyclical capital buffer unchanged at 2.5%. Banks will be required to maintain the buffer at this level from 1 April 2023. Based on an assessment of the risks associated with the provision of consumer loans secured by residential property and the property market, the Bank Board also decided to leave the upper limits on the LTV, DTI and DSTI credit ratios at the levels applicable since 1 April 2022. The standard upper limit on the LTV ratio is set at 80%, that on the DTI ratio at 8.5 times net annual income and that on the DSTI ratio at 45% of net monthly income. Higher limits – an LTV of 90%, a DTI of 9.5 and a DSTI of 50% – apply to applicants under 36 years of age for loans for the purchase of owner-occupied housing.

The global and domestic economy is facing increased risks to economic activity and price and financial stability in an environment of extraordinarily high uncertainty. Global economic outlooks are being revised downwards, and global inflation pressures, associated mainly with growth in prices of energy and agricultural commodities, persist. Medium-term outlooks are subject to exceptionally high levels of uncertainty. In an environment of rapidly rising inflation, central banks in advanced economies and elsewhere have started to tighten monetary policy. As a result, government bond yields on global financial markets have risen, prices of many financial assets have corrected, due also to rising global risk aversion, and the likelihood of property prices falling has also increased. Another decrease in, and heightened volatility of, financial asset prices remains a major risk. Market stress and the consequences of potential strengthened asset sell-offs may swiftly spill across markets and regions. Against the backdrop of strong domestic and foreign price pressures, to which the CNB has responded by raising its monetary policy rates to 7%, the domestic economy has also started to cool. The CNB forecast expects it to switch to a year-on-year decline at the end of 2022, where it will probably remain for several quarters.

The high commodity prices and tightening financial conditions are affecting the private non-financial sector. Tightening financial conditions and related growth in debt servicing costs, together with growth in input prices, are gradually putting significant pressure on non-financial corporations in the EU, many of which are highly indebted. Households may also be exposed to risks associated with growth in debt service, as in many EU countries they substantially increased their indebtedness through debt financing of residential property purchases in the previous environment of low interest rates. This could also be the case for some Czech households, as growth in housing loans in the Czech Republic has been among the strongest in recent years and growth in koruna interest rates has been one of the highest in the EU since autumn 2021, as has growth in living costs. As in the EU, domestic non-financial corporations remain highly heterogeneous across sectors. Overall, however, the combination of rising input prices and debt servicing costs is putting increased pressure on the financial soundness of firms. Consistent with the CNB's autumn forecast is an increase in the default rate on loans to the domestic private non-financial sector, which, however, should be capable of withstanding the stress in the absence of systemically more severe shocks over the forecast horizon.

The government deficits and growth in government debt are being accompanied by increasing sovereign exposures of domestic banks. Consistent with the CNB forecast are continued high general government deficits. The related growth in debt will lead to a higher supply of government bonds. Their higher issuance since 2020 has resulted in an increase in sovereign exposures, especially in the case of domestic banks. In order to reduce the systemic risks associated with these exposures, to maintain a stable rating (which is important for supporting demand for Czech government bonds among non-residents) and to create sufficient fiscal space to resolve future crises, it is desirable to steer public budgets quickly and credibly towards structural balance.

The Czech financial sector showed favourable trends in 2022. All the main segments of the financial sector saw growth in assets and profitability. The capital position of its key segment – the banking sector – remains robust, thanks in part to capital buffers and capital surpluses in excess of the regulatory requirements, and its profitability is also developing favourably. The banking sector's resilience to a crisis is being enhanced by gradual compliance with a minimum requirement for own funds and eligible liabilities (MREL). Loan portfolio quality, where signals of a deterioration can be observed, remains a key risk going forward. For the time being, those signals are not being accompanied to any great extent by increased expectations of credit losses. For this and other reasons, the CNB regards it as vital for banks to adopt a prudent approach to credit risk and to identify expected credit losses in a timely and conservative manner.

The total assets managed by domestic non-bank financial institutions rose further in the first half of 2022 due to a continued inflow of new funds, especially into investment funds. The growth nonetheless slowed, due to a decline in prices on both global and domestic financial markets. Domestic non-bank financial institutions remain resilient at the aggregate level and are not a direct source of significant systemic risks.

A macro stress test of the domestic banking sector confirmed its resilience both in the *Baseline Scenario* and in an *Adverse Scenario* associated with the hypothetical materialisation of climate transition and physical risks. The banking sector as a whole would comply with the regulatory limits on the capital and leverage ratios in both scenarios. However, materialisation of the *Adverse Scenario* would significantly reduce the banks' capitalisation. Increased uncertainties contributing to a rise in the likelihood of the *Adverse Scenario* materialising require banks to act very prudently in the management of balance sheets, risks and capital, and in their dividend policies.

The Bank Board decided to leave the CCyB rate unchanged at 2.5%. Banks will be required to maintain the buffer at this level from 1 April 2023. Until then, the CCyB rate will rise gradually from the current level of 1.5%. Although the levels of certain macrofinancial indicators and the results of analyses are signalling a decline of the domestic economy from the local peak of the financial cycle, the Bank Board decided to leave the CCyB rate at 2.5%, due mainly to the high volume of previously accepted cyclical risks in the banking sector's balance sheet. Moreover, additional risks are entering banks' balance sheets via relatively rapid credit growth, especially in the case of foreign currency loans to non-financial corporations. The Bank Board also took into account the current geopolitical and macroeconomic uncertainties, which create room for sudden and strong materialisation of previously accepted risks. Given the absence of material credit losses, provisioning remains low, which may make the banking sector vulnerable. Against this backdrop, it is desirable for banks to have relatively large capital buffers. Should the economic situation worsen and significant credit losses form in the domestic banking sector, the CNB is ready to lower the CCyB rate or release the buffer fully in order to cover these losses while maintaining banks' capital capacity for lending to the real economy at a sufficient level.

The affordability of housing has deteriorated further due to rapid growth in residential property prices, and the estimated overvaluation of apartment prices in relation to the income of the median household and the interest rate level required on the market has also increased. A renewed vicious loop between credit financing of residential property purchases and rapidly rising residential property prices is a potential source of significant systemic risk in the Czech economy. Rapid year-on-year growth in residential property prices in the Czech Republic continuing in the first half of 2022 was reflected in the estimated degree of apartment price overvaluation. Apartment prices for the median household were around 60% higher in 2022 Q2 than the level consistent with their incomes and with the interest rates required on the market. The share of households whose income allows them to safely debt-finance an average apartment at the given level of interest rates dropped below 10%, fostering lower growth in housing loans. The previous growth in residential property prices amid a rising degree of overvaluation and lower lending activity is creating potential for a major price correction in the future. The CNB estimates that the probability of these prices falling by more than 10% over the next two years relative to the present price level is about 35%. Consistent with the CNB's autumn forecast is year-on-year growth in residential property prices turning slightly negative in mid-2023 and returning to growth in 2024.

The LTV, DTI and DSTI credit standards tightened in 2022 as a result of the CNB's response to the growth in systemic risks associated with the provision of consumer loans secured by residential property and with the situation on the property market. Since 1 April 2022, the standard upper limit on the LTV ratio has been 80% (or 90% for applicants under 36 years for the purchase of owner-occupied housing), that on the DTI ratio 8.5 (or 9.5) times net annual income and that on the DSTI ratio 45% (or 50%) of net monthly income. Although banks were mostly compliant with the upper limits on the credit ratios, a large proportion of the consumer loans secured by residential property were provided with a near-threshold DSTI ratio while these limits were in effect. The riskiness of these loans is being exacerbated by the overvaluation of property prices and growth in borrowers' living costs. Risks thus continue to accumulate in banks' portfolios, albeit at a lower rate due to the previous gradual decline in the volume of pure new consumer loans secured by residential property in 2022.

The CNB Bank Board decided to leave the upper limits on the LTV, DTI and DSTI credit ratios at the levels applicable since 1 April 2022. The Bank Board agreed that despite the expected decline in the volume of new consumer credit secured by residential property, the risks associated with the mortgage and property markets remain elevated. The likelihood of a decline in residential property prices is rising, and, in a context of high energy prices and other living costs, the risks to household debt service sustainability are increasing. The Bank Board decided to keep the upper limits on the ratios at the current levels also because of the persisting economic and geopolitical uncertainty. The Bank Board assessed the 80% upper limit on the LTV ratio (90% for applicants under 36 years for the purchase of owner-occupied housing) as consistent with achieving the objective of limiting the risks associated with a decline in collateral value, which could lead to systemic credit losses on new consumer loans secured by residential property. At the same time, in its decision it also took into account the impact of a change in the LTV ratio on households with regard to housing affordability. It left the upper limits on the DSTI and DTI ratios at their current levels in order to maintain the quality of the loan portfolio in a context of falling real incomes. It also ascribed an important role to maintaining the stability and predictability of the regulatory environment.

The CNB will publish additional detailed analyses of risks to financial stability and information about the macroprudential policy settings in June 2023 in its publication *Financial Stability Report – Spring 2023*, which will be the reference document for the spring Bank Board meeting on financial stability issues.

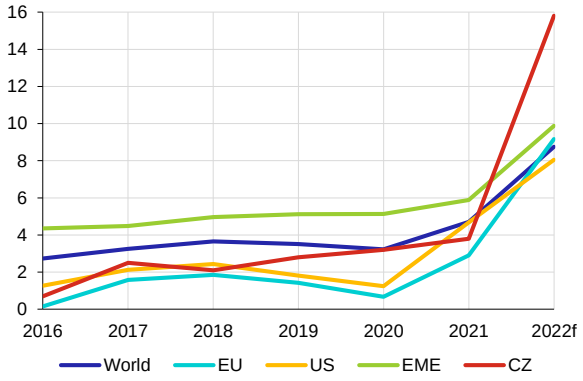
II. THE REAL ECONOMY AND FINANCIAL MARKETS

II.1 THE MACROECONOMIC AND FINANCIAL ENVIRONMENT

The global economy is facing rising prices…

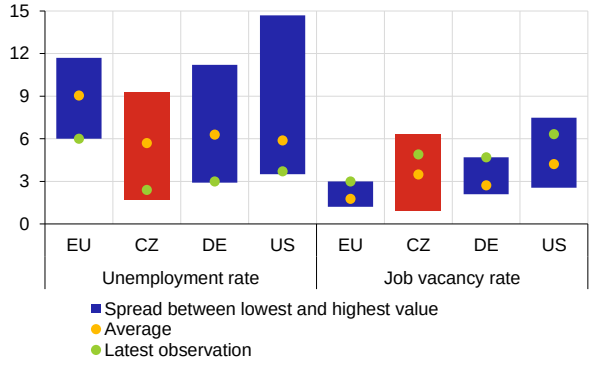
Prices have been rising globally since the start of 2022 (see Chart II.1). This has been accompanied by significant volatility on energy and agricultural commodity markets (see Chart II.1 CB). Tight labour markets are also having an inflationary effect in advanced economies (see Chart II.2). Although lower tensions in global supply chains relative to the previous two years are reducing supply-side price pressures, persisting shortages of material (see Chart II.2 CB) and still higher transport costs than in the pre-pandemic year 2019 (see Chart II.3 CB) are having the opposite effect. The impact of rising energy prices was strongest in European economies due to their direct dependence on supplies mainly of natural gas from Russia and efforts to reduce this dependence. In the US, demand-side effects were the biggest contributor to inflation. These price pressures have led the IMF to revise its global inflation forecasts upwards (see Chart II.4 CB).[1] Prices in the domestic economy were affected by both supply and demand factors in the first half of 2022, and mostly by supply factors in the second half. Consistent with the *Baseline Scenario* is inflation in the Czech Republic peaking at the end of 2022[2] and approaching the CNB's 2% target in the first half of 2024 (see Chart III.19).

Chart II.1
Inflation in selected regions
(annual inflation rates in %)



Source: IMF, CNB
Note: f = forecast. The forecast for the Czech Republic is based on the CNB's autumn forecast (MPR – Autumn 2022). The forecasts for the other economies are based on the IMF's October forecast published in World Economic Outlook, October 2022.

Chart II.2
Labour market indicators in selected regions
(%)



Source: Eurostat, U.S. Bureau of Labor Statistics
Note: The data on unemployment rates are for the period from 2000 to 31 August 2022. The data on job vacancy rates are for the period from 2012 to 30 June 2022 for EU countries and to 31 August 2022 for the US. The job vacancy rate is calculated as the ratio of the number of job vacancies to the sum of the number of occupied posts and the number of job vacancies (the ratio to the number of employed persons for the US).

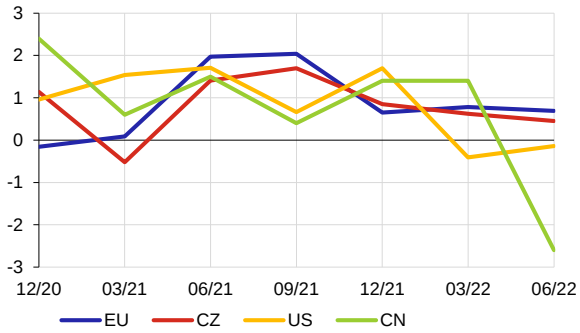
…and is forecasted to slow

Economic trends were mixed across the global economy in the first half of 2022. The economic slowdown in China resulting from anti-epidemic measures and a worsening situation on the Chinese property market is gradually spreading to the global economy via lower demand from China (see Chart II.3) and delays in supply chains. EU economies recorded growth, driven mainly by private consumption, investment and tourism, while the US has now entered a downward phase of the business cycle. The environment of high inflation and tightening financial conditions in advanced economies has been reflected in sharply falling consumer and business sentiment[3] (see Chart II.5 CB), which is reducing demand. In this context, the IMF has revised its global economic outlooks for 2022 and 2023 downwards (see Chart II.4).[4] The economic outlook for the Czech Republic has also been revised. A real drop in households' disposable income was reflected in a reduction in household consumption in 2022 Q2 (see Chart II.3 and Chart II.6 CB). The difficult financial situation of households and non-financial corporations (see section II.2), coupled with lower external demand, is expected to continue to dampen domestic economic activity in 2023 (see Chart II.4).[5] Real GDP is expected to return to growth in 2024 (see Chart II.6 CB). The forecasts are surrounded by a high level of uncertainty due to persisting geopolitical tensions, a possible

1 More information on inflation abroad can be found in World Economic Outlook, October 2022.
2 More information on inflation in the Czech Republic can be found in MPR – Autumn 2022.
3 The PMIs for CZ, DE, EA and US have entered the contraction phase and are on a downward trend.
4 More information on economic developments abroad can be found in World Economic Outlook, April 2022 and World Economic Outlook, October 2022.
5 More information on economic developments in the Czech Republic can be found in MPR – Spring 2022 and MPR – Autumn 2022.

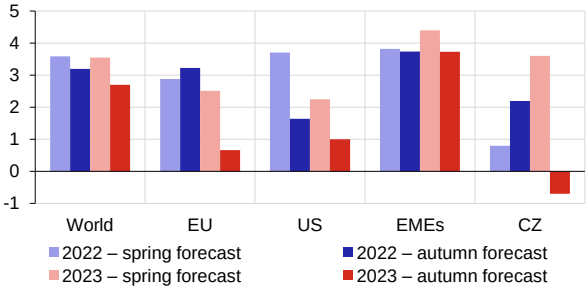
tightening or reintroduction of pandemic measures with negative impacts on global supply chains, and the consequences of the financial markets' response to the tighter global financial conditions.[110]

Chart II.3
Economic growth in selected regions
(quarterly real GDP growth in %)



Source: OECD

Chart II.4
Economic growth forecasts for selected regions
(annual real GDP growth in %)



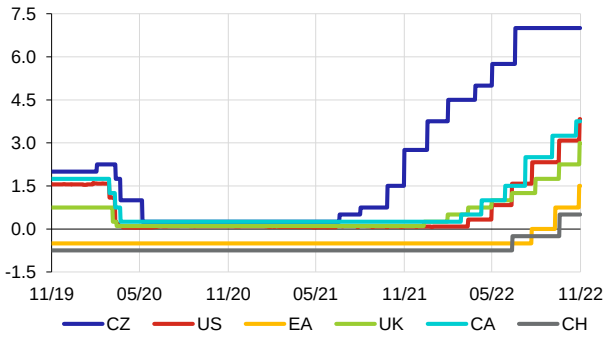
Source: IMF, CNB

Note: The forecast for the Czech Republic is based on the CNB's spring and autumn forecasts (MPR – Spring 2022 and MPR – Autumn 2022). The forecasts for the other economies are based on the IMF's April and October forecasts (WEO, April 2022 and WEO, October 2022).

Central banks have been tightening monetary conditions in response to the rising inflation…

Central banks have responded to the rising inflation by tightening monetary policy in 2022 (see Chart II.5). The monetary policy rates of key advanced economies have been raised repeatedly in steps of 50 and 75 bp and ranged between 0.5% and 4% in early November 2022.[6] They are expected to rise further over the rest of 2022 and for at least part of 2023.[7] According to implied market expectations, the highest levels to which the monetary policy rates will climb in the current rate-increasing cycle were around 5% for the US, 4.6% for the UK and 3% for the ECB as of 11 November 2022 (see Chart II.6). Global monetary conditions might also start to tighten via a reduction of the balance sheets of major central banks.[8] On the one hand, the sale of securities and tapering of lending schemes by central banks should foster growth in loan rates and bond yields at longer maturities while reducing the amount of liquidity in the financial system. On the other hand, it will increase the availability of safe assets and hence collateral for secured funding on financial markets. The ultimate effect of the balance sheet reduction by key central banks may thus not be entirely straightforward for individual financial markets and its intensity will largely depend on the pace of reduction (see Box 1).

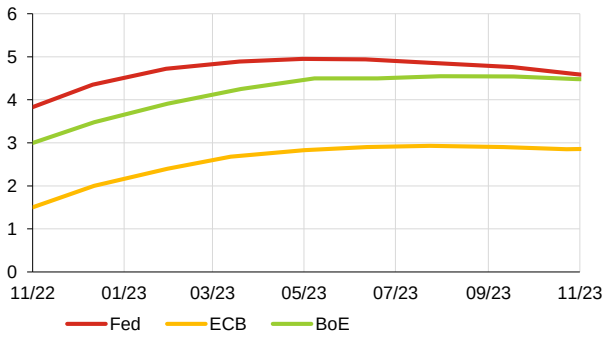
Chart II.5
Monetary policy rates of selected central banks
(%; latest observations as of 4 November 2022)



Source: Refinitiv

Note: In the case of EA, the chart shows the deposit rate. In the case of the US, it shows the centre of the range.

Chart II.6
Market-implied rate paths
(%; levels as of 11 November 2022)



Source: Refinitiv

6 The US Fed raised its target range by 75 bp to 3.75–4.00% in November 2022. This was the fifth consecutive and fourth 75 bp hike. The Fed is widely expected to raise the range further by at least 50 bp at its December 2022 meeting. The ECB raised its deposit rate by 75 bp at its September and October meetings. Between July and October the rate rose by 200 bp to 1.5%. The ECB also said it expects to raise rates further. Other central banks also increased rates at their latest meetings. Rates went up by 75 bp to 3% in UK, 50 bp to 3.75% in CA and 75 bp to 0.5% in CH, for example.

7 For the ECB, see, for example, the ECB's decision and statement of 27 October 2022.

8 The ECB ended net asset purchases in July 2022 and plans to announce conditions for reducing its balance sheet in December 2022. The BoE began to reduce its balance sheet passively by ceasing to reinvest maturing principal in February 2022 and started selling bonds in November 2022. The Fed has been actively reducing its balance sheet since June 2022. Its balance sheet shrank by around 3% in the first five months.

…financial conditions are also tighter in the Czech Republic

The growth in the CNB's two-week monetary policy rate to 7% in June 2022 and its subsequent stability, accompanied by communication of the need keep the rate at this level for longer, were reflected in domestic interest rates and yields. Rates on new loans to non-financial corporations, koruna interest rate swap rates and yields on bonds with short residual maturities responded fastest to the CNB's tighter policy. Yields on bonds with longer residual maturities and rates on loans to households for house purchase responded more slowly and modestly (see Chart II.7). The inversion of the Czech government bond yield curve has gradually intensified since the start of 2022 in response to the rapid rise in policy rates. The difference between the short end of the curve and the ten-year maturity exceeded 2 pp in late July and early August (see Chart II.8). Due to subsequent growth in financial market expectations of tighter for longer global and domestic financial conditions, longer yields rose and the curve flattened temporarily. However, lower-than-expected inflation in the Czech Republic and the US fostered a renewed decrease in November, especially at longer maturities (see Chart II.8).

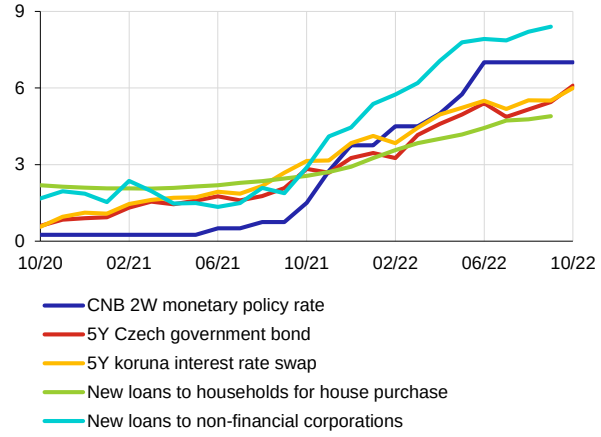
Czech government bond yields may continue to show increased volatility

The slope of the domestic yield curve is broadly in line with the path of monetary policy rates in the *Baseline Scenario* and the path of Czech government bond yields consistent with them (see Chart III.19 in section III.4), where domestic financial conditions are expected to ease relatively gradually and monetary policy rates are assumed to remain above their neutral levels in the coming years. In the case of Czech government bond yields, no sudden disorderly responses are currently expected from the financial markets due to concerns about government debt sustainability (see section II.2.1 and Chart II.7 CB). However, these yields are relatively sensitive to a deterioration in geopolitical conditions and changes in the assessment of the Czech Republic's credit risk. They could also be affected by a change in equilibrium on government bond markets due to increased issuance by European and other countries amid the current reduction of major central banks' balance sheets and a significant narrowing of the interest rate differential of koruna assets against EUR and USD.

Chart II.7

Interest rates and yields in the Czech Republic

(%)



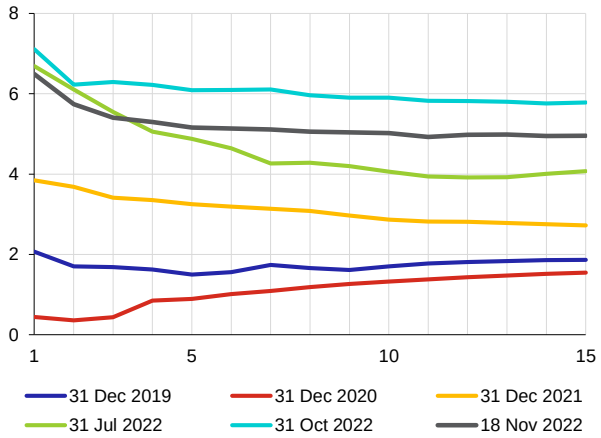
Source: Refinitiv, CNB

Note: Month-end values are used, except for interest rates on new loans, where monthly averages are used instead. These loans only include koruna loans.

Chart II.8

Czech government bond yield curve

(%; x-axis: residual maturity in years)



Source: Refinitiv, CNB

BOX 1: Changes in the calibration of the ECB's non-standard open market operations

After tightening monetary policy, the ECB recalibrated its unconventional secured open market operations (TLTROs) in late October 2022. The original declared aim of TLTROs was to provide banks with advantageous medium-term funding (for up to three years under TLTRO III) in an environment of liquidity shortages and low inflation in order to markedly ease lending conditions and hence support lending. The ECB's main condition for banks to obtain advantageous funding was to exceed the reference threshold for the size of the portfolio of loans granted to the private non-financial sector (excluding loans to households for the purchase of residential property) in a certain reference period. The ECB launched TLTRO I in 2014, TLTRO II in 2016 and TLTRO III in 2019. The terms and conditions for using them have changed over time.

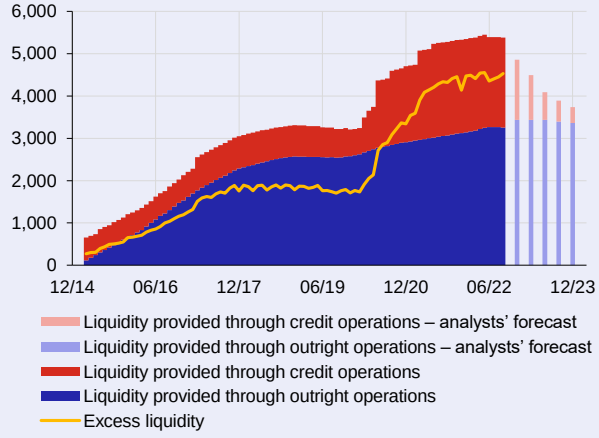
From the accounting perspective, the use of TLTROs increased banks' liquidity buffer on the asset side and their secured source of medium-term funding on the liability side. From the regulatory perspective, TLTROs led to only a partial improvement in banks' liquidity position under the original terms, as they were secured solely by high-quality liquid assets.

After the onset of the coronavirus pandemic, however, the ECB changed the conditions for eligible collateral. This resulted in growth in collateral outside the category of high-quality liquid assets and in an improvement in banks' liquidity position as measured by the LCR. In May 2022, assets other than high-quality liquid ones made up 74% of TLTRO collateral.

The November 2022 recalibration of TLTROs concerned the favourable rate on this source of funding. Under the rules in effect before the November change, the TLTRO rate was initially set as the ECB's deposit rate or main refinancing rate minus 50 bp[9] and, since June 2022, as the average of the rates over the lifetime of the TLTRO. As TLTROs simultaneously created an additional liquidity buffer in banks' balance sheets remunerated at the ECB's deposit rate, banks made a return of as much as 50 bp. Since 23 November 2022, the TLTRO rate has been linked to the current deposit rate or main refinancing rate without the 50 bp deduction. This means that banks have a zero or negative return on this operation, as the rate on reserves deposited at the ECB will be the same or lower than the TLTRO rate. Due to the possible drop in the return on TLTROs, the ECB has adjusted the terms for early repayment of these operations. This will allow banks with sufficient liquidity to release the encumbered assets.

The recalibration of TLTROs will be partly offset by banks' income on excess liquidity deposited with the ECB not linked to TLTROs. This is mostly liquidity provided to the banking sector through the ECB's direct operations, which accounted for 72% of excess liquidity as of 30 September 2022 (see Chart 1). TLTROs thus make up a smaller part of banks' liquidity buffer deposited with the ECB. Moreover, the effect of the tighter TLTRO III conditions on the liquidity situation of the euro area banking sector will be spread over 2023 and the first half of 2024, with most operations maturing in June 2023 (see Chart 2).[10] As indicated above, the repayment of TLTROs can be expected to affect the LCR to some extent, as most of the TLTRO-linked assets do not fall into the category of high-quality liquid assets. After their release, these assets will thus not be able to fully offset the drop in the liquidity buffer once TLTROs are repaid. Given the above, the potential impact of the recalibration and future repayment of TLTROs on the domestic banking sector will be gradual and only indirect. As a structural liquidity surplus will be preserved in the euro area even after the repayment of TLTROs, the availability of euro funding to domestic banks should not worsen significantly (see section III.2.3).

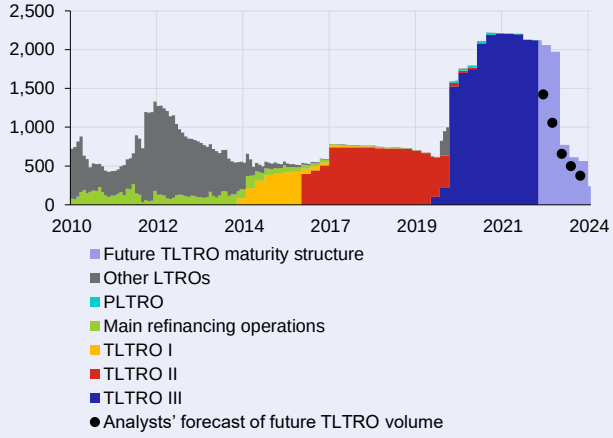
Chart 1 (BOX 1)
The ECB's liquidity-providing operations
(EUR billions)



Source: ECB, Bloomberg

Note: Excess liquidity consists of banks' deposits at the ECB held in current accounts and the deposit facility in excess of the minimum reserve requirements. The analysts' forecast of liquidity provided through TLTROs is taken from a survey conducted by Bloomberg after 27 October 2022. The analysts' forecast of liquidity provided through direct operations is taken from the October round (2022) of *The ECB Survey of Monetary Analysts* and does not take into account the ECB's decision regarding TLTROs made on 27 October 2022.

Chart 2 (BOX 1)
The ECB's liquidity-providing credit operations
(EUR billions)



Source: ECB, Bloomberg

Note: The analysts' forecast is taken from a survey conducted by Bloomberg after 27 October 2022. The TLTRO maturity structure does not take into account the possibility of early repayment.

9 If the lending threshold was met, TLTROs were remunerated at the deposit rate minus 50 bp. If not, they were remunerated at the main refinancing rate, but even in this case 50 bp was deducted from that rate.

10 The risk of sudden significant changes in the liquidity conditions of European banks is relatively low, partly because the last TLTRO was provided on 22 December 2021. In addition, three-month LTROs, which are standard open market operations, will still be available. Although a survey of analysts conducted by Bloomberg after 27 October 2022 indicated that the option of early repayment would be widely exercised, this prediction has not so far materialised. A total of EUR 300 billion was repaid in November. This is at lower end of the analysts' estimates, which ranged between EUR 200 billion and EUR 1,500 billion. This suggests that banks continue to regard TLTROs as a source of relatively cheap funding.

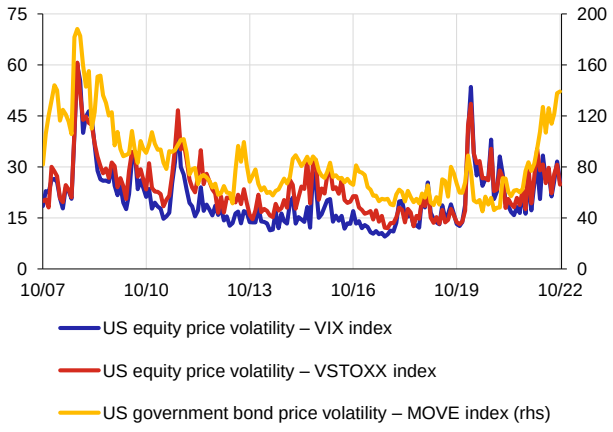
There is increased uncertainty and related volatility on financial markets…

The implemented and further expected increases in monetary policy rates have led to a decline in prices on bond and equity markets. This is due in part to growth in uncertainty about the future geopolitical and economic situation, continued growth in inflation and tightening financial conditions. The uncertainty has been reflected in volatility on markets for government bonds (see Chart II.9 – MOVE index, Chart II.8 CB – EU sovereign risk index), whose yields have risen to their highest levels in years (see Chart II.10). Global corporate bond and equity markets have also been hit by increased risk premia and a drop in prices (see Chart II.9 CB and Chart II.9 – VIX and VSTOXX indices). The key equity indices have even fallen by around 20% during 2022 relative to the highs they reached in late 2021 and early 2022 (see Chart II.10 CB). 2022 has also seen the materialisation of liquidity risks associated with derivatives holdings, where margins have had to be made up in the case of loss-making positions. The liquidity stress has fostered tensions on the UK bond market, as leveraged British pension funds – including funds using derivatives to increase their leverage – have responded to the liquidity shortage by selling their gilts. Commodity derivatives have also faced a surge in liquidity needs. This has mainly affected energy companies that use these derivatives to fix future prices of energy production (see section II.2). These events may recur to some extent on various markets in the near term, as their causes (growing inflation and monetary policy tightening, uncertainty about public finance sustainability, geopolitical tensions and energy price volatility) are medium-term in nature and cannot be expected to lessen immediately.

Chart II.9

Market volatility indicators

(points)

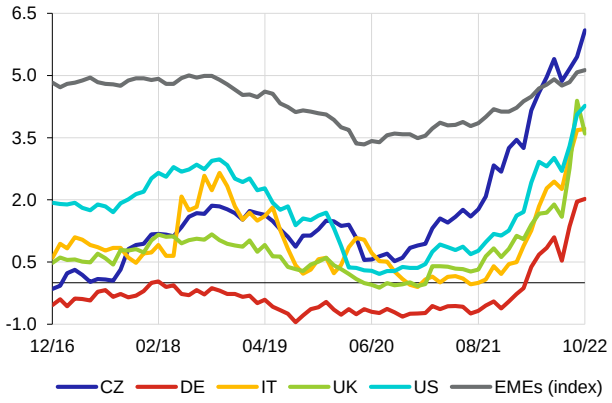


Source: Refinitiv

Chart II.10

Five-year government bond yields for selected countries

(%)



Source: Refinitiv, CNB

Note: In the case of EMEs, the chart shows the index of yields across maturities.

…the volatility is also linked to the public finances of EU countries

The increased volatility on the markets for EU countries' government bonds is also linked to some extent to the evolution of their public finances since the outbreak of the coronavirus pandemic (see Chart II.11 CB). As well as government support programmes mitigating the impacts of the pandemic, financial aid reducing the impacts of energy prices on end consumers is now increasing the burden on individual EU Member States' public budgets (see Chart II.11).[11] The support most often takes the form of one-off benefits for households and firms, cuts in taxes related to electricity prices and caps on the prices of electricity and natural gas.[12] The rising cost of debt refinancing as a result of tighter financial conditions means that the fiscal policies of highly indebted countries are faced with a need to compromise between providing households and firms with financial support and keeping public finances sustainable (see Chart II.12).[13] Sovereign risk is being reduced to some extent by the relatively long average maturity of government debt (see Chart II.12 CB). However, a continued rapid upward trend in indebtedness may lead to downgrades of country ratings or an abrupt reassessment of risk by investors, such as occurred in the UK in early October 2022.[14]

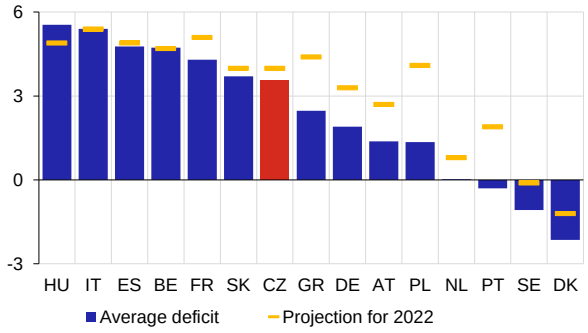
11 Countries have also been cooperating at the EU level, adopting common rules for measures to reduce the impacts of energy prices on retail consumers and a proposal for an emergency regulation capping gas prices in the EU and ensuring safe gas supplies in winter 2022.

12 A chronological overview of the specific steps taken by the governments of individual Member States since autumn 2021 is given in an article issued by the Bruegel think tank.

13 See, for example, Sensitivity of sovereign debt in the euro area to an interest rate-growth differential shock.

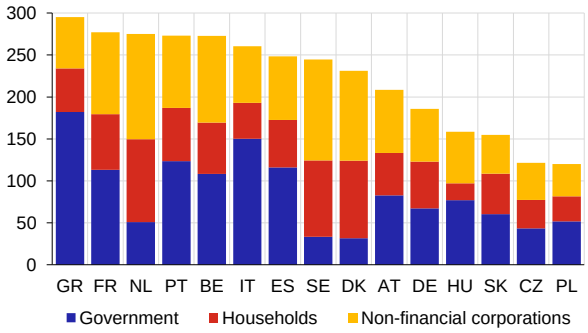
14 A programme of extensive tax cuts was unveiled in the UK despite growing government spending. Sterling weakened and gilt yields rose sharply in response to this budget mismatch, causing problems for pension funds. These circumstances led to forced purchases of government bonds by the BoE and stabilisation of the market.

Chart II.11
General government deficits in selected EU countries
(% of GDP; data as of 30 June 2022)



Source: Eurostat, IMF
Note: Averages for 2021 Q3–2022 Q2. The data for IT and GR are not seasonally adjusted. The projections for 2022 are based on Fiscal Monitor, October 2022.

Chart II.12
Debt ratios of economic agents in selected EU countries
(% of GDP; data as of 30 June 2022)

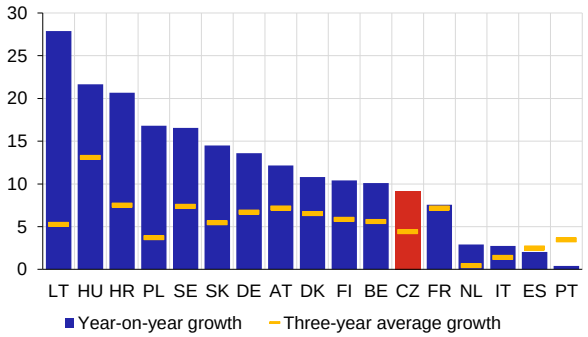


Source: ECB

High input prices and tighter credit standards are affecting the EU private non-financial sector

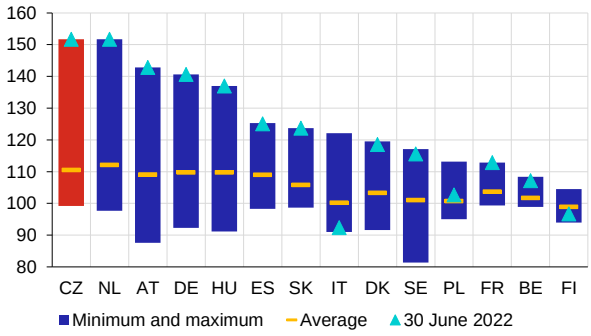
EU non-financial corporations' profit rate stayed above its long-term average in the first half of 2022 (see Chart II.13 CB). High input prices and falling aggregate demand have the potential to reduce profitability and increase credit risk, especially in energy-intensive firms. Indebted non-financial corporations and their debt servicing ability started to be affected by tighter financial conditions (see Chart II.14 CB). Despite higher loan rates in EU countries, year-on-year growth in corporate loans surged (see Chart II.13). Besides rising prices, this rise was driven by energy firms' need to respond to the aforementioned margin requirements arising from loss-making commodity derivative positions (see Chart II.15 CB).[15] Despite the tough macrofinancial conditions, EU non-financial corporations have yet to be hit by a wave of defaults. The number of defaults remains well below the level recorded at the end of the pre-pandemic year 2019[16] (see Chart II.16 CB). The credit risk of European households is also low, partly due to still favourable labour market conditions (see Chart II.2). However, possible growth in unemployment as a result of the expected drop in economic activity and falling real household disposable income (see Chart II.17 CB) may lead quite quickly to growth in this risk. Falling disposable income, tighter credit standards (see Chart II.14 CB) and high residential property prices are making housing less affordable for Europeans (see Chart II.14) and have the potential to cool the previously strong property price growth in many EU countries (see Chart II.18 CB). This cooling may be supported by potential government initiatives taking the form of property tax increases (see Box 2).

Chart II.13
Growth rates of loans to non-financial corporations in selected EU countries
(%; data as of 30 September 2022)



Source: ECB, CNB, MNB, NBP, Riksbank
Note: The data for CZ are adjusted for the credit portfolio of Sberbank.

Chart II.14
Property price-to-income ratios in selected EU countries
(base index; 2015 = 100)



Source: OECD
Note: Data for 2012–30 June 2022.

15 The strong year-on-year growth in loans in mining and quarrying may also be linked to the extension of the deadline for moving away from fossil fuels in order to ensure energy security. The later shift away from fossil fuels and hence later reduction of carbon dioxide emissions may increase climate risks. However, the current high energy prices are accelerating the transition to climate-neutral economies by increasing the return on investment by the private non-financial sector in renewables and energy efficiency. See, for example, Not too late – Confronting the growing odds of a late and disorderly transition.

16 Growth continues mainly in transport and storage, an industry hit hard by the pandemic and currently also by high fuel prices. More information on the vulnerability of the non-financial corporations sector can be found, for example, in the ECB articles Assessing corporate vulnerabilities in the euro area and Identifying the corporates most vulnerable to price shocks following the pandemic.

BOX 2: Effect of property tax on growth in residential property prices

In most advanced countries, property tax revenues are low relative to other tax revenues.[17] Given the sizeable stress on public budgets linked with the support programmes being implemented to mitigate the impacts of the pandemic and the energy crisis, a debate about increasing property tax revenues has therefore started (Leodolter et al., 2022).[18] Besides the need to raise general government revenue, reducing income inequality across households and mitigating excessive property price volatility over the financial cycle are cited as additional incentives for such action (Poghosyan, 2016).[19] In this debate, the questions of to what extent this tax can affect property prices and whether it can be used as a tool to limit surges in property prices in the growth phase of the financial cycle are particularly relevant to financial stability.

This box presents selected channels through which property tax affects property prices. It sets out to estimate the size of the impacts of a potential increase in this tax. Given the absence of suitable data for a detailed empirical analysis, two structural models applied at the CNB to analyse the residential property market are used to assess the impacts. Both describe the behaviour of property prices primarily from the perspective of demand factors and assume that supply is inelastic in the short run. Despite a number of simplifying assumptions, however, they give an idea of how an increase in the property tax rate is reflected in property prices.

The first ("macroprudential") model assumes that a marginal buyer determining the prices on the market is a liquidity-constrained household that has to use debt financing to buy a property. Property prices in this model thus depend directly on households' borrowing capacity and are derived from the attainable loan amount households can safely repay. In this situation, an increase in property tax affects property prices via a decrease in disposable income, which households would otherwise be able to use to service debt safely. The second ("valuation") model is based on asset pricing theory and assumes that property prices correspond to the discounted flow of expected income from property ownership. The pricing model is adapted to the characteristics of retail investors from the household sector who purchase buy-to-let property. This model assumes that an increase in property tax is reflected in property prices via a decrease in the future net income the property is able to generate.[20]

Despite the different focus of the two models, the analysis of the effects on property prices leads to similar conclusions in both cases. Table 1 shows the model-implied size of the effects of a property tax increase for different tax rates. The tax rate is expressed as a percentage of the property value. The results suggest that a property tax increase has two types of effects on property prices: (i) a one-off effect in the form of a gradual change in the price level and (ii) a subsequent lasting effect in the form of a permanent decrease in price dynamics. However, as regards the strength of the effect, only the one-off effect is significant, whereas the contribution of the higher tax rate to curbing the price dynamics can be considered negligible for economically plausible tax increases (see Table 1). This follows from the fact that, given a constant tax rate, the amount of tax paid, which subsequently reduces disposable income or rental income, is determined solely by the property price or the change therein. For tax rates of up to 1%, the impact on household income is not significant in absolute terms and does not affect the subsequent dynamics.

Under the macroprudential approach, the strength of the one-off effect depends – unlike in the valuation approach – also on the initial price of the property and thus, among other things, on the initial level of mortgage loan rates and the degree to which credit standards are relaxed. In an environment of low interest rates and relaxed credit ratio caps, an increase in property tax may therefore imply an appreciable tightening of the conditions for buying property which offsets the relaxed financial conditions in the economy for households purchasing housing for themselves. However, given the mostly one-off nature of the effect, this would only occur at the time of the tax increase.

Overall, the analysis shows that a one-off increase in the property tax rate affects property prices also in a mostly one-off way. The potential of this tax to act as a tool or built-in stabiliser to mitigate the risks associated with excessive property

17 The configuration of the tax base, the budget allocation of taxes and the method for calculating the tax differ considerably across countries. To facilitate international comparison and other considerations, the size of the annual tax payment is related to the property price in the given year in this Box. In global terms, the percentage tax rate defined in this way usually ranges between just above zero and around 1%. At less than 0.1%, the rate in the Czech Republic is one of the lowest in the OECD. In the Czech Republic, however, the tax is calculated differently and is based on the floor area of the property and on the application of relevant coefficients (depending on municipality size and in some cases also a local coefficient). All of the revenue from this tax is revenue to the municipality, so it cannot be used to increase general government budget revenue.

18 Leodolter, A., Princen, S. and Rutkowski A. (2022): *Immovable Property Taxation for Sustainable & Inclusive Growth*, Discussion Paper No. 156, European Economy Discussion Papers, European Commission.

19 Poghosyan, T. (2016): *Can Property Taxes Reduce House Price Volatility? Evidence from U.S. Regions*, IMF Working Paper No. 2016/216.

20 This box abstracts from the possibility of investors reflecting the property tax increase in higher rents, so the presented results represent the upper bound on the potential impacts. However, the qualitative conclusions of the analysis would not change if the property tax increase was reflected in required rents.

price volatility across the financial cycle therefore seems limited overall. For these purposes, the tax rate would have to be adjusted regularly and the changes to it would have to be linked to macrofinancial variables closely correlated with property prices. However, this is not done in practice internationally.

Table 1 (BOX 2)
Model-implied effect of a property tax increase on property prices
(%)

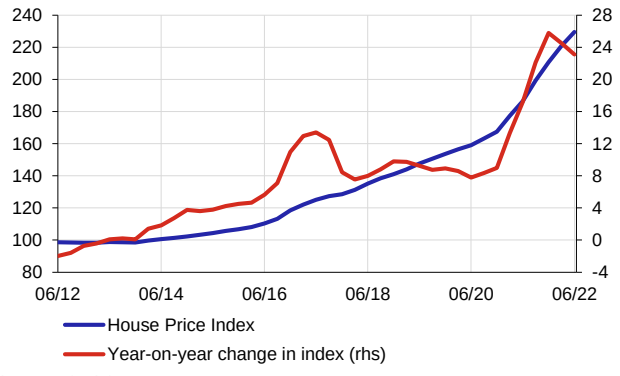
	Macroprudential approach			Valuation approach		
Tax rate increase	0.25 pp	0.5 pp	1 pp	0.25 pp	0.5 pp	1 pp
One-off effect: size of decline in property prices						
Case 1 Interest rate on house purchase loans: 2% Average DSTI: 40% LTV: 80%	2.40	4.68	8.95	2.65	5.11	9.70
Case 2 Interest rate on house purchase loans: 4% Average DSTI: 35% LTV: 80%	1.70	3.34	6.46	2.53	4.94	9.42
Permanent effect: slowdown in price growth						
Year-on-year increase in property prices given unchanged tax rate is 10%*	9.98	9.96	9.91	9.76	9.51	9.02

Note: * In the case of the valuation approach, the strength of the permanent effect depends on the scenario leading to the price increase. In some scenarios, the permanent effect may not be present at all. The table shows the size of the permanent effect given growth in property prices due to a long-term decline in interest rates on house purchase loans. The investor approach also abstracts from the possibility of the tax increase being reflected in higher minimum required rents.

Domestic residential property prices have probably reached a cyclical peak…

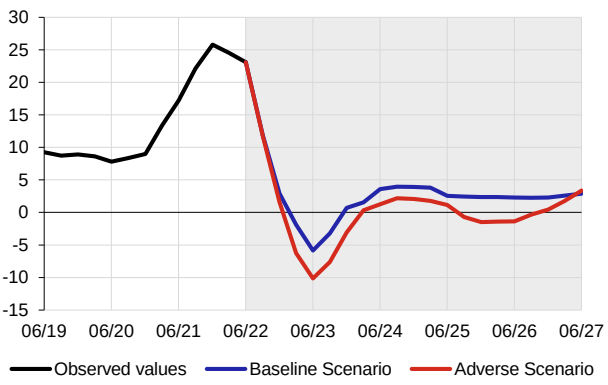
Transaction prices of residential property recorded brisk growth in the first half of 2022, although their year-on-year growth started to ease slightly compared with the end of 2021 (see Chart II.15). Available data from estate agencies and transaction data from the Czech Office for Surveying, Mapping and Cadastre (COSMC) suggest that prices were flat or started to fall slightly in some segments in the subsequent months. The price level thus probably reached its cyclical peak around the middle of the year. In connection with its autumn forecast, the CNB in its *Baseline Scenario* expects year-on-year growth in residential property prices to ease markedly by the end of 2022 and turn slightly negative in the first half of 2023 (see Chart II.16). The probability of a larger price correction than assumed in the *Baseline Scenario* has risen (see Chart II.19 CB), amid great uncertainties associated with the developments expected in the scenario.

Chart II.15
Transaction prices of residential property in the Czech Republic
(2010 = 100; right-hand scale: %)



Source: CZSO

Chart II.16
Projections of property price growth in the Czech Republic
(year-on-year growth in %)



…older apartments in less lucrative localities of the Czech Republic are particularly exposed to the risk of a price correction

As regards property types, slowing growth was recorded by apartments and family houses, whereas land prices have yet to record a turnaround according to the available data (see Chart II.20 CB). The slowdown in transaction prices of apartments was broad-based across most regions but primarily reflected slowing growth in Prague (see Chart II.21 CB). A similar pattern can be observed for asking prices (see Chart II.22 CB). Supply on the market has increased substantially during 2022 (see Chart II.23 CB). Amid sluggish construction of new apartments (see Chart II.24 CB), the growth in supply is being driven mainly by older apartments. Given the observed decline in demand for property,[21] we can expect this segment to gradually record excess supply and the strongest downward pressure on prices.

The affordability of owner-occupied housing in the Czech Republic remains significantly worsened

The continued strong growth in property prices in the first half of 2022 amid rising rates on housing loans and broadly flat growth in household income led to a further worsening of housing affordability (see Chart II.17).

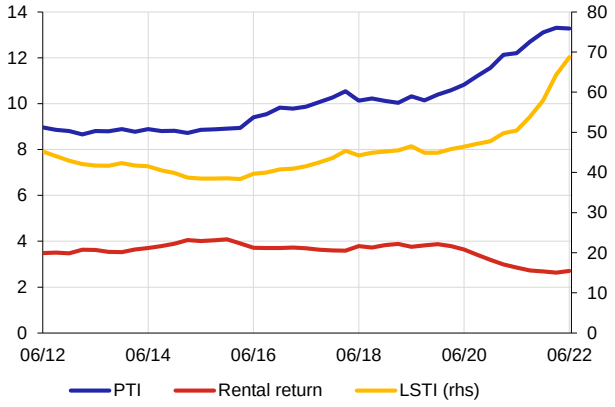
The overvaluation of apartment prices has increased further

Under the macroprudential approach, apartment prices were 60% overvalued on average for the median household at the end of 2022 Q2 (see Chart II.18). This means that, given the level of income in this period, the interest rates on new housing loans and expected economic developments, the median household can afford to buy an average apartment with debt financing only if it accepts a sizeable risk of future default. This means that apartments are currently safely attainable only for a narrow set of high-income households (see Chart II.29). In the case of buy-to-let investment apartments, the average overvaluation also reached elevated levels of more than 40% in the first half of 2022 but, in contrast to the macroprudential approach, did not rise further. The high overvaluation levels under the valuation approach point to a higher willingness of households to accept very low rental income or overly optimistic expectations regarding future growth in apartment prices and rents. Potential non-fulfilment of these expectations may foster downward pressure on prices in the future.

Chart II.17

Selected apartment affordability indicators in the Czech Republic

(PTI in years; yields in %; right-hand scale: %)



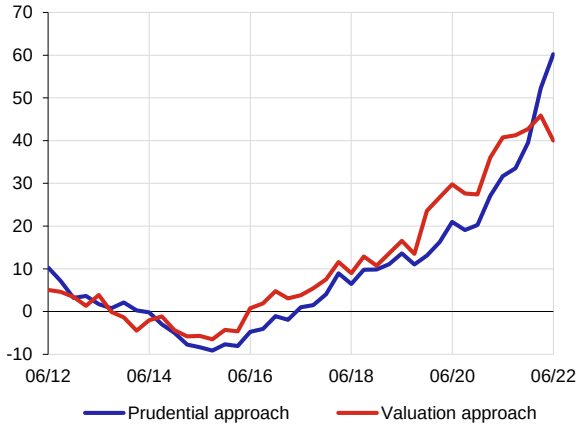
Source: CNB, CZSO, IRI, Společnost pro cenové mapy ČR, s.r.o.

Note: PTI is the price-to-income ratio and LSTI the loan service-to-income ratio. The apartment price is defined as the average price of a 68 m^2 apartment. Income is defined as the annual moving total of the average gross wage. A loan with an LTV of 80% and a repayment period of 25 years was considered for the LSTI calculation.

Chart II.18

Estimated overvaluation of apartment prices in the Czech Republic

(%)



Note: The methodology of the indicators is described in Plašil, M., Andrle, M. (2019): *Assessing House Price Sustainability*, Thematic Article on Financial Stability 1/2019, CNB. The overvaluation estimate is based on the CNB's autumn forecast – MPR – Autumn 2022.

Activity on the commercial property market in the Czech Republic increased in the first half of 2022 but remains significantly lower than in the pre-pandemic period

Following a downturn in the pandemic period, investment in the commercial property market rose gradually in 2021 and the first two quarters of 2022 (see Chart II.19) and construction of new space resumed (see Chart II.20). The recovery was due mainly to buoyant growth in industrial property, which was the most attractive commercial property segment. Despite the overall recovery, however, market activity remained below the pre-pandemic level, owing among other things to a lack of suitable investment opportunities. The market expects activity in the second half of 2022 to reflect increasing uncertainty

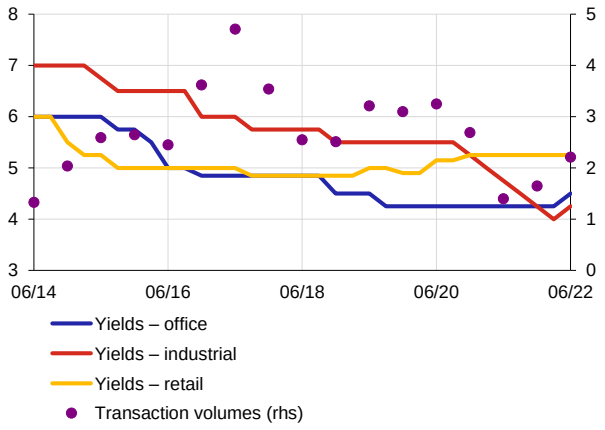
21 The decline in demand reflects the already very high property price level and worse availability of debt financing due mainly to higher mortgage rates.

about the evolution of rents and rising property operating costs on the one hand and more expensive external funding and growth in construction work prices on the other. This will noticeably dampen market activity again until the uncertainties ease. It will also delay the full pass-through of the rising prices into price conditions until 2023.

Chart II.19

Yields on commercial property and transaction volumes in the Czech Republic

(%; right-hand scale: EUR billions)



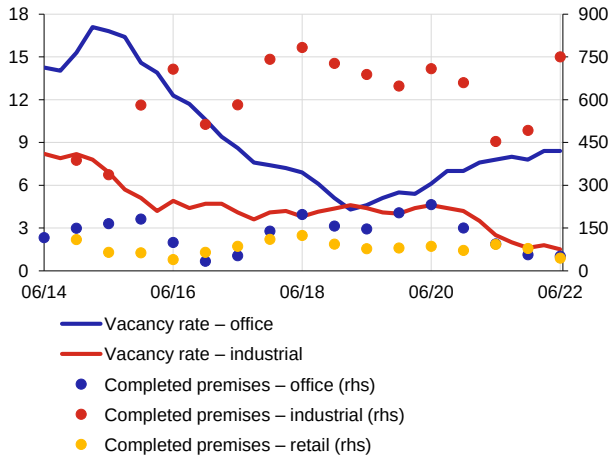
Source: Jones Lang LaSalle

Note: Prime yields. Transaction volumes are reported at annual frequency until 2013 and as annual moving totals at semi-annual frequency from 2014 onwards.

Chart II.20

Vacancy rates and completed premises for commercial property in the Czech Republic

(vacancy rates in %; right-hand scale: space in thousands of m^2)



Source: Jones Lang LaSalle

Note: Stocks of completed premises are reported at annual frequency until 2013 and as annual moving totals at semi-annual frequency from 2014 onwards.

Yields on commercial property in the Czech Republic remain low

Prime yields on the domestic market remained very low despite the increase in domestic and foreign interest rates and rising uncertainties (see Chart II.19). Although the first signs of possible growth appeared in 2022 Q2, yields remain relatively stable in the medium term and the CNB continues to assess their level as very low (see Chart II.25 CB). In the event of a further rise in uncertainty or market revaluation by investors, they could thus increase more markedly. Such an increase would foster a correction of market prices and a decline in the value of collateral. This requires a higher degree of prudence in the provision of loans for commercial property (see section IV.4.2). However, a correction would probably affect mainly retail space and partly also office space. By contrast, given the current wave of interest in industrial property, as reflected in record-low vacancy rates in addition to yields (see Chart II.20), prime yields in this segment are unlikely to show major growth in the next few quarters.

II.2 THE DOMESTIC NON-FINANCIAL SECTOR

II.2.1 General government

General government deficits remain high

According to the CNB's *Baseline Scenario*, general government finances will end 2022 in a deficit of CZK 250.7 billion (3.7% of GDP – see Chart II.21). The resulting deficit is positively affected by higher tax revenues and the phasing out of most of the support measures adopted due to the coronavirus pandemic. An extraordinary increase in pensions and energy crisis-related expenditure[22] in particular will have a negative effect. In 2023, the impact of this expenditure will be softened on the revenue side by the planned windfall tax[23] and by EU price caps for energy producers. The CNB assumes a general government deficit of CZK 285 billion (3.8% of GDP) for 2023. Consistent with the *Baseline Scenario* is a very slight decrease in the relative indebtedness of general government in 2022. This is due to expected growth in nominal GDP (see Chart II.22). The debt ratio will gradually increase to around 44% of GDP over the scenario horizon.

Chart II.21
General government balance
(% of nominal GDP)

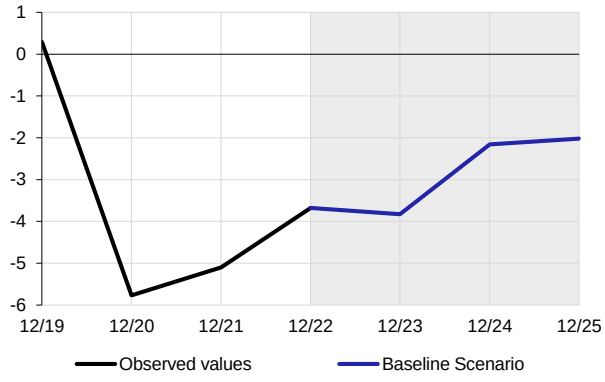
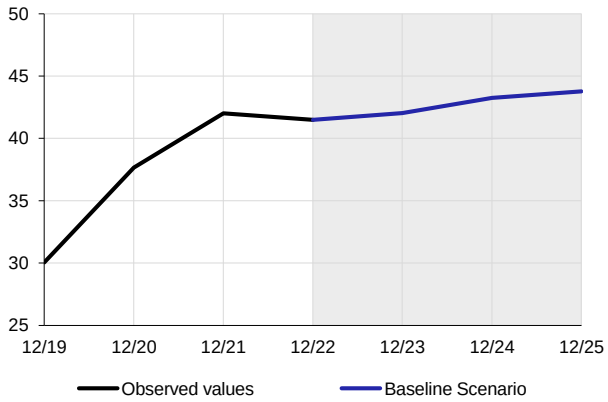


Chart II.22
General government debt
(% of nominal GDP)



The budget deficits are increasing domestic banks' sovereign exposures…

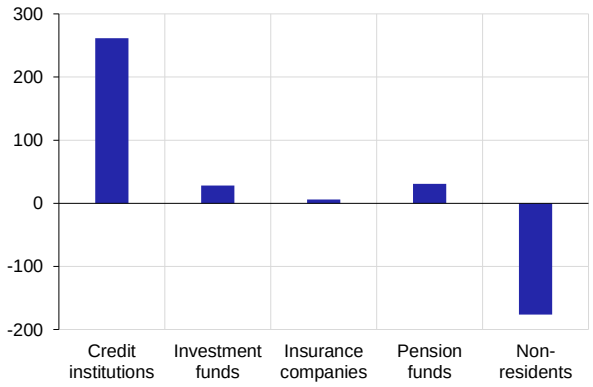
The high issuing activity on the primary and secondary government bond markets caused by the government's increased borrowing needs in 2022 met with continuing investor interest and led to an increase in sovereign exposures, especially in the case of domestic banks[24] (see Chart II.23 and Chart II.26 CB). According to the available data, non-residents reduced their direct holdings, mainly via non-renewal of holdings of maturing issues (see Chart II.27 CB). Assuming constant holdings of government bonds by other sectors (i.e. mere reinvestment of maturing issues in their portfolios) and the validity of the Czech Finance Ministry's predicted financing needs updated by the latest amendment to the state budget, banks would hold CZK 1.7 trillion of government bonds at the end of 2023. This represents an increase of CZK 1.2 trillion in just four years. Risks to financial stability mediated by the strengthening link between the size of sovereign debt and growth of sovereign exposures in the banking system are thus on an upward trend. A higher number of T-bill auctions were also organised in 2022 (see Chart II.24). This is visible in a decrease in the maturity profile of debt securities offered in primary auctions (see Chart II.28 CB). However, T-bill issues are being increased in order to preventively strengthen the Treasury's liquidity and are not being used primarily to finance current government budget expenditure. Given the relatively low yield to maturity on T-bills (6.5% for a maturity of usually one month; see Chart II.29 CB), it may thus even be income to the government budget, since the funds raised are subsequently being invested by the government on the money market at a higher rate (the 1M PRIBOR is over 7.1%). The average maturity of government debt adjusted for these operations is still 6.1 years and, along with the high demand in primary auctions, does not indicate an increased government debt refinancing risk in the short term.

22 This primarily includes spending related to the package of measures introduced to help with high energy prices. The package contains an energy savings tariff, a waiver of the fees for renewable sources and assistance for firms at risk from high energy prices.

23 The forecast assumes the same windfall tax revenues as the Czech Ministry of Finance. Lower collection of this extraordinary revenue would thus be reflected in higher deficits and pose a significant risk to the general government finance outlook.

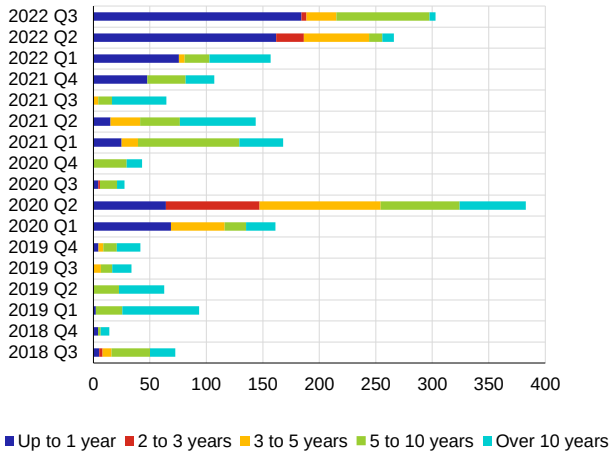
24 The current duration of government bonds in domestic banks' portfolios is around 5.8 years.

Chart II.23
Year-on-year change in government bond holdings by selected sectors
(year-on-year change in nominal value held in CZK billions)



Note: Data as of September 2022.

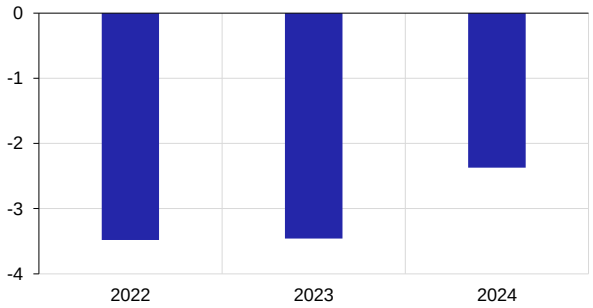
Chart II.24
Koruna-denominated Czech government security issue volumes
(CZK billions)



…a credible return to a more structurally balanced budget is needed to reduce the risks to financial stability arising from these exposures

General government finance adjusted for the business cycle and one-off effects continues to record deficits over the entire horizon of the *Baseline Scenario* (see Chart II.25) and is very far from its medium-term objective (a structural deficit of 0.75% of GDP).[25] Consistent with the scenario is a decline in the structural balance only in 2024, meaning that the statutory fiscal effort (i.e. a year-on-year decrease in the structural balance of 0.5 pp[26]) would not be achieved in 2023. However, a credible effort to gradually return general government budgets to structural balance, based, for example, on more ambitious compliance with the fiscal rules, is important not only for creating sufficient buffers to resolve future crises and maintaining a stable rating, but also for reducing the build-up of risks to financial stability stemming from the sovereign exposures held by the domestic financial sector. The long-term outlook for social system expenditure is also alarming from the sustainability perspective.

Chart II.25
General government structural balance in the *Baseline Scenario*
(% of GDP)



Note: Aggregated method.

25 The fulfilment of the medium-term objective (MTO) has been suspended for the duration of the general escape clause activated for the Stability and Growth Pact until 2023. A very lively debate on the future of the EU fiscal rules is meanwhile ongoing.

26 However, the Czech Ministry of Finance's different and much more benevolent interpretation of Act No. 23/2017 Coll., on Budget Responsibility, sets the path of the structural balance for 2025 at -3.7%, which means that structural deficits of around 3% are in compliance with the law. However, too loose an interpretation of the fiscal rules is highly undesirable and prevents them from working effectively. For details see also Opinion of the Czech Fiscal Council (in Czech only).

II.2.2 The private non-financial sector

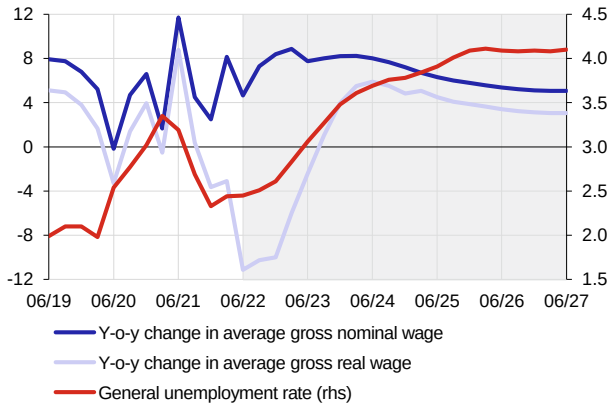
The high inflation and geopolitical tensions are taking their toll on the private non-financial sector…

The situation in the private non-financial sector has been characterised by a high degree of uncertainty since the start of 2022. In particular, the relatively high inflation and growth in energy prices, along with the sharply rising geopolitical tensions (see section II.1), have led to a decline in consumer and subsequently business confidence (see Chart II.5 CB). Real wages were down by almost 12% in mid-2022 and will not return to growth until the second half of 2023 (see Chart II.26). As a result, household demand is gradually decreasing and the domestic economy is expected to contract slightly from the end of 2022 until 2023 Q3 (see Chart II.6 CB). Nonetheless, the unemployment rate in the Czech Republic remains at a record low of around 2.5% and is thus still the lowest in the EU (where it averaged 6.1% as of mid-2022). In the *Baseline Scenario*, the unemployment rate will start to increase gradually at the end of 2022 and could reach 4% by the end of 2025. The profit rate in the non-financial corporations sector declined below 45% as of mid-2022 and returned to the pre-pandemic level, which is below average by historical standards (see Chart II.27). However, it remains above the European average of around 40%. The investment rate rebounded from a historical low, mainly due to the implementation of postponed projects after a decrease in pandemic-related uncertainty.

…a long-term deterioration in macrofinancial conditions is a risk to future developments

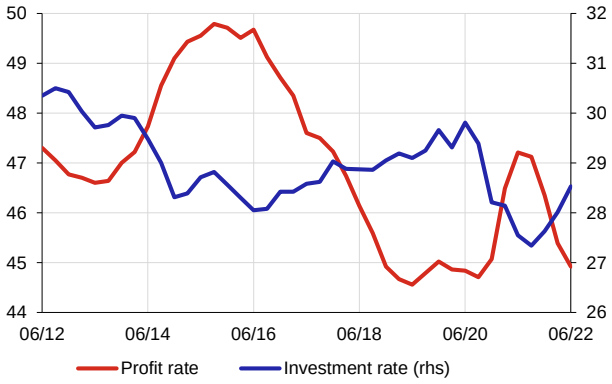
The persistence of adverse economic and geopolitical conditions poses the biggest risk to the private non-financial sector. A long period of significantly elevated energy prices and high interest expenses which could not be fully reflected in selling prices, i.e. which would exceed wage growth, could lead to the financial exhaustion of some non-financial corporations and households and to a marked deterioration in their financial soundness. Given the high government deficits recorded in recent years, the fiscal space for providing more significant support to the real economy is shrinking (see section II.2.1). The situation in the non-financial corporations sector may be further aggravated by a potential shortage of energy commodities required for the production of goods and services. This could lead to a significant wave of defaults and a rise in unemployment, which would have a negative effect on the quality of the household sector's loan portfolio. The banking sector is regularly tested using a similarly adverse scenario (see section III.4).

Chart II.26
Labour market indicators in the *Baseline Scenario*
(%)



Source: CNB, CZSO
Note: The values in the grey area are based on the *Baseline Scenario*, which is consistent with the CNB's autumn forecast in the first two years (MPR – Autumn 2022).

Chart II.27
Profit rate and investment rate in the non-financial corporations sector
(% of gross value added)



Source: CZSO
Note: Profit is defined as the annual moving total of gross operating surplus and investment as the annual moving total of gross fixed capital formation.

Growth in interest rates significantly cooled demand for loans in the household sector…

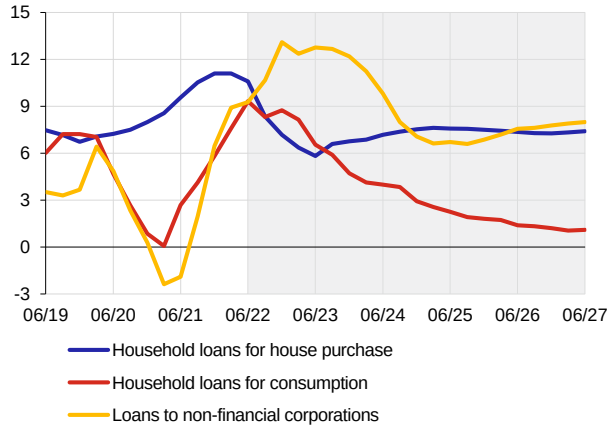
The gradual rise in interest rates was strongly reflected in credit activity in the household sector, which slowed substantially after the record-high 2021. The volume of pure new loans for consumption, including loan increases, fell by 10% year on year in September 2022 (from CZK 7.9 billion to CZK 7.1 billion) and the volume of pure new loans for house purchase, including loan increases, dropped by almost 80% (from CZK 32 billion to CZK 6.8 billion). This was reflected in slackening year-on-year growth in the stock of consumer credit and house purchase loans, which both fell to 8.3% in September 2022 (see Chart II.28). The large drop in lending activity in the housing area is due not only to a decline in the number of new loans, but also to a falling average loan size. Data from the July and August 2022 surveys of loans secured by residential property show that the median size of these loans fell by more than 14% year on year to CZK 2.4 million (see Table II.1 CB). The purchase prices of properties funded by consumer loans secured by residential property were meanwhile little changed and, based on the median values, were unchanged year on year at around CZK 3.76 million. This is consistent with the

median LTV, which fell to 65.5% for new consumer loans secured by residential property. DSTI attained higher values due to the rising interest rates. The median DSTI for these loans approached 40%, the threshold at which the CNB recommends that lenders of consumer loans secured by residential property assess loan applications with great caution. Growth in interest rates limiting loans with higher risk characteristics via DSTI had a positive effect on the median DTI, which fell to 4.8 times net annual income. Consumer loans secured by residential property have become unattainable for a material part of the population (see section II.1). This is also apparent from the income distribution of households, where both growth in interest rates and rising property prices have led in the last two years to a decrease in the share of low-income households in total new mortgage loans and, conversely, to an increase in the share of high-income households (see Chart II.29). Consistent with the developments in the *Baseline Scenario* is steady year-on-year growth in loans for house purchase around the long-term average (7.4%) and a gradual drop in loans for consumption (see Chart II.28).

Chart II.28

Projections of growth in bank loans in the private non-financial sector

(year on year in %)

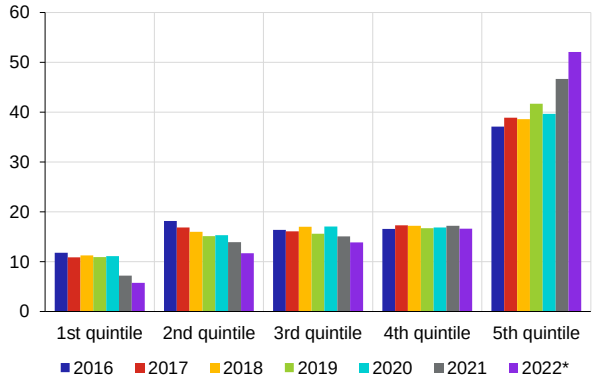


Note: The values in the grey area are based on the *Baseline Scenario*, which is consistent with the CNB's autumn forecast in the first two years (MPR – Autumn 2022). The growth rates are adjusted for the credit portfolio of Sberbank.

Chart II.29

Consumer loans secured by residential property by income quintile of households

(% of total volume of consumer loans secured by residential property)



Source: CNB, CZSO

Note: Income quintiles are calculated using data from the Survey of Income and Living Conditions (SILC), assuming that the number of applicants for a consumer loan secured by residential property reflects the number of economically active household members. The share of loans in 2022 is calculated using the available data for January to August.

…while credit activity in the non-financial corporations sector was high

The environment of high inflation and rising costs led to an upswing in overall credit activity in the non-financial corporations sector (see Chart II.28, Chart IV.7 and Chart IV.8) amid mixed trends in foreign currency and koruna loans. Strong growth was observed for foreign currency loans (year-on-year growth of 47.1% in September 2022). This caused their share in the sector's total loans to increase (see Box 3). Conversely, the total stock of koruna loans declined by 8.9% year on year in September 2022. As regards sectors, wholesale and retail trade and real estate activities, i.e. property developers, recorded the largest growth in loans. Over the entire horizon of the *Baseline Scenario*, solid investment activity in nominal terms implies buoyant year-on-year growth of loans to non-financial corporations, which will exceed 10% in the first six quarters of the scenario. It will then slow, but will still fluctuate above its long-term average between 6% and 8% (the ten-year average annual growth rate for loans to non-financial corporations was 4.4% as of September 2022).

BOX 3: Foreign currency loans in the non-financial corporations sector

The share of foreign currency loans in total bank loans to non-financial corporations rose by 12 pp to 43.7% between August 2021 and August 2022 (see Chart 1). The share of foreign currency loans has recorded an upward trend over the last few years, with the growth rate of foreign currency loans averaging around 13.5% in the last ten years, while growth in koruna loans has been broadly flat. This is confirmed by growth in the drawdown of new loans (see Chart 2). The long-term growth in the share of foreign currency loans primarily reflects structural factors and is related largely to natural hedging against exchange rate risk (for example, in August 2022, foreign currency loans accounted for more than 66%[27] of the bank loans taken out by the largest exporters in the Czech Republic[28]).

Chart 1 (BOX 3)
Loans to non-financial corporations by currency
(CZK billions; right-hand scale: % of total loans to NFCs)

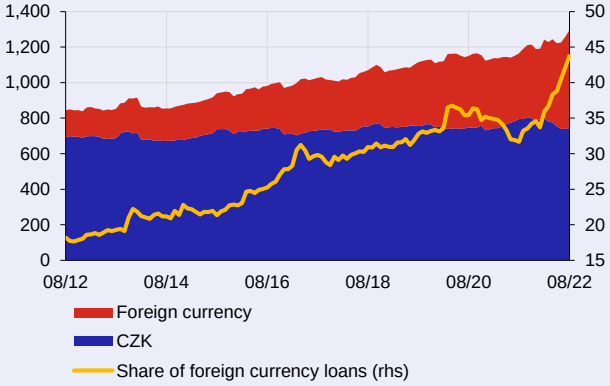
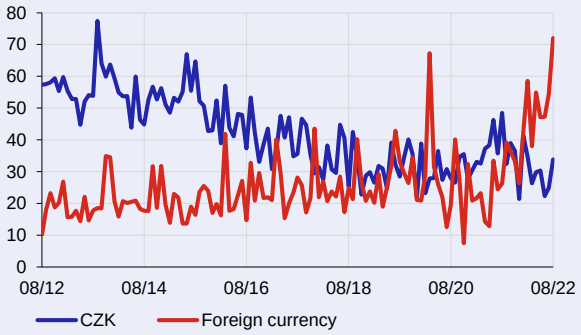
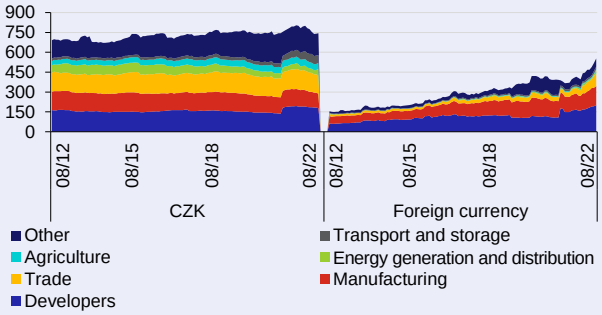


Chart 2 (BOX 3)
Drawdown of new loans to non-financial corporations by currency
(CZK billions)



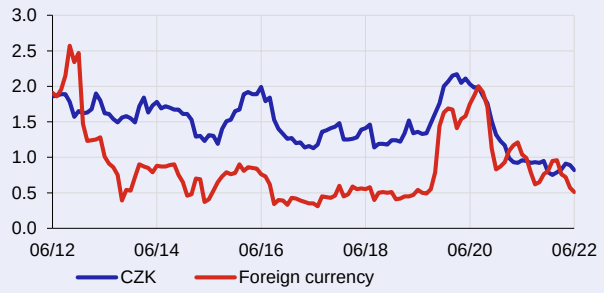
In terms of sectoral distribution, foreign currency loans are concentrated in strongly export-oriented manufacturing industries (e.g. fabricated metal products, machinery and equipment and motor vehicles) and property developers, who, especially in the case of commercial property, conduct most of their transactions in euro. These two industries together account for almost two-thirds of foreign currency loans (see Chart 3). The loan structure according to purpose is similar for both koruna and foreign currency loans. The share of investment loans in total loans exceeds 50%, with average maturities of five years for foreign currency loans and around six years for koruna loans. In terms of size, larger companies are more likely to take out foreign currency loans. Exposures to small firms[29] account for around 16% of total foreign currency loans and almost 39% of koruna loans. These shares are relatively stable over time.

Chart 3 (BOX 3)
Loans to non-financial corporations by sector and currency
(CZK billions)



Note: Developers correspond to NACE L – Real estate activities. The structural break in loans to developers in April 2020 is due to the additional categorisation of some unidentified loans as loans to developers

Chart 4 (BOX 3)
12-month default rates on loans to non-financial corporations by currency
(%)



Note: The 12-month default rates are linearly extrapolated from September 2021 onwards.

27 The trend in the share of foreign currency loans for the largest exporters is similar to that for the sector as a whole. This share has increased by almost 30 pp in the last ten years.

28 This comprises a set of around 750 companies with the largest export volumes.

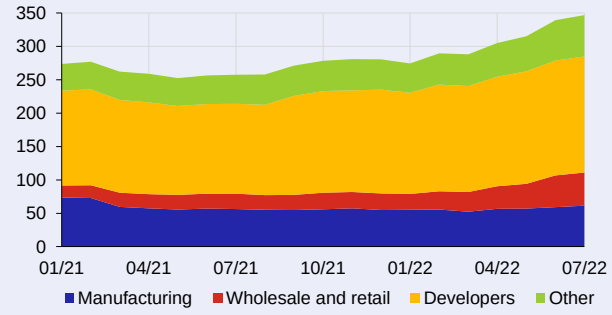
29 Companies with less than 50 employees and an annual turnover of less than CZK 300 million.

Credit risk, as expressed by the 12-month default rate, has historically been much lower for foreign currency loans than for koruna loans during economic good times, while similar levels been observed during crises (the Global Financial Crisis and the coronavirus pandemic; see Chart 4). This is due largely to the size and lines of business of firms that borrow in foreign currency, as foreign currency loans are generally taken out by large companies with low default rates. The lower default rates among non-financial corporations with foreign currency loans may support the hypothesis that exchange rate risk is limited due to natural hedging. Since around the second half of 2021, growth in foreign currency loans has probably been boosted by a widening of the interest rate differential between the koruna and the euro, as the number of entities taking out these loans and the volume of foreign currency loans for which the borrower has not agreed on currency hedging using financial derivatives have both risen (see Chart 5). This may indicate a rising number of non-financial corporations taking out foreign currency loans without corresponding foreign currency revenues,[30] which would increase the exchange rate risk of part of the corporate sector. A drop in non-financial corporations' interest rate expenses would therefore give rise to additional exchange rate risk. This could lead to problems with the repayment of some foreign currency loans if the koruna were to weaken. The potential for this risk to jeopardise the banking sector's stability is currently limited (see Box 5). The CNB intensively addresses this risk in its supervisory activities.

Chart 5 (BOX 3)

Foreign currency loans without financial hedging

(CZK billions)



Source: EMIR database, CNB

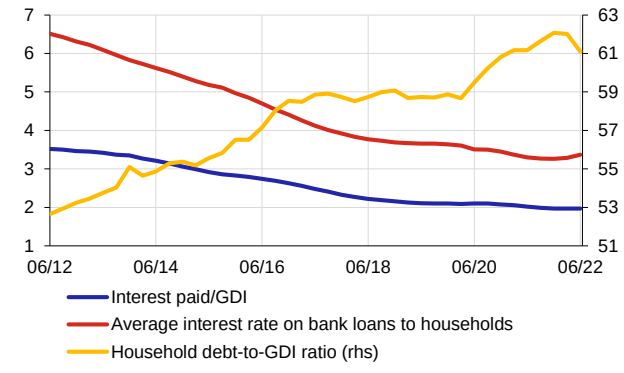
The debt ratio in the household sector has started to fall…

The household debt ratio fell by 1 pp to 61% of gross disposable income (see Chart II.30). Given the expected growth in loans and disposable income in the *Baseline Scenario*, it can be assumed that this marks a change in trend and that the slight decline will continue in 2023. The change in trend is reflected in rates on the stock of loans to households, to which rising rates on new, refixed and refinanced loans are slowly feeding through. Rates on the stock of loans have thus been going up slowly since the start of 2022. However, interest paid-to-GDI is still low by historical standards.

Chart II.30

Debt ratio and interest paid by households

(%)



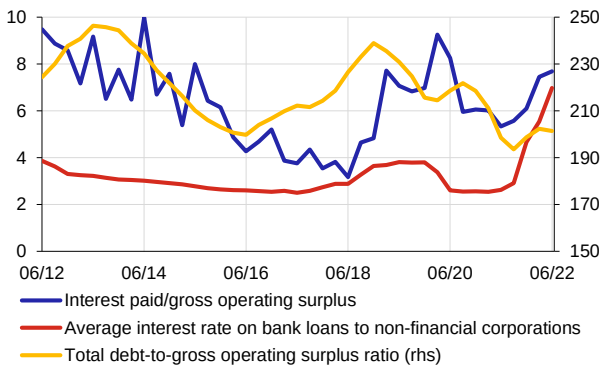
Source: CNB, CZSO

Note: The household sector also includes data for NPISHs. The interest rate is calculated as the average interest rate on the stock of bank loans to households.

Chart II.31

Debt ratio and interest paid by non-financial corporations

(%)



Source: CNB, CZSO

Note: The interest rate is calculated as the average interest rate on the stock of koruna bank loans to non-financial corporations.

30 Currency hedging is mostly negotiated for hedging the company's business, not the loan itself.

…and was close to its long-term lows in the non-financial corporations sector

Despite the high growth in bank loans to the non-financial corporations sector, the debt ratio remained close to its long-term lows in the first half of 2022 (see Chart II.31). This was due mainly to weaker growth in debt to lenders other than domestic banks (which account for less than 40% of non-financial corporations' total debt). The average interest rate on the stock of koruna loans increased significantly. However, the ratio of interest paid to operating surplus increased more slowly because of the rising share of foreign currency loans and the large proportion of inter-company financing, which was not necessarily interest-bearing debt.

Risk materialisation in the household sector is low, but the *Baseline Scenario* implies a gradual increase…

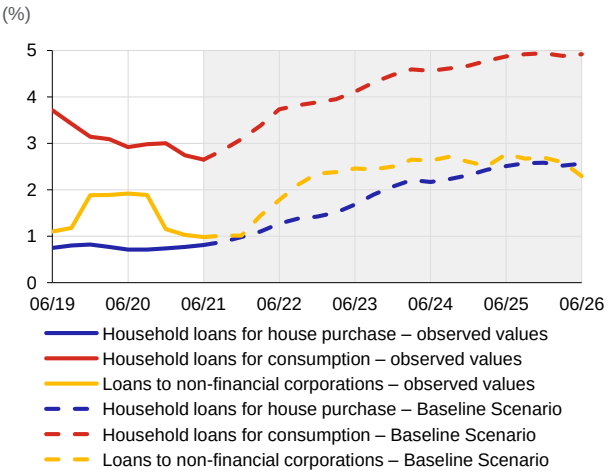
The amount of non-performing loans in the household sector has reached record lows and households have shown no sign of reduced debt servicing ability so far. The loan portfolio in the household sector thus appears to be relatively robust. Consistent with the *Baseline Scenario* is a slow rise in the default rate on loans for house purchase and consumption (see Chart II.32), due mainly to the assumed rise in the unemployment rate, to which the default rate is very sensitive (see Chart II.32 CB). The adverse price developments, which gradually pass through to housing costs and other essential expenditure, will also contribute moderately to growth in default rates. By contrast, the rise in interest rates affects the default rate to only a limited extent[31] (see Chart II.33 CB), as the speed at which increased monetary policy interest rates pass through to rates on consumer loans secured by residential property in existing portfolios is limited by the current fixed-rate periods.[32] The probability of default on loans refixed in the coming quarters will not increase much, even though the rates on those loans will go up by 4 pp on average to 6.7% and the DSTI by 7.3 pp in 2023 (see Chart II.34 CB and Chart II.35 CB), as the preference for long fixed-rate periods and the relatively strong wage growth of previous years mean that the DSTI ratio of refixed loans will climb to only 27% on average in 2023 (see Chart II.35 CB). This will imply a shift above the mid-2022 portfolio average (see Chart II.36 CB), although it can be regarded as relatively low in the long-term context. The overall DSTI, DTI and LTV distributions of consumer loans secured by residential property indicate that the portfolio of these loans is of relatively high quality both in terms of potential default and from the perspective of credit losses (see Chart II.36 CB, Chart II.37 CB and Chart II.38 CB).

…the same applies to the non-financial corporations sector

Non-financial corporations have so far been able to absorb the large increase in their operating costs and interest rate expenses, so their credit risk – as expressed by the default rate – remained low. In the first half of 2022, the three-month default rate was below the long-term average in most sectors and well below the peak levels recorded in the last ten years (see Chart II.33). Consistent with the *Baseline Scenario* is the default rate rising slightly above the long-term average and remaining between 2% and 3% over the entire scenario horizon (see Chart II.32). The largest growth in default rates is recorded in hotels and restaurants, and construction, which are most sensitive to the combination of weak demand and rising interest rates and energy prices.

Chart II.32

12-month default rate on loans to the private non-financial sector in the *Baseline Scenario*

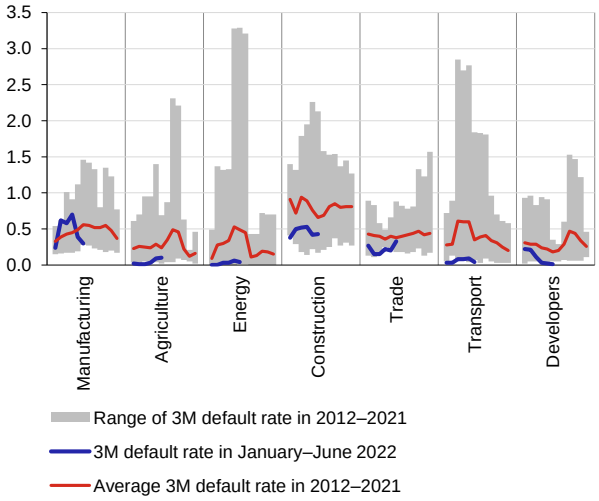


Note: The 12-month default rate is a forward-looking indicator defined as the flow of non-performing loans in the next 12 months divided by the total stock of loans in the starting period.

Chart II.33

3M default rate in selected NFC sub-sectors

(%; x-axis: individual months of year)



31 Only an increase in interest rates of 5 pp beyond the *Baseline Scenario,* which would imply a housing loan rate of between 11% and 12% in 2023, would have a significant effect on the default rate (an increase of 1.3 pp).

32 The median fixed-rate period for existing portfolios is estimated at five years.

III. THE FINANCIAL SECTOR

III.1 DEVELOPMENTS IN THE FINANCIAL SECTOR

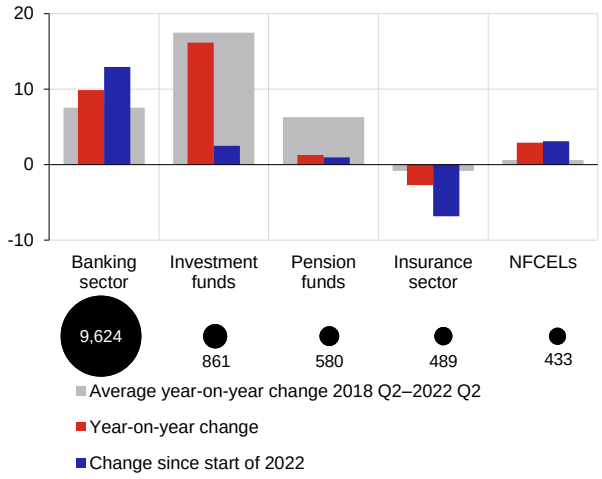
The banking sector has strengthened its dominant position

The total assets of the financial sector grew by 10.2% to CZK 12 trillion, or 192% of GDP, in the first half of 2022 (see Chart III.1). The banking sector, which accounts for 80% of the domestic financial sector's assets, recorded the largest growth in both absolute and relative terms (CZK 1,102 billion, or 12.9%). The total assets of financial corporations engaged in lending also grew (by CZK 13.1 billion, or 3.1%). Other sectors' total assets were affected by a drop in prices on global stock and bond markets on the back of growing expectations of monetary policy tightening and rising uncertainty about future economic developments (see section II.1). Growth in total assets slowed relative to the average over the previous four years in the case of pension funds (growth of CZK 5.6 billion, or 1.0%) and particularly investment funds (growth of CZK 21 billion, or 2.5%). The total assets of the insurance sector fell (by CZK 35.9 billion, or 6.8%).

Chart III.1

Rates of growth of segments of the financial sector

(%)

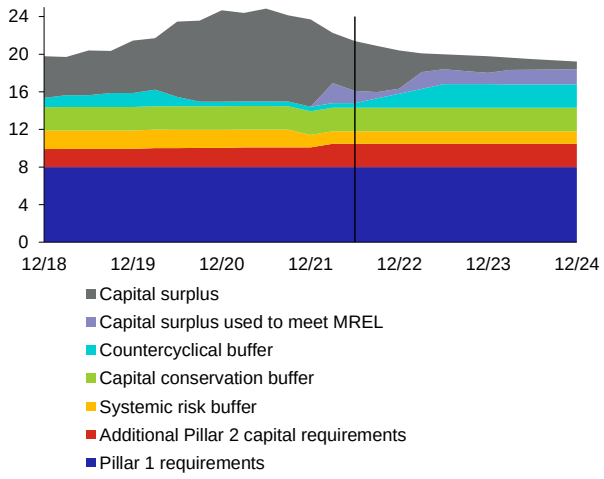


Note: NFCELs = non-bank financial corporations engaged in lending. The sizes of the circles proportionately show the value of the segments' assets in CZK billions as of 2022 Q2. The banking sector also includes credit unions.

Chart III.2

Structure of capital and capital requirements in the domestic banking sector

(pp)



Note: The capital prediction assumes constant risk weights. Risky exposures are calculated on the basis of banks' assumptions about future loans, which banks report in the statement "Bank financing plans" (FPSIFE10). The prediction also takes into account issuance of eligible liabilities by banks with a non-zero MREL recapitalisation amount.

III.2 BANKING INSTITUTIONS[33]

III.2.1 Own funds and eligible liabilities

Banks meet the capital ratio requirement by a sufficient margin…

The capitalisation of the domestic banking sector remains robust (CZK 602 billion) despite a drop in capital due to dividend payouts related to the end of profit distribution restrictions (of CZK 15.3 billion in the first half of 2022). Most of the capital (93%) consisted of the highest-quality core Tier 1 capital. The overall capital ratio decreased by 2.1 pp to 21.4% in the first half of 2022 (see Chart III.2). The decrease was due mainly to growth in exposures (-3.7 pp of the capital ratio), related to faster growth in total loans (for details see section II.2) and a drop in capital (-0.6 pp), while a decline in the aggregate risk weight of exposures had the opposite effect (+2.2 pp). Banks meet the regulatory risk-weighted capital requirement[34] by a significant margin (a capital surplus of 6.6 pp for the sector). The capital surplus fell by CZK 33.6 billion to CZK 204 billion compared with the start of 2022.

33 The Czech Export Bank and the National Development Bank are excluded from the analysis of the capital of the banking sector as a whole in the entire section III.2. This is because these banks are wholly owned by the Czech state (providing implicit state guarantees for their liabilities) and have different business models and volatile credit portfolios.

34 The risk-weighted capital requirement, expressed as the ratio of capital to risk-weighted exposures, consists of the minimum level of regulatory capital in Pillar 1 (8%), requirements based on the supervisory review of risks in Pillar 2 (an average of 2.5% for the sector as of mid-2022) and capital buffers (an average of 4.3% for the sector). Its aim is to ensure that the banking sector is sufficiently resilient to shocks.

…which is also used to cover the MREL

Some banks use their capital surplus to meet the MREL – in an amount totalling CZK 33 billion[35] (see Chart III.2, light blue area). Capital potentially available for paying dividends, absorbing losses or lending stands at CZK 171 billion (6.0% of risk weighted exposures). Other things being equal as of mid-2022, this would enable banks to lend around CZK 2.4 trillion without their capital dropping below the regulatory minimum.

However, banks' plans indicate a gradual decrease in the capital surplus…

The current capital surplus increases the banking sector's resilience in a situation of great uncertainty about future economic developments and plays an important stabilising role in the management of banks' capital position. The growth in client loans foreseen by banks, the risk of lower profitability, dividend policy and the windfall tax can be expected to lead to a further drop in the capital surplus (see Chart III.2, grey area).

…which may also be affected by the future evolution of risk weights…

The general downward trend in risk weights for exposures of banks that use internal models to set those weights (the IRB approach) halted at the end of 2021 (see Chart III.3).[36] Average risk weights rose by 1.7 pp year on year to 24.1% as of mid-2022. The largest growth can be observed for exposures to institutions (of 3.1 pp to 15.8%) and corporate exposures (of 2.1 pp to 58.4%). A slight increase is visible for other retail exposures (of 0.7 pp to 38.3%). By contrast, the risk weights for the largest credit portfolio of exposures secured by residential property continued to fall (by 1.0 pp to 17.1%).[37]

…depending on the economic impacts of the war in Ukraine

Risk weights will be affected by the scale and duration of the adverse economic impacts of the war in Ukraine. The potential increase may not be strong at first, as the parameters of internal credit risk models take into account developments over the longer term (around nine years). However, a gradual increase in risk weights may adversely affect the capital position of banks using the IRB approach. The CNB takes this risk into account when setting the CCyB rate (see section IV.3). It also assesses it in the regular macro stress tests of banks (see section III.4), which indicate that this risk is currently limited in the Czech Republic, thanks in part to prudent and preventive use of microprudential (Pillar 2) and macroprudential instruments (capital buffers and credit ratio caps).

Chart III.3

Average risk weights of the main categories of exposures under the IRB approach

(%)

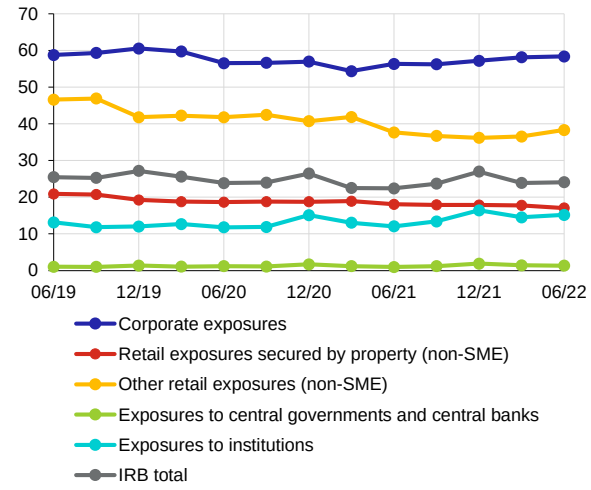
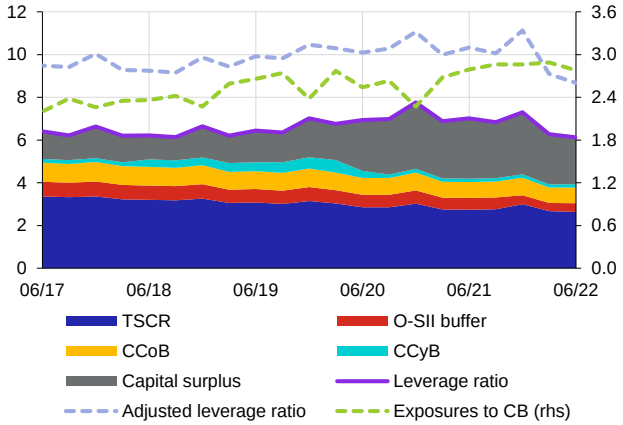


Chart III.4

Structure of the leverage ratio by capital source

(%; right-hand scale: CZK trillions)



Note: TSCR = sum of Pillar 1 and Pillar 2 requirements. Adjusted leverage ratio = Tier 1/total exposures excluding CB.

35 Large banks have started to issue debt instruments in response to the interim MREL objective currently in force. In their plans, they currently anticipate meeting the MREL recapitalisation amount mainly by means of eligible liabilities.

36 Exposures whose risk weights are set using the IRB approach amounted to CZK 6.8 trillion as of mid-2022. This corresponded to 62.4% of the exposures of the domestic banking sector.

37 For details on the risk of procyclicality of risk weights under the IRB approach, see Malovaná, S. (2021): *The Pro-cyclicality of Risk weights for Credit Exposures: Driven by the Retail Segment*, Economic Systems, Elsevier, vol. 45(1), and Brož, V. and Pfeifer, L. (2021): *Are the Risk Weights of Banks in the Czech Republic Procyclical? Evidence from Wavelet Analysis*, Journal of Central Banking Theory and Practice, vol. 10(1).

Banks' lending activity is not limited by the leverage ratio requirement

The leverage ratio[38] of the banking sector fell by 1.2 pp year on year to 6.1% as of mid-2022 but was still well above the 3% regulatory minimum (see Chart III.4). In the domestic banking sector, the ratio is significantly affected by banks' high risk-free exposures to the CNB (2.5 pp). Adjusted for these exposures, it is relatively high at 8.7% despite a year-on-year drop of 1.5 pp.

The banking sector's resolvability is enhanced by compliance with the interim MREL target

The banking sector's MREL[39] stood at CZK 415 billion as of mid-2022, with the loss absorption amount, consisting of own funds, standing at CZK 277 billion and the recapitalisation amount, covered by banks' eligible liabilities (57%) in addition to their own funds (43%), at CZK 138 billion. The recapitalisation amount is crucial for the effective resolution of banks providing critical functions, which make up the largest part of the domestic banking sector (90% of total assets). The nature of the source used to meet the MREL recapitalisation amount affects the effectiveness of the capital buffers.[40] The CNB therefore analyses and evaluates banks' approaches to compliance with the MREL on an ongoing basis. However, the current MREL compliance structure does not significantly reduce the effectiveness of capital buffers.

III.2.2 Credit risk

Overall growth in loans accelerated…

Growth in total loans to households and non-financial corporations increased further in the first eight months of 2022 as compared to 2021 (9.6% versus 8.1%) (see Table III.1). Loans to non-financial corporations recorded stronger relative growth (10.7%; see section II.2.2) than loans to households (7.1%). The growth in loans to households was affected mainly by a cooling of the mortgage market (see Chart IV.15, section IV.4 and Table III.1 CB).

…and despite a favourable trend in non-performing loans…

The ratio of non-performing loans (Stage 3; NPLs) to total loans has been falling gradually across all segments since the end of 2020, the decline being greater for households than for corporations. The total share of NPLs reached a historical low of 2% in August 2022. It was much lower for households (1.3%), due mainly to a low ratio of non-performing housing loans, than for non-financial corporations (3.3%, see Chart III.1 CB).

Table III.1

Exposures, provisions and coverage ratios by risk stage and portfolio

Client		Exposures		Provisions		Coverage ratio	
Stage	Date	Volume (CZK billions)	Change (%)	Volume (CZK billions)	Change (%)	Ratio (%)	Change (pp)
Overall	12/20	3,402	8.1	74.5	-5.7	2.19	-0.32
	12/21	3,677	9.6	68.8	-1.0	1.87	-0.19
	08/22	4,029		67.8		1.68	
S1	12/20	2,971	7.8	8.7	-0.5	0.29	-0.04
	12/21	3,203	9.6	8.1	-0.7	0.25	-0.02
	08/22	3,511		8.1		0.23	
S2	12/20	340	15.0	18.7	-3.0	5.50	-1.48
	12/21	391	12.5	15.7	12.6	4.02	0.00
	08/22	440		17.7		4.02	
S3	12/20	91	-8.2	47.2	-2.2	51.78	1.96
	12/21	84	-7.2	44.9	-6.4	53.74	0.43
	08/22	78		42.0		54.17	

Note: Client exposures are exposures to the private sector. S1 and S2 comprise performing loans; S3 can be considered identical to non-performing loans.

…there are signals that loan portfolio quality is worsening…

Loans with increased risk (Stage 2) continued to grow overall in 2022. The growth was stronger in the household segment (16.1%) than in the non-financial corporations segment (13.3%) The volume of loans to households in Stage 2 has doubled

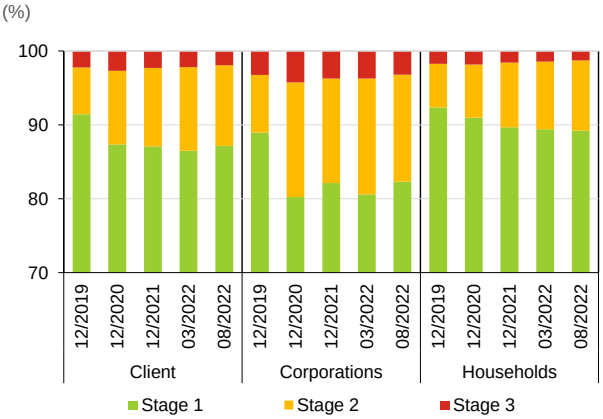
38 A leverage ratio requirement, expressed as the ratio of Tier 1 capital to total exposures, has been applicable in the EU since June 2021. Its aim is to mitigate the risk of excessive leverage, particularly in institutions with relatively low aggregate risk weights. For details see Pfeifer, L, Hodula, M., Holub, L., Pikhart, Z. (2018): *The Leverage Ratio and Its Impact on Capital Regulation*. CNB WP 15/18.

39 An intermediate objective has been in effect since 1 January 2022 and must be fully met by 1 January 2024. The MREL is designed to ensure that banks have sufficient capacity for the absorption of losses and subsequent recapitalisation in the event of resolution. Kahoun, T. (2019): *Minimum Requirement for Own Funds and Eligible Liabilities (MREL): General Approach of the Czech National Bank*, Thematic Article on Financial Stability 4/2019.

40 This reduces the capital surplus and the usability of capital buffers. For details see Pfeifer, L., Holub, L. (2022): *The Relationship between the MREL and Macroprudential Capital Buffers*, Thematic Article on Financial Stability 2/2022.

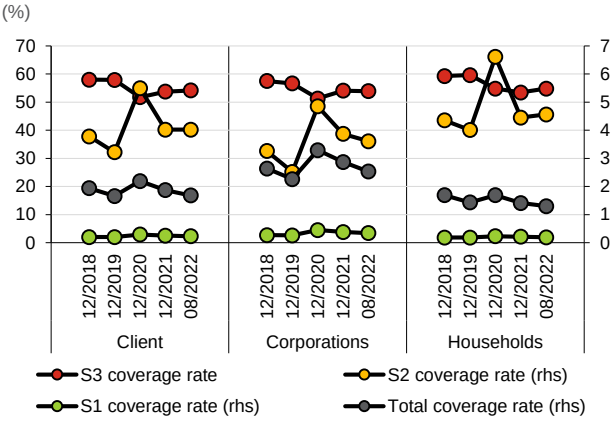
to CZK 212 billion since 2019 and their share in household loans rose from 5.9% in December 2019 to 9.5% in August 2022, signalling expectations of a drop in the credit quality of this portfolio (see Chart III.5). The share of loans in Stage 2 in the non-financial corporations segment fell from 15.5% to 14.5% in the same period. This relative drop was caused mainly by growth in the total volume of loans. In absolute terms, however, the volume of corporate loans in Stage 2 has – like the volume of loans to households – doubled to CZK 218 billion since 2019. The absolute increases in Stage 2 exposures may represent potential for higher materialisation of credit risk.

Chart III.5
Loan structure by portfolio



Note: Under the new IFRS 9 accounting standard (in effect since 1 January 2018), non-performing loans (NPLs) correspond to loans classified in Stage 3 – impaired loans.

Chart III.6
Loan coverage by portfolio



…to which banks have yet to respond with increased provisioning…

The drop in NPLs (Stage 3) has allowed for an overall reduction in provisions of almost CZK 1 billion in 2022, mainly in the non-financial corporations segment. The growth in the share of loans with increased risk (Stage 2) has yet to be accompanied by higher-volume net provisioning. Total provisions have decreased by CZK 6.7 billion since the end of 2020, amounting to CZK 67.8 billion at the end of August 2022. The gradually worsening macroeconomic forecasts require banks to take a prudent approach to provisioning, as the current situation is increasing the risk of a cliff effect, which may be reflected in a need for relatively sudden and high provisioning (see Box 4).

…which is leading to a decline in the total coverage of loans by provisions…

As a result of the strong credit growth in previous years coupled with the release of provisions, total coverage by provisions fell by 0.19 pp to 1.68% at the end of August 2022, the decrease being greater for corporations (-0.3 pp) than for households (-0.1 pp; see Chart III.6). This may increase the potential risk to recovery rates on collateral instruments should the economy fall into recession. This risk is increasing in both segments given the current economic situation and its adverse outlook.

…and may be signalling growth in the riskiness of the portfolio of loans to non-financial corporations

In the case of corporations, the coverage ratio in Stage 2 has been falling steadily since the end of 2020 (from 4.85% to 3.61%), unlike in the household sector, where it has risen slightly in 2022 (by 0.1 pp to 4.56%). This may increase the riskiness of the portfolio of loans to non-financial corporations, especially given that the share of Stage 2 in the total portfolio is larger for corporations than for households (14.5% versus 9.5%). The total coverage ratio in Stage 3 (NPLs) has risen slightly in 2022 (by 0.43 pp to 54.2%). However, it is still lower than before the coronavirus pandemic (57.9% in December 2019). In terms of credit risk materialisation, Stage 3 loans do not currently have the potential to jeopardise the financial stability of the banking sector. Their share in total loans is relatively small across segments and has been falling steadily over time, signalling effective processes for tackling the banking sector's NPLs.

State guarantees for loans provided during the coronavirus pandemic continue to reduce credit risk

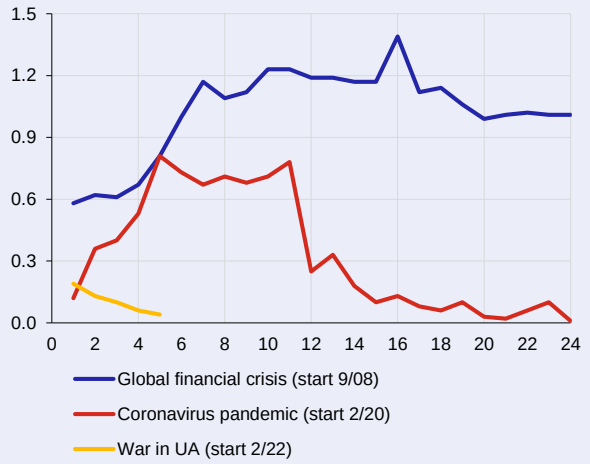
To mitigate the consequences of the pandemic, state guarantees were provided for loans secured via the Export Guarantee and Insurance Corporation (EGAP) and the National Development Bank (NRB). As of 30 June 2022, the EGAP and the NRB had secured loans of a total outstanding amount of CZK 39.2 billion (CZK 54.2 billion at origination). This represents 4.4% of total loans provided to non-financial corporations and 9.8% of loans provided to small and medium-sized enterprises. Provisions of CZK 884 million have been created for these loans. This represents a total coverage ratio of 2.3%. Most state-guaranteed loans (77%) have not been granted any relief, signalling low risks of this portfolio overall.

BOX 4: Experience with provisioning under IFRS 9 and its implications for macroprudential policy

Under IFRS 9, which has been in force since 2018, banks should, when provisioning, take into account all available information about current and future macroeconomic developments and their effects on the credit risks of relevant exposures. They should thus create sufficient provisions to cover the expected credit losses associated with deteriorating economic conditions before the business and financial cycle changes. However, some studies[41] show that forecasting models may have a limited ability to predict future developments. They may identify the depth and length of a decline in economic activity with a lag and have a tendency to head back to the steady state relatively quickly even after a significant change in economic conditions. Some studies therefore indicate that the application of IFRS 9 by banks may not be sufficiently forward-looking and that provisioning may be insufficient and even procyclical before a change in the business cycle (for details see Box 3.2 in FSR 2018/2019).[42]

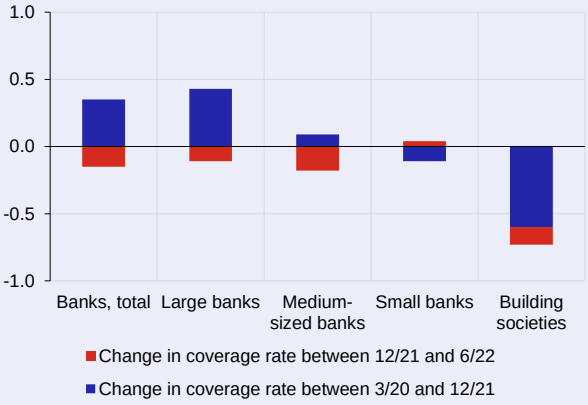
As the domestic and European economies have experienced two strongly adverse shocks – the consequences of the coronavirus pandemic (since February 2020) and the war in Ukraine (since February 2022) – in a relatively short period of three years, we can analyse the provisioning behaviour of banks in the IFRS 9 environment. At the start of the pandemic, the CNB pointed to potential risks of provisioning in an environment of strong model uncertainty about future epidemiological and economic developments (see Box 3 in Risks to financial stability and their indicators 2020). Banks created provisions totalling CZK 21 billion **in the first year of the pandemic**. In retrospect, it can be said that a number of government support instruments (especially loan moratoria, state guarantees and direct fiscal support) were used to overcome the consequences of the pandemic, instruments which significantly softened the impacts of the pandemic on credit portfolio quality. Banks thus gradually released their "pandemic" provisions (see Charts 1 and 2). At the European level, support measures were accompanied by flexibility in the regulatory and accounting frameworks, the aim being to spread the shock over time by easing the prudential rules somewhat (see Box 3 in FSR 2019/2020).

Chart 1 (BOX 4)
Comparison of impairment losses in the Czech Republic after the start of recent economic shocks
(cumulative change in pp; x-axis: number of months since start of economic shock)



Note: Annualised impairment losses on client loans, which include loans to the private non-financial sector.

Chart 2 (BOX 4)
Heterogeneity of coverage by provisions in response to the coronavirus pandemic and the war in Ukraine
(cumulative change in pp)



Note: The period between March 2020 and December 2021 shows the change in the coverage of client loans by provisions from the start of the coronavirus pandemic until the outbreak of the war in Ukraine. The period between December 2021 and June 2022 shows the change in the coverage ratio since the outbreak of the war in Ukraine.

41 See, for example, Zidong A., Tovar Jalles J., Loungani P. (2018): *How Well Do Economists Forecast Recessions*, IMF WP 18/39.

42 Abad J., Suárez J. (2017): *Assessing the Cyclical Implications of IFRS 9 – A Recursive Model*, ESRB Occasional Paper No. 12, July and Krüger S., Rösch D., Scheule H., (2018): *The Impact of Loan Loss Provisioning on Bank Capital Requirements*, Journal of Financial Stability, 36: pp. 114–129.

At present, it is increasingly likely that the global economy is heading towards a downturn. This is being reflected in deteriorating economic growth forecasts of most domestic banks and other domestic and supranational institutions (see section II.1, Chart II.4).[43] In the area of provisioning, banks have so far responded to these trends to a lesser extent than they did during the coronavirus pandemic. Worsening expectations about economic developments were one of the main factors contributing to a tightening of credit standards by domestic banks.[44] In the area of expected losses, however, banks have since February 2022 been releasing their provisions (mostly the "pandemic" ones). This is exceeding the provisioning in response to the current economic situation. The coverage of loans by provisions has thus been declining overall (see Chart 2). Despite the growth in the share of loans with increased risk (Stage 2) in total loans, their coverage ratio fell by 0.3 pp to 3.7% in the first half of 2022. The observed differences in the changes in the coverage of loans by provisions across banks (see Chart 2) are probably due, among other things, to the specificities of the model frameworks of individual institutions, including the level of conservatism in their perception of economic developments. Given the interpretation possibilities of IFRS 9, this may have implications for provisioning and the systemic resilience of the banking sector to credit risk.

It is evident that the risk of underestimation of the systemic level of credit losses may be significant. Its assessment must take into account the different nature of the causes of the external shock compared with the pandemic. The economic consequences of the war are more likely related to long-term (structural) impacts, which may increase the risks further (for details see section IV.2).[45] Potential state interventions mitigating the impacts of rising energy prices may not be sustainable in the long run, so the risk of a sudden deterioration in the quality of the banking sector's credit portfolio may grow.

The CNB therefore believes that the current situation requires banks to take a conservative approach to provisioning, one that respects, in particular, the great uncertainty about economic developments. Unless provisioning responds to the expected growth in the riskiness of loan portfolios, the role of the CCyB will grow (see section VI.3). A need for the CNB's macroprudential policy to respond in the area of the systemic risk buffer is not ruled out either. Generally, it can be said that the high uncertainty accompanying changes in the phase of the business cycle and its impact on the expected credit losses under IFRS 9 may signal a need for sufficient creation of capital buffers early in the expansionary phase of the financial cycle so as to enhance the resilience of the banking sector to systemic risks, including the potential IFRS 9 model risk, in a sufficient and timely manner.

43 GDP growth forecasts for 2023 have been revised downwards and the likelihood of a recession in winter 2022/2023 has increased significantly. Overall, the likelihood that the scenarios of adverse developments in the financial sector will materialise depends crucially on the duration and possible escalation of the acute geopolitical tensions in Europe. For details see section II.1.

44 In the June Bank Lending Survey, banks with a 62% share of the market reported that expected economic developments had led to a tightening of credit standards for loans to corporations; in the case of loans to households, the same was reported by banks with a 63% market share. For details see *Bank Lending Survey – July 2022*.

45 See, for example, https://www.bis.org/speeches/sp220826.htm.

III.2.3 Profitability and liquidity

The profit of the banking sector increased significantly

The banking sector's profit for the first eight months of the year amounted to CZK 74.7 billion, CZK 32.5 billion more than in the same period of 2021, when, however, the coronavirus pandemic was still weighing on earnings. The increase mainly reflects a rise in in interest profit due to strong credit growth, slower monetary policy transmission to deposit rates and low impairment losses. Interest profit rose by 49% year on year to CZK 115 billion (see Chart III.7). Impairment losses amounted to CZK 0.8 billion in August 2022, below the pre-pandemic level (see Chart III.8). Higher growth in profit than in total assets was reflected in higher return on assets. It increased by 0.5 pp year on year to 1.1%, the level observed before the pandemic (see Chart III.2 CB).[46]

Chart III.7
Decomposition of interest profit
(monthly contributions in CZK billions; right-hand scale in %)

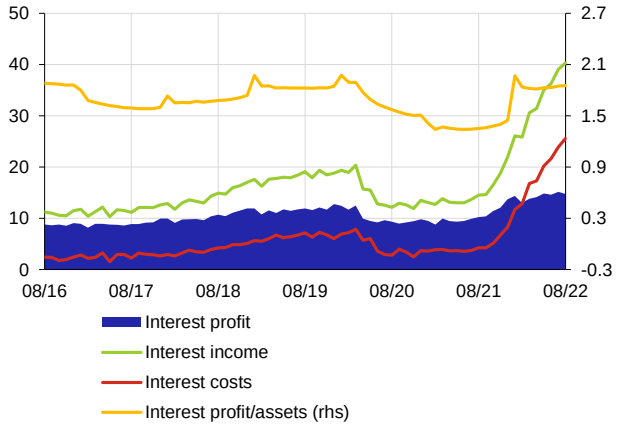
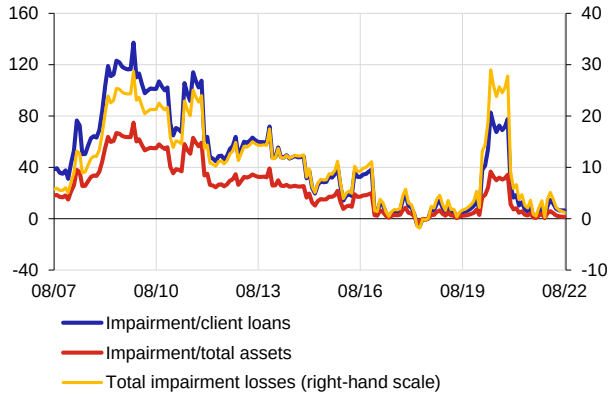


Chart III.8
Asset impairment losses
(bp; right-hand scale: CZK billions)



Note: Impairment losses are annualised. Client loans comprise loans to the private sector.

Interest income on the individual portfolios was affected by different speeds of monetary policy transmission

Interest income on corporate loans rose by CZK 17.9 billion year on year to CZK 39.6 billion and that on loans to households by CZK 5.4 billion to CZK 43.5 billion. This reflected faster monetary policy transmission to rates on loans to non-financial corporations and a significant decline in new housing loan volumes (see Chart IV.8 and section II.2.2). The margin[47] on the stock of corporate loans went up by 3.03 pp year on year to 5.60%, while that on the stock of house purchase loans dropped by 1.26 pp to 0.95% (see Chart III.9) and that on consumer credit by 1.45 pp to 6.68%. However, margins on new house purchase loans and consumer credit both increased (by 1.15 pp and 0.77 pp respectively). Further growth in interest profit will be fostered by continued monetary policy transmission to rates on loans to households, gradual refinancing of consumer loans secured by residential property and a possible increase in the risk premium in response to deteriorating economic conditions. A continued rise in rates on client deposits may have the opposite effect. Interest profit will also be affected by the growing portfolio of foreign currency loans to non-financial corporations. While its rising share in total loans to non-financial corporations may foster a decline in interest profit due to the existing interest rate differential, the rise in the ECB's monetary policy rates is having the opposite effect.

The domestic banking sector has recorded a sharp rise in foreign currency loans to non-financial corporations this year

Besides natural growth associated with the export orientation of domestic industry and the financing of commercial property with foreign currency income (see Chart 3 in Box 3), the interest rate differential relating to CNB and ECB monetary policies is playing an important role at present. Taking out foreign currency loans allows borrowers to reduce their interest costs in this situation but can create systemic risks to financial stability under certain conditions (see Box 5).

A change in the maturity structure may affect interest profit going forward

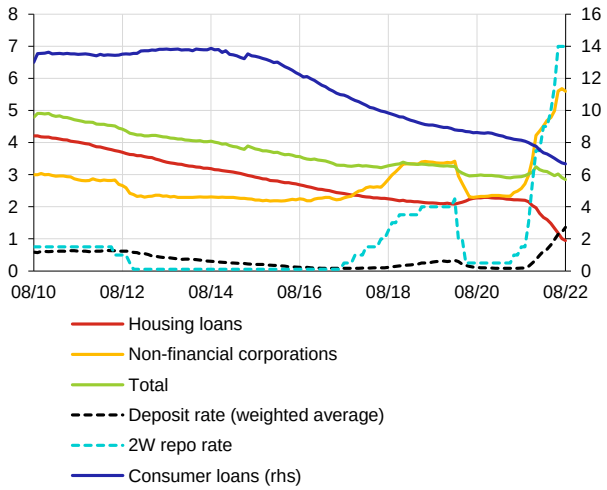
Chart III.10 shows the gradual pass-through of monetary policy rates to client deposit rates on term accounts (an increase of 2.3 pp to 3.6% in the first eight months of 2022) and, with less intensity, to rates on the demand accounts of households

46 Return on assets in the EU stood at 0.5% as of mid-2022.

47 Margins are calculated as the difference between the lending rate and the deposit rate but do not take into account interest rate position hedging.

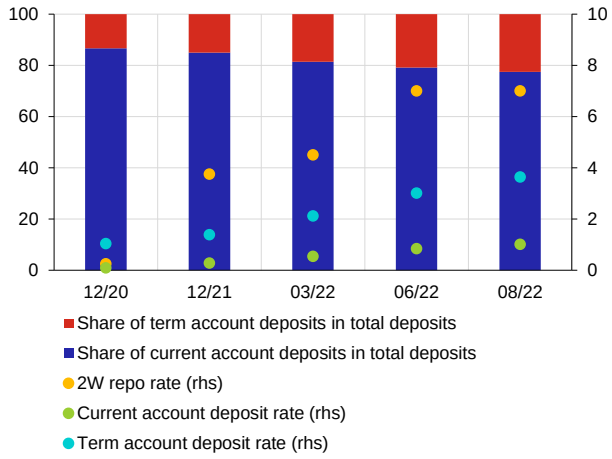
and non-financial corporations (an increase of 0.7 pp to 1.0%). The growing difference between rates on new term and demand deposits[48] is encouraging transfers to term deposits, whose share in total deposits has risen by 7.6 pp since the start of 2022 to 22.5% (see Chart III.10). If monetary policy rates remain higher for longer, these tendencies can be expected to continue and affect interest profit.

Chart III.9
Interest margins on the stock of loans
(rates in %; margins in pp)



Note: Margins are calculated as loan rates for the given sector minus the average deposit rate. The non-financial corporations item excludes revolving loans and credit cards.

Chart III.10
Interest rates on term and demand accounts
(%)



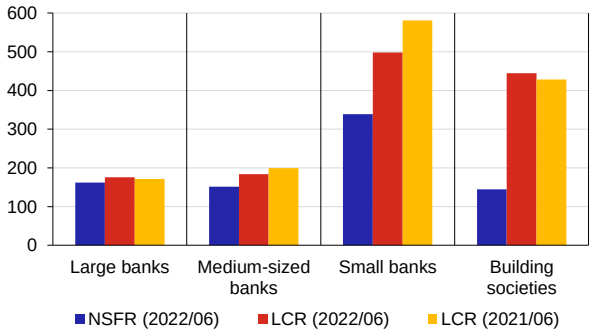
Future developments will be affected by the monetary policy stance and the domestic and global economy
The uncertainty surrounding the banking sector's future profit remains high due to the impacts of the war in Ukraine on the economy and inflation. Credit losses and rising interest costs may have a negative effect. Under certain conditions, they may be offset by increasing interest income due to a rise in the volume of loans and the risk premium in interest rates on new loans, including refinanced consumer loans secured by residential property. In the *Baseline Scenario* of the banking sector stress tests, pre-tax profit is above CZK 55 billion a year over the three years of the test and is greatly affected by credit losses (see section III.4).

The liquidity position of the banking sector is strong, as evidenced by the LCR and NSFR levels
The banking sector's aggregate LCR was 185% as of mid-2022. It has been consistently above the limit in the individual months of this year, averaging 178%. All banks were compliant with the regulatory limit of 100% throughout this period (see Chart III.11). The NSFR as of mid-2022 confirmed stable funding of domestic banks. The average NSFR across banks was 219% in June. Small banks as usual had the highest levels thanks to their high volume of stable retail deposits (see Chart III.11).

The growth in foreign currency loans provided by domestic banks may give rise to foreign currency funding risk
Numerous domestic banks, especially those very active in euro lending to the real economy (see section 2, Box 3), are below 100% in the case of the LCR and NSFR calculated using (sub)balance sheet items in euros[49] (see Table III.2). The share of net outflows in euros and dollars is significant at more than 10% of total net liquidity outflows in the banking sector regardless of currency. The main sources of funding of euro lending are wholesale ones, i.e. less stable sources obtained from counterparties other than stable retail depositors (see Table III.2). However, parent companies account for a substantial proportion of the euro wholesale funding of domestic banks (37%). The risk of a sudden outflow of euro liquidity from domestic banks (a wholesale bank run) is thus reduced to a large extent. However, the significant role of wholesale funding, including funding obtained from parent companies, may make euro liquidity more costly or harder to access in the event of sudden market stress.

48 As of August 2022, rates on new deposits on term accounts were up 5.90 pp year on year to 6.44%, while rates on new deposits on current accounts were up 0.93 pp to 1.01%.
49 An LCR of at least 100% in each currency is not a regulatory requirement.

Chart III.11
Comparison of selected indicators of banks' balance-sheet liquidity
(%)



Note: The LCR is the ratio of the liquidity buffer to the net liquidity outflow of banks over a 30-day stress horizon as defined by EC Regulation 2015/61. The NSFR is the ratio of available stable funding to required stable funding as defined by Basel III. The results take liquidity subgroups into account and exclude state-owned banks.

Table III.2
Selected indicators of euro funding of selected banks
(%)

Average euro LCR	54
Average euro NSFR	73
Share of retail deposits in euro funding	22
Share of funding from parent companies in total euro wholesale funding	37

Note: Data as of mid-2022 for selected banks together accounting for almost 90% of euro lending to non-financial corporations.

BOX 5: Systemic risks of foreign currency loans in the banking sector

Besides traditional **credit risk**, which is associated primarily with the borrower's income situation and the quality of collateral,[50] foreign currency loans (FCLs) may be characterised by credit risk due to the **borrower's exchange rate risk**[51] associated with a long-running significant depreciation of the home currency in the event of the borrower having insufficient funds in the loan currency.

If the borrower of a foreign currency loan has income in the loan currency, we refer to it as **natural hedging of the FCL**. In this case, the exchange rate risk depends on the extent to which this income covers the debt service during the repayment of the loan. Exchange rate risk may also be hedged by currency derivatives matching the maturity profile of the principal and the interest paid on the loan. This type of exchange rate risk hedging is called **financial hedging**. The two types of hedging can be combined to various extents and allow exchange rate risk to be reduced to a large extent when borrowers and lenders take a prudent approach to risk management.

FCLs that are unhedged by the borrower against exchange rate risk[52] may be a source of systemic risk. Foreign currency loans for which the borrower has no income in the loan currency and is thus fully exposed to exchange rate risk pose the greatest risk.[53] In this case, a depreciation of the home currency may undermine the borrower's ability to repay the debt. The structure of additional risks (beyond standard credit risk) relating to foreign currency loans and instruments to mitigate them are shown in Table 1.

Table 1 (BOX 5)
Structure of additional risks associated with foreign currency loans stemming from exchange rate risk and tools to mitigate them

Borrowers' exchange rate risk	Risk mitigation tools
Drop in foreign currency income	Sufficient natural hedging/financial hedging (currency derivatives)
Higher interest payments	
Depreciation of home currency	

50 For example, real estate, financial assets, circulating currency and claims.

51 There is also the risk of an adverse movement of the interest rate differential (a rise in the interest rate in the foreign currency relative to the home currency), which would increase interest payments in foreign currency. We abstract from this risk, as it affects the interest debt service, which is considerably lower than the principal repayments.

52 Unhedged borrowers are borrowers without a sufficient natural or financial hedge.

53 The ESRB has drawn attention to the risks associated with these loans. In the past, loans provided to households in some countries were unhedged against exchange rate risk and the related risks grew to systemic proportions. For details see *Recommendation of the European Systemic Risk Board of 21 September 2011 on lending in foreign currencies (ESRB/2011/1)*.

The intensity of these risks is also closely linked to the FCL maturity structure and the repayment frequency of the principal and the interest. As a rule, longer-term loans with more frequent regular repayments will be less risky, as both the borrower and the lender have more time to adjust to shocks when risks change gradually. Historically, about one half of FCLs have long maturities. This weakens the systemic risks of a sudden shock.

Data on bank loans to non-financial corporations from the CNB's AnaCredit[54] database as of 30 June 2022 were used to perform a general assessment of whether the potential **materialisation of** borrowers' **exchange rate risks** could have systemic impacts. Foreign currency loans to non-financial corporations amounted to CZK 572.7 billion (portfolio), accounting for around 45% of total loans to non-financial corporations. In all, 96% of them were denominated in euros (see Charts 1 and 3 in Box 3).[55]

The sensitivity analysis estimates the additional loss potential[56] in the foreign currency loan portfolio in a hypothetical situation involving:

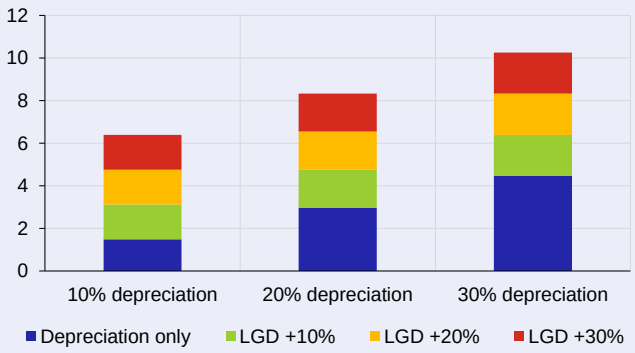
1. a depreciation of the koruna accompanied by a drop in foreign currency income leading to a need to repay the principal[57] at a weaker koruna exchange rate,[58]
2. an increase in loss given default (LGD)[59] due to potentially worse collateral quality in the event of default in a highly adverse economic situation,
3. increased default rates.[60]

The results show that the hypothetical additional loss on foreign currency loans would be around CZK 10 billion in the strongest shock scenario involving a simultaneous 30% depreciation of the koruna and 30% decrease in the recovery rate (see Chart 1). Given the current capital buffers, among other things, this does not represent a significant systemic risk. However, the CNB will take this risk into account when assessing the sufficiency of the buffers.

Chart 1 (BOX 5)

Additional loss potential in the foreign currency loan portfolio

(CZK billions)



The existing information provided by banks to the CNB about the state and management of the potential risks associated with foreign currency loans suggests that foreign currency loans are not currently a source of systemic risk, even in terms of the stability of their funding sources at the banking sector level (see section III.2.3). However, anecdotal evidence from the market suggests that competition can lead to an easing of credit conditions and standards for foreign currency loans. The CNB will therefore closely monitor and assess developments at both the microprudential and macroprudential level. Growth in the share of foreign currency loans may be reduced by a narrowing of the CZK/EUR interest rate differential due to the ECB's monetary policy.

54 AnaCredit is a statistical project aimed at collecting granular credit data on loans to legal entities based on a common EU taxonomy (https://www.cnb.cz/en/statistics/AnaCredit/).

55 The share of foreign currency loans is historically insignificant for households. It has not exceeded 0.5% of the value of total loans to households since January 2004. It is immaterial in terms of the potential emergence of systemic risks and is thus not taken into account in the analysis.

56 Calculated as the increase above the potential credit loss that banks would incur in the event of default in accordance with the regulatory PD and LGD levels set by them.

57 The effect of interest would be immaterial, so the calculation abstracts from it for the sake of simplicity.

58 We consider a worst-case scenario involving a drop in foreign currency income to zero. This allows us to determine the maximum possible impacts.

59 The downturn LGD reported by banks using internal models to calculate regulatory capital is increased (Article 18 CRR in particular). The weighted average of the downturn LGD by the size of the outstanding loan is around 32%.

60 This concerns the probability of default through the cycle reported by banks for the purposes of setting regulatory capital, which is usually higher than the realised default rate on average in the Czech Republic at the moment (for details see Articles 160 and 163 CRR). The average probability of default weighted by the size of the outstanding credit is around 7% (for the realised default rate see Chart 4 in Box 3).

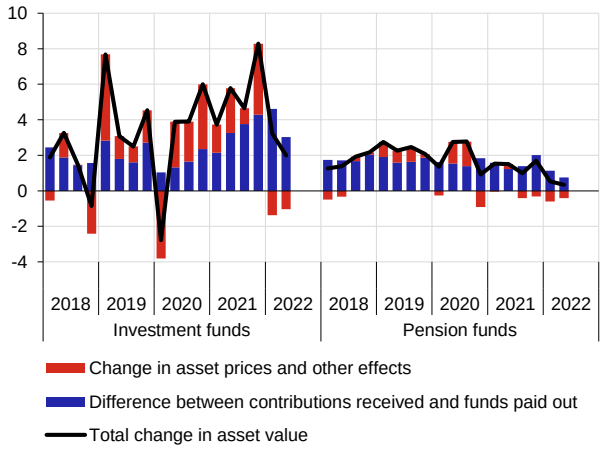
III.3 NON-BANK FINANCIAL CORPORATIONS

Growth in the funds managed by domestic non-bank financial institutions slowed in the first half of 2022…
Domestic non-bank institutional investors were hit by a decline in prices on global and domestic equity and bond markets in the first half of 2022 (see section II.1). It affected all the key categories of financial assets they hold. Nevertheless, the total assets of investment funds and pension management companies increased (see Chart III.1), as the price decline was more than offset on aggregate by net inflows of new funds (see Chart III.12). In the case of PMC funds,[61] however, the net inflow slowed on aggregate compared with previous years, with transformed funds even recording a net outflow (see Chart III.3 CB). This primarily reflects a continued transfer of funds from transformed funds to participation funds. The worsening financial situation of households (actual or expected) may also be playing a role (see section II.2).

…the incentive for institutional investors to leave part of their funds as bank deposits increased…
Given the uncertainty about future global financial market developments and also about the level of domestic interest rates, the inflow of new funds and the reallocation of existing assets in investment and pension funds were reflected in an increase in bank deposits (see Chart III.13). For the same reasons, some bond funds entered into repo transactions with banks to an increased extent (claims have risen by around CZK 30 billion since the end of 2021). This was also the main cause of investors moving capital into these funds (see Chart III.4 CB).

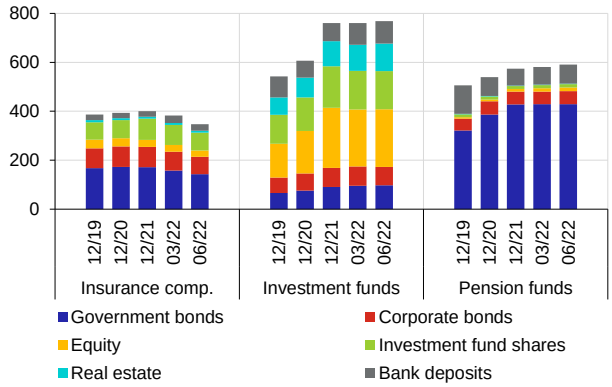
…the share of bonds classified as green remained low
As regards the exposures of domestic non-bank institutional investors to climate risks, holdings of listed shares can be assessed. Almost half of them have ESG ratings. The proportion of shares with a low ESG rating is negligible (see Chart III.5 CB). On the other hand, bonds classed as green[62] are relatively rare in view of their availability. They totalled CZK 5.4 billion on 30 June 2022. All of them were corporate bonds.

Chart III.12
Decomposition of the change in the total value of investment and pension funds' assets
(% of assets as of end of previous quarter)



Note: For pension funds, the change in asset value does not include assets associated with the use of synthetic hedging.

Chart III.13
Main components of domestic institutional investors' investment assets
(CZK billions)



Note: The difference between the assets presented in this chart and the sectors' total assets (see Chart III.1) is relatively high for insurance companies and investment funds. For insurance companies, this difference consists, for example, of insurance claims and reinsurance recoverables; for investment funds, it is made up mostly of loans and receivables, including repo transactions. In the case of insurance companies, this chart excludes branches of foreign insurance companies, the Export Guarantee and Insurance Corporation and the Czech Insurers' Bureau.

61 The text and charts use the simplified term "pension funds" along with "PMC funds". These terms are considered synonyms for the purposes of the FSR. Both include transformed and participation funds.

62 For more on green bonds see Box 1 in Risks to financial stability and their indicators 2021.

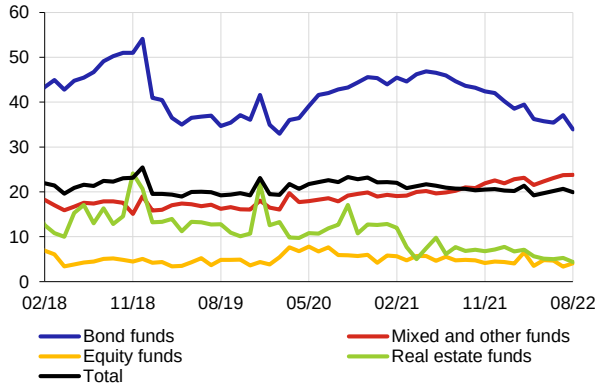
Developments in the investment fund sector did not lead to any increase in risks to financial stability

So far, in a context of falling financial market prices, domestic investment funds have not faced stronger interest in unit redemptions (see Chart III.12) and their aggregate liquidity position has not worsened significantly (see Chart III.14).[63] Equity funds had the smallest liquidity buffer, totalling 4.1% of assets as of 31 August 2022 and comprising cash, debt securities issued by general government and bank deposits and other claims payable on demand. However, these funds mainly hold shares traded in highly liquid global markets, so any sell-offs due to rising liquidity needs cannot have significant secondary effects. Real estate funds had a similarly low share of liquid assets (4.4% of assets). However, the risk of a sudden increase in liquidity needs is lower for these funds, as the period to proceed with pay-outs to investors is extended by regulation. In the event of a prolonged decline in property prices and a rise in investor uncertainty regarding the profitability of this type of investment, real estate funds could face liquidity management challenges in the medium term. However, the attractiveness of the property market for investors has not fallen much so far (see Chart II.19). The structure of investment funds' assets and liabilities was not signalling any significant risks taken on in search of yield. On the contrary, an environment of higher interest rates tends to reduce these risks naturally. In the case of alternative investment funds, which include special collective investment funds and funds for qualified investors, the CNB conducts a quarterly assessment of the risks associated with high leverage.[64] The assessment conducted by the CNB as of 30 June 2022 did not indicate any strengthening of risks having the potential to jeopardise financial stability.

Chart III.14

Share of liquid assets on the balance sheets of collective investment funds

(%)

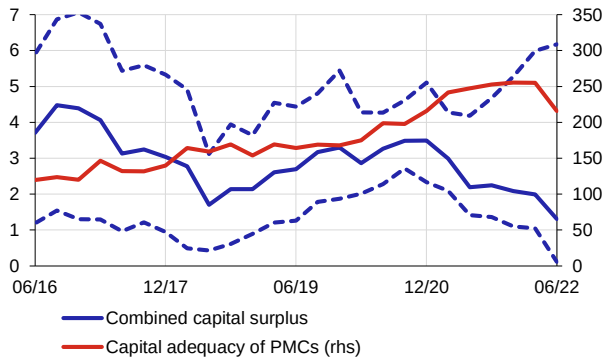


Note: Liquid assets comprise cash, debt securities issued by general government, and bank deposits and other claims payable on demand. The collective investment funds sector excludes funds for qualified investors.

Chart III.15

Combined capital surplus and capital adequacy of the PMC sector

(%)



Note: Dashed lines denote the minimum and maximum values of the combined capital surplus across TFs. The combined capital surplus is the ratio of the sum of (1) the capital surplus of PMCs and the (2) difference between the assets and liabilities of TFs to the assets of TFs.

Pension management companies (PMCs) were compliant with the capital requirements despite losses on Czech government bonds held by transformed funds…

Despite the adverse financial market developments and rising uncertainty about real household income, domestic PMCs have not faced liquidity stress so far. However, the decline in prices of Czech government bonds in transformed funds' portfolios has led to a decrease in the excess of their assets over liabilities on aggregate (see Chart III.6 CB). As a result, six PMCs topped up the capital in their transformed funds by a total of CZK 4.6 billion in the first half of 2022. This led to a decrease in PMCs' capital adequacy, which nonetheless remained sufficient (see Chart III.15). This was aided by replenishment of capital in some PMCs by their shareholders.

…and the contribution of the PMC sector to systemic risk remains relatively low

The risks associated with Czech government bond prices are mitigated to a large extent, as some PMCs do not mark a significant proportion of this portfolio to market, since they hold it to maturity, while PMCs with larger shares of bonds marked to market actively manage the capital within their financial groups. The CNB has long addressed these risks and conducts a stress test of the whole PMC sector every year (see FSR – Spring 2022). The CNB currently does not identify significant channels through which growth in yields (see section II.1) would disrupt the stability of the domestic financial sector via the PMC sector. In the short term, a continued decline in the value of Czech government bonds may require further replenishment of capital in transformed funds and possibly also capital injections into PMCs by their shareholders.

63 The liquidity position is monitored for the collective investment funds segment, which excludes funds for qualified investors. The share of liquid assets is not shown for the latter because this segment is highly heterogeneous and changes in the aggregate indicator are therefore difficult to interpret.

64 The CNB is required by law to conduct this assessment under Article 25 of Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on alternative investment fund managers and the related guidelines of the European Securities and Markets Authority.

In the longer term, however, higher government bond yields ensure sufficient profitability of transformed funds and reduce the risk of failure to fulfil the non-negative yield guarantee. A higher-yield environment also fosters more attractive returns for planholders.[65] The CNB therefore still regards the risk of a significant increase in early withdrawals of funds from pension products as low. In addition, domestic PMCs have so far not made leveraged investments to any great extent. The low incentive of domestic pension funds to take on higher risks is also related to the institutional setup of the third pension pillar as a defined-contribution system where investment risks are borne primarily by the investor (with the exception of the non-negative yield guarantee in the case of transformed funds).[66] Furthermore, pension funds again desisted from using derivatives transactions to a significant enough extent overall to generate potential excessive liquidity stress in the form of additional margin requirements.

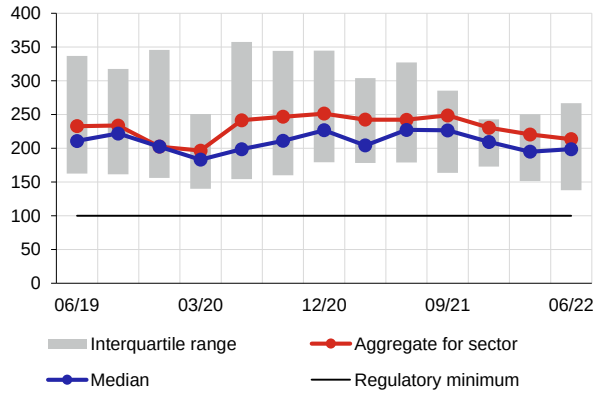
The insurance sector as a whole remained resilient

A decline in insurance company assets of 6.8% to CZK 488.6 billion in the first half of 2022 due to revaluation was accompanied by a decrease in the value of liabilities arising from life insurance (also of 6.8% on aggregate). The similar trends in assets and liabilities reflected a relatively high degree of alignment of cash flows from assets and liabilities in life insurance and the direct transfer of investment losses to clients in life insurance products where the investment risk is borne by the policy holder. As of mid-2022, the aggregate ratio of eligible capital to the solvency capital requirement remained above 20% and thus sufficiently above the 100% regulatory threshold (see Chart III.16). Insurance companies also remained profitable, mainly because of continued growth in non-life insurance premiums (see Chart III.17). In the event of an increase in costs due to inflation or higher claims arising from natural disasters (see Box 6), to which insurance companies could react by raising their premiums relatively sharply, and a simultaneous significant drop in the real disposable income of households and a decline in the profitability of non-financial corporations (see section II.2), insurance companies could face a fall in demand for insurance and hence a drop in profitability. The degree of underinsurance in the economy (the proportion of risks not sufficiently covered by insurance policies) could also increase in some segments of the insurance market. This could, among other things, exacerbate insurance companies' reputational risk. However, these risks are not immediate and the insurance sector is resilient enough to avoid significant disruption to the sector's stability should they materialise.

Chart III.16

Ratio of insurance companies' eligible own funds to the solvency capital requirement

(%)

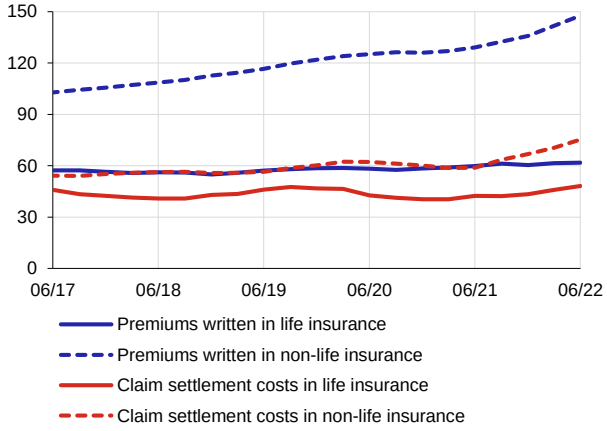


Note: The values exclude the Export Guarantee and Insurance Corporation and the Czech Insurers' Bureau.

Chart III.17

Developments in the insurance sector

(CZK billions)



Note: The chart shows the moving sum of the values for four quarters in gross terms, i.e. unadjusted for reinsurers' share.

65 Planholders in transformed funds are not directly affected by a decline in Czech government bond prices. Such a decline is accounted for through valuation differences and hence does not affect the profit/loss for the current period and, as a result, does not reduce the returns credited to planholders.

66 This makes the domestic PMC sector different from those, for example, in the UK and the Netherlands, where pension funds guarantee the final amount of pension benefits (defined-benefit system) and thus have an incentive to take on additional risks to fulfil the guarantee, especially at times of low yields.

BOX 6: Illustrative analysis of the potential channels of the impact of climate risks on insurance companies

Sudden materialisation of transition climate risks would not jeopardise the stability of domestic insurers…
The stability of the domestic insurance sector is not immediately jeopardised by transition or physical climate risks.[67] The materialisation of transition risks could take the form of a sudden change in the sentiment of financial market participants, whose demand for shares or bonds would change quickly depending on the carbon footprint of each corporation. According to EIOPA estimates,[68] this would lead, in the EU as a whole, to a 6% drop in the value of equity, corporate bonds and insurance companies' investments in investment funds. The change in this value would range between -22% (Hungary) and +4% (Croatia). The Czech Republic would record a decline of 4%. Insurance companies' total losses would amount to about 1% of their aggregate excess of assets over liabilities (1.1% for the Czech Republic and 0.8% at the EU level).[69] This scale of the losses can be regarded as relatively low. The CNB's annual macro stress tests assess the resilience of insurance companies to financial market declines of larger orders of magnitude (see FSR – Spring 2022). The CNB now also monitors the structure of investment portfolios in terms of their ESG ratings (see Chart III.5 CB).

…but an increase in the scale or frequency of natural disasters could make property insurance more expensive
The materialisation of physical climate risks would mean a rise in the frequency or scale of claims arising from natural disasters. This would result in an increase in insurers' gross claim settlement costs. Insurance companies currently limit their losses in the event of disasters by transferring a large part of their claims arising from natural disasters to reinsurers (see Chart III.7 CB, left-hand panel). In the case of repeated or higher claims, however, reinsurance companies would demand higher reinsurance premiums, as they would reassess the expected future claims they would have to cover based on reinsurance policies. Insurers could react to the increase in reinsurance prices[70] in various ways. They could pass on the higher reinsurance premiums to clients. However, this might reduce the availability of property insurance and possibly also insurers' gross sales or profits, depending on the elasticity of demand. They could also increase their prices only partially and make up for the rise in reinsurance premiums by reducing the difference between premiums and claim settlement costs (their "margin") and hence lowering their profit rate, for example in order to maintain market share. Insurers could also reduce the amount of reinsurance they purchase, i.e. accept greater risk themselves. Depending on the reaction or combination of reactions they choose, the increase in climate risks would ultimately affect policyholders (lower availability of insurance) or insurers (lower profits or higher risk).

An illustrative analysis indicates the impacts of various reactions by insurers to a rise in climate risks…
The CNB conducted an illustrative sensitivity analysis[71] of gross and net premiums and claim settlement costs in insurance against fire and other damage to property (property insurance). The analysis was conducted over a four-year timescale and covered the six insurance companies having the largest shares of the property insurance market (a total market share of around 90%). The analysis very cautiously assumes (1) natural disasters equal in scale to those observed in 2021 (in particular the summer storms and the tornado in Moravia) in the first three years, and (2) a one-off large-scale natural disaster in the fourth year.[72] Rising reinsurance prices would be the main source of insurance market stress in the analysis. Reinsurers would gradually increase the amount of reinsurance premiums demanded by 35% on average.[73] Insurers would react to the higher reinsurance prices in various ways. The first option involves full pass-through of the higher reinsurance

67 Climate risks are defined and categorised, for example, in a cnBlog article Taking into account environmental factors in the financial sector (in Czech only). Transition risks arise from institutions' exposures to counterparties that could be adversely affected by the transition to a sustainable economy. Physical risks include droughts, floods, extreme precipitation and gradually rising temperatures.

68 See the EIOPA sensitivity analysis (2020). According to the analysis, investments in assets issued by high-carbon companies account for about 2%–8% of the portfolio in most EU countries. In the Czech Republic, the share is just under 5%. However, the actual share of high-carbon assets may be even higher, as data on carbon intensity were not available for all assets. In the Czech Republic, unavailable data accounted for around 12% of the volume of corporate bonds and almost 70% in the case of investment through investment funds.

69 The share of losses to the excess of assets over liabilities in individual EEA countries would range from 0.1% (Iceland) to 1.7% (Portugal). The scale of the losses would depend, among other things, on the volume of asset holdings less affected by transition risks (government bonds, bank deposits) and on the degree to which insurance companies held the affected assets in products where the investment risk is borne by the policyholder.

70 Property insurance mostly involves one-year reinsurance and insurance policies. This enables reinsurers and insurers to react fairly flexibly to changes in the frequency or scale of natural disasters.

71 The analysis is purely illustrative and highly simplified. It is neither a simulation of future developments nor an assessment of a scenario. Among other things, it does not take into account insurance companies' other balance-sheet items, yields and costs (beyond the assumptions specified below). The analysis is static, i.e. it shows alternatives relative to a base year abstracting from inflation, changes in product structure, adjustments to reinsurance strategies, changes in capital management and so on

72 For the purposes of the analysis, the disaster was set comparable to the 2002 floods. According to an estimate by the Czech Insurance Association, the covered losses ran to CZK 36.7 billion at the time, or roughly CZK 59 billion at today's prices. By the CNB's estimation, this is broadly equal to the gross value (i.e. before reduction due to reinsurance) of the solvency capital requirement for disaster risk in non-life insurance for the insurers covered by the analysis (estimated at CZK 58.1 billion), which should represent a loss with a probability of 0.5%. The distribution of the losses among insurers accords with their market shares, which were estimated using their shares in gross premiums and gross claim settlement costs in property insurance in 2021. An estimate of the share of each insurer in the total claim settlement costs after the tornado in Moravia in 2021 was also taken into account.

73 This rate of growth of reinsurance premiums would cause the ratio of reinsurance claims paid to reinsurance premiums to return from the elevated levels seen in 2021 (95% on average) to 39% as observed in 2019–2020. This would be consistent with reinsurers gradually reassessing the growth in claims paid from being a one-off swing to being the norm in an environment of climate change.

costs to insurance prices. The analysis assumes that higher insurance prices would lead to a drop in demand for insurance, the rate of decrease equalling one-half the rate of price growth (i.e. the price elasticity of demand is set at -0.5). In the second option, insurers would, due to competition, incorporate only 50% of the rise in reinsurance prices into insurance prices and would accept a decline in the difference between net premiums and claim settlement costs (i.e. a decline in their "margin"). In the third option, one-half of the price increase would again be offset by insurers, but this time by reducing the amount of risks reinsured. The illustrative analysis assumes that the risks covered by insurers themselves would rise by 10% every year and one-third of the losses arising from natural disasters in the fourth year would not be reinsured.

…the results of which show that the related risks to the domestic insurance sector's stability are not immediate

The results of the sensitivity analysis reveal that the first option – full transfer of reinsurance prices to customers – is the least risky one for insurers in terms of financial stability (see Chart III.7 CB and Chart 1). On aggregate, it would ensure that a positive difference is maintained between net premiums and net claim settlement costs in property insurance (see Chart 1, left-hand panel), even given sizeable losses in the fourth year. On the other hand, the availability of this insurance would decline the fastest – given the elasticity and pace of price growth chosen, demand would drop by 20% in the third and fourth years of the analysis. This would lead to a fall in the total insurance volume and hence to a decline in insurers' profits. However, insurers would not record significant losses even if net operating expenses (at the original level) were taken into account (see Chart 1, middle panel). Underinsurance – the proportion of risks in the economy not covered or insufficiently covered by insurance policies – would also increase. In the event of significant natural disasters, this could result in reputational risks for insurers, typically as a result of paying out amounts much lower than the losses incurred due to the natural disaster. In the second and third options, insurers would increase their premiums more modestly. This would lead to a smaller fall in demand (11% in both cases). However, the second option would involve a faster drop in the ratio of net premiums to claim settlement costs (the "margin") and property insurance would be loss-making overall, taking operating expenses into account. In this case, the cumulative loss would be around one-quarter of the initial capital surplus (see Chart 1, right-hand panel). So, even the very strong assumptions of the analysis would not result in a significant threat to the resilience of the insurers analysed. In the third option, insurers' losses would be lower in the first three years and the higher share of risk borne by them would manifest itself after the large-scale natural disaster in the final year. The latter would generate losses of almost one-half of the initial capital surplus. So, even in this case, the illustrative analysis suggests that insurers would still be able to meet the capital requirement despite having to cover sizeable damage to property.

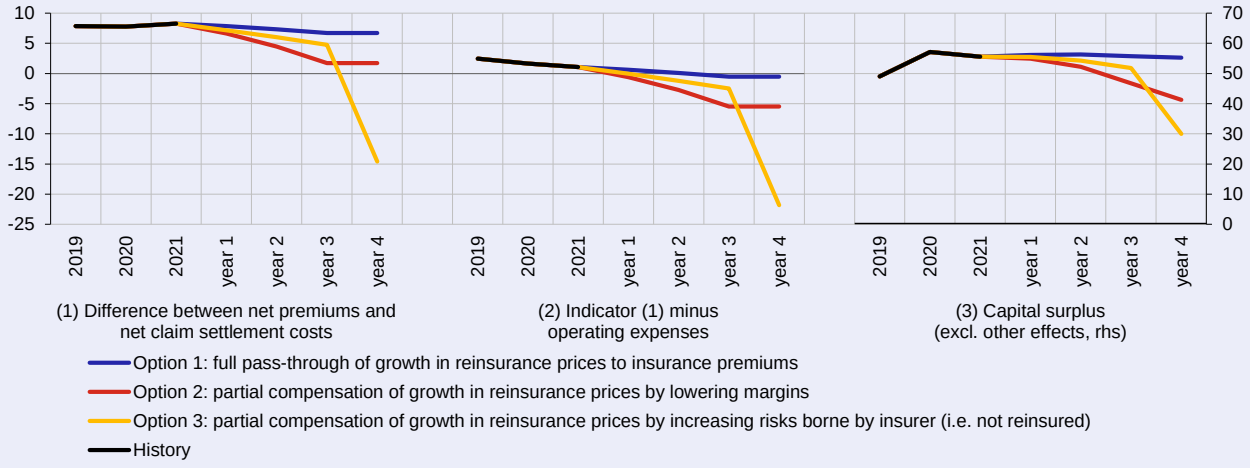
Climate change materialisation may increase the risk management and premium-setting requirements

Overall, the analysis shows that the potential materialisation of climate risks would not pose an immediate threat to insurance companies, but it could lead to higher prudential requirements as regards risk management and property insurance product pricing. Raising efficiency and hence reducing operating expenses may be crucial for insurers in the event of a drop in demand. Another, related risk is that of reinsurer default, which would lead to a sharp rise in insurers' costs if it coincided with a large natural disaster. However, this risk is relatively hard to quantify and is excluded from the analysis. The CNB will continue to monitor these risks and climate risk in insurance in general.

Chart 1 (BOX 6)

Illustrative analysis – hypothetical impact of repeated natural disasters on insurance companies

(CZK billions)



Note: The amounts pertain to insurance against fire and other damage to property.

III.4 MACRO STRESS TEST OF THE BANKING SECTOR

The solvency macro stress test (SMST) is a tool for assessing the resilience of the domestic banking sector to hypothetical adverse economic developments. In the Spring Financial Stability Reports, we traditionally assess the impacts over a three-year horizon, while the Autumn Reports are typically used to test the resilience of the banking sector to the impacts of specific risks with a longer horizon. In this year's test, they are represented by climate risks, which affect the economy and banks over a longer period of time. The *Baseline Scenario* is based on the macroeconomic forecast published in Monetary Policy Report – Autumn 2022[74] and, thanks to its five-year horizon, the possible long-term consequences of the current geopolitical and economic situation can be assessed.

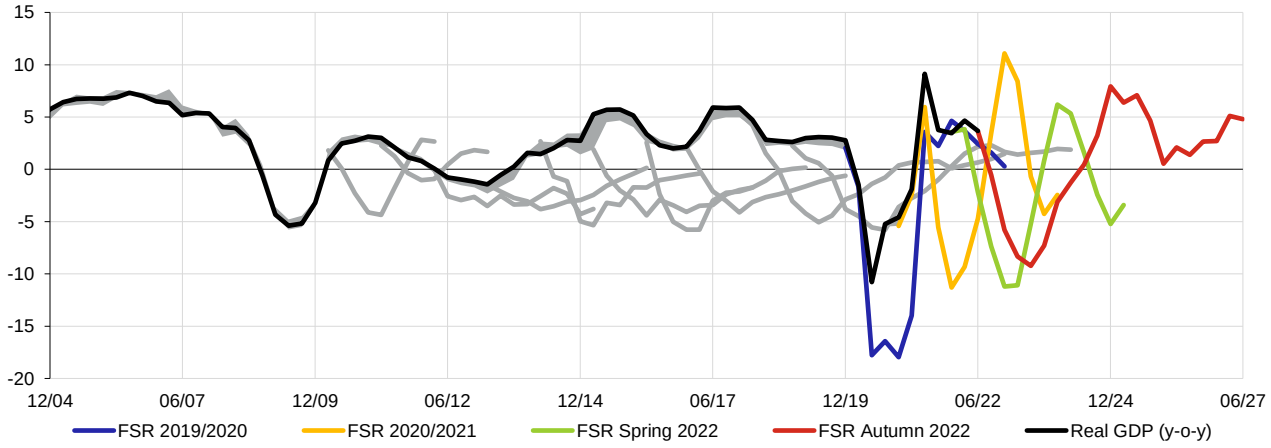
The *Adverse Scenario* tests resilience to climate shocks…

The aim of the scenario is to test the resilience of the banking sector[75] to hypothetical economic developments caused by the materialisation of selected climate change-related transition risks resulting from predominantly political decisions made outside the Czech Republic and physical risks (jointly referred to below as "climate shocks"). The *Adverse Scenario* is thus not the classical "cyclical" stress test used until the pandemic (Chart III.18, GDP in the tests in 2010–2019), which assumed a weakening of GDP due to traditional economic shocks, but a scenario based mostly on the hypothetical materialisation of selected climate transition and physical risks concentrated into five years. Climate shocks lead to a sharp decline in GDP in this scenario.

Chart III.18

Adverse scenarios in Financial Stability Reports 2010–2022

(year-on-year change in real GDP in %)



Note: The grey areas represent revisions to changes in real GDP. The grey lines show the historical scenarios used until the pandemic.

…of a transition and physical nature

In the *Adverse Scenario*, transition risks are associated with political decisions to increase the price of emission allowances and to transition to electromobility and a low-emission economy. The scenario takes into account a significant increase in the price of carbon dioxide emissions, which will go up by USD 100/t above current levels in the first year of the test and rise further over the following years,[76] a reduction in consumption of fossil energy sources (coal, oil, natural gas), an increase in the share of renewable energy sources,[77] a negative demand shock related to the transition from cars with internal combustion engines to electric cars, which will lead to a slight decline in global industrial production, and negative consumer and investor sentiment in response to the uncertainty associated with the economic consequences of the climate-protection measures being introduced. Physical risks are represented by an increase in the frequency and severity of natural disasters. The scenario takes into account global droughts and local floods.

The methodology takes into account additional risks related to the transition to a climate-neutral economy

In order to capture the impacts of the transition to a climate-neutral economy more precisely, an additional stress going beyond the scenario is applied to bank loans and securities based on the emission-intensity of each sector. The risk margins applied correspond to the expected phase-out of technology producing high carbon dioxide emissions. As regards

74 The time series of the variables for the last three years of the *Baseline Scenario* and all the years of the *Adverse* Scenario were created solely for stress testing purposes. For this reason, neither the *Baseline Scenario* beyond the forecast horizon, nor the *Adverse Scenario* is the CNB's official forecast.

75 Banks subject to CNB supervision (with the exception of the NDB and the CEB) representing 94% of the domestic banking sector's assets were stress tested.

76 The simulation also assumes that half of the government budget revenue stemming from the increase in the price of carbon dioxide emissions will be used for government investment.

77 The decline in the share of fossil energy sources in production will result in an increase in energy prices, with a negative impact on GDP.

loans to non-financial corporations, exposures are broken down by sector (CZ-NACE). Compared with the scenario-based path, their risk parameters (PD, LGD) are increased depending on carbon dioxide emissions per unit of turnover[78] for sectors with above-average emissions. The risk parameters may increase almost twofold (for climate risk management in banks see Box 7). Equity and debt securities are repriced in a similar way, with the additional increase in the riskiness of these securities depending on the issuer's emission intensity.

The stress test takes into account current fiscal policy, including the impacts of the windfall tax

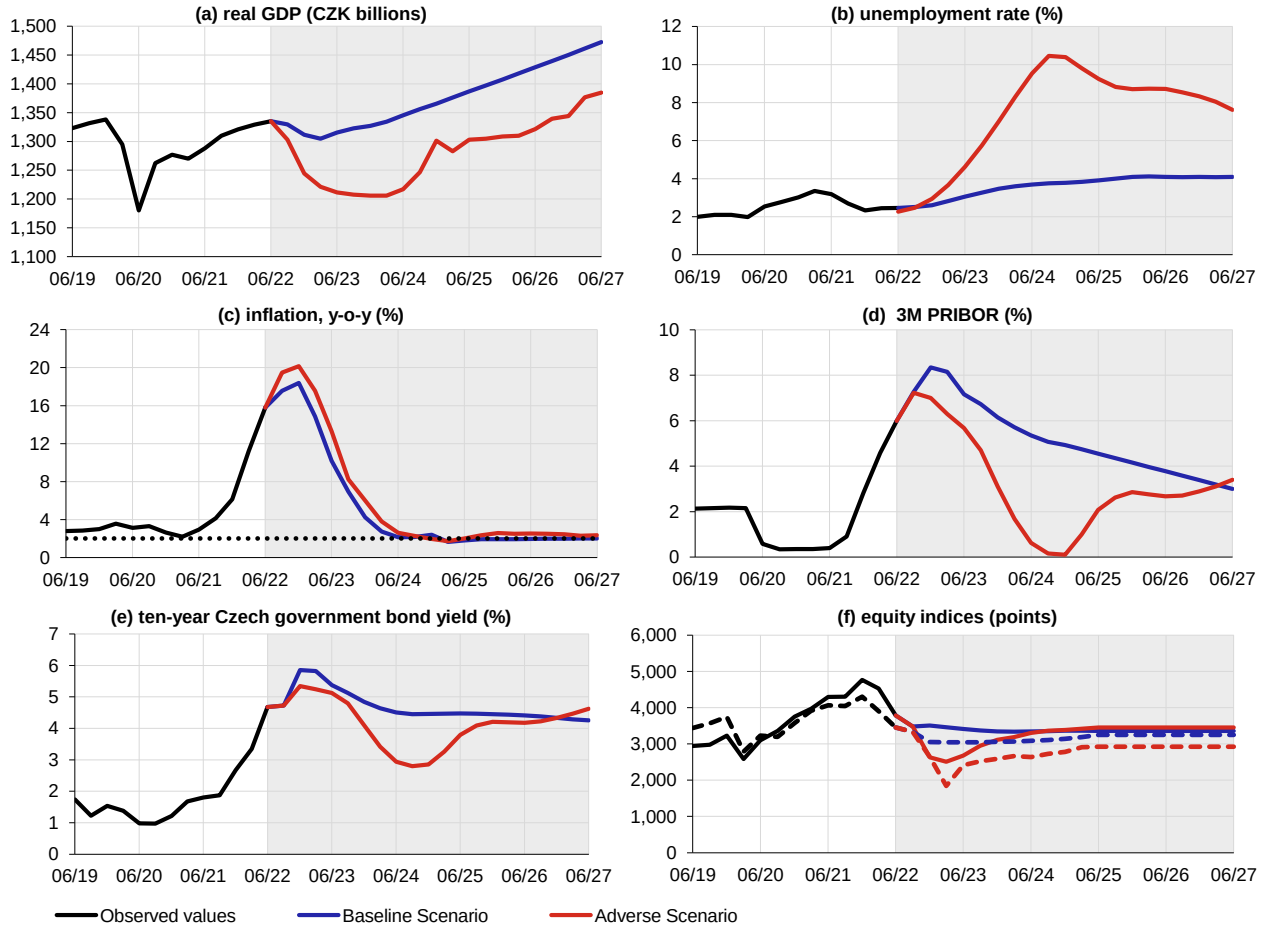
The scenarios take into account the current fiscal policy support for the economy, which is being financed by the issuance of government bonds. This is reflected in an increase in the proportion of government bonds in banks' balance sheets in both the *Baseline Scenario* and the *Adverse Scenario*, which assume that fiscal policy remains accommodative in the first two years of the scenario and is gradually tightened from the third year onwards. The increase in the share of government bonds in banks' balance sheets could, under certain assumptions, positively affect their profits. However, the growth in concentration could also increase the risks associated with the link between banks and the state. The impacts of the windfall tax are taken into account in both scenarios.

The *Baseline Scenario* assumes a modest recession with subsequent renewed growth

The economy slips into a modest recession at the end of the first year and the start of the second year of the scenario, but grows again in the following years. The default rates of non-financial corporations and households increase in the initial years of the scenario. This is fostered in the case of firms by a decline in demand and profitability and in the case of households by growth in unemployment, goods and services prices and interest rates (see section II.2). In the following years, the default rate decreases for non-financial corporations due to the economic recovery, while remaining elevated for households due to persisting high unemployment and limited wage growth. Loss given default increases very modestly and gradually over the entire scenario horizon in both non-financial corporations and households.

Chart III.19

Alternative scenarios: selected variables



Source: CNB, Refinitiv

Note: For equity indices, the solid line denotes the S&P 500 and the dashed line the EURO STOXX 50.

78 Broken down into divisions, i.e. the one-digit NACE level for sectors of non-financial corporations.

The *Adverse Scenario* assumes a strong recession related to the hypothetical materialisation of climate shocks…
The strongly declining economic activity abroad is related to the hypothetical materialisation of climate risks. This would be accompanied by growth in prices of energy and food. Industrial production would fall and consumer and investment sentiment would go down. This would be reflected in a decrease in domestic GDP (see Chart III.19), due mainly to foreign trade and investment, and in a fall in consumption, a rise in unemployment, more limited wage growth and depreciation of the koruna against the euro. Following an initial increase, inflation would decrease in both the euro area and the Czech Republic due to negative demand shocks. Both the ECB and the CNB would lower interest rates in response. After the initial sharp rise, the climate transition risks would lessen and government investment activity would increase, with governments investing half of the revenue stemming from the rise in prices of emission allowances. The impacts of physical climate shocks, represented by global waves of drought and local floods, would decline gradually as economies adjust to the "new normal". Together with easy monetary policy, these positive factors would lead to an economic recovery in the second third of the scenario, driven in the domestic economy mainly by growth in net exports, investment and consumption. Economic growth would be partly reduced by more restrictive monetary policy over the scenario horizon.

…which would lead to materialisation of credit risks
The adverse economic developments would be reflected in worsening credit risk parameters among both non-financial corporations and households. Owing to the hypothetical economic downturn and rising unemployment, default rates would surge in the first two years of the scenario in both non-financial corporations and households (see Table III.3). Although the default rate of non-financial corporations would subsequently halve, that of households would remain high due to only gradually declining unemployment and limited wage growth. Loss given default in non-financial corporations would rise sharply at the start of the scenario but later decline gradually. By contrast, it would increase gradually for households, peaking between the third and fourth year of the scenario. Loans to non-financial corporations would increase and the growth would stay in double figures. On the one hand, this would be due to rapid growth in input prices, which implies robust growth in nominal investment. On the other, depreciation of the koruna against other currencies would be reflected in credit growth in the first two years. Given the significant proportion of foreign currency loans to non-financial corporations, their volume would grow in koruna terms. Growth in loans to households for house purchase would decline only at the beginning of the scenario and remain around 5–6% despite the worse consumer sentiment, which would have a greater effect on consumer credit, the growth of which would decline throughout the scenario.

Table III.3
Key variables in the alternative scenarios

	Actual value	*Baseline Scenario*						*Adverse Scenario*					
	2021	2022	2023	2024	2025	2026	6/2027	2022	2023	2024	2025	2026	6/2027
Macroeconomic variables (averages for given periods in %)													
Real GDP growth (y-o-y)	3.6	2.3	-0.7	2.5	3.1	3.0	3.0	0.6	-7.0	2.6	4.7	2.2	4.9
Inflation rate	3.8	15.7	9.1	2.4	1.8	2.0	2.0	16.7	11.3	2.7	2.2	2.5	2.3
Unemployment rate*	2.9	2.5	3.2	3.7	4.0	4.1	4.1	2.5	5.3	9.7	9.1	8.6	7.8
Nominal wage growth (y-o-y)	5.1	7.1	8.2	7.8	6.2	5.3	5.1	5.7	6.4	7.0	5.6	5.9	6.1
Real GDP growth in EMU (y-o-y)	4.8	2.5	-0.2	1.9	2.4	1.7	1.6	1.7	-2.2	1.0	3.4	2.7	2.3
Credit growth (y-o-y, averages for given periods in %)													
Non-financial corporations	0.9	9.0	12.1	9.0	6.7	7.5	7.9	8.9	14.5	12.5	11.6	11.0	10.6
Loans for house purchase	9.9	8.0	6.0	7.2	7.6	7.3	7.4	8.0	5.5	6.4	6.4	5.9	5.7
Consumer credit	3.3	7.1	5.7	3.7	2.1	1.4	1.1	6.9	5.2	3.9	2.0	1.6	1.5
Default rate (PD)*													
Non-financial corporations	1.0	2.2	2.4	2.5	2.6	1.7	1.7	4.1	7.2	2.1	3.7	3.4	3.3
Loans for house purchase	0.9	1.4	2.0	2.2	2.4	2.4	2.5	2.5	5.0	5.3	5.3	5.2	5.2
Consumer credit	3.1	3.9	4.5	4.7	4.9	4.9	5.0	5.0	7.4	7.7	7.7	7.6	7.6
Loss given default (LGD) (averages for given periods in %)													
Non-financial corporations	32	32	34	34	34	34	34	33	39	46	45	43	41
Loans for house purchase	15	15	14	16	17	17	18	16	18	21	24	25	23
Consumer credit	42	43	43	44	45	46	46	44	50	53	55	56	53
Asset markets (averages for given periods in %)													
3M PRIBOR	1.1	6.6	7.0	5.3	4.5	3.7	3.1	6.2	4.9	0.6	2.1	2.8	3.3
5Y IRS CZK	2.2	5.2	5.6	4.4	4.1	3.8	3.5	5.0	4.2	1.5	2.5	3.0	3.4
5Y Czech GB yield	1.9	5.0	5.5	4.4	4.1	3.8	3.5	4.8	4.6	2.0	3.1	3.5	3.9
3M EURIBOR	-0.5	0.4	3.1	3.1	3.1	3.2	3.2	0.6	2.1	1.2	2.0	2.7	4.1
5Y IRS EUR	-0.2	1.8	2.8	2.8	2.9	3.0	3.0	1.5	1.6	2.3	2.2	2.0	1.2
Residential property (y-o-y)	19.6	15.6	-2.6	3.3	2.8	2.3	2.7	15.3	-6.8	1.5	0.2	-0.7	2.6
Equities (y-o-y)	28.4	-15.5	-10.5	1.6	4.3	0.5	0.0	-17.9	-27.3	17.3	8.1	0.2	0.0

Source: CNB, BRCI

Note: * The unemployment rate is calculated using the ILO methodology. The PD values represent the expected default rate in the following year.

In the *Baseline Scenario*, the banking sector's profitability decreases from its current high levels…

Despite growth in loan portfolios, a decrease in interest rates results in a decline in net interest income (NII), the main component of profit to cover losses. It totals CZK 126.4 billion in 2022 (see Table III.4) but drops to around CZK 100 billion in the subsequent years. The decline in NII is mainly due initially to the pass-through of higher monetary policy rates to deposit rates and later to falling income on excess liquidity, which reflects decreasing monetary policy rates and a decline in excess liquidity. A significant rise in credit losses from their current low levels to more than CZK 30 billion a year further reduces pre-tax profit, which decreases from CZK 122.8 billion in the first year to about half that level in the subsequent years of the scenario. Under the assumptions of the scenario, this would substantially lower the potential windfall tax revenue. Profitability, as measured by return on assets (RoA), declines throughout the scenario, from 0.83% to slightly below 0.5%. The decomposition of the change in the overall capital ratio (see Chart III.20) shows that the contribution of profit to cover losses (+15.3 pp) to capital formation is 7.9 pp after taking into account credit losses (-5.1 pp), the negligible losses arising from market risk (0.0 pp) and taxes (-2.3 pp). However, an increase in the total risk exposure amount (TREA), which reflects increasing risk weights (-3.3 pp) and a rise in exposures (-3.1 pp), has a negative effect (-6.4 pp) on the resulting capital ratio. The latter thus increases from 21.1% to 22.6% before dividends are taken into account.

Table III.4

Impact of the alternative scenarios on the banking sector

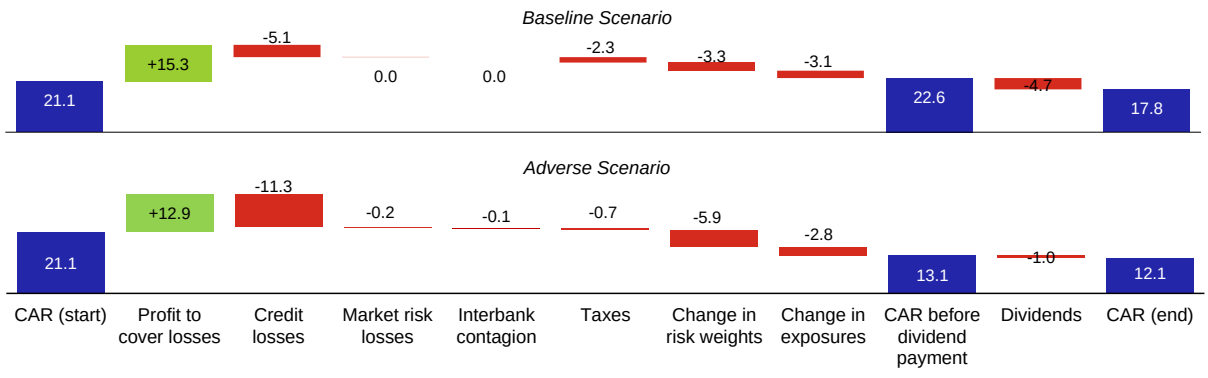
	Actual value	*Baseline Scenario*						*Adverse Scenario*					
	2021	2022	2023	2024	2025	2026	6/2027	2022	2023	2024	2025	2026	6/2027
Items in P/L statement and OCI (CZK billions)													
Profit to cover losses*	78.5	126.4	100.9	92.0	95.6	100.7	53.2	119.9	80.1	69.5	104.7	104.8	52.7
Credit losses*	-1.5	-8.5	-32.1	-37.2	-39.6	-36.2	-16.5	-38.5	-100.4	-86.8	-80.9	-80.0	-26.2
in stages 1 and 2	-2.6	-0.4	-8.4	-6.3	-3.6	4.4	1.2	-28.9	-52.0	19.1	-11.4	11.0	18.5
in stage 3	4.3	-7.8	-23.7	-31.0	-36.0	-40.7	-17.8	-9.3	-48.4	-105.9	-69.5	-91.0	-44.7
Profit from market risks (P/L)	8.9	6.0	0.2	0.3	0.1	0.1	0.1	4.4	1.6	1.3	-0.7	-0.1	-0.2
Pre-tax profit	85.2	122.8	69.0	55.1	56.1	64.6	36.8	84.7	-18.7	-15.9	23.1	24.7	26.3
Profit from market risks (OCI)	-14.9	-13.3	1.2	1.3	0.5	0.7	0.4	-15.9	1.0	2.5	-2.8	-0.6	-0.3
Interbank contagion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.8	-1.1	-0.3	-0.3	0.1
Balance-sheet items (CZK trillions; end of period)													
Assets	7.63	8.92	9.47	9.89	10.30	10.73	10.90	8.91	9.46	9.87	10.34	10.86	11.07
Client loans (net)	3.76	4.28	4.63	4.91	5.20	5.54	5.67	4.25	4.57	4.89	5.26	5.66	5.82
Debt securities holdings	1.46	1.67	1.75	1.81	1.86	1.90	1.92	1.69	1.83	1.92	2.00	2.07	2.11
Regulatory capital	0.62	0.60	0.61	0.63	0.66	0.69	0.70	0.59	0.56	0.54	0.55	0.57	0.58
TREA	2.62	2.93	3.12	3.33	3.56	3.82	3.92	2.98	3.46	3.89	4.29	4.70	4.82
TEM	8.21	9.38	9.84	10.19	10.55	10.94	11.10	9.40	9.95	10.42	10.89	11.40	11.58
Regulatory indicators (% as of end of period)													
Overall CAR (% of TREA)	23.5	20.3	19.5	19.0	18.5	18.0	17.8	19.9	16.3	14.0	12.9	12.1	12.1
CET 1 CAR (% of TREA)	22.1	18.9	18.2	17.8	17.3	17.0	16.8	18.5	15.1	12.9	12.0	11.2	11.3
Leverage ratio (% of TEM)	7.3	6.1	6.0	6.0	6.0	6.1	6.1	6.1	5.4	5.0	4.9	4.8	4.9
MREL* (% of TREA)	26.0	26.0	27.7	27.0	26.2	25.7	25.5	25.4	23.7	20.8	19.3	18.3	18.3
MREL* (% of TEM)	8.3	8.1	8.8	8.8	8.8	9.0	9.0	8.1	8.2	7.8	7.6	7.5	7.6
Others													
Dividends for given year	90.3	98.3	22.4	19.1	18.4	20.2	18.3	60.5	1.7	2.6	3.3	4.2	3.3
Loss rate* (%)	-0.04	-0.20	-0.70	-0.76	-0.76	-0.66	-0.29	-0.92	-2.19	-1.74	-1.51	-1.39	-0.43
RoA* (in %)	0.83	1.12	0.53	0.42	0.42	0.48	0.27	0.76	-0.23	-0.18	0.16	0.17	0.19

Note: Actual values for 2022 H1 and prediction for 2022 H2. * Profit to cover losses represents pre-tax profit adjusted for credit losses and losses from market risk. Credit losses (with a minus sign) represent impairment losses due to credit risk. If loss allowances are released, the figure is shown with a plus sign. MREL is the sum of own funds and eligible liabilities. The loss rate is calculated as credit losses divided by gross average client loans. RoA is calculated as after-tax profit divided by average assets at the end of the period.

Chart III.20

Decomposition of the change in the banking sector's overall capital ratio in the alternative scenarios

(pp)



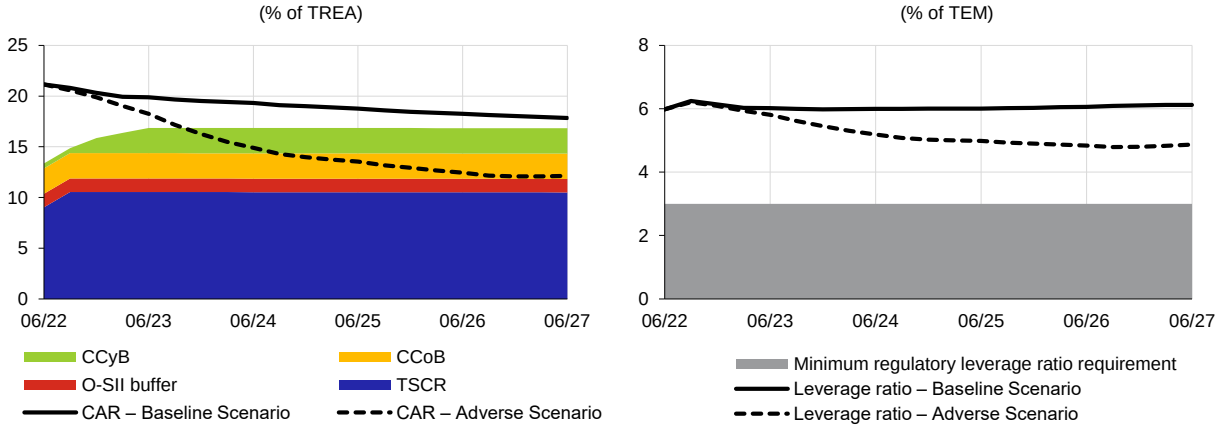
Note: CAR = overall capital ratio. Items increasing the capital ratio are shown in green and items reducing it in red.

…but the resulting capital ratio remains above the regulatory threshold after taking dividends into account
Dividend payments in the modelling framework[79] (CZK 197 billion) reduce the resulting capital ratio from 22.6% to 17.8%, comfortably above the overall capital requirement (OCR). No systemically important bank[80] would breach the O-SII buffer requirement in the *Baseline Scenario* (see Chart III.22), while other banks would breach the SREP capital requirement (TSCR) in two cases. Topping up the capital to the TSCR would require a capital injection of CZK 6.8 billion. The banking sector as a whole is also above the binding 3% leverage ratio requirement by a sufficient margin. Individually, however, two systemically unimportant banks would be non-compliant with the requirements. This would require a capital injection of CZK 5.6 billion. The introduction of the windfall tax will not have a significant effect on the sector's resilience.

In the *Adverse Scenario*, the capital ratio would drop more significantly amid a decline in profitability…
A gradual decline in interest rates together with a decline in the monetary policy rate in the initial years of the scenario would result in a large drop in NII and profit to cover losses (from CZK 119.9 billion to CZK 69.5 billion in the third year of the scenario; see Table III.4). However, NII and profit to cover losses would recover in the fourth year amid rising interest rates and growth in loans. High credit losses in the scenario (CZK 412.8 billion in cumulative terms) would result in a fall in pre-tax profit to negative territory in the second and third years of the scenario. In subsequent years, though, the banking sector would be profitable due to increasing profit to cover losses. RoA would be negative in the second and third years (-0.2%) and later rise to 0.2% at the end of the scenario. The decomposition of the change in the overall capital ratio (see Chart III.20) shows that profit to cover losses (+12.9 pp) would cover credit losses (-11.3 pp), market risk losses (-0.2 pp), interbank contagion losses (-0.1 pp) and taxes (-0.7 pp) and would contribute 0.7 pp to capital formation. However, a surge in the total risk exposure amount (TREA, -8.7 pp) due to growth in risk weights (-5.9 pp) and growth in exposures (-2.8 pp) would result in a decline in the overall capital ratio before dividends to 13.1%.

…and the banking sector would use almost the full capital conservation buffer as well as the countercyclical buffer
Owing to the dividend payments (CZK 75.6 billion) concentrated in the first year of the scenario, the resulting overall capital ratio would decline to 12.1%. In this scenario, the CNB would respond by fully releasing the CCyB, allowing it to be used to absorb the banking sector's losses, and banks would use almost the full capital conservation buffer. Two systemically important banks would breach the O-SII buffer requirement (see Chart III.22), with one also slightly breaching the TSCR. The conversion of eligible liabilities of CZK 1.3 billion might help top up capital to the TSCR, while capital injections totalling CZK 16.5 billion would be necessary in the two banks to fully replenish the O-SII buffer. As regards other banks, the TSCR would be breached in six cases. This would require capital injections totalling CZK 28.4 billion in five banks. In one bank, capital could be topped up through a conversion of eligible liabilities of CZK 0.6 billion. The leverage ratio of the banking sector in the *Adverse Scenario* drops to 4.9% but remains above the 3% threshold by a sufficient margin. Four systemically non-important banks would be individually non-compliant and a capital injection of CZK 21.0 billion would be required to meet the threshold. The resulting overall capital ratio shows that the banking sector as a whole would be resilient to adverse economic developments caused by the materialisation of selected climate change-related transition and physical risks concentrated in the next five years. The result also confirms that the current CCyB level is necessary to keep the banking sector sufficiently resilient and able to lend to the real economy.

Chart III.21
Compliance with the capital requirements by the banking sector in the alternative scenarios



79 For details on the methodology see Solvency macro stress test of the domestic banking sector.
80 We consider five banks with an O-SII buffer level set for 2022 to be systemically important.

Above all, additional eligible liabilities would be necessary in both scenarios to comply with the MREL

The MREL shortfall[81] – the amount of own funds and eligible liabilities required to meet the $MREL_{TREA}$ plus the combined capital buffer or the $MREL_{TEM}$, whichever requirement is the higher – amounts to 1% of the TREA in the *Baseline Scenario* (see Chart III.23). More than half of the shortfall (0.6% of the TREA) could be covered by issuing additional eligible liabilities. In the *Adverse Scenario*, the MREL shortfall would be 7.3% of the TREA. This is due to full implementation of the MREL during the scenario and also to a significant rise in the TREA, which increases the $MREL_{TREA}$ requirement. Only about a third of the MREL shortfall could be covered by issuing additional eligible liabilities. The rest would have to be made up using CET 1 or other capital. The CET 1 shortfall of 2.4% of the TREA would be fully covered at the aggregate level by release of the CCyB.[82]

Chart III.22

Need and method for replenishing own funds at different capital requirement levels

(CZK billions; right-hand scale: number of banks)

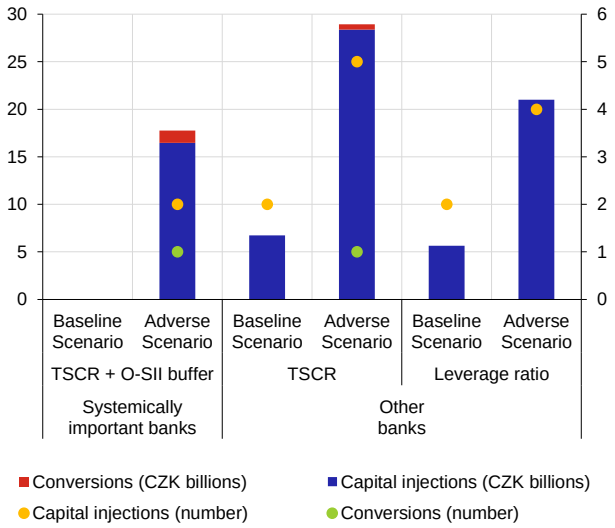
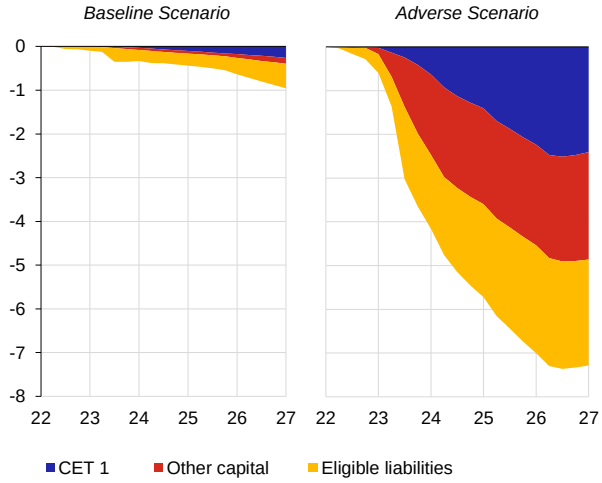


Chart III.23

MREL shortfall and its structure

(% of TREA)



81 The MREL shortfall is calculated as the amount of eligible liabilities and own funds required so that individual banks comply with the $MREL_{TREA}$ plus the combined capital buffer or the $MREL_{TEM}$, whichever is the higher. This is then aggregated for the entire banking sector and normalised by the value of the TREA. The structure of the MREL shortfall is calculated so that banks not only meet the $MREL_{TREA}$ and $MREL_{TEM}$ requirements, but also comply with the CET 1 capital ratio, the overall capital ratio and the binding leverage ratio requirement once the corresponding CET 1 level is replenished. For the purposes of topping up to the overall capital ratio, no distinction is made between AT 1 and Tier 2. It is assumed that banks will meet the MREL recapitalisation amount by issuing eligible liabilities.

82 Both scenarios assume that a CCyB of 2.5% of the TREA is applied.

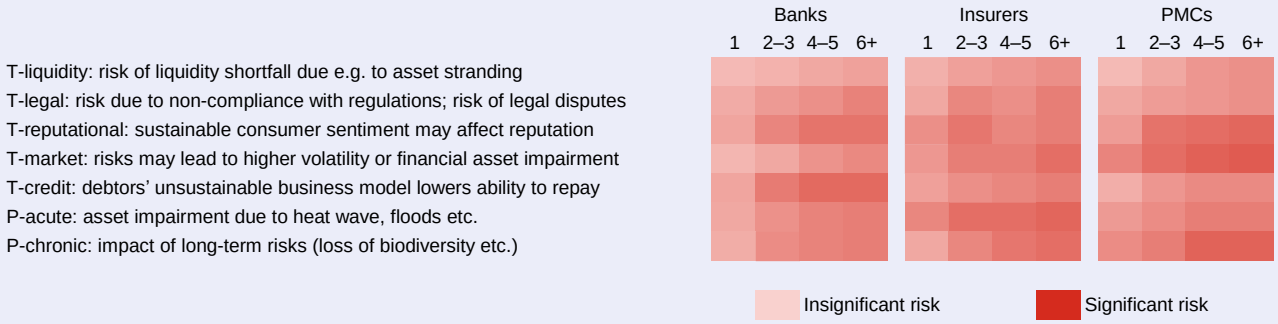
BOX 7: Environmental risk management by financial institutions operating in the Czech Republic, and reporting of climate change-related information

The CNB conducted a survey of twelve banks, six insurance companies and seven PMCs in the first half of 2022 to determine the degree of implementation of environmental factors into financial institutions' processes.[83] The survey also covered the management of environmental/climate risks in each institution. The results revealed that the institutions surveyed already take into account environmental risks that they consider significant for their core business from the long-term perspective, or plan to do so before 2024 (see Charts 1 and 2). All the institutions take environmental risks into account as an additional component of traditional financial risks in their risk management. This component may change the level of risks relating to certain types of assets, especially in the longer term. The institutions identified reputational risk as the biggest risk to their core business (see Chart 1). However, the majority assess it as low in terms of both investment portfolio composition and, in the case of banks, credit portfolio composition. The banks and insurance companies surveyed expect no additional stress in the liquidity or capital area stemming from environmental risks at the one-year horizon. Half of the insurance companies expect slightly increased stress, but only at the three-year horizon.

Chart 1 (BOX 7)

Types of environmental risks and their significance for financial institutions' core business

(columns: significance of each risk at horizons in years)



Note: T denotes transition risk. P denotes physical risk. Only three PMCs take the impact of physical risks into account. The average significance of these risks is thus affected by the small sample of respondents.

The survey was also aimed at determining how environmental risks are reflected in the management of sub-risks. When assessing client riskiness, almost all banks take the associated environmental risk into account. More than three-quarters of the banks surveyed take environmental risks into account when monitoring and managing their credit portfolios, valuing collateral and assessing client riskiness[84] and also in their sectoral exposure, or plan to do so within two years. Two-thirds of banks incorporate environmental risks into prices of loans and half of banks incorporate them into their internal credit risk analysis models, or will do so at the two-year horizon. Three-fifths of banks answered that they took environmental risks into account when measuring market risks, or planned to do so within two years, and half of banks do the same or plan to do so when approving new products. More than half of banks already implement environmental risks in their operational risk management or plan to do so within two years.

Turning to insurance companies, the contribution of environmental risks to underwriting risks is highest for property insurance and moderately significant for liability insurance at the five-year horizon. Most insurance companies are not currently planning to make any major adjustments to their reinsurance schemes in respect of the occurrence of natural disasters. Most are not seeing any restriction in the supply of passive reinsurance, but half of insurance companies have registered an increase in its price. A third of insurance companies have increased the price of insurance due to environmental physical risks. Another third are monitoring the risks and are ready to respond to current developments by raising their prices. Half of insurance companies have reduced insurance cover due to environmental physical risks and are applying exclusions in relation to these risks in contractual arrangements. Over the last five years, two-thirds have also introduced rules to limit the conclusion of insurance contracts due to material environmental risks.

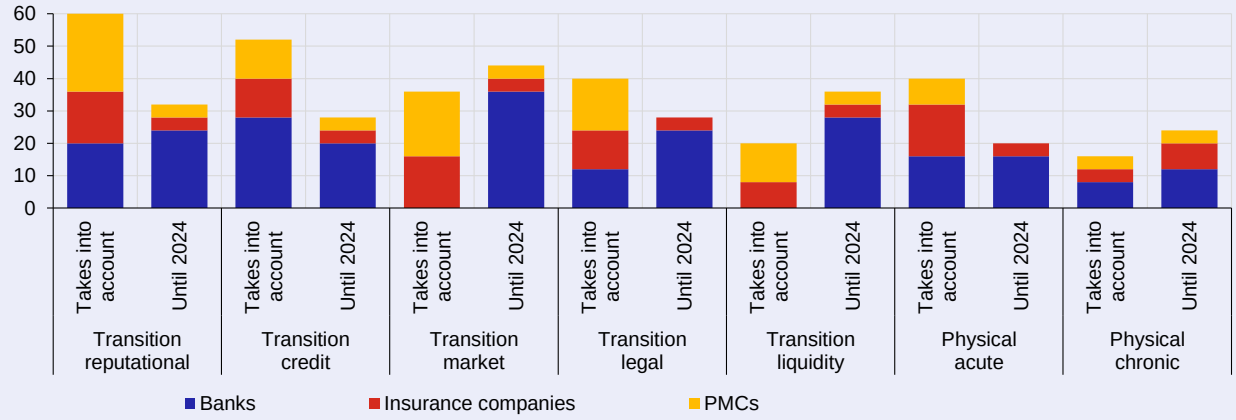
83 See cnBlog Zohledňování environmentálních faktorů ve finančním sektoru (in Czech only).

84 No bank currently takes clients' voluntary carbon offsets into account when lending, and only two banks are considering doing so before the end of 2023.

Chart 2 (BOX 7)

Taking into account of environmental sub-risks at different time horizons

(share of financial institutions in total number surveyed in %)



Almost all the institutions surveyed use both qualitative and quantitative methods to analyse environmental risks or plan to do so within two years. The most used qualitative methods include consideration of the counterparty's external ESG rating and qualitative analysis of climate scenarios. Half of the institutions use or intend to use stress testing based on climate scenarios or the setting of new quantitative objectives or limits for the purposes of quantitative analysis. Other methods include the use of standard models expanded to include environmental risks and new indicators focusing exclusively on environmental risks. As regards climate scenario analyses, most of the institutions surveyed use scenarios designed by international institutions and half use scenarios designed and used within the financial group they belong to. The most used scenario is that of a transition to a climate-neutral economy before 2050. In response to the results of climate scenario analyses, the institutions surveyed are implementing internal changes or plan to do so within two years (see Chart 3).

Chart 3 (BOX 7)

Areas of change depending on the results of climate scenarios

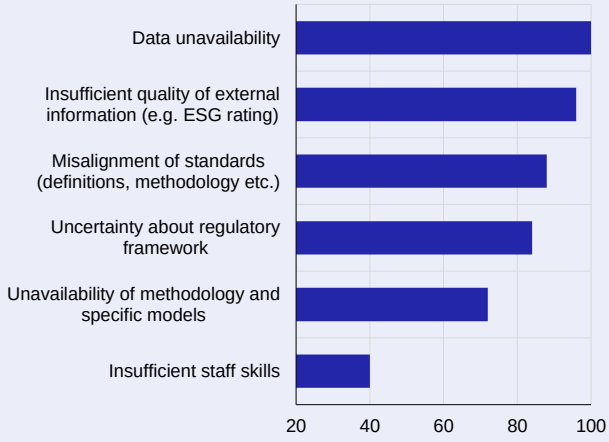
(share of financial institutions in total number surveyed in %)

Note: Change in the composition of the investment portfolio is relevant for insurance companies and PMCs, change in the insurance portfolio for insurance companies and change in the credit portfolio for banks.

Chart 4 (BOX 7)

Barriers to assessment of environmental risks

(share of financial institutions in total number surveyed in %)



A lack of data, insufficient data quality and low standardisation remain obstacles to effective analysis and risk management (see Chart 4). One currently widely supported instrument for removing such obstacles and mobilising the capital and investment needed to transition to sustainable economies is standardised reporting of climate-related information by non-financial corporations and financial institutions. Generally, this reporting is aimed mainly at disclosing to what extent the impacts of climate change on governance and risk management processes, strategy and the levels of climate change-related indicators are taken into account.[85] As a result of reporting, the reporting companies can themselves more effectively analyse the opportunities and risks arising for their core business from climate change and the transition to

85 For example, the amount of greenhouse gas emissions under Scope 1, 2 and 3 and the energy performance of buildings.

a sustainable economy. The information disclosed is to be forward-looking. This is particularly important for financial institutions, which need to sufficiently quantify climate change-related risks and estimate the potential losses arising from exposures jeopardised by climate risks.

The need for a globally unified reporting framework to ensure data consistency and comparability across jurisdictions led to the establishment of the TCFD[86] in 2015. In 2017, it published recommendations[87] on the type and scope of information disclosed by firms. In line with these recommendations, some countries have started to introduce and apply requirements for disclosure of relevant information.[88] The ISSB is working on creating globally recognised standards.[89] In March 2022, it issued a proposal for climate-related disclosure requirements[90] built on the recommendations of the TCFD. The public consultation has been closed and the form of the standards is now being discussed again.

In April 2021, the European Commission presented a proposal for a Corporate Sustainability Reporting Directive (CSRD)[91] in the EU. The proposal is in line with the recommendations of the TCFD and builds on the previous Non-Financial Reporting Directive (NFRD).[92] Unlike the previous directive, the CSRD will apply to all large companies[93] and all medium-sized and small public-interest entities. The reporting obligation will also cover non-EU companies meeting given criteria.[94] Compared with the NFRD, the number of reporting companies is to increase from around 11,700 to 49,000. Electronically disclosed information will have to comply with relevant standards[95] and be subject to a binding audit, which should improve the credibility of the information and prevent greenwashing.[96] In June 2022, the EU Council and the European Parliament reached a preliminary agreement on the form of the CSRD, which now has to be officially approved and implemented into national law. According to the current outlook, the first group of companies is to start disclosing information in 2024.[97]

The information disclosed by companies and financial institutions should solve the problems of absent and heterogeneous data, which financial institutions and supervisory authorities have identified as significant barriers to effective analysis of climate risks and more precise identification of potential threats to financial stability.

86 The Task Force on Climate-Related Financial Disclosures.

87 Recommendations of the Task Force on Climate-related Financial Disclosures (2017).

88 In the UK, for example, more than 1,300 of the largest corporations and financial institutions have had a duty to disclose climate-related financial information in line with the TCFD recommendations since 6 April 2022. Since 1 January 2022, the largest banks and insurance companies in Switzerland have been required to disclose information on climate-related financial risks in accordance with rules based on the TCFD recommendations.

89 The International Sustainability Standards Board (ISSB) was established in 2021 and falls under the International Financial Reporting Standards (IFRS) Foundation.

90 [Draft] IFRS S2 Climate-related Disclosures. The ISSB has also introduced draft requirements for disclosure of sustainability-related financial information ([Draft] IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information).

91 Proposal for Directive 2021/0104, amending Directives 2013/34/EU, 2004/109/ES and 2006/43/ES and Regulation (EU) No. 537/2014, as regards corporate sustainability reporting.

92 The NFRD applies to large public-interest entities with an average number of employees in excess of 500 and to public-interest entities that are parent companies of a large group with an average number of employees in excess of 500 on a consolidated basis. Public-interest entities are defined as companies with securities listed in EU regulated markets, banks (whether listed or not), insurance companies (whether listed or not) and any other companies designated by Member States.

93 Large undertakings are those which exceed at least two of the following thresholds on their balance sheet dates: (a) balance sheet total: EUR 20 million, (b) net turnover: EUR 40 million, (c) average number of employees during the financial year: 250.

94 Companies whose annual income generated in the EU exceeds EUR 150 million and which also have a large or listed subsidiary in the EU or a significant branch in the EU (generating income of EUR 40 million).

95 The standards, which have undergone a public consultation, are to be adopted by the Commission by 30 June 2023. Standards for specific sectors that are associated with adverse impacts on sustainability are to be adopted by the Commission by 30 June 2024. However, their form is currently not known.

96 Greenwashing refers to market practices whereby institutions' disclosures relating to the assessment, verification or presentation of the environmental attributes of their business activities, including the provision of (financial) products and services, are distorted (both intentionally and unintentionally).

97 Companies which had to disclose information under the NFRD will report under the CSRD for the first time in 2025 for 2024. Large companies which were not subject to the NFRD and are now subject to the CSRD will report for the first time in 2026 for 2025. Small and medium-sized enterprises will report in 2027 for 2026, with a possible exemption until 2028. From 2028, relevant subsidiaries and branches will be responsible for reporting by non-EU companies at the consolidated level.

IV. MACROPRUDENTIAL POLICY

Pursuant to Article 2 of the Act on the CNB, the CNB maintains financial stability and sees to the sound operation of the financial system in the Czech Republic. To achieve these objectives, it conducts macroprudential policy. To this end, it uses a set of macroprudential instruments focused mainly on the banking sector, which is the largest sector in the domestic financial system. This section IV evaluates the current position of the Czech economy in the financial cycle, the resilience of the domestic financial sector to the risks identified, and the tasks and recommendations arising from analyses for the settings of the CNB's macroprudential policy instruments.

IV.1 THE CNB'S MACROPRUDENTIAL POLICY OBJECTIVES AND INSTRUMENTS

Macroprudential policy responds to changes in systemic risk on an ongoing basis…

The CNB sets macroprudential policy instruments on the basis of an assessment of the intensity of systemic risks.[98] In conformity with an ESRB recommendation, it focuses on the fulfilment of intermediate objectives (see Table IV.1) reflecting the existence of several sources of systemic risk and their own transmission mechanisms. Among the most important macroprudential instruments in the current regulatory framework are capital buffers, which are applied on top of the 8% minimum capital requirement (Pillar 1) and the Pillar 2 requirements (see section III.2.1). The CNB currently applies three capital buffers to strengthen the resilience of the banking sector (see Table IV.2) and its ability to lend. The buffer rates reflect the current and expected cyclical and structural characteristics of the Czech banking sector.[99] Given the systemic risks identified in the area of housing loans, the CNB has been exercising its statutory power to set upper limits on credit ratios since 1 April 2022 (see section IV.4).

Table IV.1.
Summary of intermediate objectives and macroprudential instruments and evolution of specific risks

Intermediate objectives	Specific risk	Existence of specific risk in CZ	Key instruments	Applied in CZ	Detailed information
Mitigate excessive credit growth and leverage	Stronger credit recovery accompanied by easing of lending standards	Yes	Countercyclical capital buffer	Yes, 1.5% from 1 October 2022; increased to 2.0% from 1 January 2023 and 2.5% from 1 April 2023	IV.3
	Rising leverage, rising off-balance sheet risk	Potential	Macroprudential leverage ratio	No	-
	Low risk weights of significant credit portfolios	Potential	Macroprudential tool to mitigate systemic risk at Member State level (Article 458 CRR)	No	-
	Elevated growth in loans and risks in specific sector	Potential	Sectoral capital requirements (sectoral and broad-based systemic risk buffer)	Not as yet, CNB reacts to property exposure risks with other instruments	-
	Risk of spiral between property prices and property financing loans	Yes	LTV caps	Yes, tightened on 1 April 2022	IV.4
	Risk of excessive household indebtedness and debt service	Yes	LTI, DTI, LSTI, DSTI caps	Yes, DTI and DSTI reintroduced on 1 April 2022	IV.4
Mitigate excessive maturity mismatch and illiquidity	Long-term liquidity risk	Potential	Macroprudential NSFR	No	III.2
	Short-term liquidity risk	No	Macroprudential LCR	No	III.2
Limit exposure concentrations	Property exposure concentration	Potential	Systemic risk buffer	Not as yet, CNB reacts to property exposure risks with other instruments	-
	Sovereign exposure concentration	Yes	Public finance stress test	Yes, option of additional capital requirements in event of elevated sovereign risk, since 2015	-
Limit misaligned incentives	Potential impacts of problems in SIFIs on financial market stability and real economy	Yes	SIFI capital surcharges (G-SII and O-SII buffer)	Yes, O-SII buffer rate of 0.5%–2.5%	IV.2
			Systemic risk buffer	No	IV.2
Strengthen resilience of financial infrastructures	Counterparty default risk, interconnectedness of financial infrastructures	No	Margin and haircut requirements on CCP clearing	No	-
			Increased disclosure	No	-
			Systemic risk buffer	No	-

Note: The main goal of these instruments is to strengthen the resilience of the banking sector, not to mitigate systemic risk. The classification of intermediate objectives and instruments is based on Recommendation of the ESRB of 4 April 2013 on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1).

98 For details, see https://www.cnb.cz/export/sites/cnb/en/financial-stability/.galleries/macroprudential_policy/cnb_macroprudential_policy_strategy.pdf.

99 The exception is the capital conservation buffer, whose rate is unchanged over time.

The macroprudential space created has enhanced banks' capacity to lend to the real economy in times of stress…
The CNB's Macroprudential Policy Strategy puts an emphasis on timely and preventive use of the available instruments. The macroprudential space has been significantly enhanced by capital buffers (the combined capital buffer), whose rates for individual banks ranged between 4.0% and 6.5% at the start of October 2022 depending on the banks' systemic importance. Owing to the pending increase in the countercyclical capital buffer rate, this space should grow by 1 pp by April 2023 (see Table IV.2 and section IV.3). The credit potential of the capital buffers amounted to CZK 2.2 trillion as of mid-2022.[100]

…and the CNB considers it natural for banks to use it if necessary
The CNB is ready to release the countercyclical capital buffer in the event of adverse economic developments accompanied by growth in credit losses.[101] It has also long emphasised that it considers it natural for banks to use their combined capital buffer to cover credit losses and provide loans in this situation. This approach is fully in line with the current regulatory framework. The capital buffers would later be replenished gradually using future profits in accordance with the regulatory rules.[102]

Table IV.2
Summary of macroprudential capital buffers in the Czech Republic
(%)

Capital buffer	Rate	Date of effect
Capital conservation buffer (CCoB)	2.50	2014
Countercyclical capital buffer (CCyB)	1.50	1 October 2022
	2.00	1 January 2023
	2.50	1 April 2023
Systemic risk buffer (SRB)	-	-
Buffer for other systemically important institutions (O-SIIs)	0.50–2.50	1 October 2021

The overlaps between the parallel capital requirements are not systemic
The current regulations allow the combined capital buffer to be used to meet the leverage ratio requirement and, in certain circumstances, to meet the MREL (the "parallel capital requirements"). Banks may only use the part of buffers which is not subject to the parallel capital requirements to absorb losses and lend to the economy (otherwise they would fail to comply with these requirements).[103] The overlaps between the capital buffers and the parallel capital requirements amounted to CZK 27 billion (i.e. 18% of the combined capital buffer) as of mid-2022 and concerned seven banks, two of which are systemically important institutions. The overlaps between the parallel capital requirements have not yet reached the level where they systemically limit the effectiveness of macroprudential policy capital instruments. The CNB will monitor the overlaps on an ongoing basis and, where necessary, respond with microprudential and macroprudential supervisory actions and resolution measures to maintain the effectiveness of the capital buffers at a sufficient level.

100 The credit potential depends not only on the capital buffer rates, but also on the risk weights. If the risk weights increase, the credit potential of the buffers decreases (see section III.2 for details on the risks of a change in trend in risk weights).

101 For details see Holub, L., Konečný, T., Pfeifer, L., Brož, V. (2020): *The CNB's Approach to Releasing the Countercyclical Capital Buffer*, Thematic Article on Financial Stability 3/2020.

102 Profit distribution may be restricted not only in a situation where a bank is non-compliant with the combined capital buffer on top of the Pillar 1 and Pillar 2 minimum requirement, but also, in certain circumstances, in a situation where it is non-compliant with the combined capital buffer on top of the MREL. For details see Pfeifer, L. and Holub, L. (2022): *The Relationship Between the MREL and Macroprudential Capital Buffers*, Thematic Article on Financial Stability 2/2022.

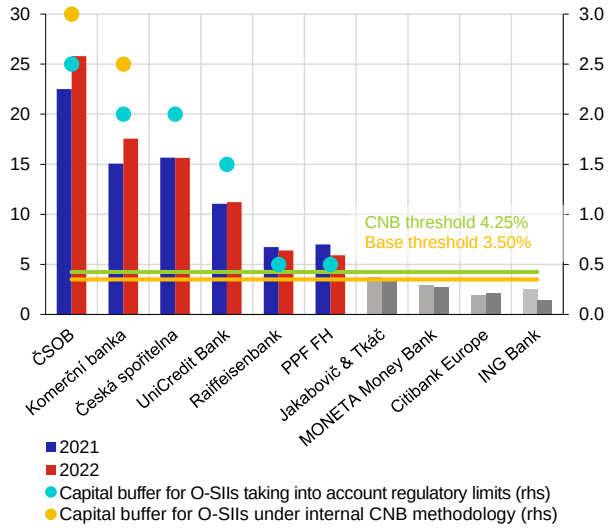
103 For details on the overlap between capital buffers and the leverage ratio requirement see Pfeifer, L. (2020): *Usability of Capital Buffers under a Binding Leverage Ratio Requirement*, Thematic Article on Financial Stability 6/2020, and for details on the overlap between capital buffers and the MREL see Pfeifer, L. and Holub, L. (2022): *The Relationship Between the MREL and Macroprudential Capital Buffers*, Thematic Article on Financial Stability 2/2022.

IV.2 STRUCTURAL CAPITAL BUFFERS

The list of other systemically important institutions was expanded

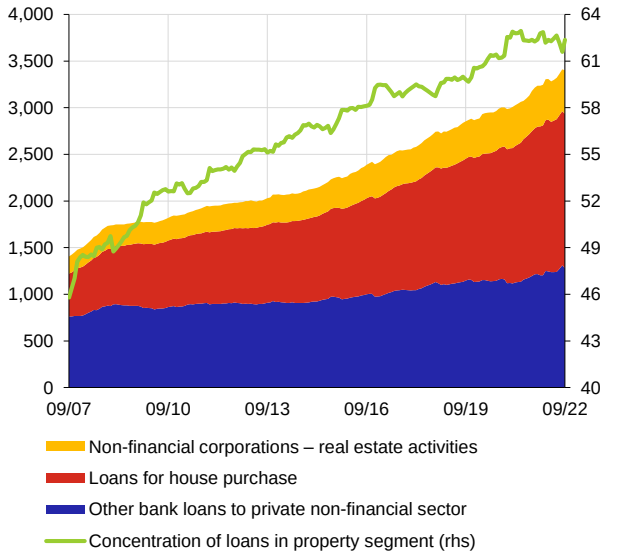
Based on the CNB's evaluation, the current list of five other systemically important institutions has been expanded for 2023 to include PPF Financial Holdings a.s., for which the O-SII buffer rate has been set at 0.5%.[104] The O-SII buffer rates for the other institutions remain unchanged. The total assets of these systemically important institutions accounted for 80% of the domestic banking sector as of mid-2022. Their resilience is thus crucial for financial stability. The CNB sets an O-SII buffer rate ranging between 0.5% and 2.5% of risk-weighted exposures for these institutions depending on their systemic importance (see Chart IV.1).[105] The buffer rates of two institutions are lower than their systemic importance scores would imply due to the regulatory cap on the rate for subsidiaries (see Chart IV.1).[106] This reduces the coverage of risks associated with the institutions' systemic importance and violates the level playing field principle. The specific cap on the rate for subsidiaries also implies potential volatility should their home macroprudential authorities change the settings of this buffer.[107]

Chart IV.1
Systemic importance scores and O-SII buffers
(score in %; right-hand scale: rate in %)



Note: Grey denotes institutions not included in the list of other systemically important institutions for 2023.

Chart IV.2
Concentration of bank loans in the property segment
(CZK billions; right-hand scale: %)



The concentration of the housing loan portfolio remains elevated

The concentration of property financing loans has long been on an upward trend in the domestic banking sector. The share of property exposures in loans to the private non-financial sector stood at 62.6% as of mid-2022 and has risen by 3.6 pp over the past five years. The share of housing loans in loans to the private non-financial sector was 49.3%, having increased by 5.2 pp in the same period. Growth in new loans for house purchase dropped sharply in 2022 and the trend thus halted (see Chart IV.2).

The capital intensity of the key mortgage portfolio continues to decrease…

The implicit risk weights on the housing loan portfolio derived from banks' internal models are now at record-low levels (having dropped by 7.0 pp to 17.1% over the past five years) and may not fully reflect the macroprudential systemic risks associated with the relevant portfolio in the current economic conditions (see section III.2).

104 For details see the CNB website: https://www.cnb.cz/en/financial-stability/macroprudential-policy/list-of-other-systemically-important-institutions/.

105 To calibrate the O-SII buffer, the CNB applies the bucketing approach. See Pfeifer, L. (2021): *The CNB's Approach to Setting the Capital Buffer for Other Systemically Important Institutions: Past and Present*, Thematic Article on Financial Stability 2/2021.

106 The O-SII buffer cap is 3%. In the case of domestic institutions that are subsidiaries of foreign institutions identified by their home supervisors as O-SIIs or G-SIIs, the cap on the O-SII buffer rate cannot be more than 1 pp above the parent institution's O-SII or G-SII buffer rate. Five of the six domestic O-SIIs are subsidiaries of foreign institutions identified by their home regulators as O-SIIs or G-SIIs and may thus be subject to the specific cap on the buffer rate for subsidiaries.

107 The CNB has long opposed this regulation. For details see the CNB's response to the Targeted Consultation on Improving the EU's Macroprudential Framework for the Banking Sector.

…the results of the *Adverse Scenario* of the stress test of banks indicate that it is sufficiently resilient
According to the results of the *Adverse Scenario* of the solvency macro stress test (see section IV.1), average quarterly provisioning at the sector level would total around CZK 5.9 billion. Conversely, net interest income on housing loans would be around CZK 8.3 billion. Therefore, during the test, the total new provisions do not exceed the income on this portfolio, nor do they result in a loss which, coupled with a steady rise in risk weights, could weaken the sector's capital position. It thus does not seem necessary for now to use the sectoral buffer to cover systemic risk in the case of housing loans.

The current macroprudential and monetary policy settings are limiting the further accumulation of these risks
The current LTV, DTI and DSTI caps are limiting the accumulation of risks in the area of loans for house purchase (see section IV.4). The risks associated with the cyclical decline in risk weights for housing loans are, among other things, taken into account in the CCyB rate, which will be gradually increased to 2.5% with effect from 1 April 2023. The risk accumulation trend is also being slowed by the current monetary policy stance, which is affecting the pace of credit growth.[108] Macroprudential and monetary policies are thus acting in the same direction in the current situation.[109]

The ESRB has issued a warning on growth in systemic risks, which may amplify each other's impact…
A warning issued by the ESRB in September 2022[110] points out that the growth in geopolitical tensions in Europe is increasing a number of risks to financial stability. The war in Ukraine is driving up energy prices and inflation. This may increase the NPL ratio in the financial sector. Risks stemming from a sharp fall in asset prices remain severe. Growth in debt service for clients, accompanied by a decline in their real income, may also contribute to the materialisation of previously accumulated cyclical risks. In addition, the probability of large-scale cyber incidents has increased. These risks may amplify each other's impact.

…and is urging financial institutions and competent authorities to show heightened vigilance
The ESRB therefore recommends in its warning that financial institutions and competent micro- and macroprudential authorities should prepare for possible adverse economic developments, including in the area of liquidity. The warning urges financial institutions to manage risks prudently by conservatively reflecting the current economic developments in their provisioning, capital and capital planning. This should serve as a first line of defence against the above risks. It may be supplemented with the introduction of micro- and macroprudential measures in the form of an increase in the additional Pillar 2 capital requirement and the capital buffers. Given the existing systemic risks, the CNB considers the current macroprudential policy settings to be sufficient at the moment.

108 The average mortgage loan rate was up 2.6 pp year on year to 4.8% as of August 2022.

109 For more details on the interaction between monetary and macroprudential policies see Malovana, S., Frait, J. (2017): *Monetary Policy and Macroprudential Policy*: *Rivals or Teammates?* Journal of Financial Stability 32 (2017): 1–16.

110 Warning of the European Systemic Risk Board of 22 September 2022 on vulnerabilities in the Union financial system (ESRB/2022/7).

IV.3 THE COUNTERCYCLICAL CAPITAL BUFFER

The CNB has been setting the countercyclical capital buffer (CCyB) since 2014 with the aim of limiting the negative impacts of the financial cycle on the banking sector and thus preventing the transmission of adverse financial shocks to the real economy. Given the wide range of manifestations of the financial cycle in the real economy and the financial sector, the CNB sets the CCyB rate on the basis of a comprehensive assessment of a set of macrofinancial and banking sector-specific indicators. The CNB regards as appropriate a CCyB rate that is sufficient to cover the potential losses stemming from the materialisation of cyclical risks while maintaining banks' capital capacity for lending at a sufficient level.[111]

The CNB is leaving the CCyB rate unchanged at 2.5%

The CNB Bank Board decided at its meeting on 30 November 2022 to leave the CCyB rate unchanged at 2.5% (see Chart IV.3). Banks and credit unions will be obliged to apply this rate from 1 April 2023. In adopting this decision, it took into account indicators and analyses of the position of the Czech economy in the financial cycle and the degree of vulnerability of the banking sector. The Bank Board agreed that although the size of new cyclical risks in the banking sector's balance sheets has started to fall, the amount of cyclical risks accumulated in the banking sector's balance sheet remains elevated given their very low materialisation recorded so far. This trend in the indicators corresponds to a situation where the economy has just passed the peak of the financial cycle. The Bank Board decided to keep the rate at the current level also because of the persisting geopolitical and economic uncertainties, which are creating increased potential for sudden and large-scale materialisation of credit risks. Should the scenario of a worsening economic situation and unexpected credit losses forming in the domestic banking sector materialise, the CNB is ready to lower the CCyB rate or release the buffer fully in order to cover these losses while ensuring that banks have sufficient capital capacity to lend to the real economy.

Chart IV.3
Applicable and pending CCyB rate in the Czech Republic
(% of total risk exposure)

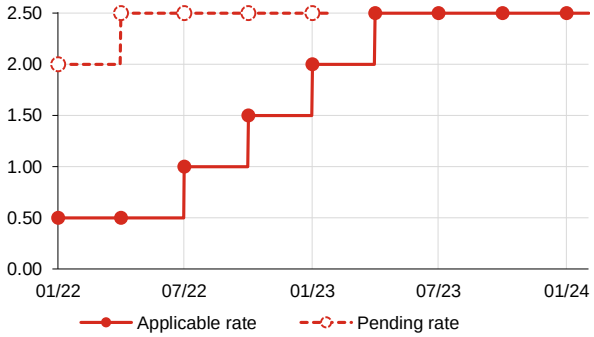
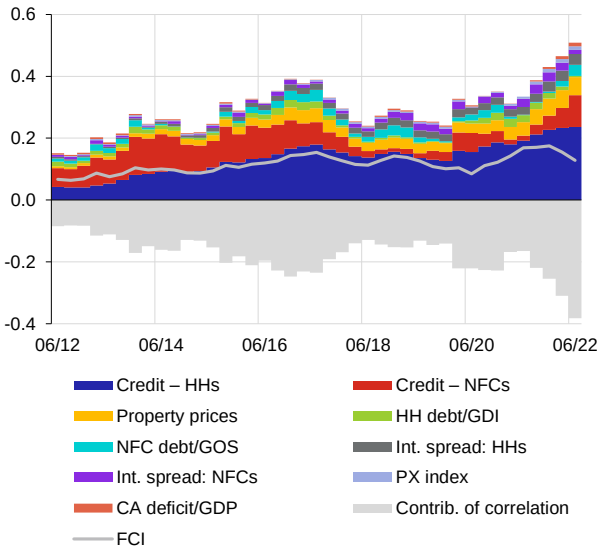


Chart IV.4
Financial cycle indicator
(0 minimum, 1 maximum)



Source: CNB, CZSO

Note: The interest rate spread is defined as the difference between the client rate on new loans and the 3M PRIBOR. The negative contribution of the cross-correlation structure to the FCI value (the loss due to imperfect correlation of the subindicators) is the difference between the current FCI value and the upper bound, which assumes perfect correlation between all indicators. Weak correlation between the subindicators is reflected in growth in the negative contribution to the overall FCI value.

111 For more details on the setting of the CCyB rate in the Czech Republic see: The CNB's approach to setting the countercyclical capital buffer.

Lower correlation between the subindicators led to a drop in the financial cycle indicator

The financial cycle indicator (FCI) dropped in 2022 Q2, implying a decline of the economy from the local peak reached at the end of 2021 for the second consecutive quarter. The decrease in the FCI value was due primarily to a sizeable drop in the correlation between the factors (see Chart IV.4), caused mainly by different trends in new loans to non-financial corporations and households. However, the theoretical FCI value, which is the sum of all subindicators not taking the correlation into account, increased further and was the highest since 2009 at the end of June 2022. All the subindicators except the interest rate spread for non-financial corporations, credit growth for non-financial corporations and household debt were in the highest third of their historical ranges. Due to the relatively high inflation in the Czech Republic, especially in the last three quarters (see section II.1), the FCI was also calculated using credit series adjusted for price indices. A comparison of the indicators reveals that the price-adjusted FCI has recorded higher values in recent quarters,[112] as the correlation of its variables has remained stable due to slower growth in corporate loans (see Chart IV.5).

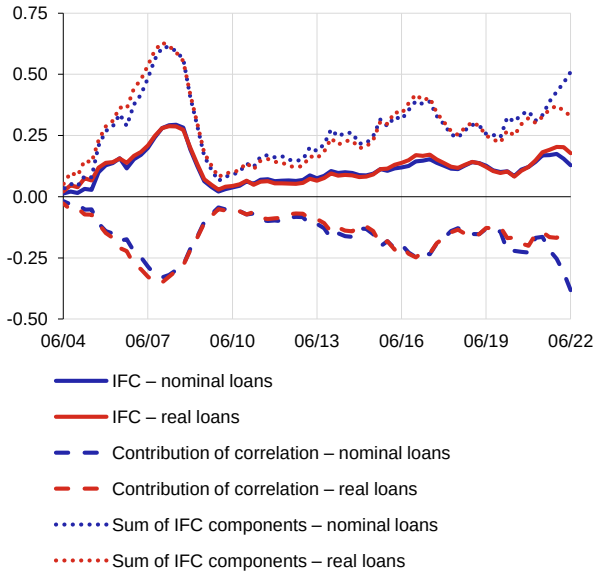
Growth in bank loans was particularly strong in the non-financial corporations sector

The year-on-year growth rate of loans to non-financial corporations reached 9.2% in September 2022, well above the historical average (see Chart IV.6 and Chart IV.7). The rapid growth was driven by high inflation, with foreign currency loans growing particularly strongly (see Box 3). Turning to individual sectors, the highest lending activity was recorded by wholesale and retail, property developers and transport, and energy generation and distribution. The high lending activity in the last-mentioned segment was due to the exceptionally high liquidity needs of large energy companies, which had to meet the increased margins required by exchanges. Real growth in loans to non-financial corporations adjusted for the producer price index and for the liquidity loans provided to large energy firms was below average and significantly negative (-9.8%). The growth rates of loans provided to households for house purchase and for consumption have been decreasing and stagnating respectively since the start of 2022. Adjusted for consumer price inflation, the growth was negative and below average in both these segments.

Chart IV.5

Comparison of financial cycle indicators with nominal and real loans

(0 minimum, 1 maximum)



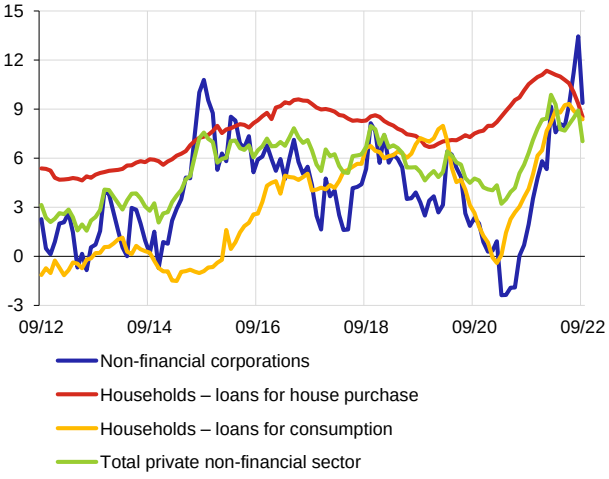
Source: CNB, CZSO

Note: In order to determine real loans, nominal loans were adjusted for changes in price indices – the consumer price index in the case of households and the producer price index in the case of non-financial corporations.

Chart IV.6

Year-on-year growth in bank loans to the private non-financial sector

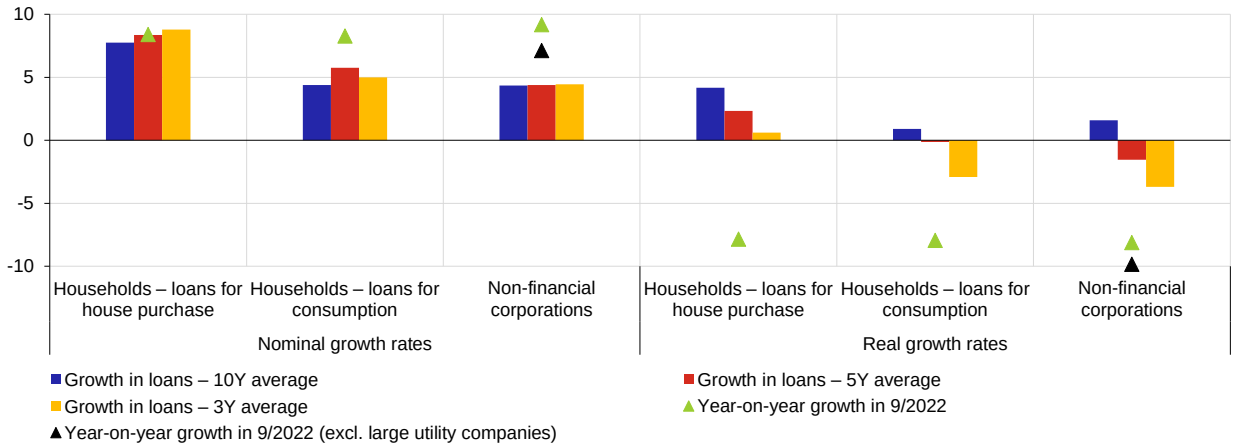
(%)



Note: The data are adjusted for the credit portfolio of Sberbank.

112 Owing to the relatively subdued growth in the price level since the start of measurement of the FCI, the two indicators have only started to differ significantly in the last three quarters.

Chart IV.7
Average and current growth in bank loans to the private non-financial sector
(%)

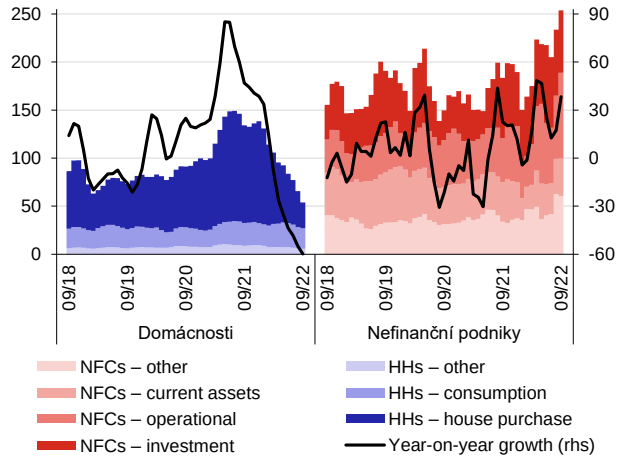


Note: The data are adjusted for the credit portfolios of Sberbank. The real growth rates are adjusted for inflation – the CPI in the case of loans to households and the PPI in the case of loans to non-financial corporations.

Pure new loans fell sharply in the household sector

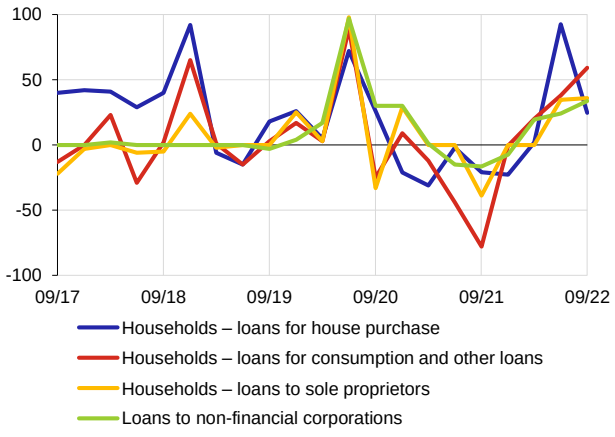
Following a surge in loans in 2021, the property market cooled due to rising interest rates (see Chart II.7) and the already high property prices (see Chart II.15 and Chart II.16), and pure new loans to households for house purchase fell sharply (see Chart IV.8). At CZK 26.9 billion, the quarterly total of pure new loans to households for house purchase in 2022 Q3 was the lowest since 2014. Loans to households for consumption also declined slightly in 2022 Q3. Pure new loans in the non-financial corporations sector accelerated, with operational and other loans in particular recording year-on-year growth. Total new loans to non-financial corporations rose by 27.5% year on year in the first nine months of 2022. Adjusted for liquidity loans to energy companies, they increased by 22.8%.

Chart IV.8
Pure new bank loans to the private non-financial sector
(three-month totals in CZK billions; right-hand scale: %)



Note: Pure new loans comprise increases in existing loans and are adjusted for refinanced and refixed loans. The growth rate is calculated using three-month totals.

Chart IV.9
Credit standards in the Czech Republic
(net percentages)



Source: Bank Lending Survey, CNB
Note: The data represent the difference between the market share of banks that reported a tightening of lending standards and banks that reported an easing of lending standards in the past three months. More information on the indicator methodology can be found on the CNB website.

The indicators are sending mixed signals about the pace of the taking on of cyclical risks in banks' balance sheets

The incipient cooling of the mortgage and property markets (see section II) has reduced the amount of cyclical risks being taken on in banks' balance sheets. However, lending to non-financial corporations has accelerated. The FCI also provides an unclear guide, as its value has declined but the sum of its subindicators has increased. In the overall assessment, the pace of the taking on of new risks in banks' balance sheets has clearly slowed. According to projections of growth in loans to households and non-financial corporations, this trend can be expected to continue in the coming quarters (see

section II.2, Chart II.28). The prudential estimate of unexpected credit losses due to cyclical effects has decreased slightly compared with the previous assessment and indicates a capital need of CZK 19.4 billion, which would be fully covered by a CCyB rate of 0.75%. The same rate is implied by an indicative conversion based on the FCI (see Table IV.1 CB).

…their total volume accumulated in the banking sector's balance sheet remains high

The cyclical risks taken on in the past remain accumulated in the banking sector and have not decreased significantly as yet. These risks should be sufficiently covered by the CCyB rate until they decline visibly due to materialisation via credit losses or gradual natural disappearance.[113] The current conditions of rising consumer and producer prices, geopolitical uncertainty and a growing likelihood of recession in advanced economies are meanwhile increasing the likelihood of these risks materialising in the near future. The banking sector has also taken on board the less favourable economic situation by tightening credit standards in all the main credit segments (see Chart IV.9).[114]

Provisioning is exceptionally low

Given the absence of credit losses and the current expectations of low losses in the future, provisioning remains exceptionally low (impairment losses; see Chart III.8). In line with the low provisioning, the ratio of provisions created for loans to gross loans has also declined. Increasing vulnerability is also implied by an increase in the BPI indicator, which expresses the ratio of the margin on the stock of loans to provisions per unit of credit (see Chart IV.1 CB).

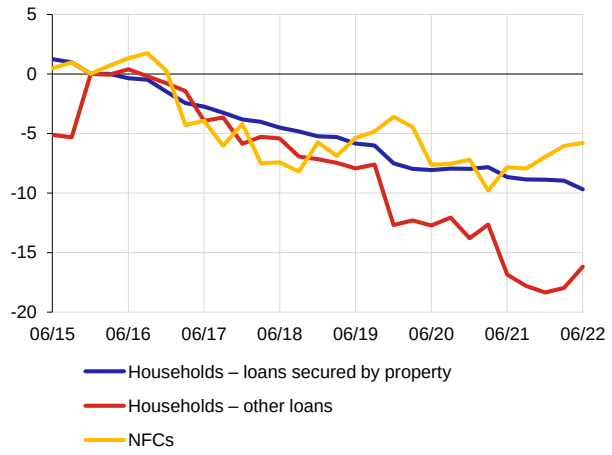
Risk weights on the main credit portfolios remain low…

Risk weights on credit portfolios under the IRB approach ("risk weights") are one of the key indicators of the banking sector's vulnerability over the financial cycle. A drop in risk weights reduces the capital requirement in absolute terms. Risk weights in the main credit portfolios recorded mixed trends in 2022. The risk weights for loans to households for house purchase continued to fall, while the average risk weight on loans to non-financial corporations and loans to households for consumption increased (see Chart IV.10). Compared with the start of the strongly expansionary phase of the financial cycle which, according to the CNB's analyses, the Czech economy entered at the end of 2015, risk weights in all the main credit portfolios were considerably lower at the end of June 2022.

Chart IV.10

Change in risk weights compared with the start of the strongly expansionary phase of the financial cycle

(pp)

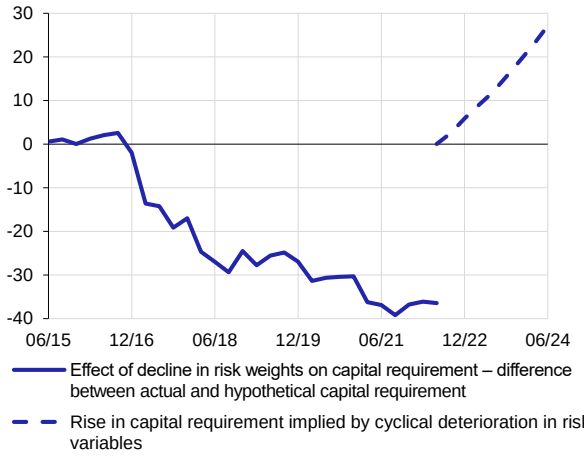


Note: According to the CNB's analyses, the strongly expansionary phase of the financial cycle started in 2015 Q4.

Chart IV.11

Effect of a change in risk weights on the capital requirement

(CZK billions)



Note: The chart shows the capital requirement for the following IRB portfolios reported in the given period: retail exposures – non-SME exposures secured by property, and retail exposures – other non-SME and corporate exposures. The actual capital requirement is based on the actually observed risk weights and exposures. The hypothetical capital requirement is calculated on the basis of the risk weights as of the beginning of the expansionary phase of the financial cycle (12/2015) and the actually observed exposures.

113 Natural disappearance of risks means, for example, gradual repayment of principal, a decline in the real value of debt due to inflation or an improvement in loan characteristics (such as LTV, DTI and DSTI) in line with the evolution of macrofinancial variables over time.

114 However, it may have done so largely because of growth in interest rates and due to the applicable mortgage ratios, and not in response to the worse economic outlook.

…a cyclical deterioration in risk parameters would lead to growth in risk weights and an increase in the capital requirement in absolute terms

In addition to covering the manifestations of the financial cycle in the real economy (credit losses), the CCyB rate should cover the growth in the absolute capital requirement due to the effects of the financial cycle on risk weights. The CNB derives the buffer rate using cyclically deteriorated risk parameters of the probability of default (PD) and loss given default (LGD), which enter the models used to calculate risk weights. This estimate shows that growth in risk weights would lead to an increase in the capital requirement in absolute terms of CZK 27.1 billion, which would be fully covered by a CCyB rate of 1% (see Chart V.11).

A quantitative assessment shows that it is necessary to maintain a rate of at least 1.75% to cover the risks

The conversion of the FCI to the CCyB rate (see Chart IV.12, column: *Conversion based on FCI values*) and the prudential estimate of unexpected losses (see Chart IV.12, column: *Conditional credit loss distribution*) both indicate a rate of 0.75%. The estimated capital needed to cover the potential cyclical rise in risk weights implies a rate of 1.00% (see Chart IV.12, column: *Rise in risk weights due to cyclical deterioration of risk parameters*). The capital needed to cover the unexpected losses and the increase in risk weights thus amounts to CZK 46.5 billion and would be fully covered by a CCyB rate of 1.75%. It should be noted that the quantitative approaches do not take into account all the possible risks associated with the current high economic and geopolitical uncertainties (see section III, Box 5). These uncertainties may lead to higher and faster risk materialisation than implied by the quantitative approaches used.

The CCyB rate is being raised in many European countries

Other European countries have also responded to the growth in cyclical risks by raising the CCyB rate (see Chart IV.13). The same rate as in the Czech Republic has been announced by Norway and Denmark. In addition to the Nordic countries, non-zero CCyB rates have been set by some large economies such as Germany and France.

Deviations of the credit-to-GDP ratio from its trend do not provide a suitable guide to increasing or releasing the CCyB for the Czech Republic

In accordance with an ESRB recommendation,[115] the CNB should take into account the credit-to-GDP ratio and its deviation from the long-term trend when determining the position in the financial cycle and deciding on the CCyB rate. In 2022 Q2, the ratio was 84.3% and the relevant gap -7.3 pp. The CNB has long maintained that this approach is not a suitable tool for assessing cyclical risks in the Czech economy and is subject to a range of shortcomings which reduce its reliability.[116] The additional gap (the expansionary credit gap), which uses an alternative approach to determining the long-term trend and partially eliminates the problems associated with the recommended methodology, was 0 pp in Q2, implying a rate of 0% (see Chart IV.2 CB). However, this indicator must also be viewed as only a very simplified way of assessing the position in the financial cycle, with very limited direct usefulness as regards deciding on the CCyB rate.

Chart IV.12

CCyB rate covering financial cycle effects monitored

(% of total risk exposure)

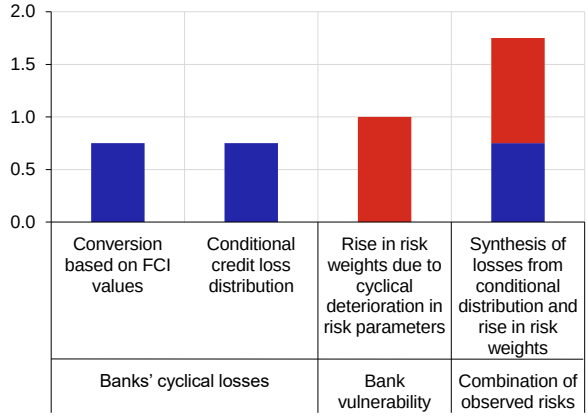
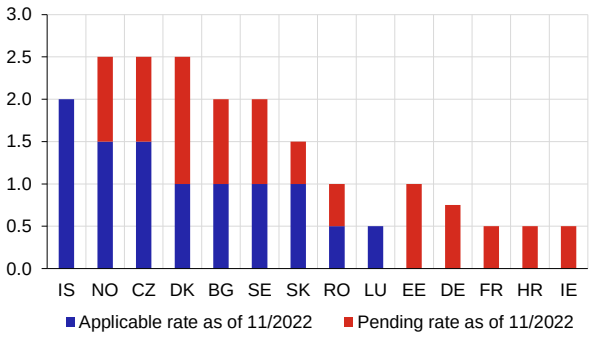


Chart IV.13

CCyB rates in selected European countries

(% of total risk exposure)



Source: ESRB

Note: Data as of 21 November 2022.

115 European Systemic Risk Board (ESRB, 2014): *Recommendation (ESRB/2014/1) on guidance for setting countercyclical buffer rates*.

116 *The CNB's Approach to Setting the Countercyclical Capital Buffer* (Appendix 1).

IV.4 RISKS ASSOCIATED WITH PROPERTY MARKETS

IV.4.1 Risks associated with residential property markets

The CNB responds to risks associated with residential property financing by means of its legal mandate

Since 2021, the CNB has been able to set[117] binding upper limits on the LTV, DTI and DSTI ratios[118] for all providers of consumer loans secured by residential property in a provision of a general nature. The CNB therefore introduced such limits on all three indicators for the first time in December 2021, and they became binding on lenders on 1 April 2022.[119] By setting upper limits, the CNB responded to the growth in systemic risk associated with the provision of consumer loans secured by residential property in 2021 and to the potential for that risk to increase further.[120] The CNB sets some additional parameters and requirements limiting the risks associated with these loans in its *Recommendation on the management of risks associated with the provision of consumer loans secured by residential property* (the "Recommendation").

The CNB continuously monitors and regularly assesses the factors giving rise to systemic risk associated with the residential property market and house purchase loans

The CNB has long been monitoring and regularly assessing the risks arising in the mortgage and property markets. The CNB reviews the reasons for setting, resetting or cancelling the upper limits on credit ratios at least once every six months. During the review, it assesses whether substantial changes have occurred, or are likely to occur, in the factors giving rise to systemic risks related to the provision of consumer loans secured by residential property. These mainly include: (a) changes in total consumer credit (see sections II.2, IV.3 and IV.4), (b) changes in new consumer credit secured by residential property (see sections II.2, IV.3 and IV.4), (c) changes in residential property transaction prices (see section II.1), (d) changes in the ratio of total consumer credit to consumers' income (section II.2), (e) changes in the ratio of residential property prices to consumers' income (see section II.1), (f) overall macroeconomic developments in the Czech Republic (see section II.1) and (g) the impact on consumers and providers of such loans (see section III.2 and section IV.4). The main source of information for aggregate analyses is the *Survey of consumer loans secured by residential property*[121] (the "Survey"). The CNB used data from the Survey to assess credit risks assumed since 1 April 2022, when the legally binding upper limits took effect, and to verify their materialisation in 2022 Q2. Regular stress testing of households (see section II.2), among other things, is used to assess the level of risk associated with the provision of new consumer loans for the financing of residential property. The results of the stress tests, along with other detailed analyses conducted by the CNB (see sections II–IV), are taken into account in the review of the upper limits on credit ratios.

New loans for house purchase decreased in 2022…

The provision of new residential loans, which had been significantly elevated in 2021, decreased in the first few months of 2022. The volume of pure new loans for house purchase started to fall quickly (see Chart IV.14) due to a gradual increase in long-term interest rates (see Chart II.7) and the entry into effect of the binding upper limits. It reached historical lows in August and September 2022. The sizeable reduction in volume mainly reflected a falling number of loans granted (see Chart IV.15). It also partly reflected a decrease in the average loan size (see section II.2, Table II.1 CB).[122] As interest rates increased, interest in refinancing loans decreased as expected in the course of 2022, falling below the long-term average in 2022 Q3 (see Chart IV.14). The *Baseline Scenario* assumes a total volume of pure new housing loans of between CZK 170 billion and CZK 180 billion for both 2022 as a whole and 2023. This is roughly equal to the level in 2015, which, according to CNB analyses, saw the start of a strongly expansionary phase of the financial cycle (see section IV.3). Lending activity will thus probably be slightly below its long-term average (see Chart IV.7).

Residential property prices were well above their fundamental values…

Residential property prices were significantly overvalued for the median household in the first half of 2022. Debt financing of these properties has become either unaffordable or highly risky for such a household (see section II.1). The effectiveness

117 Article 45b(1) of Act No. 6/1993 Coll., on the Czech National Bank, as amended.

118 Two upper limits apply for each ratio: a standard one and a higher one for applicants under 36 years buying owner-occupied housing (the "age exemption"). For applicants under 36 years, lenders have the option of applying an LTV cap 10 pp higher, a DSTI cap 5 pp higher and a DTI cap of one annual net income higher than usual. To take specific loans into account, lenders can apply a "volume exemption", namely the option of exceeding the binding upper limits in cases corresponding to 5% of the volume of new consumer loans secured by residential property granted in the last quarter (the "reference volume") regardless of the applicant's age.

119 *Provision of a general nature on setting upper limits on credit ratios No. I/2021* published on 26 November 2021 and effective 1 April 2022. Since this date, lenders – taking into account the 5% volume exemption – have been able to provide loans secured by residential property with a maximum LTV of 80%, a maximum DSTI of 45% and a maximum DTI of 8.5 times net annual income (or 90%, 50% and 9.5 respectively for applicants under 36 years for financing owner-occupied housing).

120 *Risks to financial stability and their indicators – December 2021*, section IV.4.1.

121 This report primarily contains data on the provision of new loans by banks up to the end of August 2022.

122 Pure new loans for house purchase were also affected by a significant reduction in loan commitments (see Chart IV.3 CB). These are also included in the statistics on pure new loans. Their temporary increase in 2021 mainly reflected a rise in the frequency of negotiated loan contracts drawn down at a later date.

of the binding upper limits on income-based credit ratios (DTI and DSTI) contributed to limiting the potential build-up of systemic risks associated with the purchase of housing under such price conditions. The binding upper limits have reduced the risk of adjustment to high property prices and rising interest rates through higher debt or debt servicing costs,[123] i.e. through channels which generally imply a higher degree of risk associated with loan repayment. Extending the repayment term has been largely exhausted as an adjustment channel, as also indicated by the median maturity, which reached the extreme level of 30 years in the case of pure new consumer loans secured by residential property at the end of 2021 (see Chart IV.16, Recommendation C). Declaring a higher number of applicants when negotiating a loan so that their income is sufficient to fulfil the income-based credit ratios thus remained the adjustment channel. The results of the Survey partly confirmed adjustment using this channel in the course of 2022 (see Chart IV.17). However, given the long-running decline in the average household size (see Chart IV.6 CB), this form of adjustment may be reaching its limits.

Chart IV.14
Three-month totals of components of new loans for house purchase
(CZK billions; right-hand scale: thousands; moving three-month totals)

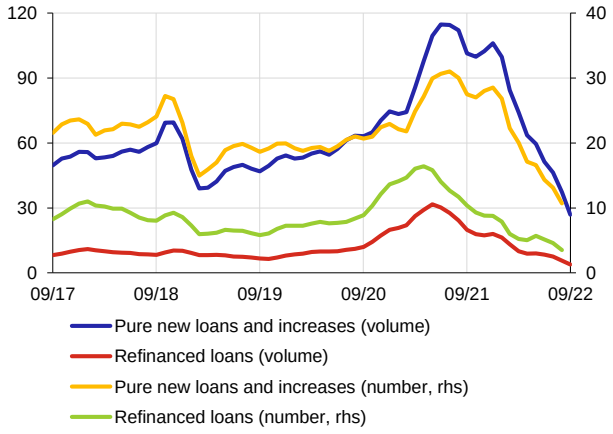
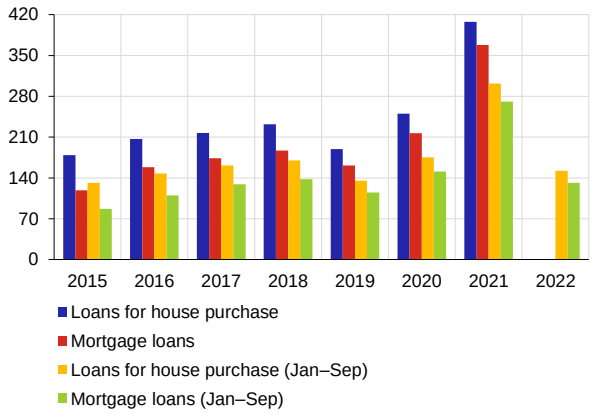
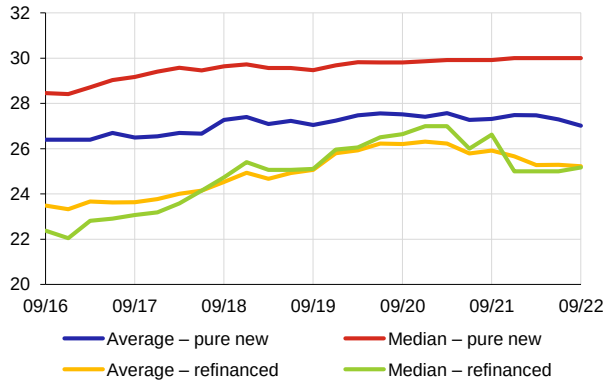


Chart IV.15
Pure new bank loans for house purchase
(CZK billions)



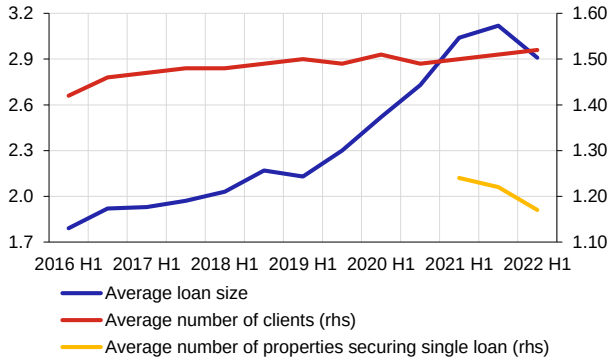
Note: All series include increases in existing loans. Mortgage loans falling under the category of housing loans.

Chart IV.16
Maturity of consumer loans secured by residential property
(years; averages weighted by loan amount)



Note: The figure for 2022 Q3 is based only on the data for July and August.

Chart IV.17
Selected characteristics of new consumer loans secured by residential property
(CZK millions; right-hand scale: number of persons/properties)



Note: The average number of properties securing a single loan is weighted by the individual loan size. Collection of these data started in 2021 H1.

…so the share of property financed by loans for house purchase fell considerably

While the number of apartment and family house transfers financed by consumer loans secured by residential property fell rapidly and continuously in the first eight months of 2022, the number of transactions financed solely from buyers' own funds decreased much more slowly. This was reflected in a sharply declining share of transfers financed by loans for house purchase. This share had long been around 55%. It rose temporarily in 2021, when the market saw record-high volumes of loans provided, but was about 20 pp below the long-term average by August 2022 (see Chart II.18). Residential property prices are therefore now being affected to an increased extent by cash buyers.

123 The DSTI distribution of loans shows that some higher-income applicants adjusted to the more restrictive effect of the DSTI ratio by increasing the share of own funds (see Table IV.2 CB, Chart IV.4 CB and Chart IV.5 CB). This is partly consistent with the median LTV (see Table IV.1 CB) and the share of loans with LTVs of more than 70%, which fell to a historical low (see Chart IV.20).

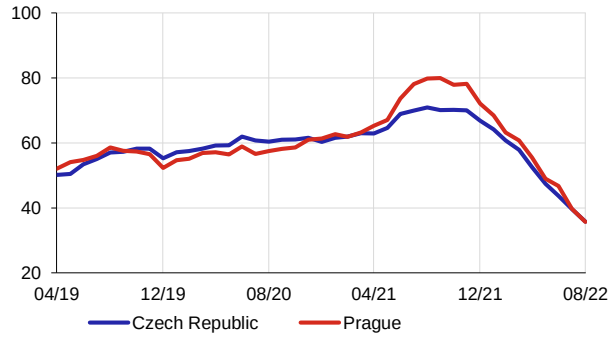
New consumer loans secured by residential property were provided more to borrowers over 36 years on average

In line with the previous trend, the share of principal borrowers aged 36 or more (see Chart IV.19), who must comply with the standard upper limits on the credit ratios, increased in 2022 Q2 and Q3. Loans to these borrowers accounted for the dominant proportion of loans in respect of which the upper limits were exceeded and the 5% volume exemption had to be applied. This effect was strongest for the DSTI ratio, which represents the greatest constraint on applicants in the current credit conditions (see Chart IV.7 CB, Chart IV.8 CB and Chart IV.9 CB).

Chart IV.18

Share of apartment and family house transfers financed using consumer credit secured by residential property

(% of total number; half-yearly moving averages)



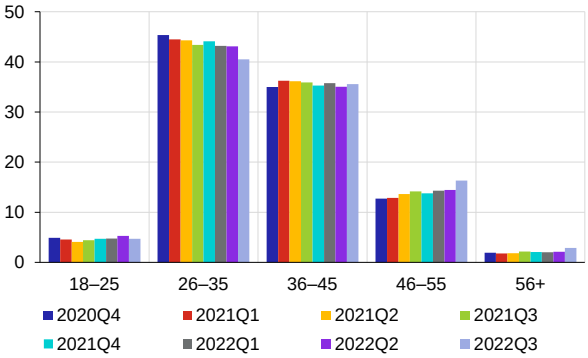
Source: CNB, COSMC

Note: Calculated as the ratio of the number of pure new loans for purchasing property according to the Survey to the number of transactions registered by COSMC.

Chart IV.19

Distribution of pure new and increased refinanced loans by age of the principal borrower

(share of loans in volume provided in %; x-axis: age of principal borrower in years)



Note: Consumer loans secured by residential property. The figures for 2022 Q3 are based only on the data for July and August.

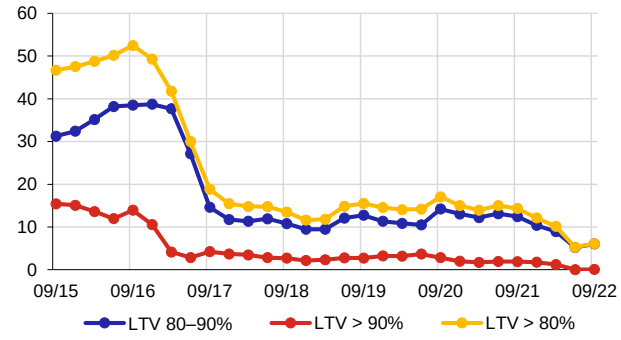
The binding upper limits on the LTV ratio are limiting the risks associated with property price corrections…

Since 2021, banks have gradually been reducing the provision of consumer loans secured by residential property with higher LTVs. In response to the entry into effect of the binding upper limits on the LTV ratio, they further tightened the provision of such loans and complied with the limits in 2022 Q2. The share of loans with LTVs of more than 90% fell almost to zero during 2022. The volume of loans with LTVs of more than 80% moved in the same direction, falling by one-half compared with the end of 2021 to just above 5% in 2022 Q3 (see Chart IV.20). Overall, the shift to loans with less risky LTVs enhanced the banking sector's resilience to adverse shocks to property prices and the value of collateral in an environment of an elevated probability of a property price correction (see section II.1, Chart II.19 CB). As regards compliance with the LTV limits, the CNB is continuing to monitor any efforts to circumvent the limits through the additional provision of unsecured consumer credit. The taking out of an unsecured loan in the six months before or after obtaining a consumer loan secured by residential property may be a signal of such behaviour. Despite increasing partly, the extent of such drawdown was negligible in economic terms (see Chart IV.21). From the perspective of the upper limit on the LTV ratio, future adjustment could take the form of a rise in the number of properties pledged. However, the latter has been falling since 2021 (see Chart IV.17).

Chart IV.20

Loans with LTVs in selected bands

(share of loans in volume provided in given quarter in %)

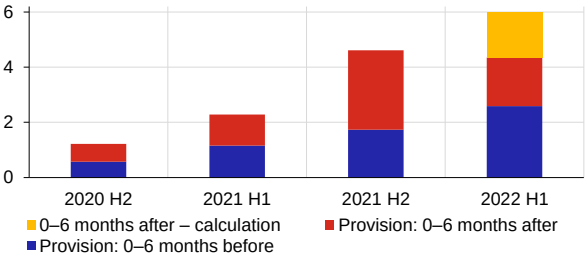


Note: Consumer loans secured by residential property. The figure for 2022 Q3 is based only on the data for July and August. The share relates to the volume of loans in the current quarter. It therefore provides information on current changes in risks taken on from the LTV perspective, not on formal (non-)compliance with the binding upper limits.

Chart IV.21

Concurrent provision of unsecured and secured consumer loans

(unsecured loans in CZK billions; x-axis: half-year in which the loan was provided)



Note: Only loans secured by residential property in the case of secured consumer loans. "Before" and "after" relate to the time of provision of the secured loan. For the first and last monitored period, the data are calculated to add up to the whole, as the known data do not cover the entire six months. Data for the period of one year before the provision of the secured loan and one year after it provide a similar picture.

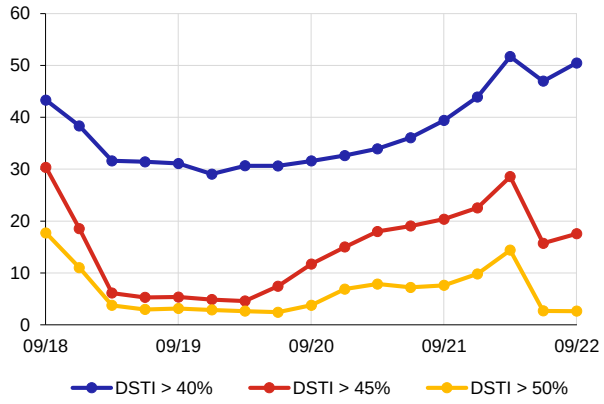
…but the risks associated with debt service remain elevated

Overall, banks complied with the upper limits on the DSTI and DTI ratios in 2022 Q2, and the 5% volume exemption was not exceeded at the aggregate level.[124] The share of loans provided with DSTIs of more than 50% started to drop sharply at the end of 2022 Q1, falling by 12 pp to less than 3% in Q3 (see Chart IV.22). Its upward trend observed before the upper limits took effect thus came to a halt. The share of loans with DSTIs of more than 45% mirrored this, decreasing noticeably towards the standard upper limit, although it remained close to 15% in 2022 Q3. Some loans with high DSTIs shifted to the 40%–45% band. Although this shift can be considered a change towards more sustainable debt service amid potential unexpected adverse shocks, the CNB still regards loans with DSTIs of more than 40% as highly risky and expects lenders to proceed with an increased degree of prudence when providing such loans. Loans with DSTIs of more than 40% accounted for 50% of the total volume of CZK 22 billion provided in July and August 2022. A growing share of these loans could give rise to longer-term risks, especially if credit market activity recovers. Amid high interest rates, the introduction of the upper limits on the DSTI ratio led to a rapid decline in loans with risky DTI ratios (see Chart IV.23). The share of loans with DTIs of more than 8, which is below the standard upper limit, was less than 4% in 2022 Q3. This indicates that the upper limits on the DTI ratio of 8.5 and 9.5 were not restrictive for new loan applicants.

Chart IV.22

Loans with DSTIs in selected bands

(share of loans in volume provided in given quarter in %)

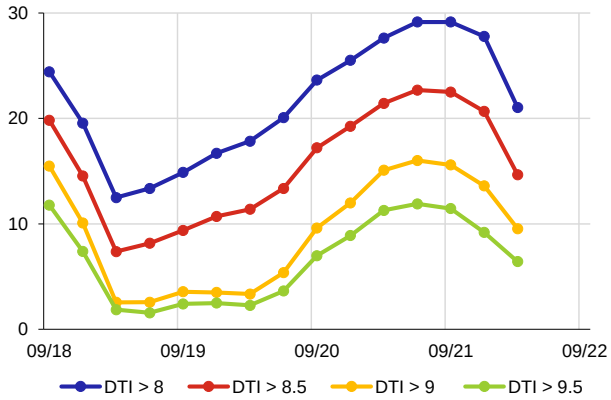


Note: Consumer loans secured by residential property. The figure for 2022 Q3 is based only on the data for July and August. The share relates to the volume of loans in the current quarter. It therefore provides information on current changes in risks taken on from the DSTI perspective, not on formal (non-)compliance with the binding upper limits.

Chart IV.23

Loans with DTIs in selected bands

(share of loans in volume provided in given quarter in %)



Note: Consumer loans secured by residential property. The figure for 2022 Q3 is based only on the data for July and August. The share relates to the volume of loans in the current quarter. It therefore provides information on current changes in risks taken on from the DTI perspective, not on formal (non-)compliance with the binding upper limits.

Interest rates did not differ significantly across risk categories

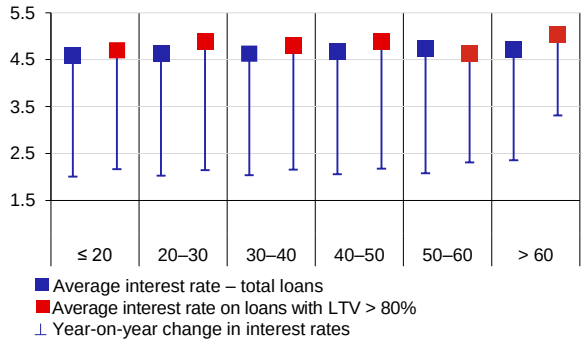
The increase in monetary policy rates in the second half of 2021 and the first half of 2022 was reflected in a rise in rates on consumer loans secured by residential property across all risk categories. By comparison with previous rounds of the Survey, however, the differences in the average risk mark-up declined across the different credit ratio values (see Chart IV.24). This probably reflects the upper limits in force and the application of the 5% volume exemption solely to specific loan cases where higher credit ratios do not imply a rise in credit risk.

In line with the market outlook for interest rates, fixed-rate periods decreased significantly for new loans

The increase in interest rates consumer loans secured by residential property well above the average of the last few years led to a decrease in the fixed-rate periods for new loans. The average fixed-rate period for pure new loans fell from 7.6 years in March 2020 to about 5.6 years in August 2022 (see Chart IV.25). Applicants for consumer loans secured by residential property probably took into account the market rate outlook implied by the shape of the yield curve in expectation of loan rates falling again in the medium term. On the one hand, shorter fixed-rate periods may help them obtain lower loan rates, but on the other, this strategy increases their sensitivity to the business cycle and changes in monetary policy.

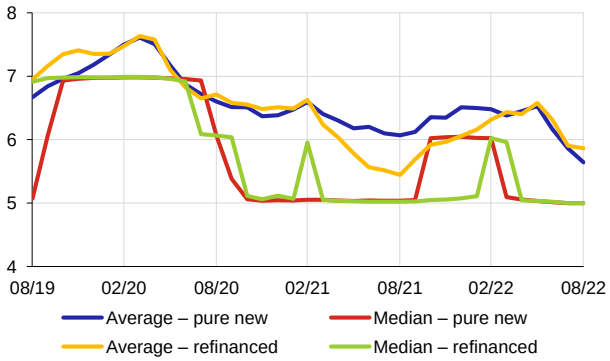
124 In a small number of cases, banks slightly exceeded the volume exemption for the DSTI ratio due to reconfiguration of internal processes associated with the transition to the binding upper limits.

Chart IV.24
Average interest rates by loan characteristics
(average interest rate in %; x-axis: DSTI in %)



Note: Consumer loans secured by residential property. Data for 2022 Q2. Weighted average interest rates with the sizes of individual loans as weights. Interval closed from the right.

Chart IV.25
Fixed-rate periods of consumer loans secured by residential property
(years; averages weighted by loan amount)



Note: The figure for 2022 Q3 is based only on the data for July and August.

The setting of upper limits on the LTV, DTI and DSTI ratios helped reduce the provision of loans with highly risky characteristics

The setting of upper limits on the LTV, DTI and DSTI ratios with effect from 1 April 2022, coupled with the increase in CNB monetary policy interest rates, helped slow the build-up of systemic risk associated with the provision of consumer loans secured by residential property with highly risky characteristics in banks' balance sheets. The reduced inflow of loans with such characteristics helped increase the resilience of the most vulnerable part of banks' mortgage portfolios (loans up to five years since provision) to the expected risk of impending recession (see section II.1).

The CNB is leaving the upper limits on the LTV, DSTI and DTI ratios at their current levels

At its meeting on 30 November 2022, the CNB Bank Board left the upper limits on the LTV, DSTI and DTI ratios at their current levels: an LTV of 80% (90% for applicants under 36 years for purchases of owner-occupied housing), a DSTI of 45% (50%) of the applicant's net monthly income and a DTI of 8.5 (9.5) times net annual income. At the same time, lenders should still assess applications for consumer credit secured by residential property with DSTIs of more than 40% and DTIs of more than 8 with an increased degree of prudence. The Bank Board agreed that despite the expected decline in the volume of new consumer credit secured by residential property, the risks associated with the mortgage and property markets remain elevated, partly due to a possible decrease in property prices. The Bank Board decided to keep the upper limits at the current levels also because of the persisting economic and geopolitical uncertainty.

The upper limits on the LTV ratio are appropriate to cover credit losses given the estimated decline in collateral value

Despite the cooling of debt financing of residential property to the levels observed before the strongly expansionary phase of the financial cycle, apartment prices remain high relative to disposable income and rents (see Chart II.17). Increased tensions persist on the residential property market, with current price levels being markedly overvalued for a significant proportion of potential applicants for a consumer loan secured by residential property (see section II.1, Chart II.18). Amid significant macrofinancial uncertainties and risks of them increasing further, the current property market imbalances may even result in a decline in residential property prices. According to CNB analyses, the probability of a price correction rose during 2022 (see Chart II.19 CB). A marked decrease in the value of collateral in the case of new loans amid a rise in defaults could lead to higher credit losses[125] having the potential to reduce the resilience of the domestic banking sector, especially if accompanied by additional adverse shocks. In the *Baseline Scenario*, the CNB assumes that year-on-year growth in residential property prices slows markedly by the end of 2022 and turns negative in the first half of 2023 (see Chart II.16). However, even given the risks to the forecast, among other factors, this potential decline in property prices should not be significant or have a systemic impact in the short run. The upper LTV limits of 80% and 90% were therefore assessed as consistent with achieving the objective of limiting the risks associated with a decline in collateral value, which could lead to systemic credit losses on new consumer loans secured by residential property.[126]

125 This holds true assuming that banks continue to value a large majority of residential properties at parity with their purchase price.

126 For details regarding the setting of LTV at the CNB see Plašil, M., Komárková, Z. (2022): *Setting the Upper LTV limit at the CNB*, Thematic Article on Financial Stability 1/2022.

The upper limit on the DSTI ratio is playing an important role in mitigating the build-up of systemic risk…
For many applicants, the increase in interest rates on housing loans in the course of 2022 implied a significant autonomous tightening of the conditions for debt financing of residential property under the applicable upper limit on the DSTI ratio. It had the largest effect on applicants buying property in localities with high property prices, Prague and Brno in particular (see Chart IV.10 CB). This development was reflected on the one hand in a marked decline in new housing loans (see Chart IV.14 and Chart IV.15) but contributed on the other hand to a substantial proportion of new loans being provided with DSTI ratios in excess of 40%. The CNB regards the provision of such loans as highly risky, especially when real wages are falling as a result of rapidly rising prices of energy and other consumer basket items. The Bank Board agreed that relaxing the upper limit on the DSTI ratio in an environment of rapidly rising living costs is not a desirable macroprudential policy response at this time. According to the overall assessment, the upper limit on the DSTI ratio continues to play an important role in limiting the further build-up of risky loans in banks' portfolios and is contributing to maintaining sufficient credit quality. Although the upper limit on the DSTI ratio can no longer directly affect the risk of loans accepted earlier, leaving it at the current level will help limit additional defaults by new clients. Given the lower volume of new mortgage loans being provided, the isolated effect of additional default alone may not imply the emergence of systemic risk, but in combination with risks accepted earlier across credit segments it may aggravate the cumulative stress in the banking sector.[127] At the same time, the Bank Board stated that, in conditions of highly elevated inflation, macroprudential policy should act in the direction of limiting credit growth and the quantity of money in the economy and should correspond to the restrictive effect of monetary policy.

…maintaining it at the current level is also desirable in light of the significant uncertainties that exist
The additional reasons for leaving the DSTI cap unchanged include significant upside and downside risks and uncertainties in the *Baseline Scenario*. Uncertainty prevails regarding the estimate of the future volume of new loans, especially given the uncertain trend in long-term interest rates (see Chart II.8) and the effect of the fiscal measures adopted to support households. The extent of future materialisation of credit risk due to the expected global slowdown is also subject to significant uncertainty (see section II.1). According to the CNB's analyses, the default rate on loans to households may rise rapidly from its current low level to more than 5%. Clients taking out loans with high DSTI ratios would be at particular risk.[128] The estimated share of risky loans in bank portfolios based on DSTI for which the CNB identifies the potential for a higher probability of default (see Chart IV.11 CB) now exceeds 10% on aggregate (see Chart IV.12 CB).

Leaving the upper limit on the DTI ratio unchanged reduces the likelihood of excessive fluctuations in lending
In deciding to leave the current upper limit on the DTI ratio unchanged, the CNB Bank Board primarily took into account the fact that this binding upper limit had previously been set at a relatively benevolent level that does not constitute a major constraint for most applicants for a consumer loan secured by residential property and providers of these loans in the current conditions. The motivation for leaving this limit unchanged is mainly to create a predictable macroprudential environment and also to reduce the likelihood of swings in the mortgage market, excessive prolongation of repayment terms of consumer loans secured by residential property and the taking on of excessive debt in the case of a change in the credit cycle.

IV.4.2 Risks associated with commercial property markets

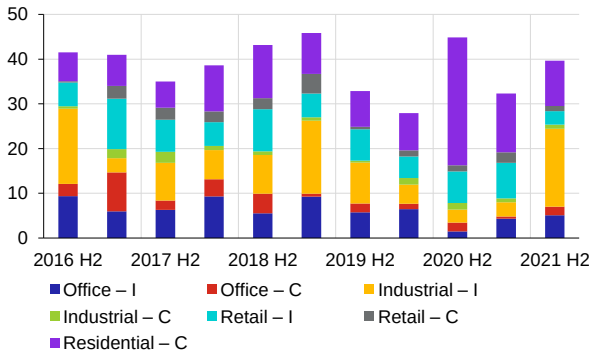
Loans secured by commercial property did not deviate from their usual levels in the first half of 2022
New loans secured by commercial property amounted to almost CZK 35 billion in the first half of 2022 (see Chart IV.26).[129] The domestic banking sector's lending activity in this credit segment stayed at the long-term level of CZK 30–40 billion per half-year amid a very limited reaction to the change in the macroeconomic conditions and the level of observed activity on the commercial property market (see section II.1). As regards the structure of new transactions, the share of financing of office property increased in the first half of 2022 at the expense of lending to investors in industrial property. This may be due to the already low returns in this segment relative to the risk undertaken (see section II.1). However, the distribution of new loans across segments is highly variable over time, and in the case of mixed-purpose property it may be difficult to fully differentiate the amount of financing by type. Therefore, it will only be possible to assess any changes in the financing of the individual segments in the longer term.

127 If a certain level of stress is exceeded, non-linear effects and higher risk materialisation which cannot be fully captured by the traditional modelling system may occur in the financial system. In an environment of higher living costs, significant materialisation of risks associated with new loans may also create downward pressure on household consumption and foster a longer-lasting economic downturn.

128 A 5% default rate across the entire credit portfolio implies a significantly higher default rate for the most recent loans, as the probability of default generally decreases gradually as the loan "ages" and is minimal for the oldest loans.

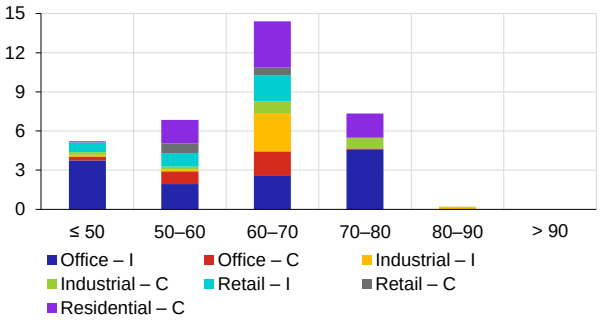
129 The results are based on a semi-annual survey of loans secured by commercial property, conducted usually among seven banks covering around 70% of the market.

Chart IV.26
Amount of new loans secured by commercial property
(CZK billions)



Note: I: investment in existing commercial property, C: construction of commercial property. Results based on data for selected banks.

Chart IV.27
LTV distribution of new loans secured by commercial property in 2022 H1
(CZK billions; x-axis: LTV in %)



Note: I: investment in existing commercial property, C: construction of commercial property. Results based on data for selected banks. Interval closed from the right.

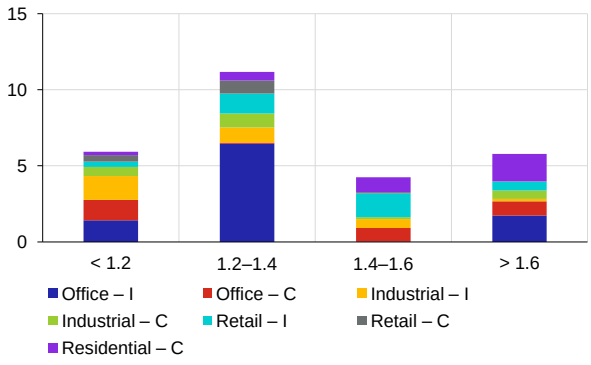
The risks associated with commercial property markets continue to be largely exported

The total exposures secured by commercial property in Czech banks' balance sheets remain relatively low. Foreign investors funded by the foreign financial sector have long played a key role on the commercial property market. The potential direct negative effects of a sharp rise in yields associated with marked declines in commercial property prices (see section II.1) would therefore be largely exported abroad and have a marginal effect on the domestic financial sector. However, in the event of highly adverse financial conditions, the commercial property market could become an aggravating factor that would contribute to exacerbating the domestic shocks and increasing their duration.

Banks applied a prudent approach to the provision of loans secured by commercial property

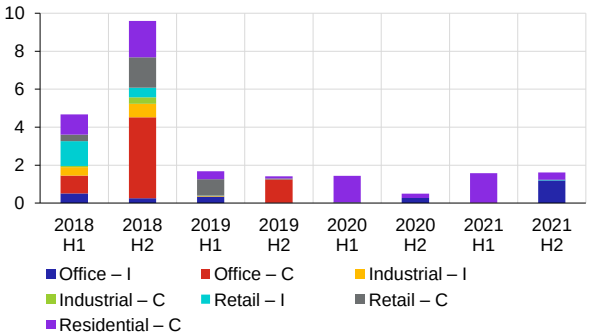
After having become more prudent about the commercial property segment in the first half of 2021, banks continued in this vein in the second half of 2022, mostly by reducing the provision of loans falling in the riskiest categories. Amid tightening collateral requirements, no loans with an LTV of over 90% were provided in the first half of 2022, and loans with LTVs of between 60% and 70% were dominant (see Chart IV.27). The slight rise in the share of loans with LTVs of 70%–80% is partly due to a change in the structure of the commercial property segments financed. In the first half of 2022, the share of office property was higher, at the expense of industrial property, which generally requires higher collateral. From the perspective of the DSCR ratio, newly provided loans in the riskiest category with a DSCR of less than 1.2 recorded an appreciable decrease, although here, too, the structure of the property financed played a role (see Chart IV.28). Banks' prudence is also evidenced by their strict requirement for a high degree of collateral for loans falling in the riskier DSCR categories. The volume of new loans with simultaneously a DSCR of less than 1.2 and an LTV of more than 70% was very low in the first half of the year (see Chart IV.29). Their share in total new loans was the lowest since the *Survey of loans secured by commercial property* began.

Chart IV.28
DSCR distribution of new loans in 2022 H1
(CZK billions; x-axis: DSCR in %)



Note: I: investment in existing commercial property, C: construction of commercial property. Results based on data for selected banks. Interval closed from the right.

Chart IV.29
Amount of new loans with an LTV of more than 70% and a DSCR of less than 1.2
(CZK billions)



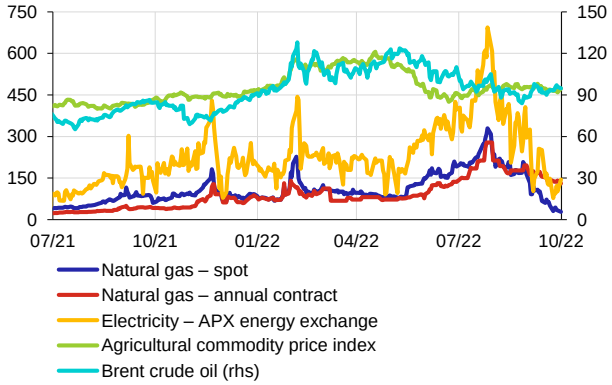
Note: I: investment in existing commercial property, C: construction of commercial property. Results based on data for selected banks. Interval closed from the right.

V. CHARTBOOK

SECTION II

Chart II.1 CB
Selected commodity prices

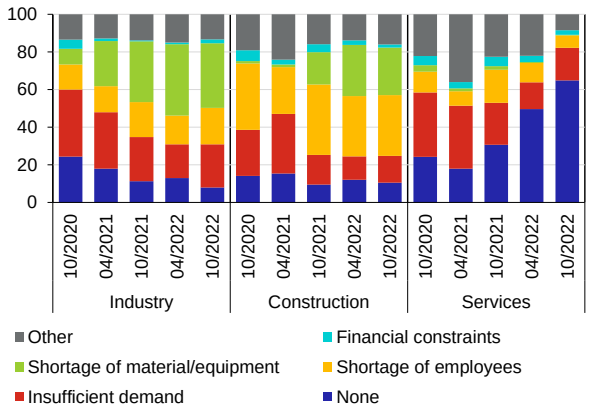
(oil in USD/barrel; commodity index in USD/index point; natural gas and electricity in EUR/MWh)



Source: Refinitiv, Amsterdam Power Exchange

Chart II.2 CB
Barriers to growth in production by sector in the Czech Republic

(%)



Source: CZSO

Note: Results of a CZSO survey in the corporate sector.

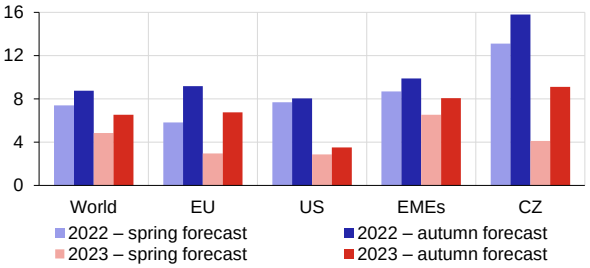
Chart II.3 CB
Container transport prices

(FBX Global Container Freight Index in USD)

Source: Refinitiv Datastream

Chart II.4 CB
Inflation forecasts for selected regions

(annual inflation rates in %)

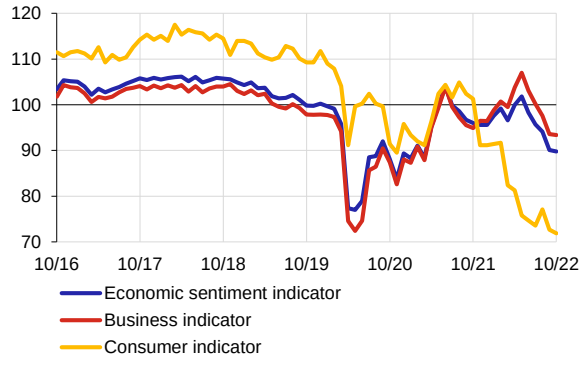


Source: IMF, CNB

Note: The forecast for the Czech Republic is based on the CNB's spring and autumn forecasts (MPR – Spring 2022 and MPR – Autumn 2022). The forecasts for the other economies are based on the IMF's April and October forecasts published in World Economic Outlook, April 2022 and World Economic Outlook, October 2022.

Chart II.5 CB
Economic sentiment indicator for the Czech Republic

(base index relative to long-term average)



Source: CZSO

Chart II.6 CB
Annual real GDP growth in the *Baseline Scenario*

(%)

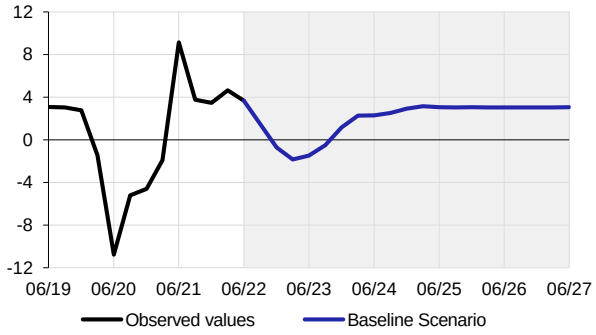
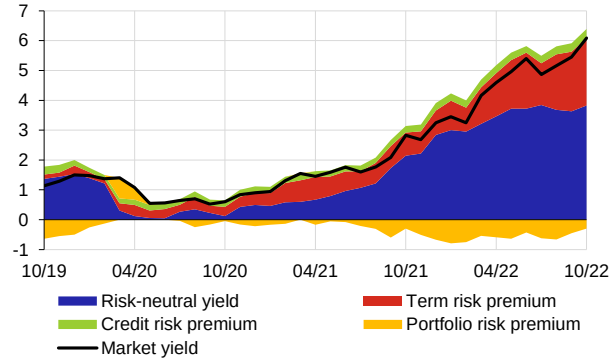
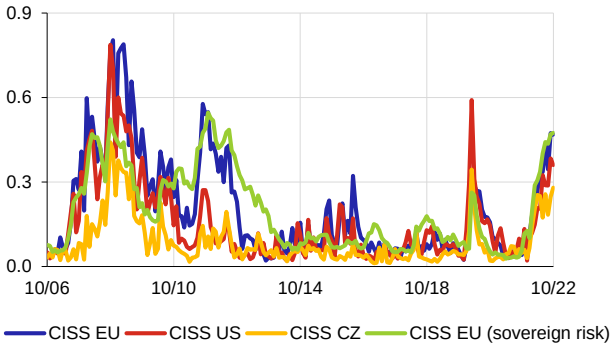


Chart II.7 CB
Decomposition of the five-year Czech government bond yield
(yield in %; components in pp)



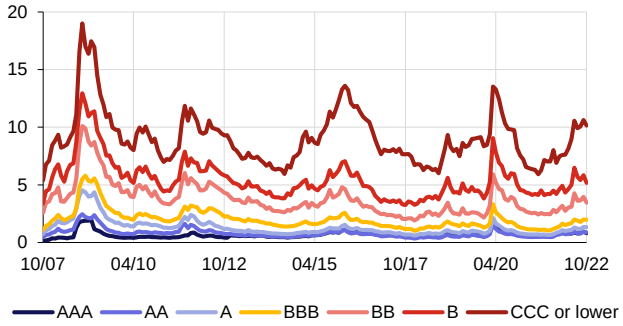
Source: Refinitiv, CNB

Chart II.8 CB
Composite indicator of systemic stress in financial markets (CISS)
(index in points between 0 and 1)



Source: ECB, CNB, Refinitiv

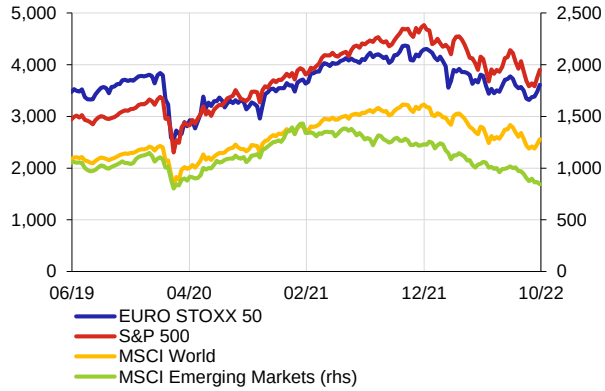
Chart II.9 CB
Risk premia on corporate bonds by rating grade
(pp)



Source: Bank of America Merrill Lynch

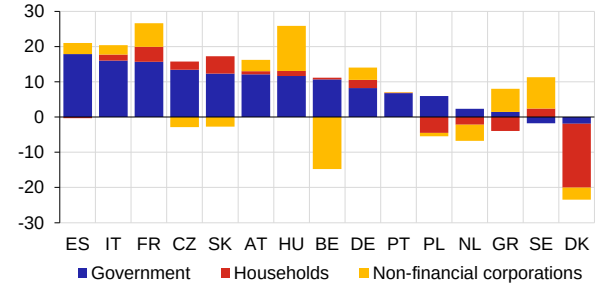
Note: Risk premia are expressed as the spread of corporate bond yields over government bond yields.

Chart II.10 CB
Key global stock indices
(points)



Source: Refinitiv

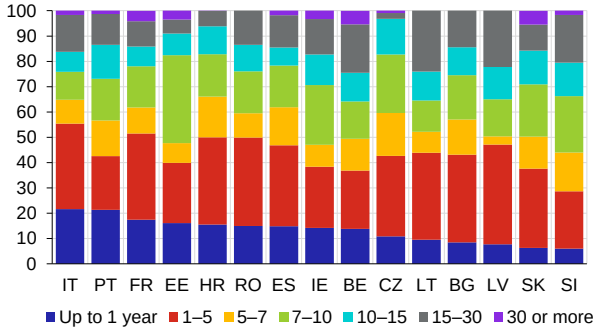
Chart II.11 CB
Change in the debt ratios of economic agents in selected EU countries
(pp; as of 30 June 2022)



Source: ECB

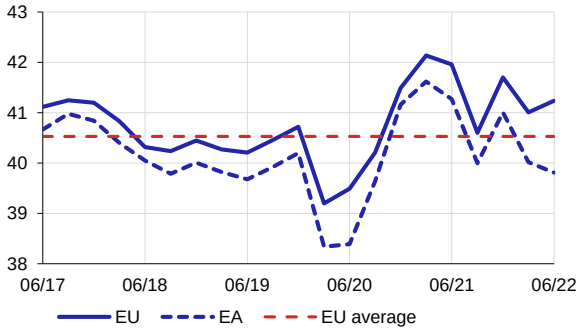
Note: Change from 31 December 2019. Debt is expressed relative to GDP.

Chart II.12 CB
Residual maturity of gross government debt
(share in debt in % at end of 2021)



Source: Eurostat

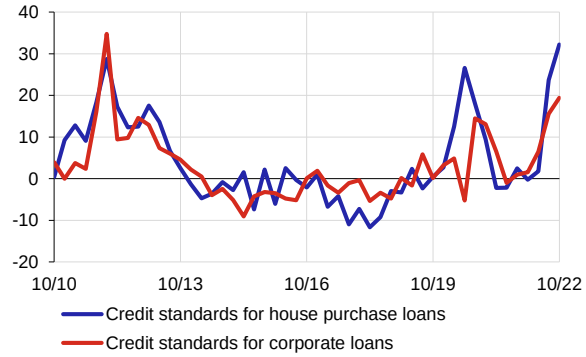
Chart II.13 CB
Profit rate in the EU non-financial corporations sector
(% of gross value added)



Source: Eurostat

Note: The average profit rate of EU corporations is calculated for the period from 2012 to 30 June 2022. The profit rate is expressed as the ratio of gross operating surplus to gross value added.

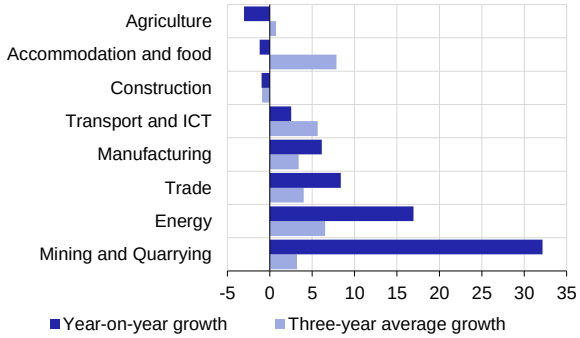
Chart II.14 CB
Changes in credit standards in the euro area
(%)



Source: ECB

Note: Results of the ECB's bank lending survey as of 2022 Q3. The percentage value denotes the net share of banks that tightened credit standards in the previous three months.

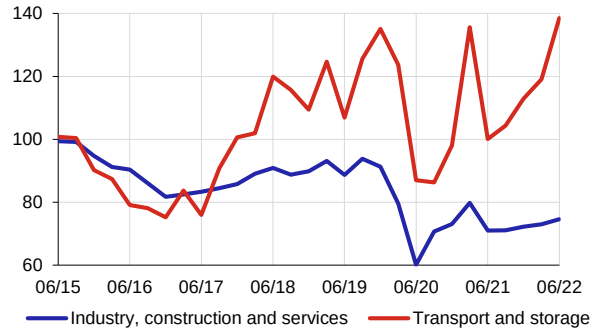
Chart II.15 CB
Growth rates of bank loans to non-financial corporations in the euro area by sub-sector
(%; data as of 30 June 2022)



Source: ECB

Note: ICT stands for information and communication technology.

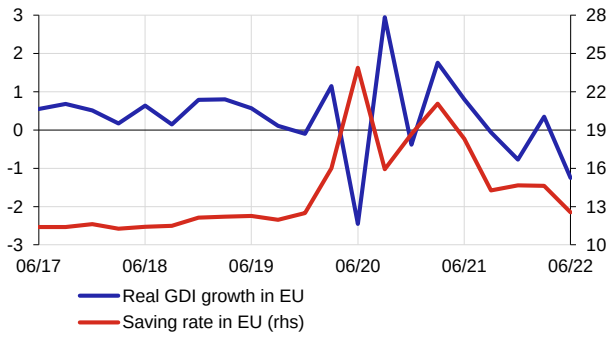
Chart II.16 CB
Defaults by non-financial corporations in the EU by sector
(base index; 2015 = 100)



Source: Eurostat

Note: Manufacturing, construction and services comprise NACE sectors B–S, i.e. including transport and storage.

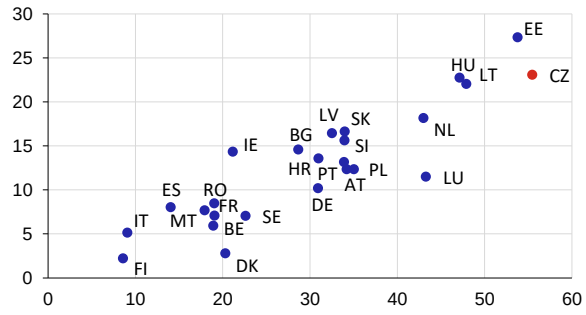
Chart II.17 CB
Real disposable income growth and saving rate of households in the EU
(%)



Source: Eurostat

Note: Quarter-on-quarter growth in real GDI per capita.

Chart II.18 CB
Residential property price growth in selected EU countries
(%; x-axis: three-year growth; y-axis: one-year growth)



Source: Eurostat

Note: Data as of 30 June 2022. Due to different methodologies, the data for SK differ considerably from those published by the NBS, according to which property prices recorded one-year growth of 25.51% and three-year growth of 71.64%.

Chart II.19 CB
Probability of average apartment prices in the Czech Republic falling by more than 10%
(%)

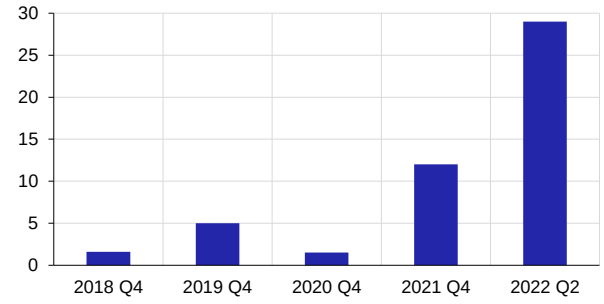
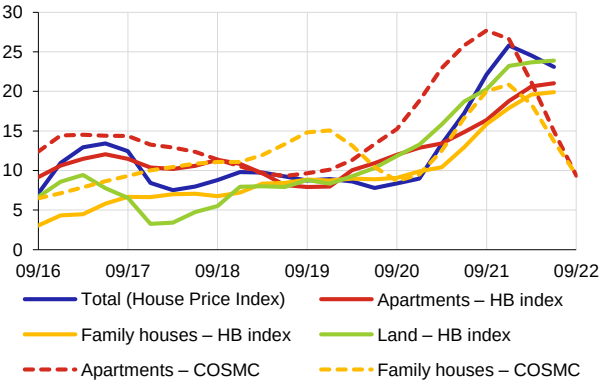


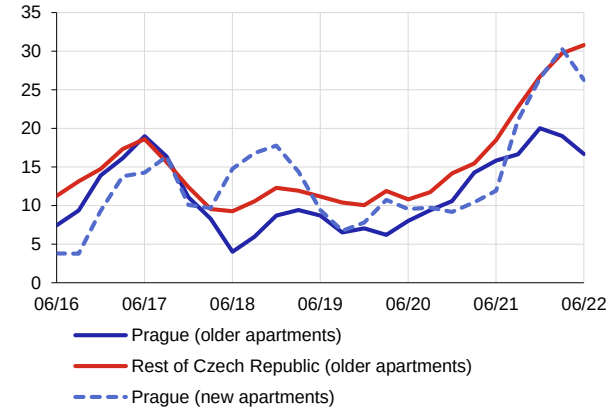
Chart II.20 CB
Property transaction prices in the Czech Republic by type
(year-on-year growth in %)



Source: CZSO, HB Index, COSMC

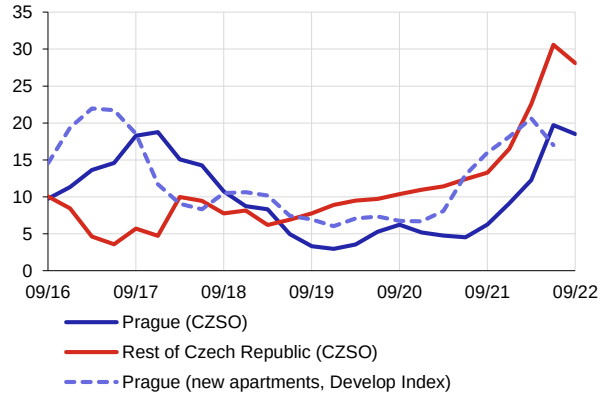
Note: The COSMC data on price growth rates are currently experimental. The September 2022 data so far do not include the full set of transactions.

Chart II.21 CB
Apartment transaction prices by region
(year-on-year growth in %)



Source: CZSO

Chart II.22 CB
Apartment asking prices by region
(year-on-year growth in %)



Source: CZSO, Společnost pro cenové mapy ČR s.r.o.

Note: As the Develop Index is published every two months, the figures for March and September were obtained as the average of the year-on-year growth rates in February and April and in August and October respectively.

Chart II.23 CB
Residential property supply and demand
(31 December 2021 = 100; seasonally adjusted number of transactions)

Source: Czech Office for Surveying, Mapping and Cadastre (COSMC), Sreality portal.

Note: Adjusted for clearly non-market transactions.

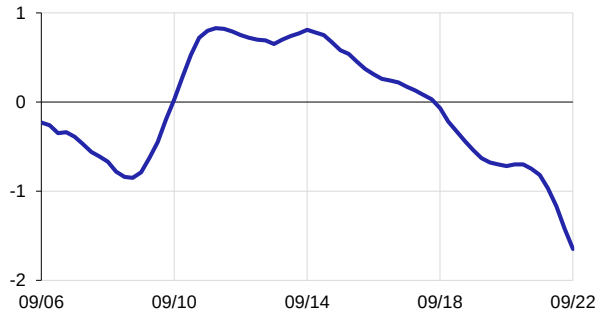
Chart II.24 CB
Size of housing construction
(annual moving totals in thousands of apartments)

Source: CZSO

Note: Number of apartments in apartment blocks.

Chart II.25 CB
Risk premium for yields on commercial property

(pp)



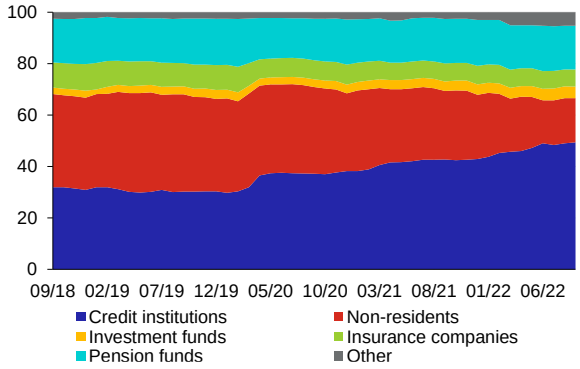
Note: The risk premium is calculated as the difference between observed yields and the value implied by a model.

Chart II.26 CB
Share of general government debt securities in the total assets of banks

(%)

Chart II.27 CB
Decomposition of the direct shares of individual sectors in holdings of domestic general government bonds

(%)



Note: Adjusted for temporary transfers of holdings in secured operations.

Chart II.28 CB
Average maturity of issues in primary auctions of koruna debt securities

(years)

Note: Average weighted by the volume sold (adjusted for purchases by the Ministry of Finance).

Chart II.29 CB
Average yields in primary auctions of koruna debt securities by maturity basket

(%)

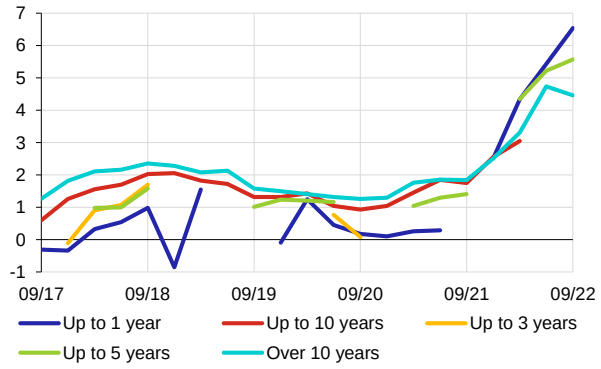


Table II.1 CB

Medians of variables describing the characteristics of households when providing a consumer loan secured by residential property

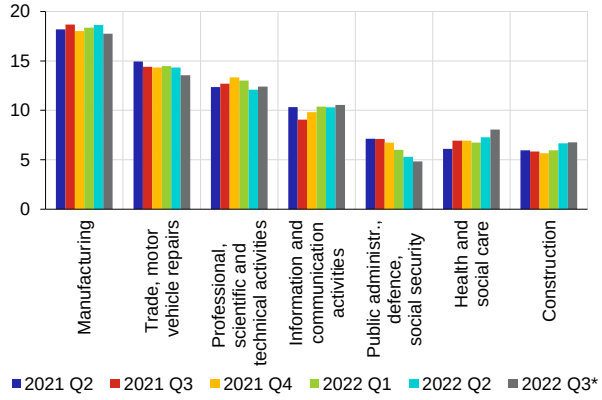
	2020 H2	2021 H1	2021 H2	2022 H1	2022 H2*
Net monthly income (CZK thousands)	45.7	49.4	52.8	57.5	60.0
Year-on-year change (%)	5.7	9.6	15.5	16.4	17.2
Loan size (CZK thousands)	2,382	2,700	2,840	2,740	2,400
Year-on-year change (%)	19.1	22.7	19.2	1.5	-14.3
Property purchase price (CZK thousands)	3,100	3,510	3,690	3,900	3,760
Year-on-year change (%)	20.2	23.1	19.0	11.1	0.3
Mortgage loan instalment (CZK thousands)	9.8	11.3	12.4	14.4	14.8
Year-on-year change (%)	12.0	18.9	26.5	28.1	23.4
LTV (%)	74.0	71.4	70.0	67.1	65.5
DTI (net annual incomes)	5.5	5.8	5.9	5.5	4.8
DSTI (%)	32.8	33.6	35.3	38.3	38.7

Note: The figures fall into the category of pure new consumer loans secured by residential property and relate to the date on which the loan agreement was concluded. Net monthly income is the net income declared in the loan application and comprises the income of all persons listed in the loan agreement. The last half-year, indicated by *, contains data for July and August 2022 only. The year-on-year changes for the last half-year thus compare the July and August values between 2021 and 2022.

Chart II.30 CB

Share of consumer loans secured by residential property by sector of the principal applicant

(share in total volume in %)

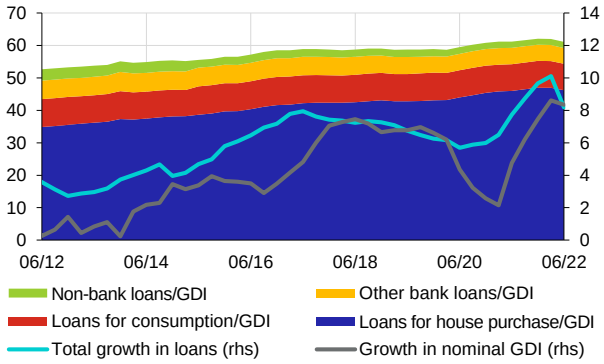


Note: The chart only shows sectors in which the share of loans provided exceeds 5% of the total volume. Data for 2022 Q3 only include July and August (marked *).

Chart II.31 CB

Household indebtedness and disposable income indicators

(ratios in %; right-hand scale: year on year in %)



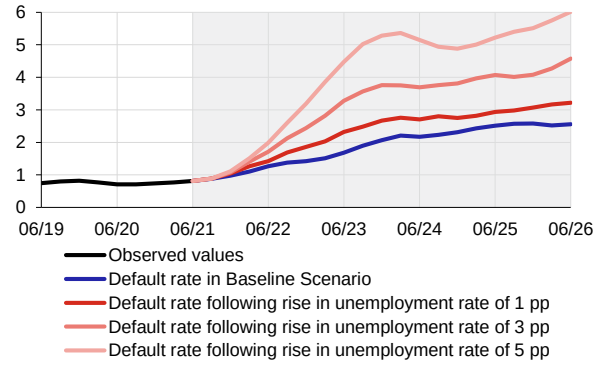
Source: CNB, CZSO

Note: Non-bank loans are loans provided by other financial institutions. GDI stands for gross disposable income. The household sector also includes data for NPISHs.

Chart II.32 CB

12M default rate on loans to households given an additional rise in the unemployment rate going beyond the *Baseline Scenario*

(%)

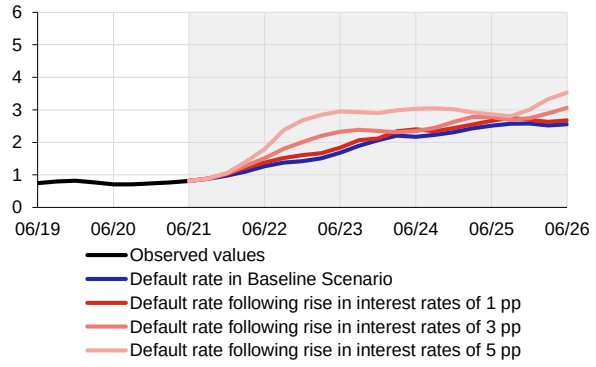


Note: Consumer loans secured by residential property. The 12-month default rate is a forward-looking indicator defined as the flow of non-performing loans in the next 12 months divided by the total stock of performing loans in the starting period.

Chart II.33 CB

12M default rate on loans to households given an additional rise in interest rates going beyond the *Baseline Scenario*

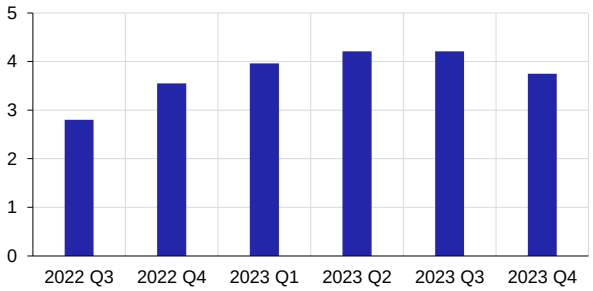
(%)



Note: Consumer loans secured by residential property. The 12-month default rate is a forward-looking indicator defined as the flow of non-performing loans in the next 12 months divided by the total stock of performing loans in the starting period.

Chart II.34 CB
Estimate of the change in interest rates on loans at refixing

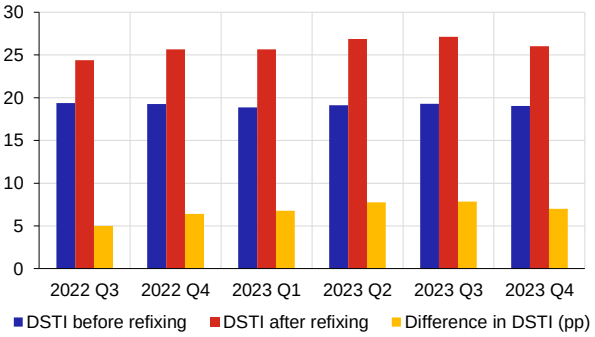
(pp)



Note: Consumer loans secured by residential property.

Chart II.35 CB
Estimate of the DSTI ratio of refixed loans

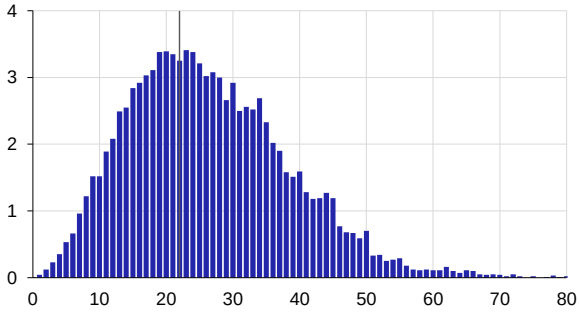
(%)



Note: Consumer loans secured by residential property.

Chart II.36 CB
Estimate of the DSTI distribution of loans

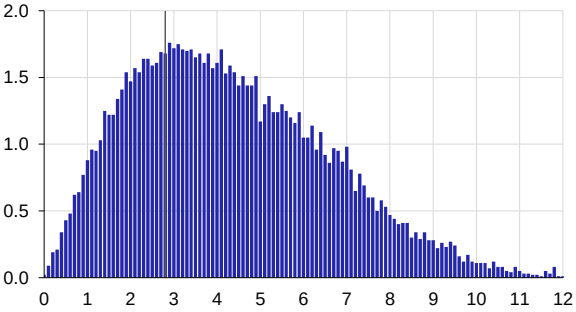
(% of total volume)



Note: Consumer loans secured by residential property. The vertical black line denotes the average DSTI. The estimate assumes a gradual rise in the net income of all borrowers in line with macroeconomic developments.

Chart II.37 CB
Estimate of the DTI distribution of loans

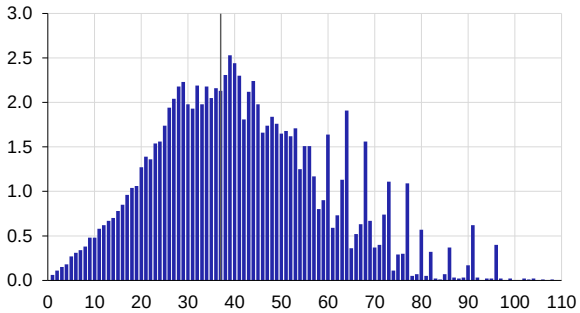
(% of total volume)



Note: Consumer loans secured by residential property. The vertical black line denotes the average DTI. The estimate assumes a gradual rise in the net income of all borrowers in line with macroeconomic developments and a gradual decline in debt in line with the instalment schedule.

Chart II.38 CB
Estimate of the LTV distribution of loans

(% of total volume)



Note: Consumer loans secured by residential property. The vertical black line denotes the average LTV. The estimate assumes immediate revaluation of collateral in line with property price developments and a gradual decline in the loan size in line with the instalment schedule.

SECTION III

Table III.1 CB
Exposures, provisions and coverage ratios by risk stage and portfolio

Households		Exposures		Provisions		Coverage ratio	
Stage	Date	Volume (CZK billions)	Change (%)	Volume (CZK billions)	Change (%)	Ratio (%)	Change (pp)
Total	12/20	1,854	12.7	31.4	-6.2	1.69	-0.28
	12/21	2,089		29.5		1.41	
	08/22	2,238	7.1	29.2	-0.9	1.30	-0.11
S1	12/20	1,687	11.0	3.9	-0.1	0.23	-0.02
	12/21	1,873		3.9		0.21	
	08/22	1,997	6.6	3.8	-1.7	0.19	-0.02
S2	12/20	133	37.4	8.8	-7.5	6.61	-2.16
	12/21	183		8.1		4.45	
	08/22	212	16.1	9.7	18.8	4.56	0.10
S3	12/20	34	-4.3	18.7	-6.8	54.83	-1.40
	12/21	33		17.4		53.43	
	08/22	29	-12.2	15.7	-9.9	54.82	1.39

NFCs		Exposures		Provisions		Coverage ratio	
Stage	Date	Volume (CZK billions)	Change (%)	Volume (CZK billions)	Change (%)	Ratio (%)	Change (pp)
Total	12/20	1,307	4.1	43.0	-9.0	3.29	-0.42
	12/21	1,361		39.1		2.87	
	08/22	1,507	10.7	38.1	-2.6	2.53	-0.35
S1	12/20	1,049	6.6	4.7	-11.1	0.45	-0.07
	12/21	1,118		4.2		0.38	
	08/22	1,240	11.0	4.2	0.4	0.34	-0.04
S2	12/20	203	-5.2	9.8	-24.3	4.85	-0.98
	12/21	193		7.4		3.87	
	08/22	218	13.3	7.9	5.6	3.61	-0.26
S3	12/20	55	-8.4	28.4	-3.4	51.27	2.81
	12/21	51		27.4		54.08	
	08/22	48	-5.0	26.0	-5.3	53.91	-0.18

Note: Client exposures are exposures to the private sector. S1 and S2 comprise performing loans; S3 can be considered identical to non-performing loans.

Chart III.1 CB
NPL ratio for bank loans to the private non-financial sector

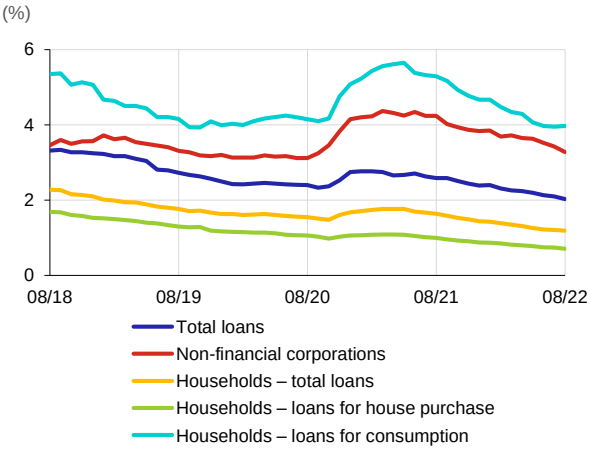
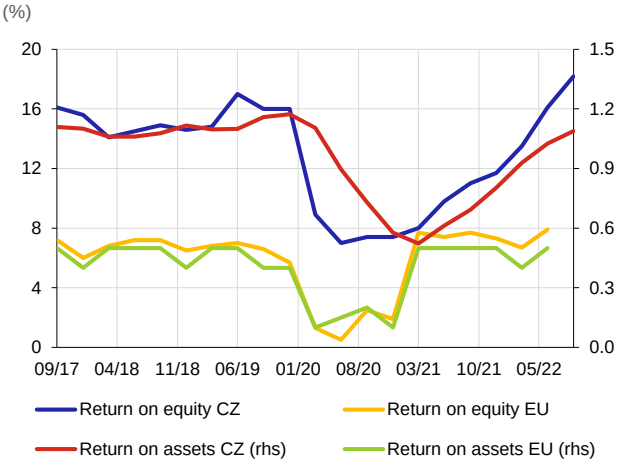


Chart III.2 CB
Profitability of the Czech and EU banking sectors



Source: CNB, EBA

Chart III.3 CB
Decomposition of the change in the value of pension funds' assets
(CZK billions)

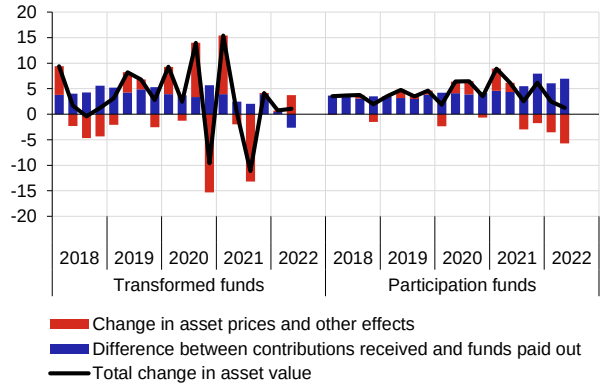


Chart III.4 CB
Decomposition of the change in the value of investment funds' assets by investment policy in 2022
(CZK billions; x-axis: individual months of 2022)

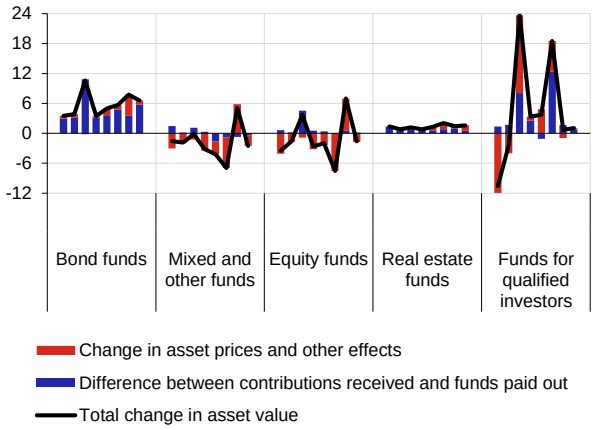
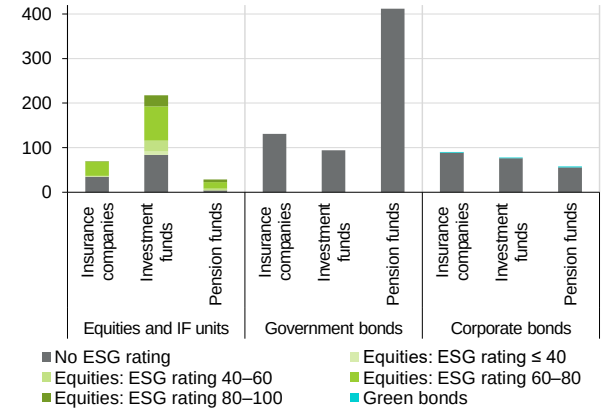


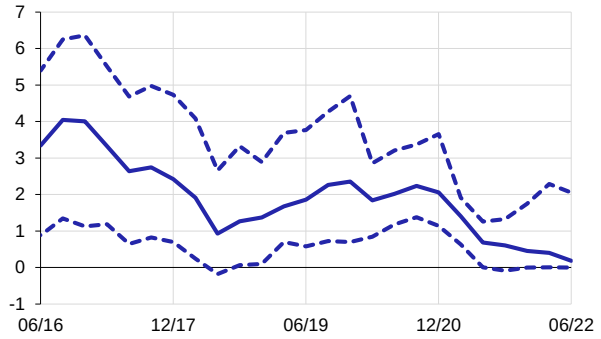
Chart III.5 CB
Listed securities held by domestic institutional investors by ESG rating
(CZK billions; data as of 30 June 2022)



Source: CNB, Refinitiv

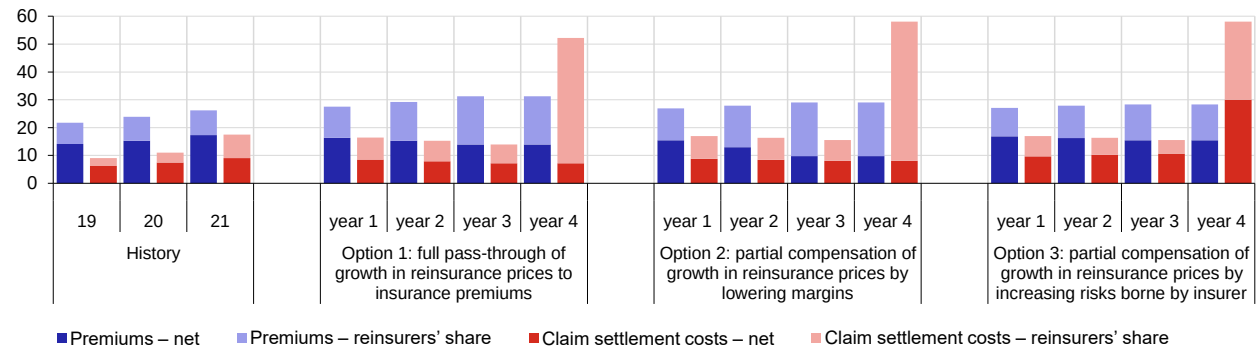
Note: IF = investment funds. The amounts in the chart are lower on aggregate than in Chart III.13, as this chart only includes listed securities.

Chart III.6 CB
Excess of assets over liabilities of transformed funds
(% of TFs' total assets)



Note: Dashed lines denote the minimum and maximum values across TFs.

Chart III.7 CB
Illustrative analysis – hypothetical path of premiums and claim settlement costs in the event of repeated natural disasters
(CZK billions)



Note: The amounts pertain to insurance against fire and other damage to property.

SECTION IV

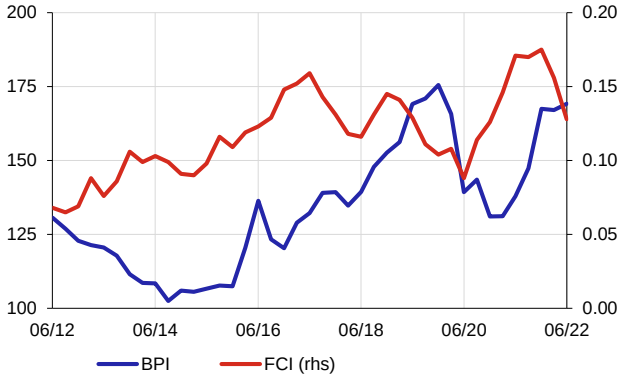
Table IV.1 CB
Conversion of FCI values into the countercyclical capital buffer rate

Range of FCI values		CCyB rate
from	to	
0.00	0.09	0.00%
0.09	0.10	0.25%
0.10	0.12	0.50%
0.12	0.14	0.75%
0.14	0.16	1.00%
0.16	0.18	1.25%
0.18	0.21	1.50%
0.21	0.23	1.75%
0.23	0.26	2.00%
0.26	0.29	2.25%
0.29	1.00	2.50%

Note: The interval containing the current FCI value is indicated in red.

Chart IV.1 CB
BPI and FCI

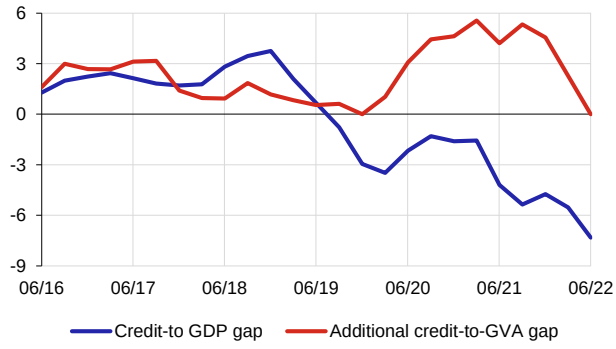
(%; right-hand scale: 0 minimum, 1 maximum)



Note: The BPI expresses the ratio of the margin on the stock of loans to provisions per unit of credit. The margin on the stock of loans is the difference between the client lending rate and the client deposit rate.

Chart IV.2 CB
Standardised credit-to-GDP gap and additional gap

(pp)



Source: CNB, CZSO

Note: The trend in the standardised gap is estimated using the HP filter (lambda = 400,000) over the entire time series. The additional gap – the expansionary credit gap – is calculated as the difference between the ratio of bank loans to the gross value added (GVA) of the private sector and the minimum level of this ratio over the past eight quarters.

Chart IV.3 CB
Credit commitments in the private non-financial sector

(year-on-year change)

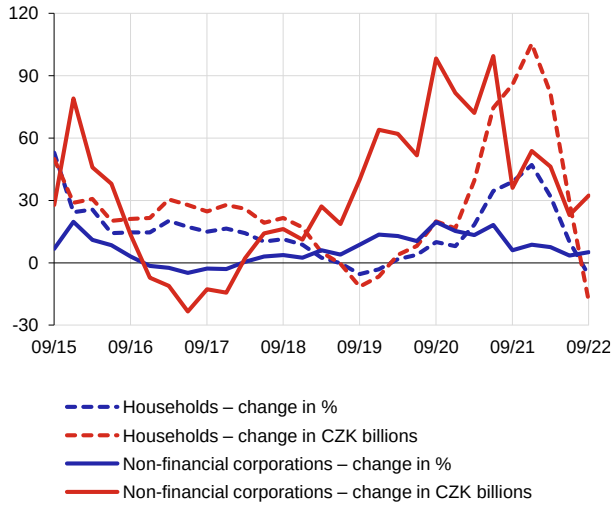


Table IV.2 CB
Characteristics of households with a near-limit DSTI upon the provision of consumer credit secured by residential property (pure new loans)

		(applicants not entitled to age exemption, DSTI 43–45%)							(applicants entitled to age exemption, DSTI 48–50%)						
		2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2	2022 Q3	2021 Q1	2021 Q2	2021 Q3	2021 Q4	2022 Q1	2022 Q2	2022 Q3
Net monthly income	average	62.6	62.4	66.8	73.8	69.2	77.7	81.6	37.3	42.1	42.2	47.5	52.7	57.8	57.5
(CZK thousands)	median	51.8	51.9	54.1	55.0	55.9	60.8	66.3	31.7	34.7	34.8	41.4	48.8	51.5	51.2
Loan size	average	3.8	3.8	4.0	3.9	3.8	3.5	3.4	3.9	4.1	4.3	4.4	4.3	4.4	4.0
(CZK thousands)	median	3.5	3.5	3.5	3.3	3.2	3.0	2.8	3.5	3.8	3.8	4.0	3.8	4.0	3.5
LTV	average	70.0	70.0	70.0	69.0	68.0	62.0	64.0	77.5	80.0	74.0	71.0	71.0	74.0	75.0
(%)	median	66.9	65.3	64.8	63.6	63.2	59.1	60.1	72.3	71.9	69.2	67.7	67.2	69.1	68.7
DSTI	average	44.2	44.1	44.2	44.2	44.3	44.4	44.4	49.2	49.2	49.3	49.2	49.3	49.4	49.4
(%)	median	44.2	44.1	44.2	44.2	44.4	44.6	44.6	49.2	49.2	49.3	49.2	49.4	49.5	49.6
DTI	average	7.3	7.3	7.2	7.1	6.7	6.0	5.7	9.8	9.7	9.6	9.1	8.1	7.5	7.2
(years)	median	7.6	7.6	7.6	7.5	6.9	6.2	5.8	10.7	10.4	10.2	9.5	8.2	7.7	7.1

Chart IV.4 CB
LTV distribution of new consumer credit secured by residential property with a near-limit DSTI – no entitlement to the age exemption

(DSTI 43%–45%; share of loans in volume provided in %; x-axis: LTV in %)

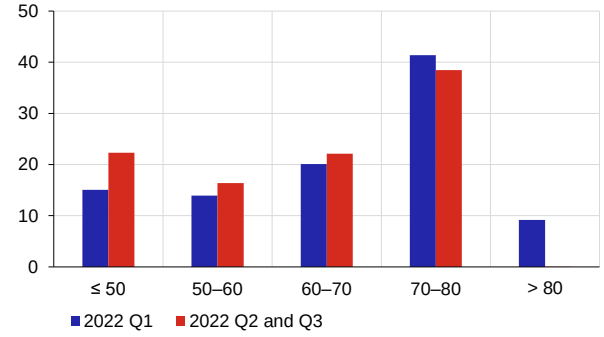


Chart IV.5 CB
LTV distribution of new consumer credit secured by residential property with a near-limit DSTI – entitlement to the age exemption

(DSTI 48%–50%; share of loans in volume provided in %; x-axis: LTV in %)

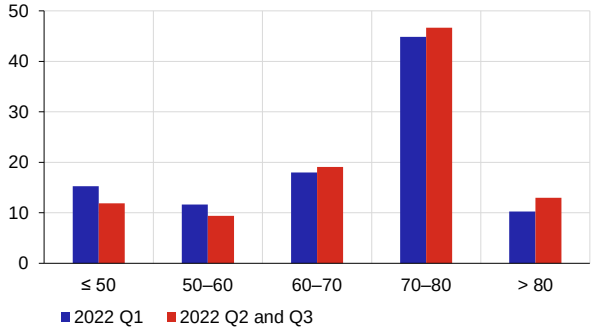
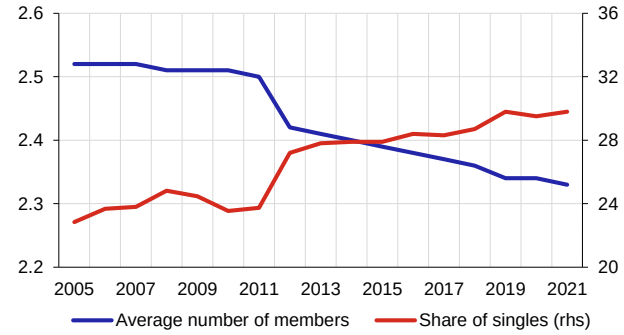


Chart IV.6 CB
Selected demographic characteristics of households

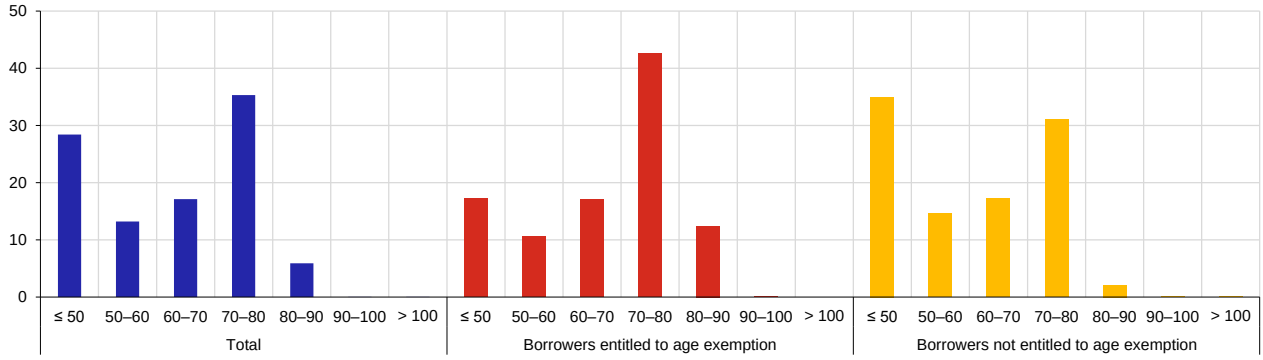
(number of persons; right-hand scale: %)



Source: CZSO

Chart IV.7 CB
LTV distribution of new consumer credit secured by residential property

(share of loans in volume provided in %; x-axis: LTV in %)

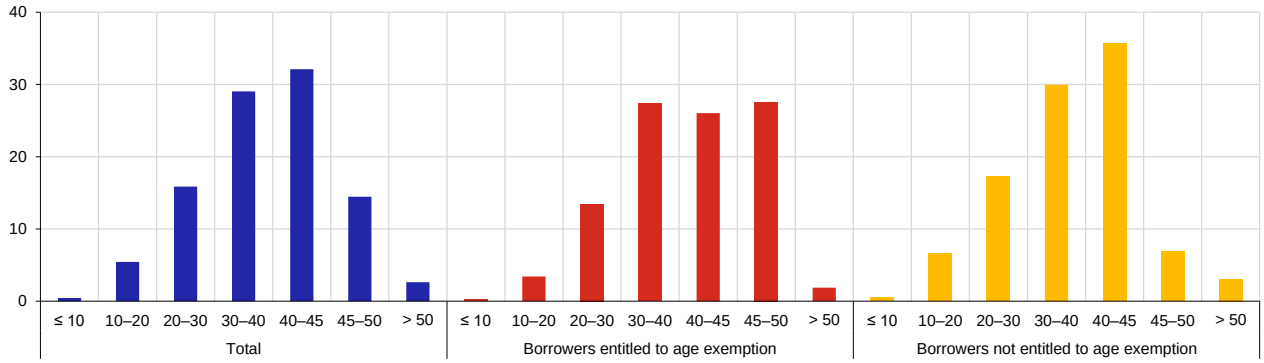


Note: Interval closed from the right. Data for 1 April 2022–31 August 2022.

Chart IV.8 CB

DSTI distribution of new consumer credit secured by residential property

(share of loans in volume provided in %; x-axis: DSTI in %)

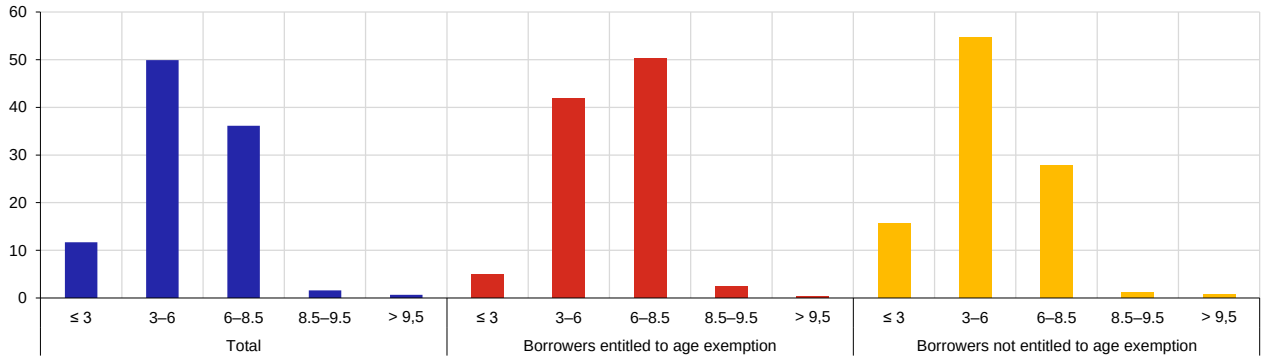


Note: Interval closed from the right. Data for 1 April 2022–31 August 2022.

Chart IV.9 CB

DTI distribution of new consumer credit secured by residential property

(share of loans in volume provided in %; x-axis: DTI in years)

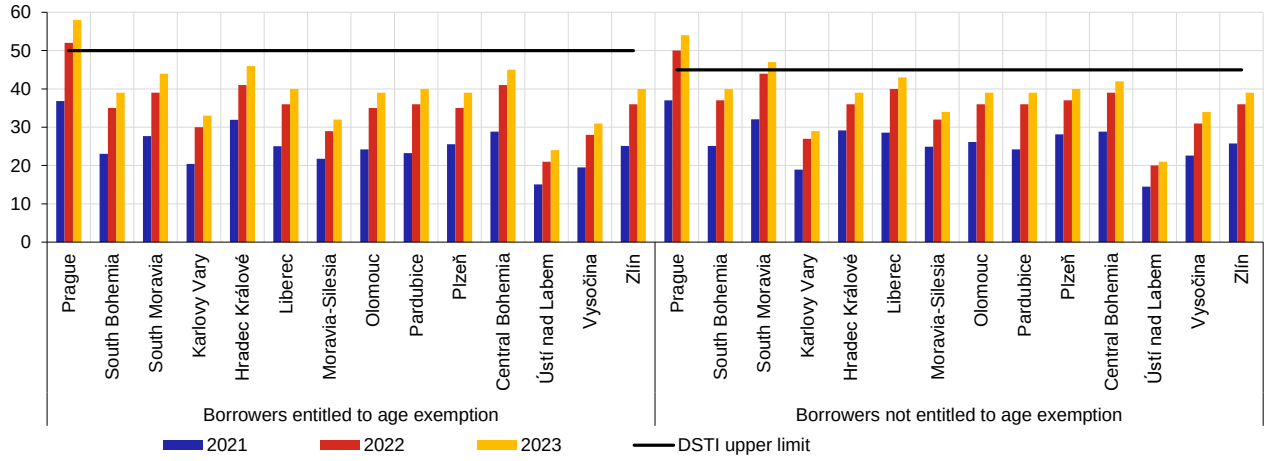


Note: Interval closed from the right. Data for 1 April 2022–31 August 2022.

Chart IV.10 CB

Estimated affordability of a consumer loan secured by residential property for an applicant with a median income in terms of DSTI by region

(%)

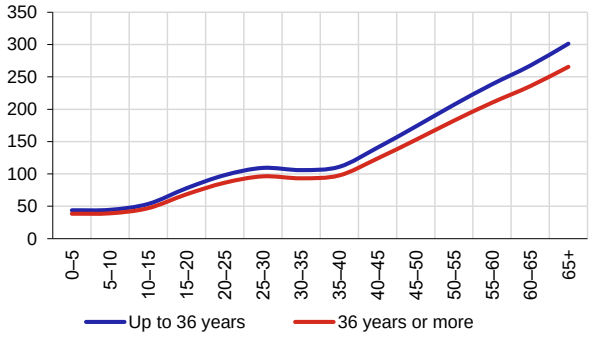


Source: CZSO, CenovaMapa.org

Note: Property prices calculated per a 68 m^2 apartment. Property prices, net income and interest rates are assumed to change in line with the macroeconomic forecast. The average loan maturity is 360 months for applicants entitled to the age exemption and 300 months for applicants not entitled to the age exemption. Net household income represents median household income with two economically active members and the head of the household aged 15 to 70. Loan affordability is much worse for a one-member household.

Chart IV.11 CB
DSTI and estimated default rate

(estimated default rate, average for entire sample = 100; x-axis: DSTI in %)



Note: Consumer loans secured by residential property. Model-estimated values smoothed using the LOWESS method. Age means the age of the borrower relevant for the application of the DSTI limit under the Act on the CNB. Intervals closed from the left and open from the right.

Chart IV.12 CB
Estimate of the cumulative DSTI distribution of the level of consumer loans secured by residential property

(% of total debt; x-axis: DSTI in %)

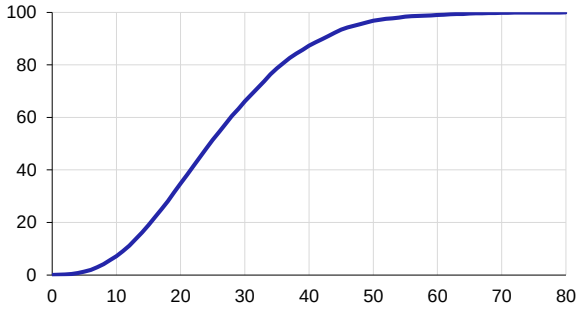


Chart IV.13 CB
Estimate of the cumulative LTV distribution of the level of consumer loans secured by residential property

(% of total debt; x-axis: LTV in %)

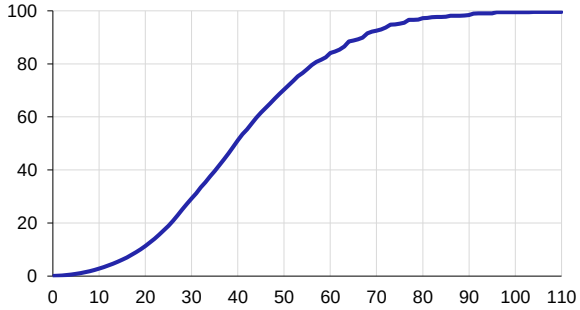


Chart IV.14 CB
Estimate of the cumulative DTI distribution of the level of consumer loans secured by residential property

(% of total debt; x-axis: DTI in years)

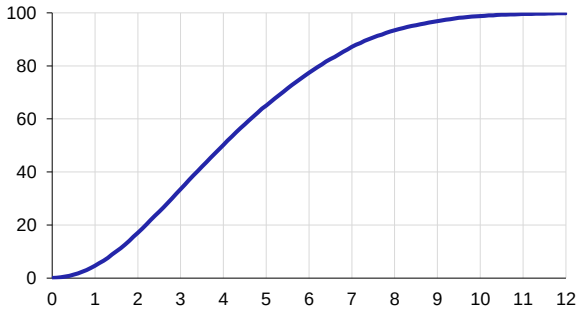
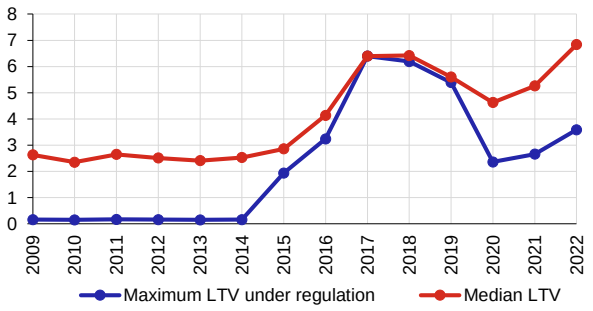


Chart IV.15 CB
Time needed to save for a down-payment on a consumer loan secured by residential property

(years)



Note: The time needed for a median household to save for a down-payment on a residential property with the average market price at the given time. It is assumed that the household will only save what remains after it pays the necessary expenses and some other expenses, and that the returns on its savings are constant. Other fundamental variables such as income and expenses are also assumed to be constant over the saving period. The 2022 figures are only preliminary.

Glossary

Bank Lending Survey (BLS): A survey of bank lending conditions for non-financial corporations and households in the Czech Republic, the pilot round of which took place in 2012 Q1. The survey aims to obtain qualitative information on current perceptions of the situation on both the supply and demand side of the credit market.

Basel III: A regulatory framework issued by the Basel Committee on Banking Supervision in 2010 which sets standards for capital adequacy of banks and now also for their liquidity. Overall, Basel III introduces stricter rules than the previous framework and came into existence mainly as a reaction to the financial crisis.

Breakdown of banks by total assets: In some charts and tables in the FSR, banks are assigned to groups based on the amount of their total assets. The breakdown of banks into groups is revised at the end of each calendar year. In 2007 and 2008, banks having total assets of over CZK 150 billion were regarded as large banks, banks having total assets of over CZK 50 billion and up to CZK 150 billion were regarded as medium-sized banks and banks having total assets of less than CZK 50 billion were regarded as small banks. In 2009 the total amount of assets necessary for inclusion in the group of large banks was increased to CZK 200 billion and the range for medium-sized banks was changed to CZK 50 billion–CZK 200 billion. The range for small banks was unchanged. As from 2012, the breakdown of banks by total assets is as follows: large banks have total assets of over CZK 250 billion, medium-sized banks have total assets of over CZK 50 billion and up to CZK 250 billion and small banks have total assets of less than CZK 50 billion.

Capital ratio: The ratio of regulatory capital to total risk-weighted assets. The Tier 1 capital ratio is the ratio of Tier 1 capital to total risk-weighted assets (see also Tier 1).

Capital requirement: The capital requirement is the amount of capital a bank has to hold so as to cover all the risks it undertakes.

Collective investment funds (CIFs): Mutual and investment funds whose sole business activity is collective investment, i.e. collecting funds from investors and investing them. CIFs are broken down by investor type into funds intended for the public (dominated by open-ended mutual funds) and funds for qualified investors, and by asset risk into money market, bond, equity, mixed and real estate funds and funds of funds. Sometimes the category of funds of funds is not listed separately, but is included in the other categories according to the type of funds in which they invest.

Consumer credit: Credit used to finance household consumption. It also includes bank overdrafts and debit balances and credit card credit.

Countercyclical capital buffer: A macroprudential tool designed to increase the banking sector's resilience to cyclical risks associated with fluctuations in lending.

Credit potential of the capital buffers: Provides information on the potential volume of new loans, the risks of which would be covered by the combined capital buffer.

Credit potential of the capital surplus: Provides information on the potential volume of new loans, the risks of which would be covered by capital beyond Pillar 1, Pillar 2 and the capital buffers.

Debt service-to-income (DSTI): The ratio of total debt service to the net income of the loan applicant.

Debt-to-income: The ratio of debt to the net income of the loan applicant.

Default: Default is defined as a breach of the debtor's payment discipline. In regulatory terminology (Regulation (EU) No 575/2013), The debtor is in default at the moment when it is probable that he will not be able to repay his obligations in a proper and timely manner, without recourse by the creditor to settlement of the claim from the security, or when at least one repayment (the amount of which deemed by the creditor to be significant) is more than 90 days past due.

ESG rating/score: The rating of an instrument, entity or activity in terms of environmental aspects (E – environment), social responsibility (S – social) and governance principles (G – governance).

IFRS 9: The financial reporting standard IFRS 9 *Financial instruments*, the final version of which was introduced in July 2014 by the International Accounting Standards Board (IASB), took effect on 1 January 2018 pursuant to Commission Regulation (EU) 2016/2067, replacing the previously valid IAS 39 standard. IFRS 9 lays down requirements for the recognition, valuation, impairment and derecognition of financial assets and financial liabilities and general hedge accounting. It aims to provide financial statement users with relevant information for assessing the size, timing and uncertainty of an entity's future cash flows.

Institutional investor: Either (a) a bank executing trades in investment instruments on its own account on the capital market, a management company, an investment fund, a pension management company or an insurance company, or (b) a foreign entity authorised to carry on business in the same fields in the Czech Republic as the entities listed under (a).

Interest margin: The difference between a bank's loan rate and its deposit rate.

Interest rate spread: Also interest rate differential; the spread between the interest rate on a contract (deposit, security) and a reference interest rate.

Leverage: See Leverage ratio.

Leverage ratio: The CRD IV/CRR rules define the leverage ratio as capital to risk-weighted assets. The term leverage is also often used in financial economics. There, however, capital is the denominator in the ratio (e.g. assets/capital or debt/capital). When we say that a bank has high leverage, we generally refer to the definition consistent with the assets/capital ratio. However, such a bank has a low leverage ratio.

Liquidity coverage ratio: A requirement to cover net liquidity outflows over a 30-day time horizon with liquid assets. It is calculated as the ratio of the liquidity buffer to the net liquidity outflow.

Loan for house purchase: Consumer credit (a) secured with real property or a lien on real property; (b) the purpose of which is (1) to acquire, settle or maintain rights to real property or part of real property; (2) to build real property or part of real property; (3) to pay for a transfer of a share in a housing cooperative or to acquire a share in another legal entity in order to acquire the right to use a flat or a house, (4) to change a building in accordance with the Building Act or to connect it to public networks; (5) to cover costs related to obtaining a cash loan, credit or other similar financial service with the purpose referred to in (1)–(4), or (6) to repay credit, a cash loan or other similar financial service provided for purposes referred to in (1)–(6); or (c) provided by a building society in accordance with the act regulating building savings schemes.

Loan service-to-income: The ratio of loan-related debt service to the net income of the loan applicant.

Loan-to-income (LTI): The ratio of the amount of a loan to the net income of the loan applicant.

Loan-to-value (LTV): The ratio of the amount of a loan to the value of collateral.

Loss given default (LGD): The ratio of the loss on an exposure in the event of counterparty default to the amount owed at the time of default.

Macroprudential policy: A key component of financial stability policy. It focuses on the stability of the financial system as a whole. Its main objective is to help prevent systemic risk.

Market liquidity: The ability of market participants to carry out financial transactions in assets of a given volume without causing a pronounced change in their prices.

Minimum Requirement for Own Funds and Eligible Liabilities (MREL): A sufficient volume of eligible liabilities is necessary for a failed bank to be recapitalised using internal funds (bail-in). In the event of a crisis, the CNB writes off or converts these liabilities. A sufficient MREL together with the application of a suitable combination of resolution tools thus enables a failed institution to be resolved without the use of public money.

Mortgage loan: A loan which is at least partly secured with a lien on property.

Mortgage loan refinancing: The process whereby a mortgage debtor accepts a new loan from a different lender than the one from which he received the original loan and uses it to repay the original loan. He thus becomes a debtor of the other lender, but usually under more favourable conditions. This is usually possible only at the end of the original loan's fixation period.

Mortgage loan refixation: The process whereby at the end of the fixation period of a mortgage loan the debtor selects the length of the new fixation period and negotiates new conditions for this period with the creditor. In this case, the identity of the creditor does not change.

Net stable funding ratio (NSFR): A structural liquidity requirement monitored over a one-year time horizon. It is defined as the ratio of available stable funding to required stable funding.

Non-bank financial corporations engaged in lending: Financial leasing companies, other lending companies, including consumer credit, credit card and hire-purchase providers, and factoring and forfaiting companies.

Non-performing loans: A loan is non-performing if at least one of the following two situations occurs: a) the debtor is unlikely to pay its credit obligations in full without recourse to actions such as realising security, b) the debtor is past due more than 90 days on a credit obligation. For details, see Article 178 of Regulation (EU) No 575/2013 of the European Parliament and of the Council.

Output floor: A lower limit on the total risk-weighted exposures of IRB banks set at 72.5% of the total risk-weighted exposures calculated using the STA approach. The output floor is currently scheduled to be phased in between January 2023 and January 2028, increasing each year from an initial level of 50% to the target of 72.5%.

Pension funds: In the Czech environment, pension funds are transformed and participation funds which are managed by pension management companies. Participation funds are further classed into obligatory conservative funds and other funds. Obligatory conservative funds are only allowed to invest in a significantly restricted group of assets.

Pillar 1: The first part of the CRD directive, focused on the determination of minimum capital requirements for all credit institutions to cover credit, market and operational risks.

Pillar 2: The second part of the CRD directive, requiring credit institutions to assess whether the Pillar 1 capital requirement is sufficient to cover all the risks to which they are exposed. This assessment process is reviewed by the supervisory authority under the supervisory review and evaluation process (SREP). The supervisory authority then can apply a wide range of instruments, including setting an additional capital requirement, for example to cover concentration risk.

Prague InterBank Offered Rate (PRIBOR): The reference interest rate on the interbank deposit market for deposit sales. Reference banks quoting the PRIBOR must be important participants in the interbank market.

Price-to-income (PTI): A housing affordability indicator calculated as the ratio of the property price to the annual income of the household or loan applicant.

Price-to-rent (PTR): The ratio of the price of an apartment to the annual rent. The price-to-rent ratio is the inverse of the rental return.

Property asking prices: Property sale asking prices in estate agencies. Asking prices should be higher than transaction prices. Property asking prices in the Czech Republic are published, for example, by the CZSO and the Institute for Regional Information (which also publishes data on market rent supply prices).

Property developers/developments: Companies/projects whose aim is to build a complex of residential and commercial property. Property developers' work includes choosing an appropriate site, setting up a project, obtaining the necessary permits, building the necessary infrastructure, constructing the buildings and selling the property. Developers also often organise purchase financing for clients and frequently lease or manage the property once it is built (especially in the case of commercial property). Given the combination of construction activity and speculative property purchases, developers' results are strongly dependent on movements in property prices.

Property transaction prices: Prices of actual transactions on the property market, which should be the closest to actual market prices. The CZSO has been publishing two types of data on property transaction prices since 2011. Prices based on Ministry of Finance statistics from property transfer tax returns and published by the CZSO are the older source. These data contain time series from 1998 and are available in a relatively detailed breakdown (by region, degree of wear and tear and type of property). On the other hand, they do not include transactions which are not subject to property transfer tax (i.e. primarily transactions in new property) and the index is published with a lag of at least half a year. The second, new source of data on property transaction prices is data from CZSO surveys in estate agencies. They cover new property, but are not available in such a long time series and such a detailed breakdown.

Return on assets (RoA): The ratio of pre-tax profit and interest to total assets of a firm.

Risk premium: The risk premium an investor demands on investments in riskier financial instruments.

Search for yield: A situation where economic agents attempt to make up for generally low asset yields by seeking riskier-than-usual investments that yield a premium in return for the increased risk. Such behaviour may increase the future risks to the financial system.

Sovereign risk: The risk that a government will default on its obligations, leading to national bankruptcy or restructuring of government debt.

Systemic risk: The risk of the entire financial system or market collapsing.

Tier 1: The highest quality and, for banks in the Czech Republic, also the most significant part of regulatory capital. The dominant components of Tier 1 are equity capital, retained earnings and mandatory reserve funds.

VIX: An index of expected 30-day volatility of US stocks (S&P 500 index), derived from market prices of options traded at the Chicago Board Options Exchange. A higher value indicates higher expected volatility of the stock index, and therefore higher market uncertainty.

Abbreviations

AEs	advanced economies
BCBS	Basel Committee on Banking Supervision
BEA	Bureau of economic analysis (U.S. Department of commerce)
BIS	Bank for International Settlements
bp	basis point
BRCI	Bank Register of Client Information operated by Czech Credit Banking Bureau
C	construction
CB	central bank
CBCB	Czech Banking Credit Bureau
CCoB	capital conservation buffer
CCyB	countercyclical capital buffer
CDS	credit default swap
CEB	Czech Export Bank
CEE	Central and Eastern Europe
CET1	common equity Tier 1
CF	Consensus Forecast
CISS	Composite Indicator of Systemic Risk
CI	credit institution
CLO	collateralised loan obligation
CNB	Czech National Bank
CNCB	Czech Non-Banking Credit Bureau
COREP	The Common Reporting Framework
Coll.	collection
CPI	Consumer Price Index
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
CSDB	Centralised Securities Database
CZK	Czech koruna
CZSO	Czech Statistical Office
DSCR	debt service coverage ratio
DSTI	debt service-to-income
DTI	debt-to-income
EA	euro area
EAD	exposure at default
EBA	European Banking Authority
EC	European Commission
ECB	European Central Bank
ECL	expected credit loss
EGAP	Export Guarantee and Insurance Company
EIB	European Investment Bank
EIOPA	European Insurance and Occupational Pensions Authority
EL	expected loss
EMs	emerging market economies
EMIR	Regulation on OTC derivatives, central counterparties and trade repositories
EMU	European Monetary Union
ESA	Joint Committee of European Supervisory Authorities
ESFS	European System of Financial Supervision
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EUR	euro
EURIBOR	Euro InterBank Offered Rate (reference interest rate on the interbank market)
FCI	financial cycle indicator
FCLs	foreign currency loans
Fed	Federal Reserve System
FI	financial institution
FINREP	Financial Reporting
FSR	Financial Stability Report
G20	Group of Twenty
GB	government bond
GDI	gross disposable income
GDP	gross domestic product
GFSR	Global Financial Stability Report
GNI	gross national income
G-SII	Global systemically important institution
H	half-year
HBS	Household Budget Statistics
I	investment
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
ILO	International Labour Organization
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
IPFCs	investment and pension funds and companies
IR	Inflation Report
IRB	Internal Rating Based Approach, an approach within the Basel II framework for capital adequacy of banks
IRI	Institute for Regional Information
IRS	interest rate swap

ISR	sovereign risk indicator
IT	information technology
LAA	loss absorption amount
LCR	liquidity coverage ratio
LGD	loss given default
LLP	loan loss provision
LSTI	loan service-to-income
LTI	loan-to-income
LTV	loan-to-value
M	month
MBs	mortgage bonds
MF CR	Ministry of Finance of the Czech Republic
MIT	Ministry of Industry and Trade
MM	money market
MPR	Monetary Policy Report
MREL	minimum requirement for own funds and eligible liabilities
$MREL_{TEM}$	Minimum requirement for own funds and eligible liabilities – total exposure measure
$MREL_{TREA}$	Minimum requirement for own funds and eligible liabilities – total risk exposure amount
MSCI	Morgan Stanley Capital International
NACE	General Industrial Classification of Economic Activities
NBER	The National Bureau of Economic Research
NDB	National Development Bank
NFC	non-financial corporation
NFCEL	non-bank financial corporations engaged in lending
NP	natural person
NPISH	non-profit institutions serving households
NPL	non-performing loan
NRCI	Non-bank Register of Client Information
NSFR	net stable funding ratio
OCI	other comprehensive income
OCR	overall capital requirement
OECD	Organisation for Economic Cooperation and Development
OFIs	other financial intermediaries
O-SII	Other systemically important institutions
PD	probability of default
P/L	profit/loss
PMC	pension management company
PMI	Purchasing Managers' Index
pp	percentage point
PRIBOR	Prague InterBank Offered Rate (reference interest rate on the interbank market)
PTI	price-to-income
Q	quarter
QA	quick assets
RCA	recapitalisation amount
RoA	return on assets
RPN	Research and Policy Notes
S&P	Standard & Poor´s
SCR	Solvency Capital Requirement
SHI	social and health insurance
SMEs	small and medium-sized enterprises
SMST	solvency macro stress test
SOLUS	Sdružení na ochranu leasingu a úvěrů spotřebitelům (Association for the Protection of Leasing and Loans to Consumers)
SRB	systemic risk buffer
STA	standardised approach to credit risk
SFA	stock flow adjustments
TEM	see $MREL_{TEM}$
TF	transformed fund
TLTRO	Targeted Longer-Term Refinancing Operations
TP	technical provision
TREA	see $MREL_{TREA}$
TSCR	total supervisory review and evaluation process capital requirement
TTC	through the cycle
ULI	Unit Linked Insurance
VIX	Volatility index
WGI	Worldwide Governance Indicators
WP	Working Paper
Y	year

Country abbreviations

AT	Austria	IT	Italy
AU	Australia	JP	Japan
BE	Belgium	KR	South Korea
BG	Bulgaria	KZ	Kazakhstan
BR	Brazil	LT	Lithuania
CA	Canada	LU	Luxembourg
CL	Chile	LV	Latvia
CN	China	MT	Malta
CY	Cyprus	MX	Mexico
CZ	Czech Republic	MY	Malaysia
DE	Germany	NG	Nigeria
DK	Denmark	NL	Netherlands
EA	euro area	NO	Norway
EE	Estonia	NZ	New Zealand
ES	Spain	PL	Poland
FI	Finland	PT	Portugal
FR	France	RO	Romania
GR	Greece	RU	Russia
HK	Hongkong	SE	Sweden
HR	Croatia	SI	Slovenia
HU	Hungary	SK	Slovakia
CH	Switzerland	TH	Thailand
ID	Indonesia	TR	Turkey
IE	Ireland	UK	United Kingdom
IL	Israel	US	United States
IN	India	ZA	Republic of South Africa
IS	Iceland		

Selected indicators

FINANCIAL STABILITY INDICATORS – PART 1

		2016	2017	2018	2019	2020	2021	2022 I	2022 II	2022 III
Macroeconomic environment										
ME.1	Real GDP growth (year on year, %)	2.5	5.2	3.2	3.0	-5.5	3.5	4.9	3.6	
ME.2	Consumer price inflation (average annual index growth, %)	0.7	2.5	2.1	2.8	3.2	3.8	6.1	9.4	12.7
ME.3	General government balance / GDP (%)	0.7	1.5	0.9	0.3	-5.8	-5.9			
ME.4	General government debt / GDP (%)	36.6	34.2	32.1	30.1	37.7	41.9			
ME.5	Trade balance / GDP (%)	5.4	5.1	3.7	4.1	4.9	1.2	0.5	-1.0	
ME.6	External debt in % of banking sector external assets	120.3	114.0	113.8	108.7	103.2	102.3	104.5	104.4	
ME.7	Balance of payments current account / GDP (%)	1.8	1.5	0.4	0.3	2.0	-0.8	-0.9	-2.7	
ME.8	Monetary policy 2W repo rate (end of period, %)	0.05	0.50	1.75	2.00	0.25	3.75	4.50	7.00	7.00
Non-financial corporations										
NC.1	Return on equity (%)	11.3	10.7	9.8	10.4	7.2	10.5			
NC.2	Debt (% of total liabilities)	50.2	49.7	49.3	48.4	46.2	42.0	40.6	39.0	
NC.3	Credit indebtedness (% of GDP)	50.0	50.3	53.1	48.2	49.9	47.4	46.7	46.2	
NC.4	– loans from Czech banks (% of GDP)	20.3	20.0	20.0	19.3	19.7	19.5	19.5	19.0	
NC.5	– loans from Czech non-bank financial corporations (% of GDP)	4.4	4.5	4.5	4.3	4.4	4.1	4.0	4.2	
NC.6	– other (including financing from abroad. % of GDP)	25.3	25.8	28.6	24.5	25.7	23.8	23.1	23.0	
NC.7	Interest coverage (pre-tax profit + interest paid / interest paid, %)	22.1	26.8	25.2	15.0	16.6	18.4	17.4	15.9	
NC.8	12M default rate (%)	1.1	1.2	1.0	1.9	1.1	1.0	1.4	1.8	
Households (including sole traders)										
H.1	Total debt / gross disposable income (%)	58.6	58.8	59.1	58.8	60.7	62.1	62.1	61.0	
H.2	Total debt / financial assets (%)	25.9	26.3	24.6	24.2	23.2	24.2	24.3	24.3	
H.3	Net financial assets (total financial assets − total liabilities, % of GDP)	83.9	80.8	90.5	92.2	105.3	102.4	101.2	99.4	
H.4	Debt / GDP (%)	30.9	31.2	31.6	31.3	33.6	34.6	34.4	33.7	
H.5	– loans from Czech banks to households (% of GDP)	27.7	28.1	28.7	28.5	30.9	31.9	31.7	31.2	
H.6	– loans from Czech non-bank fin. corporations to households (% of GDP)	1.3	1.2	1.2	1.2	1.1	1.0	1.0	1.0	
H.7	– loans from Czech banks to sole traders (% of GDP)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	
H.8	– loans from Czech non-bank fin. corporations to sole traders (% of GDP)	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.3	
H.9	– other (including financing from abroad. % of GDP)	1.1	1.0	0.9	0.8	0.8	0.8	0.8	0.7	
H.10	Net interest expenses / gross disposable income (%)	2.6	2.3	2.2	2.1	2.1	2.0	2.0	2.0	
H.11	12M default rate (%, excluding sole traders)	2.2	1.8	1.5	1.3	1.0	0.8	0.8		
Financial markets										
FM.1	3M PRIBOR (average for period, %)	0.3	0.4	1.3	2.1	0.9	1.1	4.6	6.0	7.3
FM.2	1Y PRIBOR (average for period, %)	0.5	0.6	1.5	2.2	0.9	1.4	4.8	6.4	7.5
FM.3	10Y government bond yield (average for period, %)	0.4	1.0	2.0	1.5	1.1	1.9	3.2	4.6	4.4
FM.4	CZK / EUR exchange rate (average for period, %)	27.0	26.3	25.6	25.7	26.5	25.6	24.6	24.6	24.6
FM.5	Change in PX stock index (% year on year, end of period)	-3.6	17.0	-8.5	9.8	-5.2	38.8	25.4	8.6	-15.2
Property market										
PM.1	Total change in residential property prices (transaction prices, % year on year)	11.0	8.4	9.8	8.9	9.0	25.8	24.5	23.1	
PM.2	Change in apartment prices (asking prices according to CZSO, % year on year)	15.1	11.6	6.5	10.8	16.4	18.8	16.3	16.2	
PM.3	Apartment price / average annual wage	9.8	10.3	10.1	10.4	11.6	13.1	13.3	13.3	
PM.4	Apartment price / annual rent (according to IRI)	26.9	27.8	26.1	25.9	31.3	37.3	38.0	36.9	
Financial sector										
FS.1	Financial sector assets / GDP (%)	160.3	175.4	173.0	181.5	178.6	177.3	189.1	186.6	
FS.2	Shares of individual segments in financial sector assets (%)									
FS.3	banks	77.4	78.7	78.7	78.4	78.6	78.2	79.7	80.0	
FS.4	credit unions	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
FS.5	insurance companies	6.4	5.7	5.6	5.1	4.9	4.8	4.4	4.1	
FS.6	pension management companies and funds	5.2	5.0	5.1	5.3	5.4	5.3	4.9	4.8	
FS.7	investment funds*	5.3	5.4	5.5	6.3	6.7	7.4	7.2	7.2	
FS.8	non-bank financial corporations engaged in lending	5.0	4.6	4.6	4.6	4.1	3.9	3.5	3.6	
FS.9	investment firms	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	
Non-bank financial corporations										
NI.1	Share in financial sector assets (%)	22.0	20.9	20.9	21.3	21.1	21.4	20.0	19.7	
	Insurance companies									
NI.2	Premiums written / GDP (%)	3.1	3.0	2.9	2.9	3.0	2.9	3.0	3.0	
NI.3	Ratio of eligible own funds to the solvency capital requirement (in %)	238.1	230.0	243.6	202.4	251.3	230.5	220.6	213.6	212.9
NI.4	Change in financial investment of insurance companies (%, year on year)	0.9	4.2	1.4	-6.7	0.6	4.0	-0.5	-7.9	-8.4
NI.5	Return on equity of insurance companies (%)	15.7	14.7	15.8	24.1	18.4	36.6	38.4	25.5	25.8
NI.6	Claim settlement costs / net technical provisions (life, %)	15.1	14.4	15.3	16.6	14.2	14.4	15.7	17.2	
NI.7	Claim settlement costs / net technical provisions (non-life, %)	58.1	59.4	57.8	62.7	58.4	55.1	55.5	56.2	
	Pension management companies (PMCs) and PMC funds									
NI.8	Change in assets of funds managed by PMCs (%)	7.8	10.8	5.6	8.0	6.8	6.0	13.8	0.4	
NI.9	Nominal change in value of assets of PMC funds	0.3	3.6	-1.7	0.9	0.3	-0.4	12.5	-1.5	
	Investment funds									
NI.10	Growth in net assets (= equity; year on year, %)	17.7	20.9	6.4	21.5	10.6	23.7	20.8	15.4	
	Non-bank financial corporations engaged in lending									
NI.11	Growth in loans from non-bank financial corporations engaged in lending (%):									
NI.12	total	8.9	8.2	4.7	4.3	-2.3	0.9	1.8	5.3	
NI.13	households	7.0	0.7	-1.6	-1.2	-9.1	-2.0	-1.6	0.0	
NI.14	non-financial corporations	10.1	10.0	6.3	2.6	0.0	1.4	1.3	5.6	

FINANCIAL STABILITY INDICATORS – PART 2

		2016	2017	2018	2019	2020	2021	2022 I	2022 II	2022 III
Banking sector										
BS.1	Bank assets / GDP (%)	123.0	135.7	133.5	129.6	139.0	139.3	150.1	149.8	
BS.2	Assets structure (%, end of period)									
BS.3	loans to central bank	21.5	32.8	31.8	32.0	29.0	27.6	31.0	29.1	
BS.4	interbank loans	3.7	3.6	3.4	2.9	2.8	2.3	3.4	4.3	
BS.5	client loans	50.6	45.2	46.5	46.8	46.1	46.5	42.4	42.5	
BS.6	bond holdings	18.4	13.7	13.7	13.0	16.1	17.6	17.2	17.3	
BS.7	– government bonds	11.5	7.9	8.2	7.6	11.0	12.3	12.0	12.3	
BS.8	– Czech government bonds	10.0	7.0	7.4	6.9	10.3	11.8	11.7	11.9	
BS.9	other	5.8	4.8	4.7	5.4	5.9	6.0	6.0	6.8	
BS.10	Liabilities structure (%, end of period)									
BS.11	liabilities to central bank	0.2	0.3	0.2	0.1	0.5	0.5	0.4	0.4	
BS.12	interbank deposits	10.1	16.0	15.0	12.7	8.0	7.7	9.5	11.5	
BS.13	client deposits	65.4	61.5	63.0	64.5	66.7	66.4	67.1	67.6	
BS.14	bonds issued	11.4	11.0	10.7	11.2	12.5	12.7	11.0	8.1	
BS.15	other	12.9	11.2	11.0	11.6	12.4	12.7	12.0	12.3	
BS.16	Client loans / client deposits (%)	77.3	73.5	73.8	72.5	69.2	70.1	63.2	62.8	
BS.17	Sectoral breakdown of total loans (%)									
BS.18	non-financial corporations	33.1	33.1	32.7	32.5	30.2	30.9	31.1	30.8	
BS.19	households	45.1	46.6	46.9	47.8	47.7	50.6	50.6	50.6	
BS.20	sole traders	1.2	1.3	1.3	1.3	1.2	1.2	1.2	1.2	
BS.21	others (including non-residents)	20.6	19.0	19.1	18.4	20.9	17.2	17.0	17.4	
BS.22	Growth in loans (%, end of period, year on year):									
BS.23	total	6.0	4.6	7.2	4.4	4.2	7.0	4.4	6.9	
BS.24	non-financial corporations	5.9	4.8	5.7	3.7	0.3	5.8	7.6	7.7	
BS.25	– real estate activity (NACE L)	12.1	-1.7	5.2	7.5	4.8	0.9	0.1	7.9	
BS.26	households	7.7	8.0	7.9	6.4	6.9	10.5	10.9	8.8	
BS.27	– loans for house purchase	8.4	9.0	8.5	6.7	8.0	11.1	11.1	8.8	
BS.28	– loans for consumption	4.5	4.1	6.4	7.2	0.8	6.5	8.9	7.0	
BS.29	sole traders	4.4	10.1	5.6	8.1	2.2	1.3	1.3	-0.7	
BS.30	Non-performing loans / total loans (%):									
BS.31	total	4.8	4.0	3.3	2.5	2.7	2.4	2.3	2.1	
BS.32	non-financial corporations	5.2	4.2	3.6	3.2	4.2	3.8	3.7	3.5	
BS.33	households	3.2	2.5	2.1	1.6	1.7	1.4	1.3	1.2	
BS.34	– loans for house purchase	2.0	1.8	1.5	1.2	1.1	0.9	0.8	0.8	
BS.35	– loans for consumption	8.9	6.0	5.1	4.0	5.1	4.7	4.3	4.0	
BS.36	sole traders	8.6	6.7	5.0	4.3	6.1	6.4	6.0	5.5	
BS.37	Coverage of non-performing loans by provisions (%)	57.2	54.8	58.2	57.8	52.0	53.8	52.5	53.3	
BS.38	Capital ratio (%)	18.5	19.3	19.7	21.3	24.4	23.5	22.5	21.6	
BS.39	Tier 1 capital ratio (%)	17.9	18.7	19.1	20.8	23.7	22.8	21.8	20.9	
BS.40	Leverage (assets as a multiple of Tier 1)	13.9	15.2	15.1	14.3	13.0	13.7	15.7	16.2	
BS.41	Leverage ratio (Tier 1 capital / total exposures)	7.1	6.6	6.6	7.0	7.7	7.3	6.3	6.1	
BS.42	Return on assets (%)	1.3	1.1	1.1	1.2	0.6	0.8	0.9	1.0	
BS.43	Return on Tier 1 (%)	17.8	17.0	17.5	18.1	8.2	11.3	15.8	18.2	
BS.44	Quick assets / total assets (%)	34.4	42.0	41.2	40.7	41.2	40.9	44.3	43.1	
BS.45	Quick assets / client deposits (%)	52.1	68.0	65.1	62.8	61.5	61.7	66.0	63.9	
BS.46	Net external position of banking sector (% of GDP)	-7.8	-21.4	-20.2	-18.2	-15.8	-16.8	-18.0	-15.3	
BS.47	Banking sector external debt / banking sector total assets (%)	19.1	26.1	25.0	23.3	20.6	20.9	20.9	20.5	

ADDITIONAL INFORMATION ON THE INDICATORS

Owing to data revisions, some historical values of the indicators may not be comparable to those published in previous publications. Also, owing to a different date of update, the values of the indicators may not be the same as those referred in the text of this FSR. Missing values were unavailable at the time of preparation of the table.

ME.6	Total external debt in % of external assets held by MFIs and the CNB.
PM.1	Property prices based on the House Price Index, source: CZSO
PM.2	Apartment prices based on data from Společnost pro cenové mapy, s.r.o., apartment size 68 m^2.
FS.7	Act No. 240/2013 Coll., on Management Companies and Pension funds, was adopted in 2013, introducing the term "investment funds". Investment funds comprise collective investment funds and funds for qualified investors.
BS.25	Real estate activities (NACE L) comprise above all the activities of lessors, agents or brokers in the area of selling or purchasing property, renting property and the provision of other services related to property.
BS.37	Loans provided by the Czech Export Bank and the National Development Bank were excluded from the calculation.
BS.44, BS.45	Assets readily available to cover liabilities. They comprise cash and claims on central banks, claims on credit institutions and other clients payable on demand and bonds issued by central banks and general government.
NI.2 to NI.7	These indicators comprise domestic insurance companies (excluding the EGAP) and branches of foreign insurance companies.
NI.2	Premiums written include total gross premiums written for 12 months by domestic insurance companies including branches of foreign insurance companies (excluding EGAP).
NI.9	Change in the assets of pension funds adjusted for contributions and benefits.

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