Financial Stability Report

2019/2020

Czech National Bank —— Financial Stability Report —— 2019/2020

CNB CZECH NATIONAL BANK

The Financial Stability Report 2019/2020 was discussed by the CNB Bank Board at its regular meeting on financial stability issues on 18 June 2020 and published on 8 July 2020. Except for a few exceptions, it contains information available as of 30 April 2020. 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. Here you can also find the list of abbreviations.

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 has 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. 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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Foreword

Dear Readers,

Our main publication in the area of financial stability and macroprudential policy is the *Financial Stability Report*, which we have published in June since 2005. It is the key document for the regular spring Bank Board meeting on financial stability issues. The 16th Report – the **2019/2020** edition – is now at your disposal. I am sure you will welcome this opportunity to get again hold of information about this currently very important area of supervision and regulation.

This year, the preparation of the *Report* was significantly affected by the coronavirus crisis. Given the need to capture at least some of the impacts of this crisis on the financial sector, we are publishing the report about three weeks later than in previous years. We focus less on the events before the onset of the coronavirus crisis and try to give a more detailed presentation of the risks to future developments associated with this crisis. We devote significant space to macroprudential capital buffers and instruments aimed at maintaining financial institutions' resilience to the impacts of the crisis. Compared with the past, we have applied a larger set of stress tests to assess this resilience. Two scenarios based on those published in Inflation Report II/2020 were used for the tests. The *Baseline Scenario* is based on the CNB's official May macroeconomic forecast. The *Adverse Scenario*, which assumes a resurgence of the pandemic and a resulting longer economic downturn, represents an extreme stress.

According to the Act on the CNB, maintaining financial stability is one of our key objectives. In accordance with the Act, the CNB identifies, monitors and assesses risks jeopardising the stability of the financial system and, in order to prevent or mitigate these risks, contributes by means of its powers to the resilience of the financial system and the maintenance of financial stability. It primarily employs macroprudential policy tools to do so.

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 an integrated authority for financial market supervision and monetary policy 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 authorities 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.

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. If any risks to financial stability are identified, discussions are held regarding the possible use of regulatory, supervisory and other economic policy tools to suppress such risks or their potential effects.

The CNB is a member of the joint EU institution for the identification of systemic risks and macroprudential policy – the European Systemic Risk Board (ESRB). Together with three pan-European sectoral supervisory authorities (EBA, ESMA and EIOPA), the ESRB makes up the European System of Financial Supervision (ESFS). 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. In line with an ESRB recommendation, macroprudential policy focuses on the fulfilment of several intermediate objectives. These objectives include (a) to mitigate and prevent excessive credit growth and leverage; (b) to mitigate and prevent excessive maturity mismatch and market illiquidity; (c) to limit direct and indirect exposure concentrations; (d) to limit the systemic impact of misaligned incentives with a view to reducing moral hazard; and (e) to strengthen the resilience of financial infrastructures. According to an ESRB assessment, the CNB is one of the most active authorities in the EU countries as regards the use of macroprudential policy at the national level.

The macroprudential policy instruments used by CNB include above all a set of prescribed capital buffers for credit institutions. The CNB sets a countercyclical capital buffer and a systemic risk buffer for systemically important banks at regular intervals. In previous years, the CNB dealt intensively with risks associated with property market developments and mortgage lending. To mitigate these risks, the CNB used a set of recommendations regarding the provision of mortgage loans. The CNB has also long been pushing for a legislative change in this area, aimed at effective prevention of the relevant risks. The situation on the housing market changed fundamentally with the onset of the crisis and the CNB relaxed the conditions for providing mortgages, in line with its previous communications.

The FSR is based on an advanced analytical and modelling framework and contains a set of stress tests of individual segments of the financial sector and sectors of the real economy. The financial sector's resilience is tested by means of two scenarios. Due to this year's exceptional economic situation, the *Baseline Scenario* is similar in its parameters to the adverse scenarios of the tests performed in previous years. This year's *Adverse Scenario* assumes a resurgence of the coronavirus pandemic, a long-running downturn in economic activity and gradual exhaustion of state budgets' fiscal room for supporting the economy.

The publication is divided into five sections. The *Real economy and financial markets* section deals with the macroeconomic environment, property markets, non-financial corporations and households and analyses overall developments in the financial markets. The section called *The financial sector* discusses developments in the banking and non-banking financial sector. The *Stress tests* section assesses the resilience of sectors on the basis of stress tests and sensitivity analyses. The section *Macroprudential policy* contains an overall risk assessment, information on macroprudential instruments for mitigating risks identified, and an analysis of risks associated with developments in the regulatory environment.

The CNB will publish additional detailed analyses of risks to financial stability and information about the macroprudential policy settings in December 2020. It will do so in its regular document *Risks to financial stability and their indicators – December 2020*, which will be the underlying document for the autumn Bank Board meeting on financial stability issues.

On behalf of the Czech National Bank

Jiří Rusnok

Governor

I. SUMMARY

The Czech financial sector developed highly favourably from spring 2019 onwards. The banking sector maintained high resilience to potential adverse shocks and entered the coronavirus crisis in good shape. The disruption to economic activity due to the coronavirus pandemic has fundamentally affected financial market conditions, giving rise to a risk of sizeable credit losses and a marked reduction in lending by banks. The government's stabilisation and support measures are providing liquidity to the real economy and preventing a precipitous wave of credit defaults. The CNB's measures are stabilising the debt service of the real sectors and supporting the liquidity of financial institutions in a preventive manner. Nevertheless, it must be expected that the income of many households and corporations will fall markedly. This may have a sizeable effect on their solvency. The risks will increase in particular after the loan moratorium ends, when households and firms with higher debt levels may become insolvent.

The capital position of the domestic banking sector was robust at the onset of the coronavirus crisis thanks to capital buffers and capital surpluses in excess of the regulatory requirements. However, owing to the coronavirus contagion and the related preventive measures, it has become clear that economic activity will deteriorate significantly during 2020. This will have an adverse effect on the quality of institutions' loan portfolios. In this situation, releasing the existing countercyclical capital buffer (CCyB) is one measure that – in combination with the postponement of dividend payments – can support banks' ability to finance the real economy without interruption. At its meeting on 26 March 2020, the CNB Bank Board therefore decided to lower the CCyB rate from 1.75% to 1% with effect from 1 April 2020. At its meeting on financial stability issues on 18 June 2020, it decided to reduce the CCyB rate to 0.5%. These actions support banks' ability to lend to non-financial corporations and households without interruption, and the CNB remains ready to release the CCyB fully.

With effect from 1 April 2020, the CNB relaxed its recommendation for the assessment of new mortgages. The LTV (loan-to-value) limit was increased to 90% and the limit on the DSTI (debt service-to-income) ratio was raised to 50%. The obligation to assess new mortgages according to the DTI ratio, which reflects the number of annual net incomes needed to repay all the household's debts, has been removed from the CNB recommendation for banks. At its June meeting, the Bank Board confirmed the LTV limit at 90%. Given the expected economic consequences of the coronavirus pandemic and the risk perceptions among banks and their clients, it decided to abolish the upper limit on the DSTI ratio with effect from July 2020. However, it continues to point out to lenders that loans can usually be regarded as very risky above certain DTI and DSTI thresholds. Lenders should therefore provide such loans with great caution and only to applicants who are highly likely to repay without problems.

ASSESSMENT OF RISKS TO FINANCIAL STABILITY ASSOCIATED WITH THE REAL ECONOMY AND FINANCIAL MARKETS

The "low-for-long" scenario is beginning to materialise in advanced countries

The global economy started to slow in 2019, and the same was true for the euro area. Central banks responded to the potential disinflationary pressures by discontinuing monetary policy normalisation, lowering their monetary policy rates, and broadening their quantitative easing programmes. Most central banks reacted to the onset of the coronavirus epidemic with a further reduction of monetary policy rates and numerous other support measures. The "low-for-long" scenario is thus materialising. The exceptionally low interest rates on the one hand are helping to reduce the risks stemming from the potentially sharp and protracted economic contraction, but on the other are greatly limiting financial institutions' interest income, profitability and capital generation. Before the crisis, the CNB had been making progress with monetary policy normalisation, having increased its key monetary policy rate nine times since August 2017 to 2.25% with effect from 7 February 2020. After the onset of the coronavirus crisis, this rate was lowered in three steps to 0.25% with effect from 11 May 2020. This led to a significant decline in long-term interest rates.

Yields on safe financial and real assets dropped further globally, and risk premia on risky assets were abruptly repriced

Yields on high-quality government bonds dropped further in 2019, due in part to monetary easing by major central banks, and were close to zero or negative. As a result, institutional investors continued to reallocate their portfolios into riskier

and less liquid assets, most notably shares, property and riskier corporate bonds. Following the outbreak of the coronavirus crisis, markets panicked and risk premia surged. Central banks and government responded with numerous measures, but these only partly stabilised the situation on financial markets, which were hit by sell-offs of risky assets as investors tried to flee to relatively safe assets and cash. Government bond yields declined further in many advanced countries, including the Czech Republic. However, institutional investors are facing a growing shortage of high-quality financial assets, as the share of high-quality government bonds held by central banks, be it in foreign reserves or, as in the case of the ECB, in quantitative easing programmes, is constantly increasing.

Many countries entered the coronavirus crisis with high private and public debt

Private and public debt was at historical highs in many countries at the end of 2019. In recent years, debt growth has been recorded in particular by emerging economies, China and some EU countries. Corporate sector debt has risen significantly in the USA. The adverse economic developments due to the coronavirus pandemic could cause some debtors to experience debt servicing problems via a decline in disposable income. The rapid introduction of massive liquidity assistance programmes and loan moratoria prevented a precipitous global wave of credit defaults. However, the pace of economic recovery remains highly uncertain and the risk of low economic growth might lead to an increase in credit risk in the years ahead. A lack of confidence in debt sustainability could result in a renewed increase in risk aversion and sell-offs of financial and real assets. A spiral of rising risk premia, falling prices, asset sales, and investor flight from the markets affected could result in both the financial sector and non-financial investors incurring high losses. At the same time, an increase in risk premia could be reflected in longer-term interest rates and significantly increase the cost of funding for both the private and public sector.

The domestic economy stopped growing for the first time in six years

The coronavirus contagion ended the favourable period for the domestic economy characterised since 2014 by solid growth, low unemployment, buoyant wage growth and accommodative financial conditions. The onset of the coronavirus pandemic and the subsequent anti-pandemic measures resulted in an economic downturn and a significant deterioration of the domestic economic growth outlook for 2020 and 2021. Macroeconomic risk is therefore the most significant source of risk to financial stability in the short and medium term.

Before the pandemic broke out, the non-financial corporations sector faced a gradual decrease in profitability but was still in relatively good financial condition

The profitability of non-financial corporations stopped falling in 2019, but had nevertheless dropped by 5 pp since 2015. The debt ratio remained constant over time, just below the peak recorded in 2013. Despite the decrease in profitability, the sector was in good financial condition overall. The stable situation observed in previous years changed dramatically after the outbreak of the coronavirus crisis at the end of 2020 Q1. Many firms got into liquidity difficulties due to the closure of business premises and a sharp fall in external demand. The government is trying to mitigate these problems with a set of support measures. Firms can also partly overcome them through increased use of operating or business loans. Despite the measures, net cash flows are likely to be significantly negative in some sectors of the economy, and the default rate will gradually increase. The re-introduction of quarantine measures and a slowdown in economic activity in the event of a resurgence of the epidemic in the Czech Republic and/or its trading partner countries represents the main risk to the non-financial corporations sector going forward. Non-financial corporations would enter a second wave of the pandemic in significantly less sound condition. A protracted economic slowdown caused by changes in the behaviour of households and non-financial corporations could also have an adverse effect.

The household sector faced a marked decline in income due to the state of emergency

The disposable income of households continued to record robust growth in 2019. Amid strong credit growth, this helped maintain the debt-to-income ratio at relatively low levels (around 60%). The consumer optimism of Czech households faded quickly after the coronavirus crisis broke out. Households' confidence in the economy dropped sharply at the beginning of Q2 as the negative consequences of the state of emergency gradually started to pass through to their income. Despite the government's support stabilisation and support programmes, some households saw a marked decline in income. This may have a sizeable effect on their solvency. The risks will increase in particular after the loan moratorium ends, when indebted households experiencing a sustained drop in income and high debt service may become insolvent. The situation will be aggravated by a gradual rise in the unemployment rate, which will have the biggest impact on low-income households, which often use consumer credit.

Credit risk in the private financial sector will see an abrupt reversal

Credit risk, as measured by the 12-month default rate, decreased slightly in the household sector and was flat in the non-financial corporations sector in 2019. In line with the favourable evolution of credit risk, the ratio of non-performing loans to total loans – measuring the materialisation of risks taken on in the past – also fell. After the coronavirus pandemic broke out, institutions took into account the change in economic conditions by reclassifying credit exposures into the

category of significantly increased credit risk and by increasing their expected credit losses. However, the expected credit losses in the sectors of households and non-financial corporations remain close to all-time lows in absolute terms. The previously muted response of expected credit losses reflects the application of flexibility in the regulatory and accounting frameworks, a more optimistic assessment of possible future economic developments, and the effect of economic stabilisation measures. Those measures are creating favourable conditions for dealing with the economic impacts of the coronavirus crisis and enhancing financial institutions' role in resolving them. However, they also require a balanced macroprudential policy response in the area of the banking sector's resilience, especially as regards capitalisation.

The domestic banking sector entered the recessionary phase of the financial cycle in good condition, but its resilience is largely dependent on capital surpluses

The domestic financial sector recorded growth in most segments in 2019, but the coronavirus crisis is likely to affect the rate of growth in 2020. The banking sector entered the recessionary phase of the financial cycle – accompanied by the coronavirus crisis – with a robust capital and liquidity position and strong profitability. Profitability was at a historical high but started to fall with the onset of the crisis due to emerging growth in credit losses. Their continued growth will further increase the pressure on profitability. The banking sector's capacity to absorb losses and lend to the real economy was supported by a reduction of the countercyclical capital buffer rate to 1% and subsequently to 0.5%. The capital surplus, whose major role in safeguarding the banking sector's resilience is indicated by the results of the Adverse Scenario of the macro stress test, therefore increased. In this scenario, in contrast to the Baseline Scenario, without capital surpluses most domestic banks – and the sector as a whole – would not meet the Pillar 1 and Pillar 2 capital requirements.

The domestic non-banking sector has shown resilience to systemic liquidity stress in connection with the coronavirus crisis

The financial market shocks resulted in liquidity stress for some domestic non-bank financial institutions. This stress, however, did not lead to systemic market failures. The risk of insufficient liquidity of domestic institutional investors was reduced by the extension of the CNB's instruments to include the option of conducting repo operations with non-bank financial institutions. Risks relating to increased volatility of market variables and the long-term impacts of the coronavirus crisis on demand for investment products nevertheless persist.

The insurance company and pension fund sectors have retained their stability

Insurance companies and pension management companies have stayed sufficiently capitalised following the outbreak of the coronavirus crisis. However, a prolonged economic decline and an environment of sustained low yields could affect insurance companies in both the life and non-life areas. The fall in asset prices on global financial markets did not halt the growth in the value of pension funds' investment portfolios. However, the low capitalisation of pension management companies relative to the size of their transformed funds makes them vulnerable in the event of a need to top up their funds. This vulnerability may be induced in particular by the potential volatility of Czech government bond prices.

The CNB expanded its preventive liquidity-providing facilities

A traditional strength of domestic financial institutions is their sufficient reserve of liquid funds. As a preventive measure, the CNB Bank Board nevertheless on 16 March 2020 amended the rules of the liquidity-providing monetary operations introduced in 2008 to support the domestic financial market during the global financial crisis. It decided that, starting 18 May 2020, these operations would be announced twice a week for two-week maturity and once a week for three-month maturity. Credit institutions' bids in these operations are fully satisfied at a fixed rate corresponding to the two-week repo rate, i.e. with a zero spread. The range of eligible collateral for these operations was broadened to include mortgage bonds. Following an amendment of the Act on the CNB, a liquidity-providing instrument was introduced for some non-bank financial institutions licensed by the CNB, again for preventive reasons. These institutions are now able to obtain liquidity in the form of two-week credit from the CNB at a fixed rate equal to the two-week repo rate plus 20 bp. This credit must be collateralised by Czech government securities or CNB bills.

The crisis will result in historically high government deficits and a sharp increase in government debt

The Czech Republic's expansionary fiscal policy has been strengthened to mitigate the effects of the coronavirus pandemic. Rising government spending combined with falling tax revenues will lead to a sizeable government budget deficit and an increase in government debt. If the *Adverse Scenario* of the public finance stress test were to materialise, the government debt-to-GDP ratio could increase by up to 19 pp at the three-year horizon. Despite the relatively comfortable position of Czech public finances due to the low government debt and high demand for the government's currently increased issuance activity, the sharp rise in debt entails risks to financial stability in the medium term. However, the results of the Czech public finance stress test do not currently indicate a need to require credit institutions to meet an additional capital requirement to cover the risk of systemically important exposures to the Czech government.

MACROPRUDENTIAL POLICY

The CNB responds to risks in the banking sector associated with the financial and business cycle by setting the countercyclical capital buffer

The countercyclical capital buffer (CCyB) is designed to increase the resilience of the banking sector to risks associated with the effect of the financial cycle. An appropriately set CCyB rate should help reduce the negative impacts of the manifestations of this cycle on the banking sector and in particular to maintain the stability of banks and their ability to lend to the real economy even in the event of adverse shocks. The CNB set the CCyB rate at 0.5% as of the end of 2015 and has increased it six times since then. A rate of 1.75% was applied to domestic exposures as from January 2020, to be increased to 2.0% as from July 2020. On 26 March 2020, based on an assessment that the coronavirus contagion and the related preventive measures were highly likely to significantly reduce economic activity, which would in turn have an adverse effect on the quality of institutions' loan portfolios, the CNB Bank Board decided to lower the CCyB rate to 1%. By taking this step, the CNB confirmed that it would implement macroprudential policy in such a way that banks have sufficient room to cover the expected increase in the business sector's need for financing.

Consistent with the assessment of cyclical risks and the degree of vulnerability of the banking sector made at the Bank Board meeting in June is a reduction of the CCyB rate to 0.5%…

The final decision on the CCyB rate is always a result of a comprehensive assessment of indicators of the financial cycle and the vulnerability of the banking sector and other factors affecting the sector's resilience. Following this assessment, the CNB Bank Board decided at its meeting on 18 June 2020 to reduce the CCyB rate to 0.5% with effect from 1 July 2020 (from the current level of 1%). The partial release of the CCyB will support banks' ability to lend to non-financial corporations and households. Most banks continue to be compliant with the overall capital requirement, consisting of the minimum regulatory level in Pillar 1, the requirements based on the supervisory review of risks in Pillar 2, and capital buffers, and have a sufficient spare lending capacity.

…but the CNB stands ready to fully release the CCyB

The CNB remains ready to release the CCyB fully. The direct signal for such a step will be the materialisation of cyclical risks accepted earlier as credit losses and an increase in risk weights.

The domestic economy has probably entered the recessionary phase of the financial cycle

The starting point for the Bank Board's decision on the CCyB rate was an assessment of the position of the domestic economy in the financial cycle. According to the aggregate Financial Cycle Indicator, the domestic economy was near the peak of the expansionary phase of this cycle in 2019. However, year-on-year growth in loans to the private non-financial sector slowed steadily during 2019, and a decline in genuinely new loans can be expected this year and the next as a result of the coronavirus crisis. Given the current markedly worse economic developments, it is highly likely that the domestic economy has entered the recessionary phase of the financial cycle this year. Newly accepted cyclical risks will thus continue to decline in the coming quarters.

The cyclical risks in banks' balance sheets remain elevated and will materialise in the coming quarters

The cyclical risks in banks' balance sheets increased in the preceding expansionary phase. Despite the sharp economic deterioration, the cyclical risks previously accepted in the banking sector are not materialising at the systemic level yet. This is due mainly to the stabilisation and support measures adopted by the government. However, the risks will doubtless materialise in the form of rising credit losses after the loan moratoria end. Risk weights are also likely to increase gradually in the coming years as the default rate rises. In this regard, the lowering of the CCyB rate is a forward-looking response to the expected adverse economic developments and will create room for banks to absorb their impacts.

Robust capital buffers are the basis for maintaining banks' stability

The main task of microprudential supervision and macroprudential policy in the current situation is to ensure that the banking sector is sufficiently resilient to the impacts of the coronavirus crisis – both those that have already been felt, and the long-term ones. The capitalisation of the Czech banking sector is still robust. Besides the combined capital buffer (the sum of the CCoB, the CCyB, the SRB and the O-SII buffer[1]), a capital surplus and earnings retained in accordance with the CNB's recommendations meanwhile form a significant part of the capital buffer in excess of the regulatory minimum.

The CNB regards the use of banks' capital buffers to absorb losses as natural and desirable

The CNB views the capital buffers defined in EU legislation as cushions to absorb banks' losses in bad times. Their release and use is associated primarily with the materialisation, or high probability of materialisation, of credit losses and

1 CCoB – capital conservation buffer, CCyB – countercyclical capital buffer, SRB – systemic risk buffer, O-SII – capital buffer for other systemically important institutions, G-SII – capital buffer for global systemically important institutions.

the effects of those losses on the capital position of banks. If systemic losses were to occur, the CNB expects it would first completely release the CCyB. It also expects that, where necessary, credit institutions will use the CCoB buffer to absorb potential losses, i.e. maintain their capital ratios at least at a level corresponding to the sum of Pillar 1, Pillar 2 and, where relevant, the current SRB. The CNB also does not rule out the use of the SRB buffer by systemically important institutions where necessary to maintain the smooth flow of credit to the real economy in very adverse economic situations. Overall, the CNB therefore considers it natural that, following the potential release of the CCyB, banks would temporarily not maintain the combined capital buffer in full and would use the CCoB and the SRB in order to be able to continue providing services to their clients in the event of strongly adverse developments.

The current buffers may not fully cover the increased risks and uncertainties of the present situation

The potential level of the banking sector's systemic losses depends on the future evolution of non-performing loans and the expected credit losses arising from them. However, besides the impact of macroeconomic risks on capital, the banking sector's resilience will be affected by previously approved and planned changes to EU regulations. One change scheduled to take effect next year will lead to a decrease in the capital buffers of domestic systemically important institutions. The CNB, like several other national macroprudential authorities in Europe, currently applies the SRB to mitigate risks associated with the systemic importance of institutions. After the transposition of CRD V/CRR II into Czech law, it will only be possible to use the capital buffer for other systemically important institutions (the O-SII buffer). As the CNB will be able to set the upper limit on the O-SII buffer no more than 1% above the foreign parent institution's O-SII or G-SII buffer rate as set by its domestic regulator, the O-SII buffer rates of some domestic systemically important banks will in all probability decline. The CNB will still be able to use the SRB to cover other types of structural risks.

Banks must apply a very prudent approach to capital management

Given the unfavourable economic outlook and the high degree of uncertainty about future developments, it is vital that banks apply a highly prudential approach to capital management. If the probability of macroeconomic developments following the *Adverse Scenario* were to increase, the capital buffers might not be sufficient to absorb the losses and the current capital surpluses might have to be used. In such a situation, premature use of a large proportion of banks' capital surplus could become a source of systemic risk. Banks should thus refrain from making dividend payouts and taking any other action that might jeopardise their resilience until both the acute and longer-term impacts of the coronavirus crisis disappear. The CNB stands ready to use all its supervisory and regulatory instruments to maintain the banking sector's high resilience and its ability to lend to the real economy.

The affordability of housing deteriorated in 2019 due to rapid growth in residential property prices

Previous *Financial Stability Reports* identified a spiral between credit financing of residential property purchases and rapidly rising residential property prices as a significant source of systemic risks in the Czech economy. Buoyant wage growth and favourable financial conditions for purchasing property boosted the attractiveness of investing in housing. The sustained property price growth may have increased the incentive for some households to buy property on credit and encouraged them to take on excessive debt in relation to income. A risk scenario going forward was a situation where a large proportion of households started to consider the current income growth to be permanent and succumb to the illusion that it would be easy to service increasing debt levels. Another risk was an assumption that house prices would continue to rise indefinitely. Property transaction prices continued to rise at a brisk pace of close to 9% year on year in 2019 Q4. As a result, the already low affordability of housing deteriorated slightly further despite robust growth in income. The overvaluation of apartment prices, which stood at 15%–25% at the end of 2019 by the CNB's estimation, also increased slightly. Available unofficial data for the initial months of 2020 suggest that the pandemic has not had a major effect on transaction prices so far, although the April and May statistics for Prague indicate a halt in price growth or even slight month-on-month declines. The estimate of future house prices is subject to significant uncertainty. Given the adverse developments in the real economy, however, there is potential for them to decrease in the quarters ahead. Commercial property prices also increased last year. They also have the potential to fall, especially in segments hit by the pandemic.

The CNB is responding to the risks associated with credit financing of housing by changing its macroprudential policy instruments

To mitigate the risks associated with credit financing of housing, the CNB has since 2015 been applying a set of rules formulated in its *Recommendation on the management of risks associated with the provision of retail loans secured by residential property* (the "Recommendation"). LTV, DSTI and DTI limits are the most visible part of these rules. Last year, banks were recommended not to provide such loans with LTVs of over 90% and to limit the provision of loans with LTVs of 80%–90% to 15% of new loans. Since October 2018, the CNB has also advised lenders not to exceed a DTI ratio of nine annual incomes and a DSTI ratio of 45%. For years, the CNB has been seeking the statutory power to set upper limits on mortgage loan ratios. The relevant legislative amendment is currently being discussed in the Czech Parliament.

The volumes of genuinely new mortgage loans were increasing until 2020 Q1

Following a surge in loans in the second half of 2018 linked with the media campaign accompanying the introduction of the DTI and DSTI caps, the volume of genuinely new loans (excluding refinanced and refixed loans) naturally dropped in 2019 H1. Besides adjustment to the DTI and DSTI limits, this decrease was due to a set of factors including frontloading before the limits came in, a continued deterioration in housing affordability owing to rising property prices, and undersupply of new apartments in cities. The market gradually recovered in the second half of 2019. In the first four months of this year, the volume of genuinely new housing loans and mortgage loans reached a record high compared with the same period in previous years. However, it can be expected that the impacts of the coronavirus crisis will manifest themselves in the months ahead and lending for house purchase will decrease. The spiral between debt financing of property purchases and optimistic expectations regarding future property price growth should halt as a result.

Banks were mostly compliant with the recommended LTV limits

The share of loans with LTVs of 80%–90%, which could account for a maximum of 15% of new loans last year, was below the recommended limit throughout 2019, averaging 11.6%. However, banks continued to provide some loans with an individual LTV of over 90%, the level above which no loans should be provided under the Recommendation. The share of these loans in total loans averaged 2.8% of new loans in 2019 as a whole, remaining relatively constant over time. In the second half of 2019, lenders took greater account of the level of risk undertaken when setting interest rates. The risk was reflected mainly in interest rates on loans with LTVs of over 80% where they simultaneously had a DTI ratio of over 9 or a DSTI ratio of over 45%.

Lenders also complied with the DTI and DSTI limits

The process of adjustment to the limits had been far from complete in 2018, whereas the average shares of loans with a DSTI ratio of over 45% and a DTI ratio of over 9 dropped to 5.4% and 2.9% respectively in 2019. Banks overall were therefore mostly compliant with these limits or, in the case of the DSTI ratio, were only very slightly above them. A reduction in the supply of loans to clients with higher additional debt and ensuing debt service can be regarded as the main channel of adjustment to the recommended limits for both ratios.

The CNB confirmed the LTV limit and abolished the DSTI limit

At the decision of the Bank Board, the recommendations for assessing new mortgages were relaxed with effect from 1 April 2020. The LTV was increased to 90% (from 80%), which means that applicants can have less money saved to buy a house. As of the same date, the DSTI limit was relaxed to 50% (from 45%). This reduced the level of income necessary for servicing a specific debt. The obligation to assess new mortgages according to the DTI ratio was removed from the CNB's Recommendation for banks. Since the expectations of a significantly adverse change in market conditions are materialising, the Bank Board decided at its meeting on financial stability issues in June to abolish the recommended DSTI limit with effect from July this year. At the same time, the Bank Board decided that it is not desirable at the moment to change the current recommended LTV limit of 90% (with the option of applying a 5% exemption) given the persisting overvaluation of house prices. The CNB assumes, given the expected economic impacts of the coronavirus pandemic, that lenders and their clients will be well aware of the risks and will act in a very conservative way. Nevertheless, based on the conclusions of its analyses and stress tests, the CNB continues to point out to lenders that loans can usually be regarded as very risky above certain thresholds (a DTI of 8 and a DSTI of 40%). Lenders should therefore provide such loans with great caution and only to applicants who are highly likely to repay without problems.

The CNB will publish additional detailed analyses of risks to financial stability and information about the macroprudential policy settings in December 2020 in its regular document *Risks to financial stability and their indicators – December 2020*, which will be an underlying document for the autumn Bank Board meeting on financial stability issues.

II. THE REAL ECONOMY AND FINANCIAL MARKETS

The solid economic growth was interrupted by the COVID-19 pandemic. Economic activity plummeted in March 2020 and the world economy found itself on the verge of a deep recession. The financial conditions deteriorated sharply and risk premia were abruptly repriced. Massive stabilisation measures adopted by governments and central banks calmed the financial markets and have prevented a precipitous global wave of credit defaults. However, the pace of recovery of world economies remains highly uncertain. A worsening profitability outlook and rising debt burden are already being reflected in downgrades of the credit ratings of firms and governments. The pressure on public finances is being mitigated by measures adopted by central banks, which are helping to keep government bond yields low. Central bank operations have also helped stabilise risk premia and interest rates on private sector loans. However, long-running provision of very cheap liquidity and compression of risk premia on financial assets may cause a build-up of financial imbalances and hidden generation of systemic risks.

The domestic economy also contracted sharply in March 2020. The CNB's May forecast expects GDP to drop by 8% and the unemployment rate to increase in 2020. A rise global risk aversion led to a partial outflow of portfolio investment from Central Europe, reflected in a temporary rise in Czech government bond yields. The situation calmed after monetary policy rates were lowered and the CNB communicated that it stood ready to adopt extraordinary measures. So far, prices of commercial and residential property have not seen any substantial changes. The coronavirus crisis hit the household and corporate sectors. Its impacts are being mitigated by government support measures. The current adverse economic situation will have a negative effect on the profitability of firms and the income of households, which may make it more difficult for them to service their debts. The most significant source of risk to the stability of the domestic financial system is thus the adverse macroeconomic developments, whose extent and duration will be affected to a large degree by the course of the pandemic and the related speed of normalisation of the economic situation in the Czech Republic and around the world.

II.1 THE MACROECONOMIC AND FINANCIAL ENVIRONMENT

II.1.1 The external environment

The favourable conditions of early 2020 were replaced by uncertainty…

The world economy grew by a solid 2.9% in 2019, and economic activity was still developing favourably at the start of 2020. The price losses recorded on global financial markets in late 2018 had been reversed, the key stock indices were frequently hitting historical highs in January and February 2020 (see Chart II.1) and risk premia on corporate bonds were falling further (see Chart II.2). However, long-term yields were already being affected by expectations of a slowdown of the world economy (see Chart II.3) and uncertainty regarding the economic impacts of the COVID-19 infection in China. When the coronavirus reached Europe in late February, it became clear that the infection had spread from China and had caused a global pandemic.[2]

…as the world was hit by the coronavirus crisis

The coronavirus progressively hit most countries. Many governments adopted anti-pandemic measures in the form of restrictions on the free movement of persons (see Chart II.1 CB), shutdown of the services sector, and partly also restriction of production. These measures adversely affected the supply of goods and services by firms and consumer demand and brought some sectors to an almost complete halt.[3] Given the economic links between countries, international supply chains were significantly disrupted and global trade plunged.

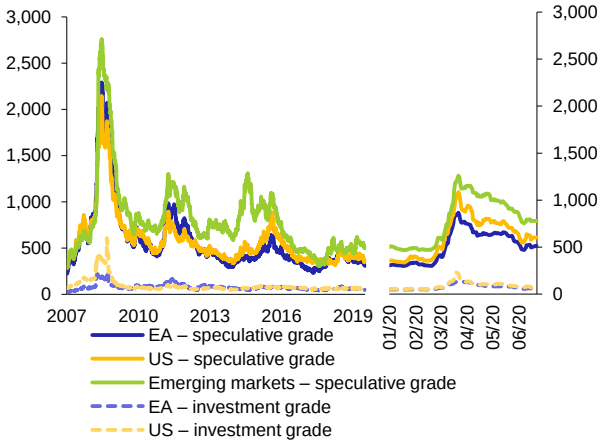
2 Given the number of countries affected and the speed of the spread of the disease, the WHO officially reclassified the original COVID-19 epidemic as a worldwide pandemic on 11 March 2020.

3 Estimates of the impacts of the early freeze of the economy and the restrictions on movement based on daily data over one month indicate that across-the-board quarantine significantly lowered the numbers of infections and fatalities, but also involved sizeable economic and social costs. In California, for example, such measures resulted in 400 jobs lost per life saved – see Friedson, A. I., McNichols, D., Sabia, J. J. and Dave, D. (2020). *Did California's Shelter-in-Place Order Work? Early Coronavirus-Related Public Health Effects*. NBER Working Paper No. 26992, https://www.nber.org/papers/w26992.

Chart II.1
Key global stock indices
(indices in points)

Source: Refinitiv

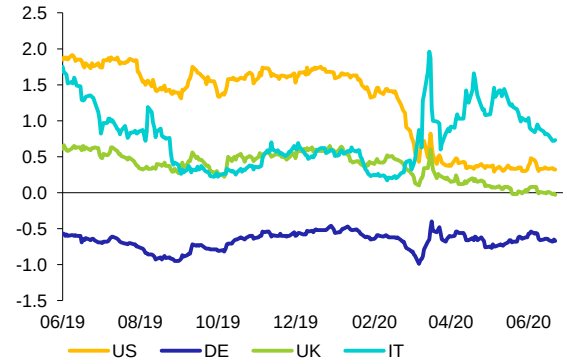
Chart II.2
Credit spreads on corporate bond yields
(bp)



Source: Bank of America Merrill Lynch

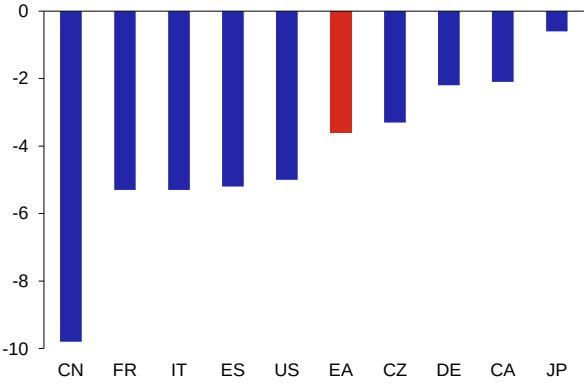
Note: Credit spread means the yield spread over government bond yields adjusted for any embedded options (option-adjusted spread). Higher values represent a higher risk premium. Speculative grade is a rating of BB+ or lower.

Chart II.3
Five-year government bond yields for selected countries
(%)



Source: Refinitiv

Chart II.4
GDP of selected countries in 2020 Q1
(%; quarter-on-quarter change in real GDP)



Source: OECD, CZSO

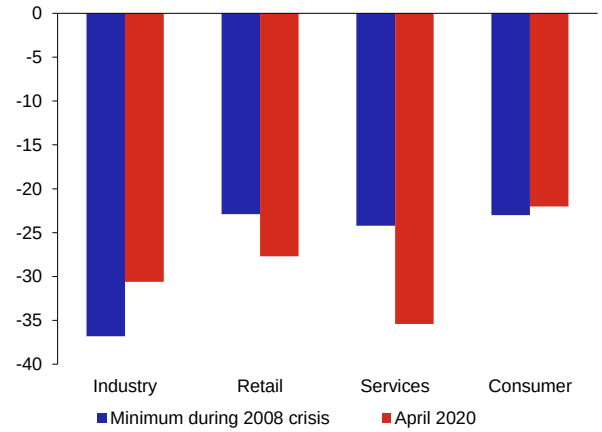
The global financial conditions deteriorated, with the corporate bond market hit the hardest…

The world economy slowed sharply in mid-March 2020 and found itself on the verge of a deep recession (see Chart II.4). The overall euro area Purchasing Managers' Index fell to an all-time low in April and the sentiment of economic agents generally worsened (see Chart II.5). Expectations of catastrophic economic scenarios were also signalled by an investor panic on global financial markets and a flight to liquidity and quality. Portfolio investment flowed out rapidly from emerging countries (see Chart II.2 CB) and some advanced countries' government bond yields declined (see Chart II.6). In the euro area, yields diverged across countries like during the 2012 debt crisis (see Chart II.3 CB). An abrupt rise in risk aversion (see Chart II.4 CB and Chart II.2) and a concurrent reassessment of profitability outlooks across sectors led to a sharp drop in stock prices, especially in advanced economies (see Chart II.1 and Chart II.5 CB). Many global corporations faced a risk of liquidity shortages. Moreover, corporate sectors in many countries entered the crisis with high debt, caused, among other things, by numerous mergers undertaken in previous years financed largely from external funds.[4] Yields surged, especially on risky corporate bonds (see Chart II.2). Markets in bonds secured by loans (CLOs) were also affected (see Chart II.6 CB). Rating agencies revised their outlooks and downgraded their ratings.[5]

4 https://www.fsb.org/wp-content/uploads/P191219.pdf.

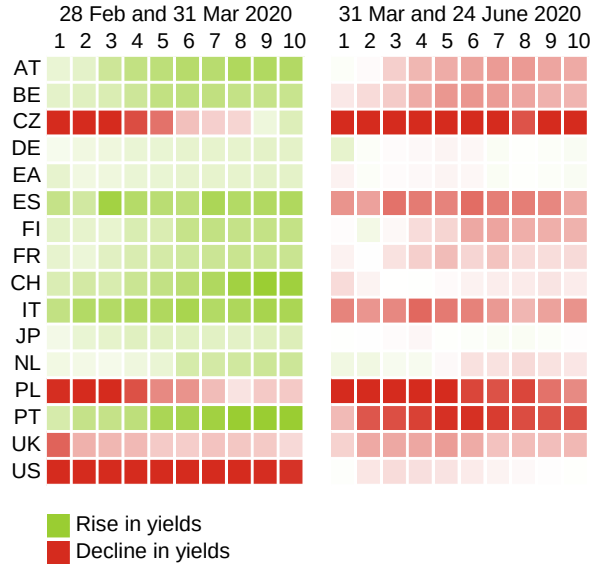
5 https://www.spglobal.com/ratings/en/research/articles/200318-covid-19-coronavirus-related-public-rating-actions-on-non-financial-corporations-to-date-11393186.

Chart II.5
Sub-indicators of economic confidence in the EU
(balance of answers in %)



Source: Eurostat

Chart II.6
Change in government bond yields for selected countries
(columns: change in yields for individual maturities in years)



Source: Bloomberg

Central banks adopted many extraordinary measures…

Central banks reacted to the situation quickly and intensively (see Chart II.7). Since March 2020, monetary policies have been eased dramatically and additional measures have been introduced to support liquidity and financial stability (see Table II.1 CB). The US Fed during March cut its monetary policy rates to zero (see Chart II.8), strengthened banks' access to dollar liquidity via swap lines[6] and launched programmes totalling up to USD 2.6 trillion. The Fed also supported the corporate bond market, first by buying bond funds and subsequently by making direct purchases of individual corporate bonds. It emphasised in its communications that monetary policy rates would stay at the current level until the economy recovers, and pledged to use additional instruments according to the seriousness of the situation.[7] The ECB kept its monetary policy rates unchanged at 0% and -0.5%. However, it made substantial changes to its extraordinary measures. It increased the volume of TLTRO III,[8] relaxed the eligibility requirements for corporate bonds used as collateral, and announced a Pandemic Emergency Purchase Programme (PEPP) of EUR 1,350 billion for government and private securities. The conditions of this programme are softer than those of the original ones, enabling the ECB to purchase assets regardless of the capital keys of individual euro area countries.[9] The ECB also started to provide euro liquidity to European central banks outside the euro area (under the EUREP facility[10]). Besides adopting measures to support market and balance sheet liquidity, many central banks and supervisory authorities have eased some of the regulatory requirements applying to financial institutions (see section V).

…which partly mitigated the adverse financial market developments

The quickly adopted central bank measures prevented money markets, which many global institutions tap for funding, from becoming dysfunctional and partly eased the tensions on stock and bond markets (see Chart II.1 and Chart II.2). The initial sharp drop in stock indices (the MSCI World Index fell by as much as 34.2% from its high) was therefore followed by a relatively large correction. Despite the partial calming of the market situation, however, highly indebted firms may continue to face elevated risk premia (see Chart II.2). As suggested by the ongoing developments in 2020 Q2, the potential risk of migration of their bonds from investment to speculative grade and a subsequent jump in their yields persists (see Chart II.7 CB), as many institutional investors' investment policies oblige them to invest solely or mostly in investment grade bonds. Any sell-offs of speculative assets could thus generate additional market stress.

6 Swap maturity was extended and swap prices lowered for EA, UK, CA, JP, CH, AU, BR, DK, KR, MX, NO, NZ, SGP and SE.

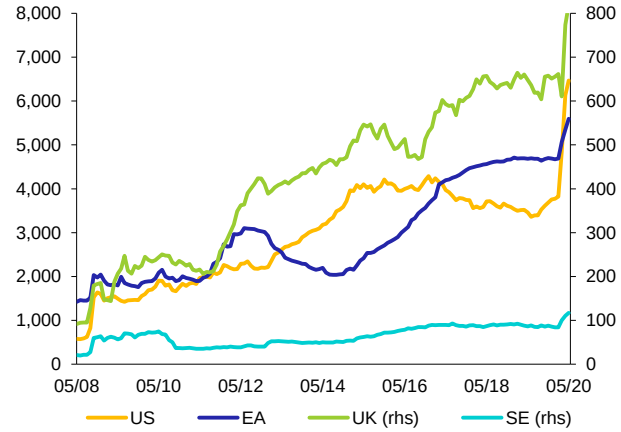
7 The Fed's measures are described at https://www.federalreserve.gov/publications/files/financial-stability-report-20200515.pdf.

8 For more details on the asset purchase programme, see https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200430~fa46f38486.en.html and https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.mp200604~a307d3429c.en.html.

9 https://www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html.

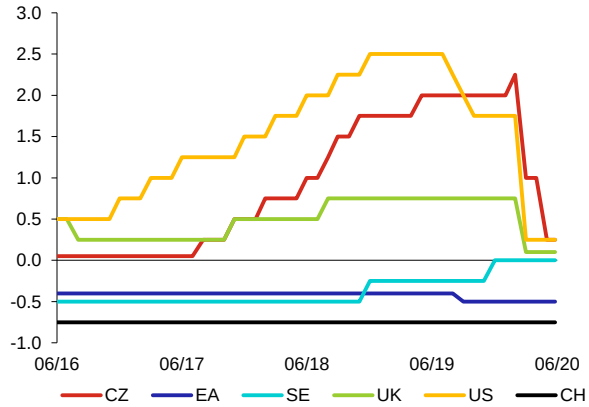
10 https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200625~60373986e5.en.html.

Chart II.7
Total assets of selected central banks
(EUR billions)



Source: Bloomberg, BoE

Chart II.8
Main monetary policy rates of selected central banks
(%)



Source: Refinitiv
Note: In the case of EA, the chart shows the deposit rate.

A range of fiscal measures were also adopted to mitigate the impacts of the coronavirus crisis

The governments of the affected countries announced massive stabilisation programmes to mitigate the adverse impacts of the pandemic (see Table II.1 CB).[11] The goal of the programmes was to reduce the liquidity problems of firms and households and stop them spilling over into solvency problems. The measures for firms included tax relief, various forms of aid to cover operating costs (rents, invoices), wage contributions and social security contribution waivers to prevent quick dismissals, state guarantees for loans, and loan moratoria. Assistance was provided to households on both the income side (attendance allowances, one-off extraordinary benefits) and the expenditure side (loan moratoria).[12] In the EU, measures to mitigate the effects of the coronavirus are being adopted at both national and central level.[13]

Economic outlooks are subject to a high degree of uncertainty, and the risk of forecast reassessment is high

The first estimates of the impact of the coronavirus crisis on the world economy started to appear during April. Updated forecasts for 2020 expect an exceptionally deep economic downturn. It is predicted to be larger on the worldwide scale than during the global financial crisis, as the coronavirus crisis has hit most countries (see Chart II.9).[14] In its April 2020 forecast, the IMF expects the world economy to contract by 3% this year and return to growth of almost 6% next year.[15] A resurgence of the pandemic poses a risk to the economy in the months ahead. The IMF April 2020 forecast presented three alternative scenarios modelling more pessimistic developments. According to the IMF, if further waves of the pandemic necessitate restrictions on economic activity, in the extremely adverse scenario GDP would be almost 8% lower in 2021 compared with the baseline and the return to growth would take several years (see Chart II.10). The behaviour and sentiment of economic agents, whose confidence about the future has worsened markedly, will play a crucial role in the economic recovery (see Chart II.5). The restart of the services sector, which accounts for a large share of employment and GDP in advanced economies, is likely to take a long time. The share of services in GDP is 65% in the EU, 77% in the USA and 52% in China (see Chart II.8 CB). A slow return to the pre-crisis level is also suggested by a rise in savings and a marked drop in sentiment in services in the EU.[16] The uncertainty surrounding the forecast is increased by persisting tense US–China relations and the still non-existent Brexit deal between the EU and the UK.

11 Aid totalling almost USD 3 trillion (almost 15% of GDP) was approved for firms and individuals in the USA. The European Commission announced the provision of assistance to EU Member Sates of EUR 750 billion (almost 6% of EU GDP) in the form of gifts and loans. https://ec.europa.eu/info/sites/info/files/communication-europe-moment-repair-prepare-next-generation.pdf.

12 The macroeconomic literature emphasises the different impacts of the pandemic on different groups of people, For example, quarantine has a greater impact on lower-income and younger people. The pandemic thus also has major consequences for the redistribution of income and consumption. A summary of the macroeconomic literature is available at https://idea.cerge-ei.cz/images/COVID/IDEA_Makro_politika_COVID-19_Duben2020_16.pdf.

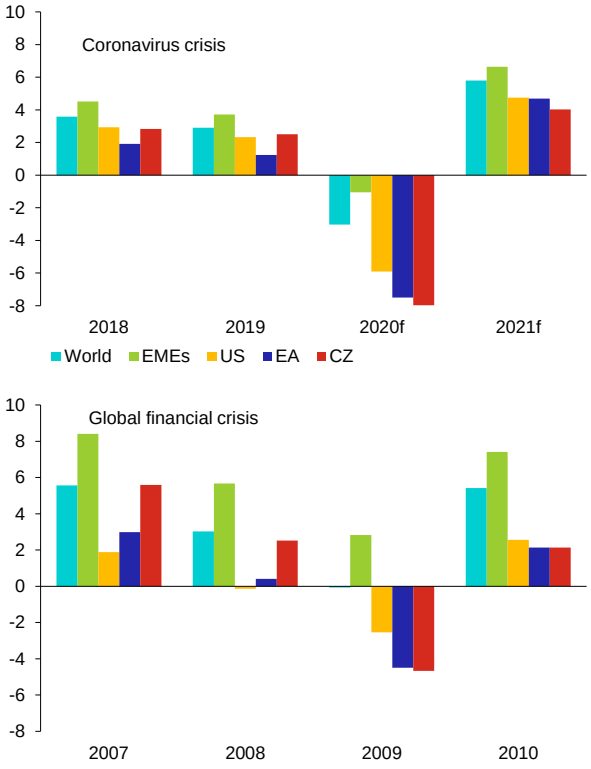
13 For an overview of the measures taken in the EU in response to the pandemic, see https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response_en.

14 Estimates of job losses in the USA (https://fred.stlouisfed.org/series/FRBKCLMCIM), which are significantly higher than in previous recessions, also point to a deeper recession. According to CF outlooks, unemployment in the USA will increase to 8.4% by the end of this year.

15 The IMF published an updated economic forecast in June 2020. The expected contraction of GDP in 2020 and the speed of economic recovery in 2021 both saw a deterioration compared with April. The IMF expects the global economy to contract by 4.9% in 2020, i.e. 1.9 pp more than in the April forecast (declines of 3%, 8% and 10.2% are projected for EMEs, the US and the EA respectively). For 2021, the IMF expects global growth at 5.4%, which is 0.6 pp less than in April (https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020). The macroeconomic forecast remains subject to a high degree of uncertainty.

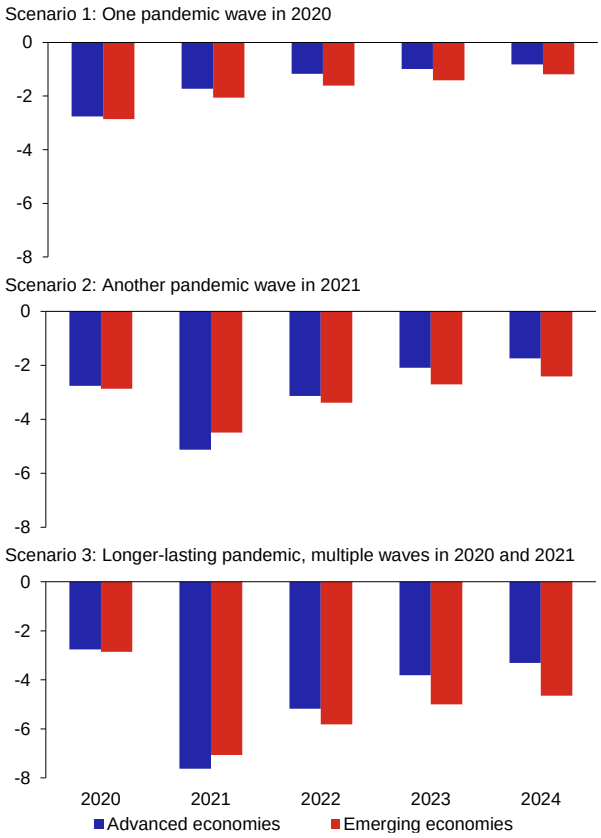
16 The normalisation of the Chinese economy, which was hit by the coronavirus in 2020 Q1, indicates a higher saving rate of households, reflected in subdued consumption and a very slow restart of services. April data from the USA confirm a bigger impact of the anti-pandemic measures on services. Industrial production fell by 11.2%, while retail sales dropped by 16.4% (https://www.federalreserve.gov/data.htm).

Chart II.9
Economic growth in selected countries
(annual real GDP growth in %)



Source: IMF, CNB
Note: f = forecast. The forecast for the Czech Republic is based on the CNB forecast published in Inflation Report II/2020. The forecasts for the other countries are based on the IMF's April forecast published in World Economic Outlook, April 2020.

Chart II.10
IMF alternative economic growth scenarios due to the coronavirus pandemic
(deviation from real GDP in IMF baseline scenario in %)



Source: IMF (World Economic Outlook, April 2020)

The risk of a protracted recession is also high because of the private sector's already high debt

For firms in particular, the anti-pandemic measures led to a greater need to borrow to overcome their sudden drop in revenues, which increased their future debt burden. In many countries, however, private sector debt had already hit all-time highs before the coronavirus crisis started (see Chart II.11). Some European economies had been in a strongly expansionary phase of the credit cycle for some time, during which strong growth in property prices and swift growth in credit had been recorded (see Chart II.9 CB). Non-financial corporations in many countries took advantage of extraordinarily low yields to issue debt securities, which made them more vulnerable to a change in market conditions when refinancing. The current adverse economic developments may adversely affect the income of economic agents for some time, and a further marked increase in private sector debt may dampen the economic recovery.

Macroeconomic risk is putting private sector debt sustainability at considerable risk

Despite programmes to support the liquidity of economic agents and measures enabling postponed repayment, the probability of a deterioration in overall payment discipline and a rise in the financial sector's credit losses is increasing. Apart from low-income households, the most vulnerable group is firms with low margins and high dependence on short-term market funding. In their case, even a short-term loss of revenue could turn into insolvency. The increasingly protracted coronavirus crisis, which is increasing credit risk (the number of defaulters in the corporate and household sectors), thus significantly threatens global financial stability in the short and medium term.

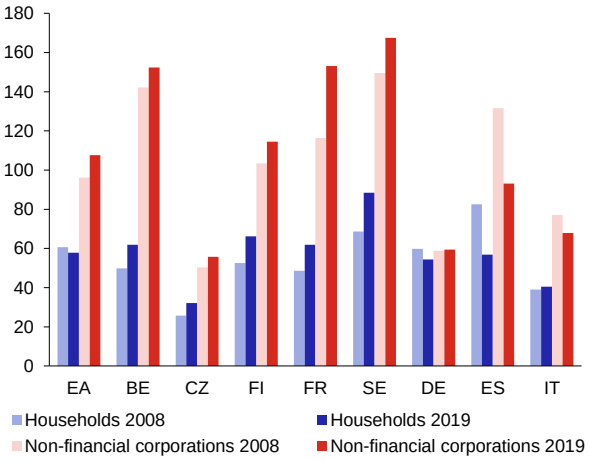
Public finances are also under considerable pressure

The coronavirus crisis has put public finances under pressure.[17] Government debt will rise in a significant proportion of countries at least in 2020. On the one hand, revenue has declined due to lower tax collection, while on the other hand expenditure has risen via built-in stabilisers and support programmes. In the EU, the coronavirus contagion has often had the biggest impacts on countries which are among the most indebted and therefore have the least fiscal room to expand (see Chart II.10 CB). High debt generally fosters high sensitivity of government bond prices to bad macroeconomic and geopolitical news and hence growth in their volatility. For countries with a BBB rating and a negative outlook, financial markets are very sensitive to high public finance sustainability risk.[18] Seven EU countries have general government debt above the notional sustainability threshold of 90%, and 14 Member States are likely to exceed the Maastricht debt criterion this year[19] (see Chart II.12). The massive government bond purchase programmes adopted by the ECB have lowered funding costs and increased the multiplier effect of European governments' fiscal policies. However, the financing of globally rising debt is draining large amounts of funding from international financial markets. If the risk of loss of confidence in the ability of some European governments to continue funding their debt smoothly were to recur, pressure for a decrease in real rates into negative territory (fiscal dominance) can be expected to return. Moreover, as some studies show, the long-term fiscal multiplier may turn negative even at a government debt level lower than the notional sustainability threshold.[20] From a medium-term perspective, fiscal dominance thus poses significant risks to economic growth in these countries in the years ahead and, given the interconnectedness of financial systems across the EU, also risks to their stability.

Chart II.11

Private sector debt in selected EU countries

(% of GDP)

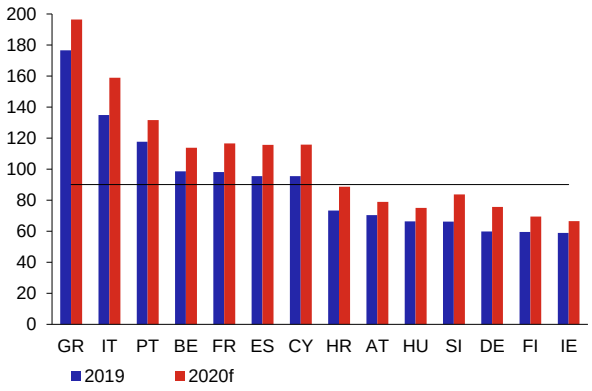


Source: BIS

Chart II.12

EU countries with high debt service levels

(% of GDP)



Source: Eurostat, EC Economic Forecast (May 2020)

Note: The horizontal line illustrates the general government debt sustainability threshold. According to the literature, the sustainability threshold is 90%.

Central banks' extraordinary measures should be in place only for as long as is necessary

If central banks' extraordinary measures to provide cheap liquidity or compress risk premia on financial assets stay in place for too long, they may become a source of risks to financial stability. It is therefore desirable for the emergency measures to be time-limited and not become the new normal. Similar central bank measures were introduced to mitigate the impacts of the global financial crisis, but in some countries they were still in place ten years after its onset, fostering excessive growth in asset prices. Given the scale of the current measures taken by some central banks (see Chart II.7), their effect on asset prices may be stronger than a decade earlier.

17 Many countries have already applied for IMF financial assistance. An overview of the credit programmes provided is available at https://www.imf.org/en/Topics/imf-and-covid19/COVID-Lending-Tracker.

18 In the case of Italy, for example, a rating downgrade would mean that some institutional investors would not be able to invest in Italian government bonds. A sell-off of these government bonds could take place, followed by an increase in debt service costs. Italy expects its government deficit to reach 10.4% of GDP this year and its debt to rise to 155.7% of GDP.

19 The sizeable expected economic downturn due to the spread of the coronavirus in the EU meant that the conditions were fulfilled for activating the general escape clause from the Stability and Growth Pact. This clause allows the Member States to deviate temporarily from the EU's budgetary objectives set forth in the European fiscal framework.

20 https://www.cnb.cz/export/sites/cnb/en/monetary-policy/.galleries/geo/geo_2020/gev_2020_05_en.pdf.

II.1.2 The domestic environment

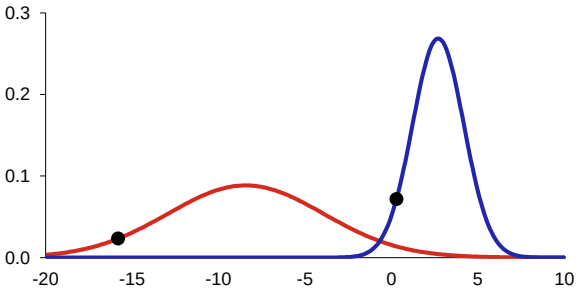
The coronavirus pandemic has caused a deep decline of the domestic economy

The domestic economy was also hit by the coronavirus contagion. The government responded by declaring a state of emergency in March 2020. Domestic activity plummeted in the first half of 2020 as a result of the anti-pandemic measures, plant shutdowns in some firms, and a drop in external demand. In terms of the components of GDP, the contraction was due mainly to household consumption (see section II.2.3), exports and corporate investment (see section II.2.2).[21] The decline in economic activity will moderate gradually in the second half of 2020 on the back of gradual relaxation of the anti-pandemic measures and an expected recovery in external demand. According to the CNB's forecast published in Inflation Report II/2020, GDP will fall by 8% in 2020 (see Chart II.23A). However, the risks to the forecast are exceptionally high.[22] If the *Adverse Scenario* were to materialise, the domestic economy could contract by as much as 13% in 2020. The uncertainty regarding the real GDP growth estimate in the CNB's May forecast also suggests that the probability of a decline in GDP as deep as 15% is not negligible (see Chart II.13).

Chart II.13

The worse GDP growth outlook and its high uncertainty

(probability density; x-axis: annual real GDP growth)



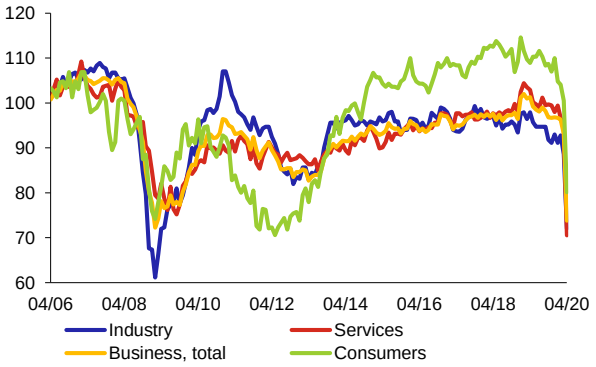
Source: CNB

Note: The blue line shows the GDP growth forecast for 2020 Q4 in Inflation Report IV/2019. The red line shows the GDP growth forecast for 2020 Q4 in Inflation Report II/2020. The black points indicate the 5% quantile.

Chart II.14

Confidence indicators

(base indices relative to 2005 average)



Source: CZSO

The government introduced numerous measures to mitigate the negative impacts of the coronavirus crisis on households and firms

The Czech government introduced a number of stabilisation and support measures to maintain the liquidity of economic agents and support the domestic economy (see Table II.1). These include an employment support programme (Antivirus), support for the self-employed, an attendance allowance, and a measure relating to the "Liberation Packages". These measures are expected to have significant impacts on the state budget in 2020 (see section II.2.1). Programmes with no immediate impact on the state budget, such as a loan moratorium (see section II.2.3) and guarantees for business loans (see section II.2.2), have also been introduced. The measures are expected to total up to 3.3% of GDP in 2020 (see Table II.2).

However, the return of the domestic economy to pre-crisis levels will probably be slow

The effectiveness and pace of implementation of the support measures will affect the length and depth of the current recession.[23] Despite the measures, the labour market situation will worsen. According to the CNB's forecast in Inflation Report II/2020, the unemployment rate will go up, peaking at 5% in 2021 (see Chart II.23D and section II.1.3). Given the structure of the domestic economy, the return to growth will depend largely on the renewal of supply relationships with foreign trading partners.[24] The economic recovery may also be hampered by the very subdued sentiment of economic agents (see Chart II.14), who may be driven by precautionary motives. This would cause consumption and investment to fall and saving to rise. The CNB's forecast expects economic activity not to reach its pre-crisis levels by the end of 2021 despite a gradual recovery. These none too favourable prospects for the income and expenditure situation of firms and households create room for an increase in their credit risk (see section II.2.2 and section II.2.3).

21 Industrial production contracted by 10% and the automotive industry by 25% y-o-y in March; see https://www.czso.cz/csu/czso/ari/industry-march-2020.

22 Inflation Report II/2020 indicated this with the aid of two additional scenarios for the domestic economy: a longer-lasting pandemic scenario assuming that the pandemic will recede more slowly and have longer-lasting negative impacts abroad, and a strongly adverse pandemic resurgence scenario assuming that government quarantine measures will be reintroduced in the Czech Republic in the second half of 2020. The *Adverse Scenario* tested in this Report is based on the pandemic resurgence scenario (see section II.1.3 and section IV).

23 https://www.piie.com/blogs/realtime-economic-issues-watch/designing-fiscal-response-covid-19-pandemic.

24 This process could be slow and complicated. According to the Economist Intelligence Unit, the coronavirus crisis may cause structural changes in the functioning of the global economy. Its report *The Great Unwinding. Covid-19 and the Regionalisation of Global Supply Chains* states that the pandemic is motivating firms to reduce their links with China in the sense of preferring local supply chains and minimising the impacts of border closures on production: https://www.eiu.com/n/campaigns/the-great-unwinding-covid-19-supply-chains-and-regional-blocs/.

Table II.1

Brief overview of stabilisation and support measures introduced in the Czech Republic

	Measure	Description	Responsible
Real sector	Reduction of monetary policy interest rates	On 7 May, the two-week repo rate was lowered by 75 bp to 0.25% and the Lombard rate to 1.00%, and the discount rate was left unchanged at 0.05%.	CNB
	Loan moratorium	Borrowers may apply for their loan instalments to be postponed by three or six months; applies to loans for consumption and loans secured by property. Payments of both principal and interest may be postponed for natural persons, but only payments of principal may be postponed for legal entities.	MF
	Liberation tax packages I–II	Postponement of filing of tax returns; postponement of tax and advance payments. Across-the-board forgiveness of fines for late tax returns and interest on late payment. Waiver of tax advances for income tax of natural persons and legal entities. Introduction of loss carryback for income tax of natural persons and legal entities; can be applied retroactively in tax returns for 2019 and 2018. ESR suspended until 1 Jan 2021.	MF
	Tax relief	A reduction in VAT on selected services (accommodation, culture, sport).	MF
Households	Postponement of rent payments	Possibility to apply for postponement of rent for 12 March to 31 July 2020. The rent owed must be paid by 31 December 2020.	MRD
	Extraordinary immediate assistance	One-off benefit for persons in financial difficulties. Granted for basic living requirements; may be combined with attendance allowance.	MLSA
	Extension of attendance allowance	Attendance allowance paid between 16 March and 30 June 2020. Until 31 March 60% of the daily assessment base; from 1 April increased to 80% of the daily assessment base. Child age increased from 10 to 13 years.	MLSA
Firms and self-employed	"25" programme – direct support for self-employed	Support for self-employed persons who could not carry on their activities due to the pandemic. A compensation bonus of CZK 500 a day for the period 12 March–8 June.	MF
	Waiver of mandatory health and pension insurance payments	Between March and August 2020, self-employed persons are not required to pay pension and health insurance advances. For minimum advances, the mandatory payments are waived in full. The state will thus pay CZK 29,376 over six months. For higher advances, the statutory minimum is waived from March to August 2020. The difference will be paid retrospectively during settlement for 2020.	MLSA
	Deferral and reduction of social insurance contributions	Employees may defer payment of social insurance contributions for employees for May–July (contributions owed must be paid by 20 October 2020). On fulfilment of the payment conditions, the penalty for late payment of contributions will be reduced by 80%.	MLSA
	COVID Rent programme	The lessor waives 30% of the full rent and the state contributes 50% to the lessee. The lessee thus pays 20% of the rent (programme in effect from 1 April to 30 June 2020).	MIT
	Attendance allowance for self-employed	Attendance allowance of CZK 424 a day between 12 March and 31 March 2020 and CZK 500 between 1 April and 30 June 2020. Can be combined with the "25" programme.	MIT
	Antivirus programme – wage and salary compensation	Mode A: The state contributes 80% to employers for wages and contributions (max. CZK 39,000) for employees in quarantine or if the business is closed by government decree. Mode B: The state contributes 60% to employers for wages and contributions (max. CZK 29,000) in the case of obstacles on the employer's part or limited availability inputs necessary to work or limited demand for products and services.	MLSA
	COVID I credit programme	Interest-free loan of CZK 500,000–CZK 15 million (up to 90% of the project's eligible costs, with a maturity of two years and a loan moratorium of up to 12 months).	MIT
	COVID II–III and COVID Praha guarantees	Guarantees for loans for firms and the self-employed to cover operating expenses. COVID II, with a capacity of CZK 15 billion, offers guarantees of up to 90% of the principal of the loan. COVID III, with a capacity of CZK 500 billion, offers guarantees of 80%–90% of the principal of the loan depending on the number of employees. Provided in the form of guarantees from the Czech-Moravian Guarantee and Development Bank.	MIT
	COVID PLUS guarantee	A guarantee for export-oriented firms with 250 employees or more and a share of exports in total sales of at least 20% in 2019. Loan size between CZK 5 million and CZK 2 billion. The maximum loan size is 25% of total annual sales of products and services in 2019. EGAP covers the principal of the loan up to 80%. A commercial bank applies for the guarantee.	MIT
	Compensation bonus for limited liability companies	Compensation bonus for members of limited liability companies of CZK 500 a day between 12 March and 8 June 2020. Conditional on the company having a turnover of at least CZK 180,000 in 2019 or expecting to achieve this turnover in 2020 or 2021.	MF
	Postponement of rent for business premises	The possibility to apply for a postponement of rent for 12 March–30 June 2020; termination of lease not possible. Rent instalments must be paid by 31 Dec 2020.	MIT
Banks	Reduction of CCyB rate	The CCyB rate was reduced to 0.50% with effect from 1 July 2020.	CNB
	Liquidity-providing repo operations	From 18 March 2020, liquidity-providing repo operations are announced three times a week. Banks' bids are fully satisfied at a fixed rate corresponding to the two-week repo rate. Eligible collateral extended to mortgage bonds and three-month repos.	CNB
	Relaxation of credit ratio limits for mortgages	Relaxation of credit ratio limits for the assessment of applications for new mortgages. LTV increased to 90%, except for investment mortgages. The recommended DSTI and DTI limits were abolished.	CNB
IC, PMC, investment funds	Liquidity-providing tool	The possibility to obtain liquid funds in the form of a short-term loan from the CNB at the repo rate plus 20 bp; eligible collateral – T-bills, government bonds and CNB bills.	CNB
Financial institutions	Restrictions on dividend payouts	Credit institutions, insurance companies and pension management companies to refrain from making dividend payouts until both the acute and longer-term impacts of the coronavirus disappear.	CNB

Source: websites of ministries of the Czech Republic, CNB

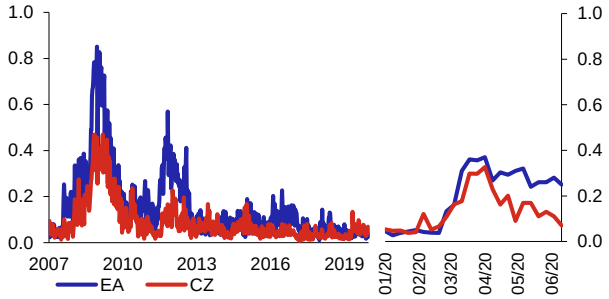
Note: IC – insurance companies, MF – Ministry of Finance, MRD – Ministry for Regional Development, MIT – Ministry of Industry and Trade, MLSA – Ministry of Labour and Social Affairs, PMC – pension management companies. Information as of 30 June 2020.

The global increase in risk aversion manifested itself on the domestic financial market

Global shifts in investment portfolios led to a partial exit of foreign investors from the CEE region in March 2020. This was apparent from a sharp change in the CISS composite indicator of market stress for the Czech Republic (see Chart II.15), a rise in yields on Czech government bonds with long residual maturities (see Chart II.16 and Chart II.17)[25] and a related weakening of the koruna (see Chart II.11 CB). The developments on the two markets were accompanied by a widening of bid-ask spreads (see Chart II.12 CB). The weakening of the koruna led to losses on domestic institutional investors' exchange rate hedging transactions and in some cases to a need to top up margins in these transactions. This temporarily worsened the liquidity situation of some institutions (see section III.2). Moreover, the rise in bid-ask spreads on koruna forwards resulted in a temporary rise in the cost of hedging against exchange rate risk.

Chart II.15
CISS composite indicator of market stress

(index between 0 and 1)

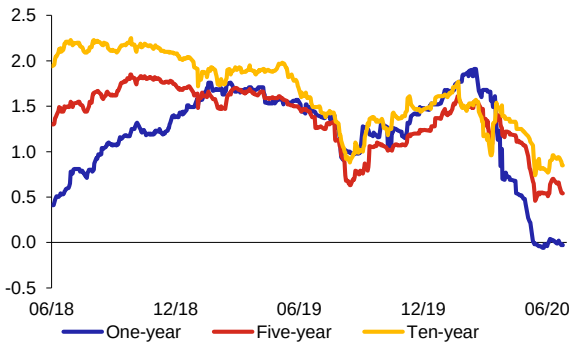


Source: Refinitiv, CNB

Note: For the calculation methodology see The CNB's approach to setting the countercyclical capital buffer.

Chart II.16
Czech government bond yields

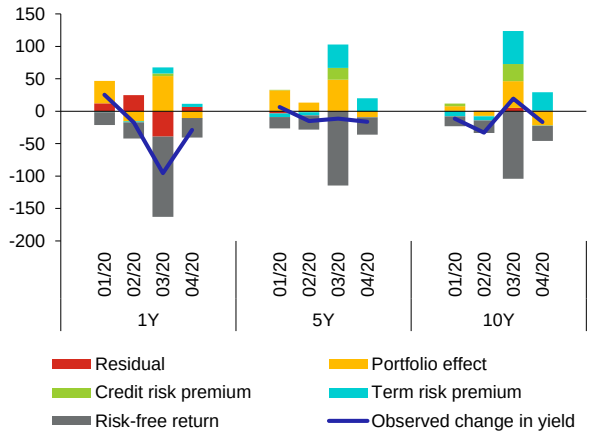
(%)



Source: CNB

Chart II.17
Decomposition of the contributions of changes in Czech government bond yields

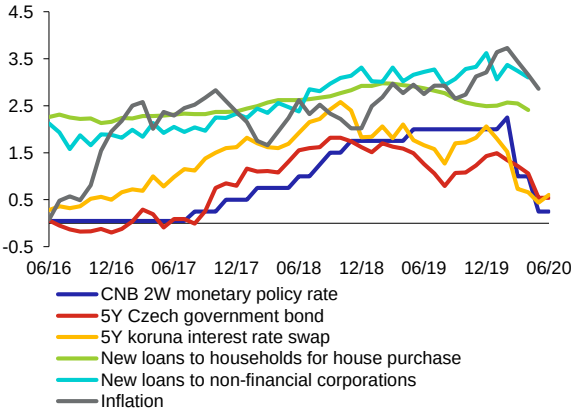
(bp)



Source: MTS, CNB

Chart II.18
Selected interest rates, yields and inflation

(%)



Source: CNB

Note: Month-end values are used, except for client rates, where monthly averages are used instead.

The CNB reacted very quickly to the extremely adverse situation

The CNB reacted to the risks related to the coronavirus crisis by substantially easing monetary conditions. It lowered monetary policy rates three times, by a total of 2 pp. The key policy rate has been 0.25% since 11 May 2020 (see Chart II.18). Furthermore, the CNB declared it was ready to adopt additional measures in this extraordinary situation, primarily to support the stability of the financial system. It was aided in this by the approval of an amendment to the Act on the CNB in March 2020. The amendment gave the CNB the option to trade on the domestic financial market without restrictions in terms of instruments, their maturity and counterparties until the end of 2021. In this context, the CNB in May 2020 broadened its framework for the liquidity-providing repo operations through which it supplies koruna liquidity to financial institutions (see Box 1). Besides monetary policy measures, it also eased some macroprudential measures (see section V).

25 Yields rose temporarily during March on account of higher risk premia. At the end of March, however, the effect of the monetary policy decisions leading to a decline in the risk-free return outweighed the positive contribution of the other components.

BOX 1 Change in the framework for the CNB's liquidity-providing operations

The CNB provides koruna liquidity on the basis of its mandate to maintain price and financial stability. By providing koruna liquidity to various financial institutions at various maturities, it seeks to facilitate balance-sheet liquidity management according to institutions' specific needs. In doing so, the CNB indirectly supports the smooth transmission of liquidity across the Czech financial system. Especially in periods of market stress, various liquidity shortages and disruptions to liquidity flows may occur on financial markets due to a lack of information and a high degree of uncertainty. This leads to growth in counterparty risk. In such a situation, it could become more difficult not just for banks, but also for non-bank financial institutions to access liquidity through standard financial market operations. This would make it harder for them to conduct their asset operations.

The CNB first introduced liquidity-providing repo operations in the context of the global financial crisis in autumn 2008, doing so solely for credit institutions operating in the Czech Republic.[26] The system for these operations was changed in May 2020 following an amendment of the Act on the CNB.[27] This change was made purely for preventive reasons and did not involve any reaction of the CNB to the worsened liquidity situation in the domestic financial system.

For the provision of koruna liquidity to credit institutions, the framework for eligible collateral (for short-term credit) was changed to include mortgage bonds (see Box 6), the weekly number of operations was increased to three, and the maximum loan maturity was extended to three months. Non-bank financial institutions licensed by the CNB – insurance companies, pension management companies and management companies – can also now obtain koruna liquidity from the CNB in its two-week liquidity-providing repo operations. These operations are regarded as extraordinary ones and monetary policy is not conducted through them. Although non-bank institutions may borrow against eligible collateral without limits and repeatedly, the loan parameters are slightly stricter for them than for credit institutions.

The tense market situation calmed following the CNB's reaction

The CNB's reaction, including its announcement that it was ready to adopt additional measures, helped calm the domestic market situation, especially on the government bond and foreign exchange markets. The CISS market stress indicator fell (see Chart II.15), as did government bond yields (see Chart II.16) and koruna interest rate swap rates. Client interest rates also reacted to the new interest rate environment by going down, although less so than monetary policy rates because of a rise in risk premia (see Chart II.18).

The coronavirus crisis has not significantly affected residential property prices so far…

Property transaction prices continued to rise at a brisk pace of close to 9% year on year in 2019 Q4 (see Chart II.19). As a result, housing affordability deteriorated slightly despite robust growth in income (see Chart II.20). Available unofficial data for Q1 and the subsequent months of 2020[28] suggest that the pandemic has not had a major effect on transaction prices so far, although the April and May statistics for Prague may indicate a halt in price growth or even slight month-on-month declines.[29] However, growth in property prices in Prague has been gradually slowing by comparison with the rest of the Czech Republic for several quarters (see Chart II.13 CB). The same is true of asking prices (see Chart II.14 CB). Growth in transaction prices was broadly balanced across different types of property (see Chart II.15 CB).

…but there is a risk of them falling substantially in the quarters ahead

The estimate of future property prices is subject to significant uncertainty. As a result of the coronavirus pandemic, fundamental factors will exert downward pressure on transaction prices; however, their actual dynamics will depend on the evolution of the current overvaluation gap. The *Baseline Scenario* assumes that the decrease in housing price overvaluation from its current levels will be only partial and the price gap will not close fully and across the board.[30] Transaction prices should thus stagnate during 2020 and then return to moderate growth (see Chart II.23E). However, there is a significant risk that a sharper decline in transaction prices than assumed in the *Baseline Scenario* will occur. This applies above all to apartment prices in Prague and Brno, where the degree of overvaluation is highest (see Chart II.16 CB). The degree of apartment price overvaluation at the national level ranges approximately between 15%

26 Banks, foreign bank branches and credit unions.

27 The parameters of the liquidity-providing repo operations are described at https://www.cnb.cz/en/financial-markets/money-market/parameters-of-the-liquidity-providing-repo-operations/.

28 Official CZSO data (House Price Index) were not available at the time of writing of the FSR. HB Index data (Hypoteční banka) are available for 2020 Q1. For April and May, Realitymix.cz statistics are available, for example.

29 In the centre of Prague, only prices of short-term leases have declined so far, owing to the restrictions on tourism, amid a rapid rise in the supply of apartments available for short-term lease.

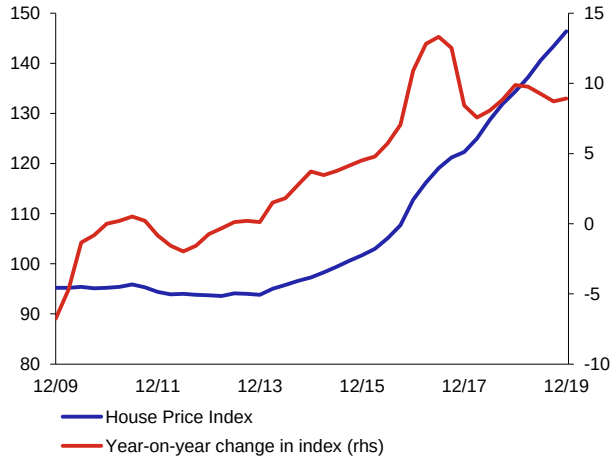
30 The *Baseline Scenario* assumes that, especially in Prague, sellers will be unwilling to cut prices significantly and most transactions will therefore be postponed.

(prudential approach) and 25% (valuation approach). A strong increase in price overvaluation under the valuation approach suggests that the decline could primarily affect selected localities with a high share of investment property (see Chart II.21). In the *Adverse Scenario*, a longer-lasting worse economic situation, a marked rise in pessimism and a sharp increase in non-performing loans are likely to result in a rapid and across-the-board return of transaction prices to their fundamental levels or even below them. In the *Adverse Scenario*, transaction prices should record markedly negative growth during 2021, dropping by more than 15% year on year (see Chart II.23E).

Chart II.19

Transaction prices of residential property

(2015 = 100; right-hand scale: %)

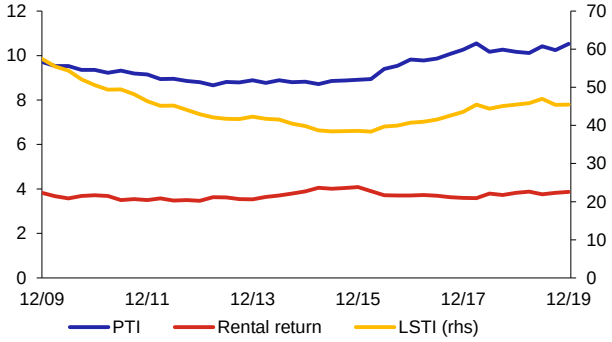


Source: CZSO

Chart II.20

Selected apartment affordability indicators

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



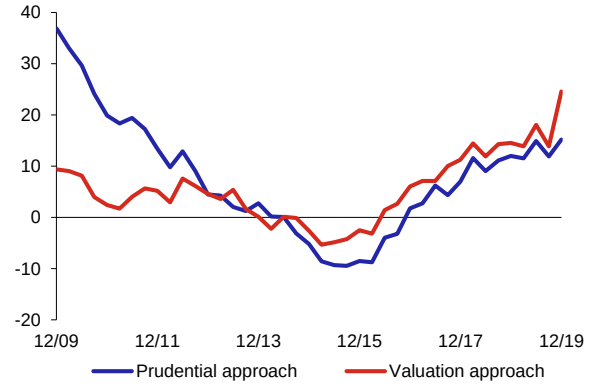
Source: CNB, CZSO, IRI, Společnost pro cenové mapy ČR, s.r.o.

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.21

Estimated overvaluation of apartment prices

(%)



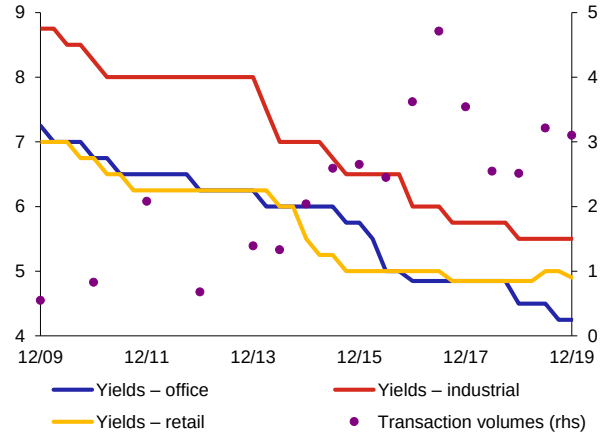
Source: CNB

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. Overvaluation is based on the official forecast published in Inflation Report II/2020. The deterioration in the economic outlook is reflected mainly in the size of overvaluation in the valuation approach, which takes into account the expected decrease in future rental income at constant current prices.

Chart II.22

Yields on commercial property and transaction volumes

(%; 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.

The long-running downward trend in yields on the monitored types of commercial property continued, with all-time lows reached in some cases

Prices of prime commercial property rose further in 2019. Yields demanded by investors remained at historical lows or – in the case of office property – declined further (see Chart II.22). The size of completed premises in new office and industrial property decreased compared with 2018 but was still high by historical comparison (see Chart II.17 CB). Overall transaction activity was slightly higher than in 2018 (see Chart II.22 and section V.3.2). The market expects the coronavirus pandemic to be reflected in the monitored indicators from 2020 Q2 onwards. Future developments will depend mainly on the expectations of key market players regarding the time needed for advanced economies to return to growth and on perceptions of yields on commercial property relative to alternative forms of investment.

II.1.3 Alternative economic scenarios

Two scenarios were used for the purposes of the stress tests: a *Baseline Scenario* based on the CNB's official macroeconomic forecast, and an *Adverse Scenario* assuming a resurgence of the pandemic and a longer economic contraction. The CNB's macroeconomic forecast and the pandemic resurgence scenario were published in Inflation Report II/2020 (see Table II.3.2).[31] Charts II.23A–F illustrate the evolution of the key macroeconomic variables in the *Baseline Scenario* and the *Adverse Scenario*. The evolution of the other indicators is described in sections II–V.

Baseline Scenario

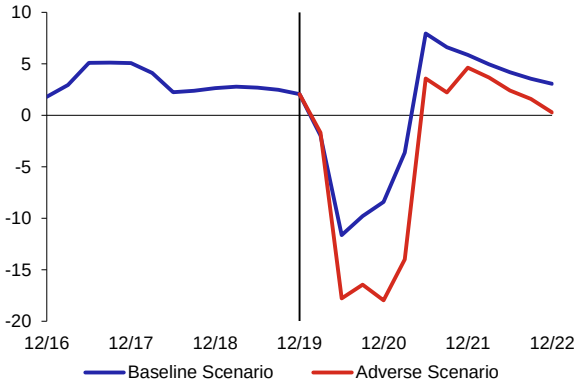
In the *Baseline Scenario*, the Czech economy is hit by a deep economic downturn as a result of the government's anti-pandemic measures, plant shutdowns in some firms, and a drop in external demand. GDP falls by 8% in 2020. All expenditure components except government consumption contribute to the downturn in the first half of this year. The year-on-year decline in economic activity starts to moderate in the second half of 2020. General government gets into significant budget deficits due to the stabilising fiscal measures. Despite the economic policy stabilisation measures, this significantly affects the labour market. The situation cools down significantly in the first half of 2020, when wage growth slows considerably and employment declines appreciably. The unemployment rate thus increases rapidly, peaking at the start of 2021. The worse sentiment of firms fosters restricted investment activity in 2020, which partially recovers in the subsequent year. The scenario assumes a gradual decrease in property price overvaluation, but the gap does not close fully owing to a fall in transaction activity and postponement of sales. In late 2020 and early 2021, a pronounced cooling of the overall price pressures leads inflation to return close to the 2% target. Following the sharp decrease in domestic market interest rates and yields in March 2020, consistent with this is a further decline in Q2 followed by broad stability. The scenario expects rates to increase towards the end of the test horizon.

Adverse Scenario

The *Adverse Scenario* assumes that the first wave of the pandemic recedes more gradually and, above all, that another wave hits Europe in late 2020. The anti-pandemic measures are extended across the effective euro area. In the Czech Republic, they are reintroduced from October to December 2020, although to a lesser extent than during the first wave. Fiscal policy again reacts using support expenditure measures, though on a smaller scale than during the first wave due to the risk of high deficits and rapidly rising debt. Government investment funded from domestic sources falls in 2021. The new wave of the pandemic starts in late 2020 and intensifies in 2021. In this scenario, GDP falls by as much as 13% in 2020. Many exhausted firms close, leading to a dramatic cooling of the labour market. Households' income situation deteriorates, with the average wage in market sectors declining in absolute terms in 2020 as a whole. Unemployment rises towards 8%. In this adverse economic situation, the funds of households and non-financial corporations are gradually exhausted. Coupled with a rise in real debt, this causes their debt servicing ability to worsen significantly. The problems in the real economy also affect the financial sector, which records considerable credit losses and a marked drop in profits. Lower growth in wage costs amid non-existent demand pressures reflecting worse consumer sentiment affects inflation, which temporarily dips below the lower boundary of the tolerance band around the target in early 2021. A markedly weaker koruna exchange rate and a hypothetically deeply negative path of market interest rates support a gradual recovery in economic activity and help inflation return to the 2% target at the end of next year. However, long-term bond yields surge on the back of a rise in global risk aversion, which, in the case of European government bonds, is also connected with returning uncertainty regarding debt sustainability in some euro area countries. Domestic banks tighten their view of credit risk and increase their risk mark-ups on interest rates on new loans. Client interest rates thus rise to a much higher level, also due partly to an increase in long-term interest rates. The rise in debt service coupled with the other impacts of the recession increases the default rate on loans to both households and non-financial corporations.

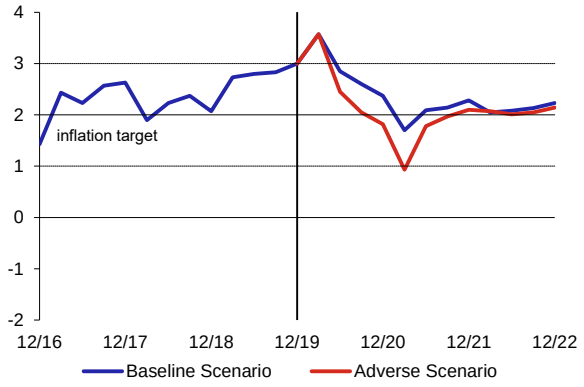
31 In both the *Baseline Scenario* and the *Adverse Scenario*, the time series of variables for the third year were created solely for the purpose of stress testing the individual sectors. For this reason, neither the *Baseline Scenario* beyond the forecast horizon, nor the *Adverse Scenario* is the CNB's official forecast.

Chart II.23A
Alternative scenarios: real GDP growth
(year on year in %)



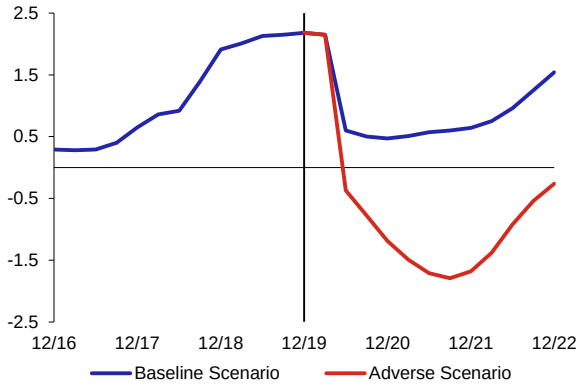
Source: CNB

Chart II.23B
Alternative scenarios: inflation
(year on year in %)



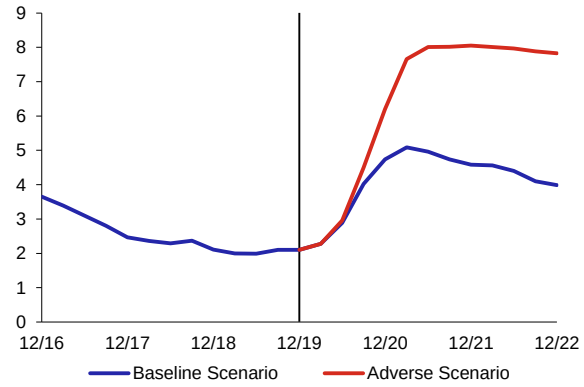
Source: CNB

Chart II.23C
Alternative scenarios: 3M PRIBOR
(%)



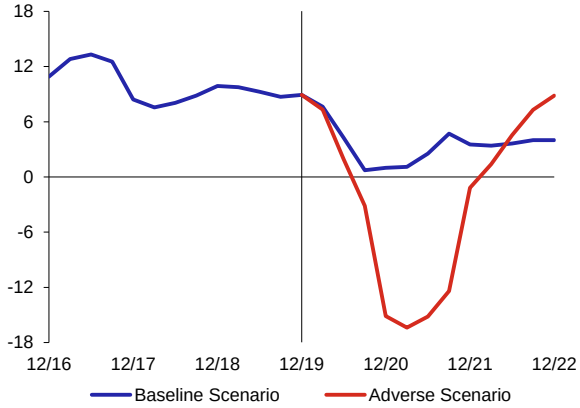
Source: CNB

Chart II.23D
Alternative scenarios: unemployment
(%)



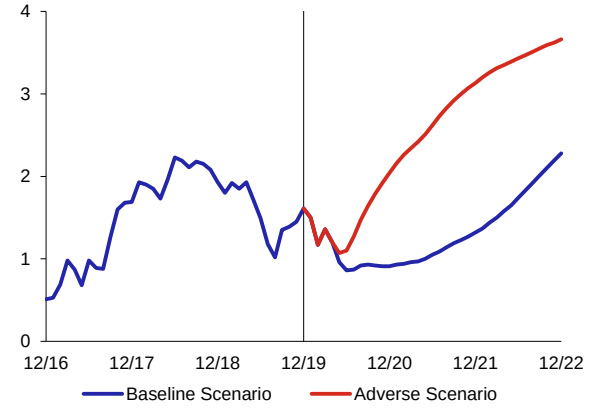
Source: CNB

Chart II.23E
Alternative scenarios: year-on-year property price growth
(%)



Source: CNB

Chart II.23F
Alternative scenarios: ten-year Czech government bond yield
(%)



Source: CNB

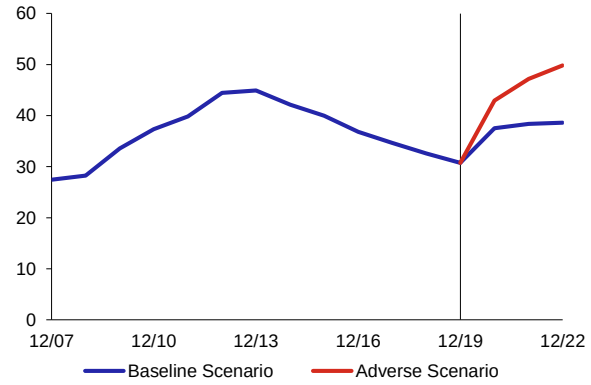
II.2 THE NON-FINANCIAL SECTOR

II.2.1 The public sector

The government debt-to-GDP ratio continued to decline in 2019, but current government expenditure rose

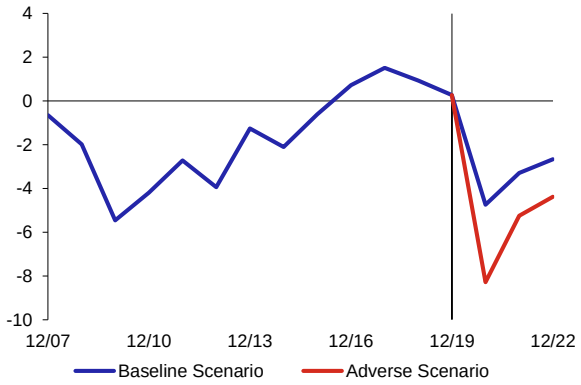
The Czech Republic's government debt-to-GDP ratio continued to decline in 2019 (see Chart II.24), thanks above all to continued solid growth of the domestic economy (see Chart II.22A). The favourable conditions associated with the economic growth were not used to implement reforms of the financial and health systems. Instead, procyclical domestic fiscal policy was manifested in growth of government expenditure,[32] primarily due to higher valorisation of pensions and brisk wage growth in the public sector. The general government balance also fell to 0.3% of GDP (see Chart II.25). An increasing share of mandatory and quasi-mandatory expenditure in total government budget expenditure simultaneously narrowed the room for active fiscal policy in the event of adverse shocks.

Chart II.24
General government debt
(% of nominal GDP)



Source: CNB

Chart II.25
General government balance
(% of nominal GDP)



Source: CNB

A sizeable government deficit and growth in government debt can be expected in 2020 and 2021 as a result of the government measures

In connection with the adoption of fiscal measures to support the economy (see Table II.2) and an expected significant loss of tax revenue, the CNB's May forecast (Inflation Report II/2020) expects a deterioration in government finances (a government deficit of -4.8% of GDP and growth of government debt to 37.6% of GDP in 2020, and a deficit of -3.4% of GDP and government debt of 38.6% of GDP in 2021; see Chart II.24 and Chart II.25). The risks to the forecast are high, however.[33] In the event of materialisation of the *Adverse Scenario*, which assumes a resurgence of the pandemic and the reintroduction of quarantine measures, the government deficit could reach 8.3% and government debt could rise to 43%. Given the future economic uncertainty, the government adopted an amendment to Act No. 23/2017 Coll., on Budget Responsibility, enabling it to create fiscal room for 2021 with a structural deficit of 4% of GDP, and pledged to improve the structural deficit by at least 0.5 pp of GDP by 2028.

The government's good position on the government bond market aids its current increased funding need

To cover the additional government expenditure and the regular debt instalments in 2020, and to strengthen the Treasury liquidity buffers, the Ministry of Finance issued significantly higher amounts of government securities than in previous years (see Chart II.26). As of mid-June 2020, it had issued CZK 535 billion of government debt securities. The Czech Republic's rating remains very solid with a stable outlook (see Table II.3), enabling it to finance the government debt at still low risk mark-ups on the part of investors. The new debt was financed by bonds with lower yields than the average yield on the existing debt (2.33%). The higher issue volumes did not lead to a drop in the average debt maturity, which remains at six years. Domestic financial corporations were predominant among investors in government securities. Demand from non-residents also remained very high (see Chart II.27).

32 Total current general government primary expenditure rose by a sizeable 7.7% year on year in 2019 (and even by 8.2% in 2018).

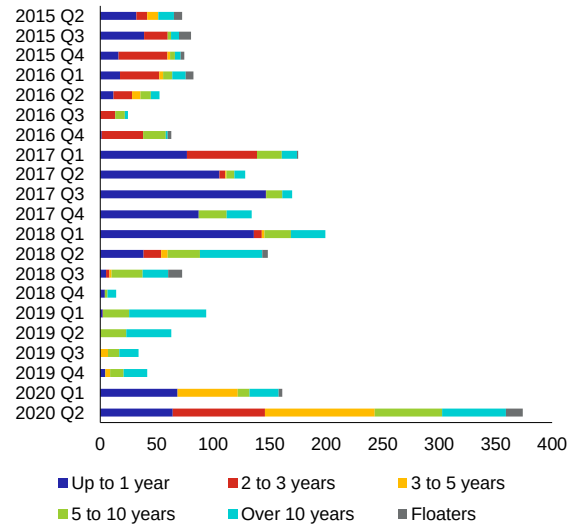
33 The risks to the forecast are affected to a large degree by the course of the pandemic. On 8 June 2020, the Czech government approved a state budget deficit of CZK 500 billion, which was not known at the time the forecast was prepared.

Table II.2
Fiscal measures to support the economy and maintain liquidity
(% of nominal GDP)

Measures	2020
Waiver of social security and health insurance contributions for self-employed	0.43
Increase and extension of attendance allowance	0.20
Compensation for employers (Antivirus)	0.42
Compensation bonus for self-employed ("25" programme)	0.45
Higher healthcare and emergency services expenditure	0.36
Compensation in cultural sector	0.03
Postponement of third and fourth phases of ESR	0.06
Compensation bonus for limited liability companies	0.17
Partial rent payment by government (COVID Rent)	0.07
Cancellation of property purchase tax	0.20
Subsidies for farmers to alleviate debt	0.02
Waiver of CAP for employers	0.27
Loss carryback	0.57
Reduction of road tax rate	0.02
Reduction of VAT on accommodation, cultural and sports services	0.02
Measures, total	**3.29**

Source: CNB
Note: CNB estimate as of 10 June 2020.

Chart II.26
Czech government security issue volumes
(CZK billions)



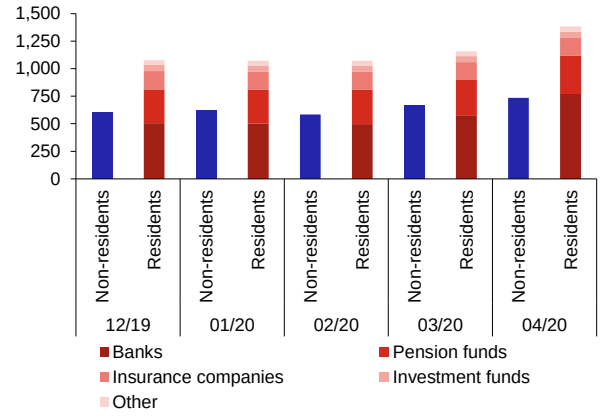
Source: CNB
Note: Data as of 24 June 2020. Colours indicate maturity baskets.

Table II.3
The Czech Republic's credit ratings

Rating agency	Domestic long-term liabilities	Outlook	External long-term liabilities	Outlook
Moody's	Aa3	Stable	Aa3	Stable
S&P Global Ratings	AA	Stable	AA-	Stable
Fitch Ratings	AA-	Stable	AA-	Stable
JCR	AA	Stable	AA-	Stable
R&I	AA-	Stable	AA-	Stable
Scope Ratings	AA	Stable	AA	Stable
Dagong Global Credit Rating	A+	Stable	A+	Stable
ACRA Europe	AA	Stable	AA	Stable
ACRA	AA	Stable	AA	Stable

Source: Ministry of Finance of the Czech Republic
Note: Sovereign credit rating.

Chart II.27
Czech government bonds in circulation by type of holder
(CZK billions at market value)



Source: CNB

The growing government debt poses risks to financial stability from the medium-term perspective

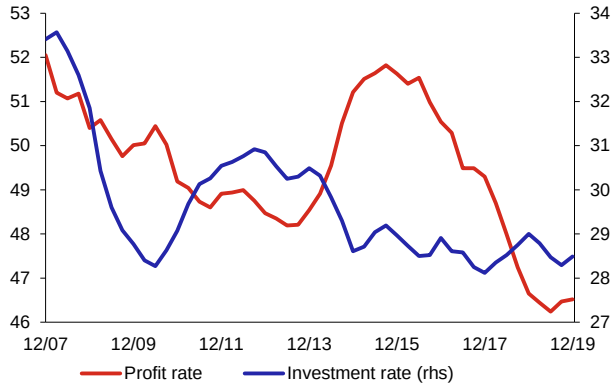
Expansionary fiscal policies have a positive effect on aggregate demand, contributing significantly to maintaining economic activity at times of recession or crisis. They simultaneously increase the government's financing needs. A sustained period of growing government demand for domestic savings might not only be gradually reflected in growth in yields on Czech government bonds, but might also crowd out the domestic private sector, mainly through growth of client interest rates. However, the risk of crowding-out of private investment through rising government expenditure is reduced by the still solid demand for Czech government bonds from non-residents. This demand could potentially grow, since central banks' government bond purchase programmes (see section II.1.1) have been causing a shortage of high-quality, liquid assets on global markets for several years now. However, countries with higher levels of government indebtedness with debt located in non-residents' balance sheets are generally exposed to a higher risk of potential contagion from countries that are high risk in terms of debt sustainability. Without credible fiscal consolidation, non-residents could cause higher volatility and, consequently, a rise in domestic market interest rates in the event of a negative demand shock. Moreover, the higher long-term interest rate volatility could in turn generate higher exchange rate volatility via capital flows. However, a stabilising factor in the case of domestic public finances is that non-residents hold Czech debt largely in Czech koruna. Given its significant foreign exchange reserves, the CNB additionally has considerable scope to curb market volatility.

II.2.2 Non-financial corporations

The pandemic hit the non-financial corporations sector in a phase of sustained decline in the profit rate and a stabilised debt ratio

The Czech Republic's economic growth and slightly weakening wage growth were reflected in renewed growth in the operating profits of non-financial corporations during 2019. This caused the profit rate to stop falling sharply and flatten out. Investment activity remained relatively low (see Chart II.28) and, consistent with that, credit growth and the sector's overall debt dynamics were also subdued (see Chart II.18 CB). At the end of 2019, the debt ratio was around 40 pp below its 2012 and 2013 peak (see Chart II.29). The level of credit risk – as measured by the 12-month default rate – remained very low in 2019, at around 1%. Optimistic expectations arising from the good financial results of non-financial corporations may have been reflected in lower formation of financial reserves. This is indicated by liquid assets, which rose at a slower pace than operating profit, and by the current account primary income statistics, which indicate increased payment of dividends abroad for 2019 (see Chart II.19 CB). Despite this, non-financial corporations entered the period of high economic stress caused by the coronavirus pandemic with sufficient room for potential growth in indebtedness, which they can use to temporarily address liquidity shortages.

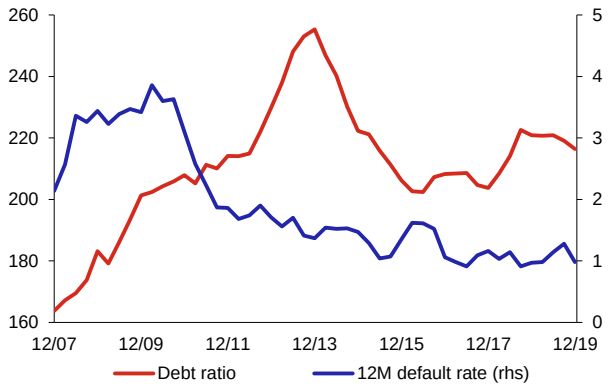
Chart II.28
Profit rate and investment rate in the non-financial corporations sector
(% of gross value added; calculated from annual moving totals)



Source: CZSO

Note: The profit rate is the ratio of gross operating surplus to the gross value added of the sector. The investment rate is the ratio of gross fixed capital formation to the gross value added of the sector.

Chart II.29
Default rate and debt ratio in the non-financial corporations sector
(% of annual total of gross operating surplus; right-hand scale: %)



Source: CNB, CZSO

Note: The debt ratio is the ratio of the total volume of loans taken out and debt securities issued to the gross operating surplus of the sector.

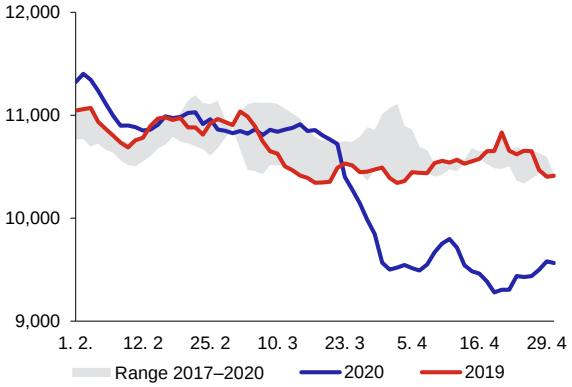
The current combination of strong demand and supply shocks is putting a heavy burden even on healthy firms

The global coronavirus pandemic, accompanied by the introduction of anti-pandemic measures, hit domestic non-financial corporations hard, with services worst affected (see Chart II.5). Mandatory shutdowns impacted particularly strongly on hotels and restaurants and passenger transport. Given the continuing restrictions on international tourism, it can be assumed that the impact on firms operating in these areas will be of a long-term nature. Developments in the domestic and external environment have also had an appreciable impact on industrial firms. Some of them were forced to halt production, and after reopening they face shortages of production inputs and weaker demand due to the disruption of supply chains. This is evidenced by data on electricity consumption (see Chart II.30).

Firms are facing major liquidity shortages as a result of shutdowns…

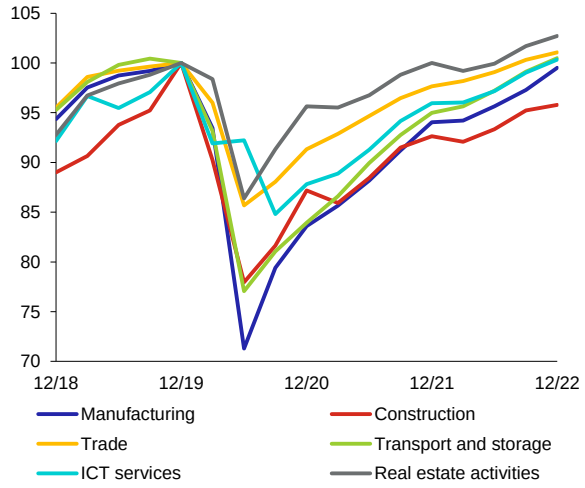
The anti-pandemic measures had a strongly negative impact on operating cash flow. Retail sales fell by 9.3% year on year in March, with hotels and restaurants and transport and storage recording the biggest drops. Most other sectors can be expected to record similar plunges in sales as that in services. Sudden revenue losses combined with insufficient financial reserves may be reflected in increased difficulties in servicing loans and paying rents and wages. Firms usually cover liquidity shortages with higher borrowing on existing lines of credit and by taking out new operating loans. Increased borrowing, however, only temporarily alleviates insufficient liquidity and may pose a risk of increased indebtedness in the future. This risk may further increase in the event of a slower economic recovery, as the servicing of higher debt will put additional pressure on the already decreased operating cash flows.

Chart II.30
Power system load in the Czech Republic
(average hourly daytime consumption in MWh)



Source: ČEPS, ASOS
Note: Data adjusted for temperature fluctuation effects on electricity consumption and further smoothed by the 7-day moving average. For more information on how the data are adjusted and interpreted, see the CNB blog article: *První odhad dopadů pandemie COVID-19 na ekonomiku ČR* (*First Estimate of the Impacts of the COVID-19 Pandemic on the Czech Economy*), A. Michl, T. Adam (in Czech only).

Chart II.31
Production in the largest sectors in the *Baseline Scenario*
(index; 2019 Q4 = 100)



Source: CNB, CZSO
Note: Production at constant prices.

…which the government is trying to mitigate with a set of support measures

The CNB responded to the deteriorating economic outlook by cutting monetary policy rates, and the Czech government, like its counterparts in other countries, introduced a series of stabilisation measures (see section II.1, Table II.1). For firms, these measures aim to maintain firms' operating cash flows and creditworthiness as much as possible and to lower their costs or spread them out over time. The measures targeted at firms include a loan moratorium, a waiver on social and health insurance advances, "liberation" packages, and loan and guarantee programmes (COVID I, II and III, and COVID Plus, together amounting to around CZK 850 billion). Other important measures include direct financial support for the self-employed (such as the "25" programme) and the Antivirus wage compensation programme.

Net cash flows may still be highly negative in some sectors

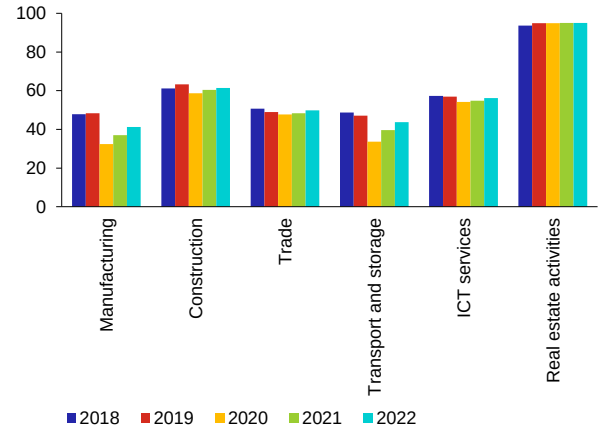
Despite the measures in place, operating cash flows may be highly negative in the worst affected segments of the economy. Firms in these sectors may need to draw additional liquidity in the form of operating loans. According to an estimate arising from the non-financial corporations stress test, the additional liquidity need for 2020 is in the range of CZK 300 billion in the *Baseline Scenario*.[34] The figure could be considerably higher if a more adverse scenario were to materialise. In this case, it would be possible to consider providing assistance to vulnerable firms in the form of a "funding for lending" programme, for example. Central banks in some countries use such programmes to offer banks longer-term liquidity at a preferential interest rate conditional on target lending criteria, and thereby to increase the supply of credit to struggling firms.

According to a macroeconomic simulation, the hardest hit sectors in the *Baseline Scenario* are manufacturing, transport, and hotels and restaurants …

The second quarter of 2020 saw a gradual easing of the anti-pandemic measures in the Czech Republic, but the production of domestic firms will not return to pre-crisis levels immediately. The *Baseline Scenario* assumes a sharp contraction in GDP in 2020 Q2 and a gradual economic recovery in the second half of 2020 (see Chart II.23A). All components except general government consumption contribute to the contraction in GDP. The biggest drops are recorded for exports, imports and investment (Inflation Report II/2020). According to the stress test of non-financial corporations, this has a particularly negative effect on sectors sensitive to these components of GDP. A significant drop in gross added value and total output in the *Baseline Scenario* is recorded in manufacturing, construction and transport (see Chart II.31) and especially in sectors such as hotels and restaurants and transport. On the aggregate level, the net profit rate decreases by about 5 pp at the peak of the coronavirus crisis, with the variability across sectors being very high (see Chart II.32). In 2020 Q4, the aggregate profit rate starts to return gradually to its original levels. In line with the *Baseline Scenario*, credit growth also declines. Due to a significant reduction in investment loans, it turns negative despite higher drawdown of operating loans to replenish liquidity (see Chart II.33).

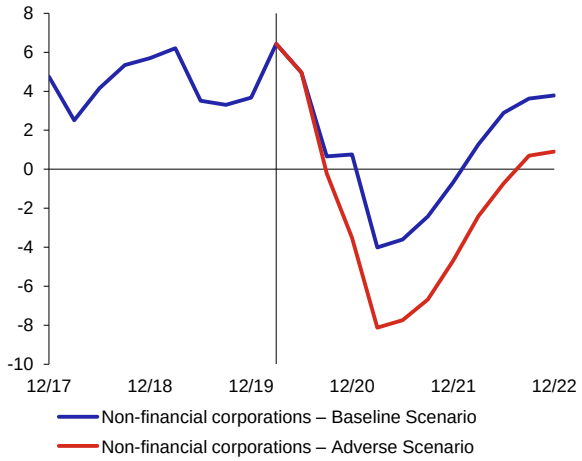
34 The estimate of specific liquidity needs is subject to significant uncertainty and the average of these estimates is around CZK 150 billion.

Chart II.32
Profit rates in the largest sectors in the *Baseline Scenario*
(%)



Source: CNB, CZSO
Note: The figures for 2019, 2020, 2021 and 2022 are estimates. The profit rate is the ratio of gross operating surplus to gross value added.

Chart II.33
Rate of growth of loans to non-financial corporations in the *Baseline* and *Adverse Scenarios*
(%)

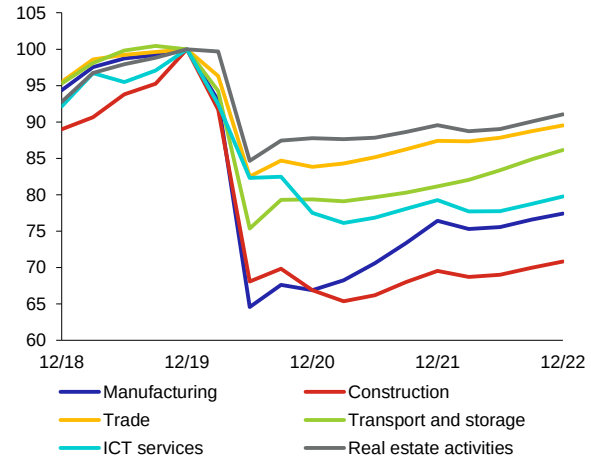


Source: CNB

…in the *Adverse Scenario* the problem would be greater for most of the economy

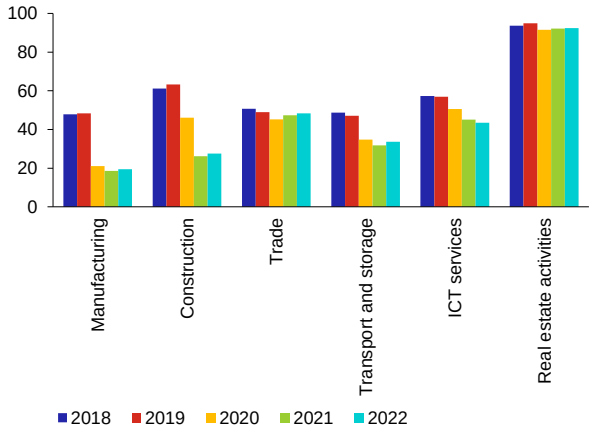
The *Adverse Scenario* predicts a very gradual fading of the first wave and the onset of a second wave accompanied by the reintroduction of quarantine measures. The materialisation of this scenario would lengthen the period of uncertainty, which in turn would be gradually reflected in a greater downturn in foreign trade and cross-border movement of people and capital. There would be a longer-lasting contraction in total output and a decrease in the net profit rate. The latter would fall by 12 pp on aggregate and would not return to its pre-crisis level at the scenario horizon (see Chart II.34 and Chart II.35). In terms of sectors, the downswing in foreign trade and travel would have the worst effect on manufacturing and transport. The lack of investment and the fall in property prices would also have a severe impact on the construction and real estate sectors. The lack of investment and the fall in property prices also have a severe impact on the construction and real estate sectors. The weak investment would lead to a significant decline in credit growth, which would remain negative until mid-2022 (see Chart II.33).

Chart II.34
Production in the largest sectors in the *Adverse Scenario*
(index; 2019 Q4 = 100)



Source: CNB, CZSO
Note: Production at constant prices.

Chart II.35
Profit rates in the largest sectors in the *Adverse Scenario*
(%)



Source: CNB, CZSO
Note: The figures for 2020, 2021 and 2022 are estimates. The profit rate is the ratio of gross operating surplus to gross value added.

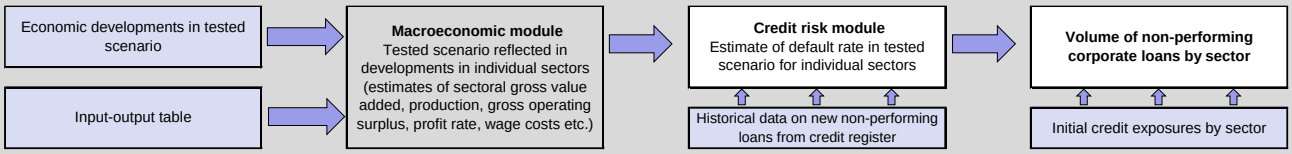
If the *Adverse Scenario* were to materialise, non-financial corporations would be exposed to shock similar to that of the first half of 2020

Firms would enter the potential second wave of the pandemic in substantially worse financial shape and with much lower financial reserves. Even more massive government support would probably be needed to maintain employment. Otherwise, there could be a significant increase in credit risk in the economy, which would affect banks and their willingness to lend even to viable companies. There would thus be a risk of a spiral, with the high default rate among non-financial corporations leading to a lower willingness of banks to provide liquidity, and a lack of liquidity leading to further defaults. The situation abroad remains a risk going forward. In the event of a slow global economic recovery and subdued investment, exporters will be exposed to long-term stress. This would mainly affect manufacturing and, within it, motor vehicle manufacturing, which is a significant net exporter.

BOX 2 Stress testing in the non-financial corporations sector

The CNB has created a new model for stress testing the non-financial corporations sector. The main macroeconomic module of this model was presented in Financial Stability Report 2018/2019. The module is based on the system of national accounts, the main national economic identities, and input-output tables. This module makes it possible to simulate developments in individual sectors when the conditions of the scenario under test are met, taking into account the existing supplier-customer relations between industries. These relations are a key channel for the transmission of the shock between sectors. Rising interconnectedness increases the strength of the shock. Based on the simulation of developments in individual sectors, performance and profitability indicators are obtained for each of them. The advantage of this approach is that it allows us to set different stress levels in different sectors (but always with regard to the initial scenario). This increases the scope for testing different economic scenarios with the same final impact on the main macroeconomic aggregates.

Figure 1 (BOX)
Stress testing of the non-financial corporations sector



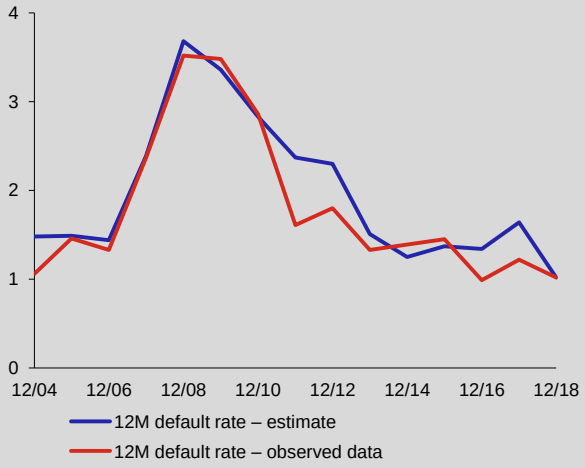
Source: CNB

To evaluate the impact of the baseline scenario on the stability of the financial or banking sector, in addition to monitoring sectoral national economic indicators, it is particularly important to track how they pass through to the creditworthiness of individual sectors and to subsequently estimate the total amount of non-performing bank loans to non-financial corporations. The relationships between the credit risk of individual sectors, the outputs from the macroeconomic module, and other relevant macroeconomic variables are illustrated in Figure 1.

The credit risk indicator for each sector is represented in the module by the 12-month default rate. This is defined as the ratio of new non-performing loans in individual sectors during the next 12 months to their total volume of performing loans.[35] Based on the historically observed paths of a large number of indicators of sector performance, profitability, costs and indebtedness, whose future evolution can be modelled in the macroeconomic module or in other CNB models, the algorithm selects indicators for each sector that can be used to obtain the optimal prediction of the 12-month default rate (see Chart 1). With knowledge of the default rates of individual sectors, the overall size of their loans (see Chart 2) and the estimated growth of those loans, the overall losses for the portfolio of loans provided to non-financial corporations are subsequently estimated in the test scenario.

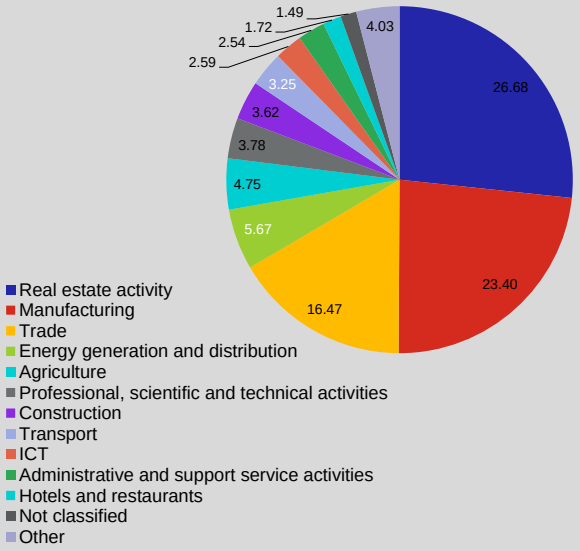
35 The 12-month default rate represents the materialisation of the one-year probability of default (1Y PD), which features in the relationship for the overall expected loss of the banking sector: EL = PD*LGD*EAD.

Chart 1 (BOX)
Actual and estimated aggregate 12M default rate
(%)



Source: CNB
Note: The estimate of the aggregate default rate was prepared as a weighted average of the estimates of the default rate based on the sizes of the exposures of individual sectors.

Chart 2 (BOX)
Breakdown of loans by sector in the initial year of the stress simulation
(% of total stock of loans to non-financial corporations)

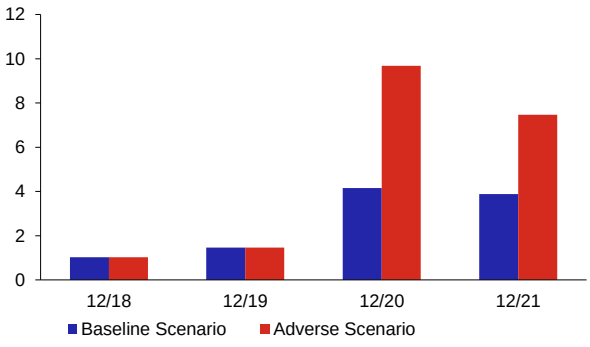


Source: CNB

The default rate rises significantly in both the *Baseline Scenario* and the *Adverse Scenario*

The current coronavirus crisis will be reflected in a substantial deterioration in credit quality in both scenarios due to reduced corporate profitability and weak overall economic performance. According to the *Baseline Scenario* non-performing loans will increase in 2020 and peak in mid-2021. As the economic situation improves, the default rate stabilises and gradually begins to decline, although it remains elevated at the horizon of the scenario (see Chart II.36). The cumulative volume of non-performing loans in the *Baseline Scenario* of the stress test of corporations is about 9.5% of the total stock of performing loans. If the *Adverse Scenario* were to materialise, the growth in non-performing loans would be even stronger. The 12-month default rate would rise continuously, and the volume of non-performing loans would exceed 7% in both 2021 and 2022. The total volume of non-performing loans would approach 19% of the total stock of performing loans.

Chart II.36
Aggregate default rate in the *Baseline* and *Adverse Scenarios*
(%)



Source: CNB, CZSO
Note: Observed data for 2018.

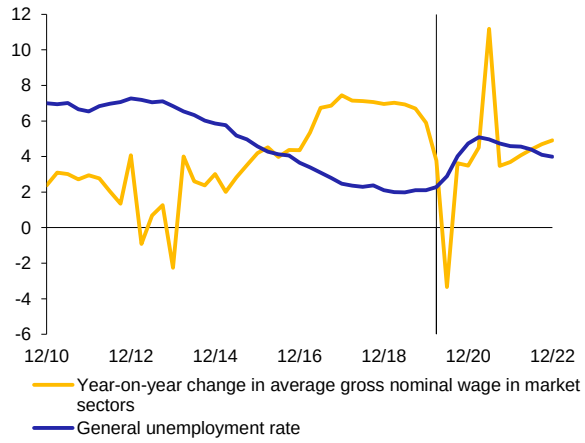
II.2.3 Households

2019 was a good year for households…

In 2019, the unemployment rate in the Czech Republic stayed at record low levels and even dipped below 2% for a short time. Wage growth remained robust, dropping only slightly from its previously high level (see Chart II.37). Favourable labour market developments from the point of view of households further encouraged optimistic expectations and helped maintain a brisk pace of consumption growth (see Chart II.38). This was one of the key factors of economic growth (see section II.1 and Inflation Report II/2020).

Chart II.37
Labour market indicators

(%)

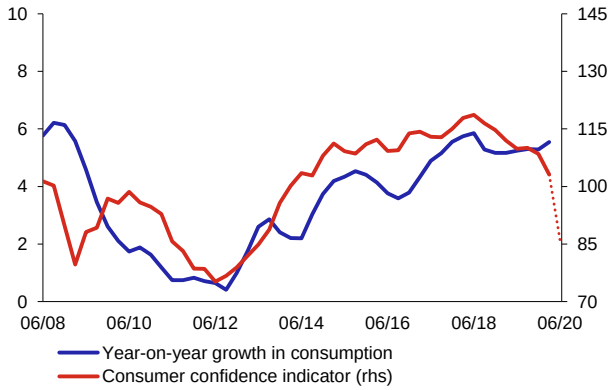


Source: CNB, CZSO

Note: The general unemployment rate is seasonally adjusted. The vertical line divides the observed values and the official macroeconomic forecasts published in the Inflation Report II/2020.

Chart II.38
Household consumption and confidence

(%; right-hand scale: base index relative to long-term average: 2003–2019)



Source: CZSO

Note: Growth rates are smoothed by the centred three-period average. The values of the consumer confidence indicator are given by the average of the values for the individual months of the quarter. The value of the indicator in 2020 Q2 is the average of the values for April and May (highlighted by the dotted line).

…but the onset of the coronavirus crisis brought about a change

The pandemic and associated anti-pandemic measures introduced in March 2020 also affected the household sector. Many workplaces were shut down, and services were subjected to restrictions. This had a particularly negative impact on the self-employed. Upon the declaration of a state of emergency, schools were also closed. This made life more difficult for families with children for whom a child-caring household member could no longer go to work.

The government tried to compensate households for their drop in income

The Czech government introduced a number of stabilising and support measures in response to households' loss of income (see section II.1, Table II.1). These include an employment support programme (Antivirus), increased attendance allowance for the period of school closures, and deferral of rent payments for households in financial difficulty. The government tried to compensate households containing a self-employed person for their loss of income by providing direct support of CZK 500 per day. This support could be combined with attendance allowance, which for self-employed persons was set at CZK 424 per day and increased to CZK 500 per day in April. The state also offered further assistance for the self-employed through a six-month waiver of mandatory minimum pension and health insurance payments. The government support measures for the self-employed include the COVID II and III programmes, through which they can obtain loans guaranteed by the Czech-Moravian Guarantee and Development Bank and an interest contribution of up to CZK 1 million. The possible postponement of rent for business premises from the declaration of a state of emergency until the end of June and the "COVID Rent" subsidy programme should also ease the difficult situation.

According to the CNB forecast, weakened household demand will persist until the end of 2020

Despite all the measures adopted, consumer sentiment plummeted (see Chart II.38). In April 2020, labour offices began registering an increased number of job applicants (see Chart II.20 CB). This was reflected in a slight rise in the unemployment rate. Business shutdowns, partial loss of income and change in the structure of household consumption led to a significant decline in aggregate consumption, which is not expected to recover until next year according to the CNB forecast (Inflation Report II/2020). The weakened demand will foster gradual lay-offs by firms and further growth in the unemployment rate. According to the CNB's May macroeconomic forecast, the latter should peak at the start of next year (see section II.1.3, Chart II.23D). The most vulnerable group will be low-income households, which, in the event of

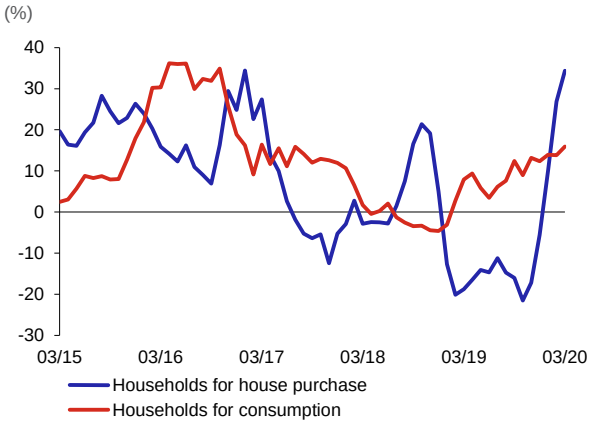
existing indebtedness or high rents, may find themselves in serious financial difficulties after the support measures end. An important factor for the economic recovery will be the support of aggregate demand, which will stimulate employment.

Credit growth is expected to decline due to the coronavirus crisis

Mortgage lending slowed in 2019. After several years of growth, this helped stabilise the debt ratio of Czech households just below 60% of gross disposable income (see Chart II.21 CB). At the start of 2020, however, interest in mortgage loans increased and new housing loans rose by more than 30% compared with the previous year (see Chart II.39). Interest in consumer credit continued to rise at the same time. After the onset of the coronavirus crisis, however, a decline in lending activity is expected. Under the *Baseline Scenario*, the pace of growth of new loans for house purchase will drop by 5 pp and that of new consumer credit by 9 pp (see Chart II.40). A much larger decrease would arise if the *Adverse Scenario* were to materialise.

Chart II.39

Year-on-year growth in new koruna loans to households

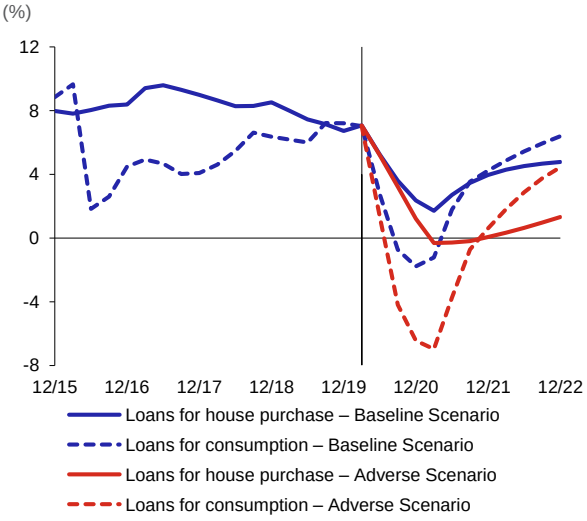


Source: CNB

Note: The household sector also includes data for NPISHs. The year-on-year growth rates are smoothed by the three-month moving average.

Chart II.40

Year-on-year growth in new bank loans to households



Source: CNB

Indebted households are more likely to face financial difficulties…

Given the high level of uncertainty about future economic developments (see section II.1 and Inflation Report II/2020), the coronavirus crisis could cause some households significant loan repayment problems. Particularly at risk are the self-employed, who have a higher share of mortgage loans with an LSTI ratio of over 40% than the employed.[36] The loan moratorium of up to six months provides a short-term solution to debt repayment problems (see Table II.1). Information from the banking sector reveals that the total number of approved applications for deferral of instalments is more than twice as high for consumer credit than it is for mortgage loans (204,000 versus 83,000). In volume terms, the difference between applications for consumer credit and mortgage loans is slightly smaller. The total volume of loans with approved applications for deferral of instalments is 23% of the volume of consumer credit (CZK 54 billion) and 13% of the volume of mortgage loans (CZK 160 billion).[37]

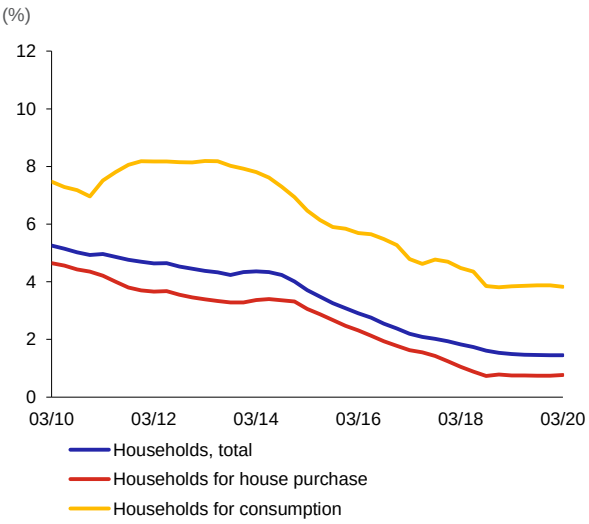
…loan repayment problems may be revealed in full after the moratorium ends

For households that run into long-term payment difficulties, deferral of payments is only a temporary solution and, after a long period of gradual decline, the default rate on household credit (see Chart II.41) is expected to rise at the end of 2020 for both consumer credit and loans for house purchase. The default rate is expected to peak in mid-2021. In the *Baseline Scenario*, the default rate will increase to 2% for house purchase loans and 5% for consumer credit (see Chart II.42). If the *Adverse Scenario* were to materialise, the default rate would increase sharply over the same period. Low-income borrowers and borrowers with high debt service would be hit particularly hard (see section IV.3).

36 Findings according to available data from the CNB survey on new loans secured by residential property for the period from 2016 to the end of 2019.

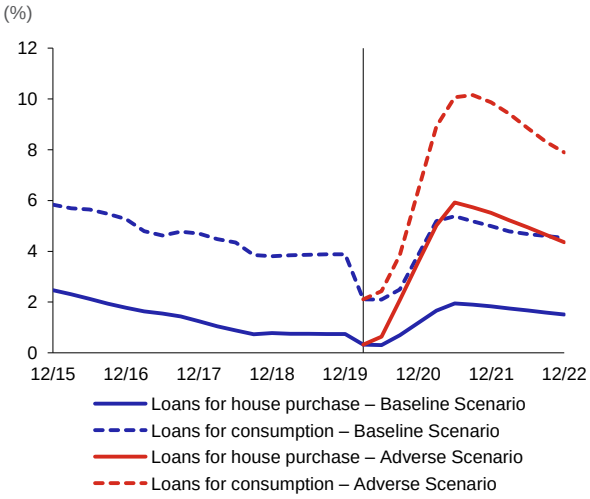
37 The individual figures are the numbers and volumes of loans with approved applications for deferral of instalments under the statutory moratorium and other deferrals provided by banks in connection with the COVID-19 pandemic. Data as of 12 June 2020.

Chart II.41
12M default rate on loans to households



Source: BRCI, CNB

Chart II.42
12M default rate on bank loans to households by scenario



Source: BRCI, CNB

III. THE FINANCIAL SECTOR

The domestic financial sector recorded growth in most segments in 2019, but the coronavirus crisis is likely to affect the rate of growth in 2020. The banking sector entered the acute phase of the coronavirus crisis with a robust capital position, strong profitability and high liquidity. The non-banking sector maintained its resilience to systemic liquidity stress.

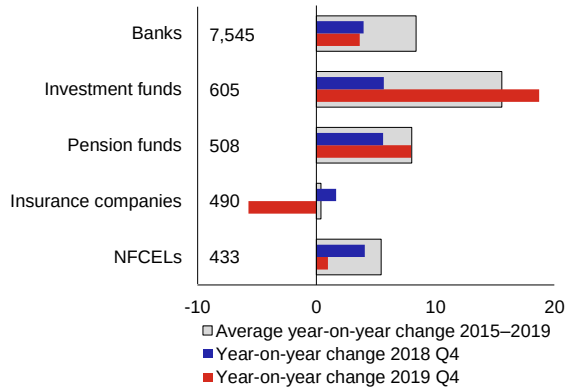
The economic consequences of the coronavirus crisis will increase the pressure on the financial indicators of domestic financial institutions. The response of the banking sector in the key area of credit losses has so far been muted due to the application of flexibility in the accounting and regulatory frameworks and to economic stabilisation measures. Looking ahead, however, credit losses can be expected to grow. This will increase the pressure on the banking sector's profitability. Uncertainty regarding future developments therefore requires careful consideration of the possible macroprudential policy response in the area of capitalisation. The shocks on financial markets have not affected the stability of domestic insurance companies and pension and investment funds. Risks relating to the heightened volatility of market variables persist in the pension funds segment. Stress test results demonstrate that the current capitalisation, liquidity and profitability of the most important segments of the financial sector ensure considerable resilience to shocks.

III.1 DEVELOPMENTS IN THE FINANCIAL SECTOR

The total assets of all segments except insurance companies increased, but slower growth can be expected in investment funds next year

All segments of the financial sector except insurance companies posted year-on-year growth in total assets at the end of 2019 (see Chart III.1). The total assets of the financial sector grew by 4.0% year on year to CZK 9.6 billion (169.7% of GDP). The banking sector,[38] which accounts for almost 80% of the financial sector's assets (see Chart III.1), recorded the largest growth in absolute terms (CZK 267 billion, or 3.7%). Investment funds recorded the highest rate of growth of total assets (CZK 97 billion, or 18.7%). However, some correction can be expected in this constantly growing segment in 2020 owing to the impacts of the coronavirus crisis on financial markets. Insurance companies recorded a year-on-year decline in total assets (of CZK 30 billion, or 5.7%).

Chart III.1
Rates of growth of segments of the financial sector
(%)



Source: CNB
Note: NFCELs = non-bank financial corporations engaged in lending. Figures in parentheses in CZK billions as of the end of 2019. The banking sector also includes credit unions.

38 The assets of the banking sector also include assets of credit unions due to the low total assets of the latter relative to the former.

III.2 BANKING INSTITUTIONS

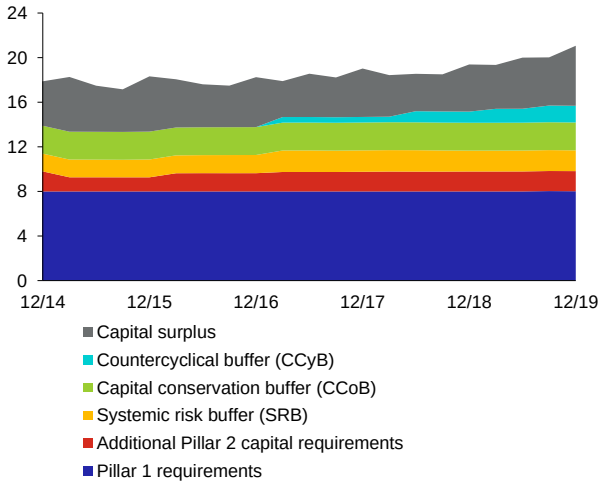
III.2.1 Capital

The domestic banking sector entered the coronavirus crisis and the recessionary phase of the financial cycle well-capitalised

At the CNB's decision, banks created a countercyclical capital buffer (CCyB) and prudently maintained a stable voluntary capital surplus in the expansionary phase of the financial cycle. The total regulatory eligible capital in the domestic banking sector rose by CZK 46 billion in 2019, reaching CZK 528 billion.[39] The overall capital ratio increased by 1.7 pp to 21.1% (see Chart III.2) and the Tier 1 capital ratio by 1.7 pp to 20.6%.[40] The capital ratio was affected mainly by accumulation of capital from profit (+1.8 pp of the capital ratio) and a decline in aggregate risk weights (+0.7 pp), which outweighed growth in client loans and other assets (-0.8 pp).

Chart III.2
Structure of capital requirements in the domestic banking sector

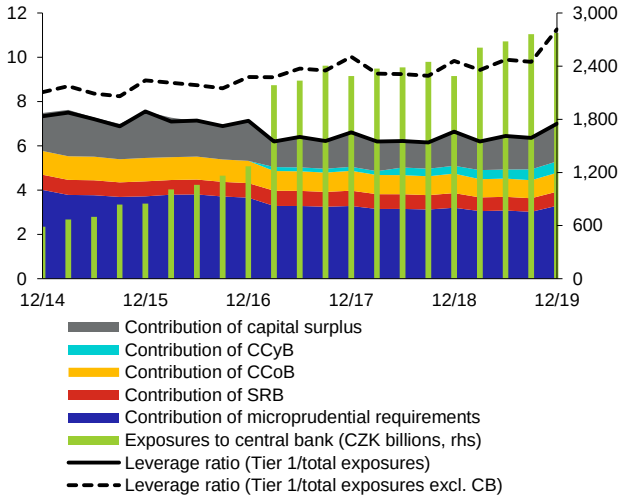
(pp)



Source: CNB

Chart III.3
Structure of the leverage ratio by capital source (the denominator including exposures to the CNB)

(%; right-hand scale: CZK billions)



Source: CNB

Note: Due to unavailability of data in a longer time series, the denominator of the leverage ratio up to 2016 Q3 contains total assets instead of total exposures. The contribution of the capital surplus consists of total capital (not just Tier 1 capital).

The reduction of the countercyclical capital buffer rate to 1% increased institutions' capital surplus

As part of the economic stabilisation measures introduced to mitigate the economic impacts of the coronavirus crisis, the CNB responded by reducing the CCyB rate from 1.75% to 1% with effect from 1 April 2020. The CNB lowered the CCyB rate further to 0.5% with effect from 1 July 2020. This led to an increase in the capital surplus of almost CZK 20 billion. This helped reduce the capital intensity of new loans, which in turn supported the banking sector's capacity to absorb losses and lend to the real economy (see section V.III).

The economic consequences of the coronavirus crisis will put pressure on the capital position of domestic institutions

The coronavirus crisis triggered an unprecedented fall in economic activity, one with strong economic impacts. It is currently impossible to determine the scale of those impacts reliably. They will depend on: (i) the reaction of entities in the real economy to the shock impulse of the coronavirus crisis in the longer term (see section II); (ii) the scale and effect of previously adopted economic stabilisation measures (see section III); and (iii) the future course of the coronavirus

39 The Czech Export Bank and the Czech-Moravian Guarantee and 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.

40 Most banks meet the overall capital requirement, consisting of the minimum level of regulatory capital in Pillar 1 (8%), a requirement based on the supervisory review and evaluation process in Pillar 2 (an average of 1.8% for the sector) and capital buffers (an average of 5.9% for the sector), by a sufficient margin. The capital surplus amounted to CZK 135 billion at the end of 2019, of which that of systemically important banks to CZK 83 billion (4.7 pp) and that of other banks to CZK 52 billion (7.2 pp).

pandemic and the subsequent response of the real economy and governments on both the domestic and global scale (see section IV). A lengthening of the period of restricted economic activity can be expected to increase the pressure on institutions' capital position. In such case, an escalation of the subsequent adverse consequences can be expected, associated with possible longer-term structural changes in the behaviour of households and non-financial corporations.

The capitalisation of domestic institutions is largely dependent on capital surpluses…

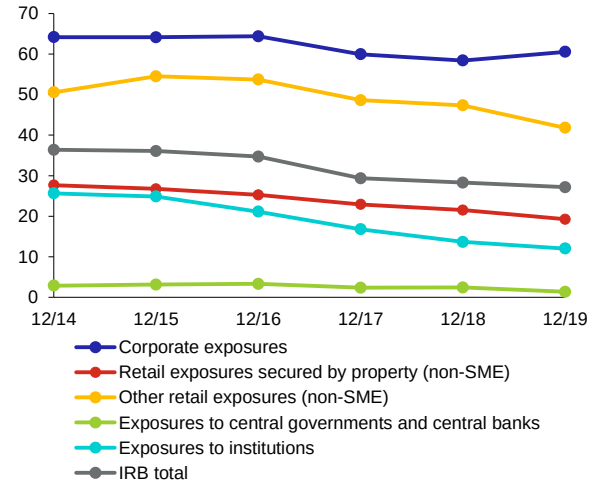
In the *Baseline Scenario* of the CNB's macro stress tests, the capital ratio of the banking sector as a whole does not fall below the Pillar 1 and Pillar 2 capital requirements. Most banks make full use of the capital conservation buffer, and some systemically important institutions also draw on the systemic risk buffer. The results of the macro stress tests also confirmed the key role of the capital surplus in maintaining the banking sector's stability in the event of strong shocks. Without a capital surplus, a total of 17 banks, and the sector as a whole, would fall below the total capital requirement in the *Adverse Scenario* of the CNB's macro stress tests (see section IV.1).

…and requires a prudential approach to profit distribution…

The uncertainty regarding future economic developments and their effect on the performance of institutions and credit losses[41] led the CNB to issue a recommendation calling on institutions to temporarily restrict dividend payments and other actions that might jeopardise their resilience until the acute and longer-running consequences of the coronavirus crisis recede.[42] Similar recommendations were issued in numerous other EU countries. The coordination of these activities at the EU level resulted in the ESRB issuing a Recommendation on restriction of distributions,[43] which foresees the prudential regime lasting at least until the end of 2020.

Chart III.4
Average risk weights of the main categories of exposures under the IRB approach

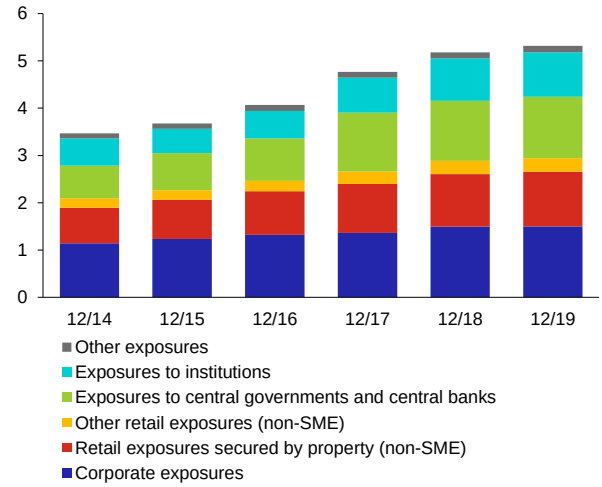
(%)



Source: CNB

Chart III.5
Size of the main categories of exposures under the IRB approach

(CZK trillions)



Source: CNB

…due in part to a possible change in trend in risk weights…

The change in the phase of the financial cycle and the rise in credit risk materialisation are reflected in a rise in risk weights for exposures of institutions that use internal models to set those weights (the IRB approach).[44] Implicit aggregate risk weights tended to fall in previous years (by 1.1 pp year on year to 27.2% in 2019; see Chart III.4). The evolution of retail exposures was consistent with the strongly expansionary phase and subsequent peak of the financial cycle, which was accompanied by stable growth in household income and favourable property price trends.[45] In the case of risk weights for corporate exposures, growing pressure on profitability started to emerge in 2019 in an environment of

41 The materialisation of credit losses usually peaks one or two years after the start of an economic downturn – see BIS (2020): *Buffering Covid-19 Losses – The Role of Prudential Policy.*

42 In addition to banks, the communication was targeted at insurance companies and pension funds – see https://www.cnb.cz/en/monetary-policy/bank-board-decisions/CNB-Board-decisions-1585237680000/?tab=statement.

43 See https://www.esrb.europa.eu/home/html/index.en.html.

44 The analysis of risk weights uses data on implicit risk weights. These are calculated as the weighted value of the exposure divided by the original value of the exposure under the European COREP reporting framework. Exposures whose risk weights are set using the IRB approach amount to CZK 5.3 trillion (see Chart III.5), which corresponds to 70.1% of the exposures of the domestic banking sector.

45 In 2019, the risk weights for loans backed by residential property fell by 2.3 pp year on year to 19.3% and those for other retail exposures (especially consumer credit and other unsecured products) decreased by 5.5 pp year on year to 41.8%.

increased wage costs and weakening external demand (see section II.1).[46] The current situation may further intensify the upward tendency in risk weights for corporate exposures (see section IV.1).

…which may also have a downward effect on the capital ratio

Other things being equal, growth in risk weights increases the capital requirements in absolute terms and reduces the capital ratio. The potential increase in risk weights will be due most of all to the longer-term structural consequences of the coronavirus crisis for the economy on both the domestic and global scale, and may not be strong at first. It may be partly and/or temporarily mitigated by fiscal, monetary policy and prudential stabilisation measures, such as state guarantees in the case of broad application of COVID guarantee programmes,[47] which reduce the credit risks of the relevant exposures (see Table III.1). Conversely, the effect of increasing risk weights on the capital position may be magnified if combined with major credit losses (see section III.2.2 credit risk).

Table III.1
Transmission of fiscal stabilisation measures to institutions' performance while in effect

Description						Impact on credit institutions*								
		Recipients				Credit risk (section III.2.2)			Profitability (section III.2.3)		Capitalisation (section III.2.3)			
Type	Aim	NFCs	Self-employed	Households	Debt instrum.	Credit stage classification	PD	LGD	Reve-nues	Costs (ECL)	Profita-bility	RW	Other **	Liquidity
Direct financial assistance	Strengthen liquidity situation of firms and households	x	x	x	No	↓	↓			↓	↑	↓		
Credit guarantees		x	x		Yes			↓		↓	↑	↓	↑ (BOX 3)	
Loan moratorium		x	x	x	Yes	↓	↓		↓	↓	↗	↓		↓

Source: CNB

Note: The arrows denote the difference compared with the situation of no measures being applied. * The direction of the arrow indicates the transmission to the relevant parameters and the colour of the arrow (green/red) the total expected impact (favourable/unfavourable) on institutions' performance. ** Other measures to strengthen regulatory capital in order to absorb losses (adjustments of capital deductions, dividend restrictions, etc.). PD = probability of default, LGD = loss given default, RW = risk weights, ECL = expected credit loss.

The leverage ratio continues to act as a prudential backstop…

The leverage ratio rose by 0.4 pp year on year to 7.0% at the end of 2019 (see Chart III.3).[48] If capital surpluses decline, it could fall to 4%, close to the 3% level that will represent the minimum leverage ratio requirement after the transposition of CRR II/CRD V.[49] This might imply undesirable capital constraints for smooth lending during an economic downturn. In the Czech Republic, however, the leverage ratio is significantly affected by institutions' exposures to the central bank. In the CRR II/CRD V preparation process, the CNB therefore proposed that exposures to the central bank be excluded in an appropriate way from the base to be used for calculating the leverage ratio, and it still considers this necessary as regards achieving financial and price stability.

…the current situation confirms that the CNB's proposals to exclude exposures to the central bank from the leverage ratio calculation are justified

CRR II/CRD V gives authorities the discretion to adjust the denominator of the leverage ratio for exposures to the central bank for up to one year under exceptional macroeconomic circumstances. Nevertheless, the application and meaning of the discretion are limited due to its being fully offset by an increase in the leverage ratio requirement. The ill-considered nature of this construction is indicated in the Commission's "banking package",[50] which contains a proposal to relax the offsetting mechanism for the adjustment of the leverage ratio requirement (see Box 4). When the denominator was adjusted for exposures to the central bank, the leverage ratio grew by 0.6 pp year on year to 10.4%, signalling a strong capital position of the domestic banking sector in a non-risk-weighted capital regime.

46 The risk weights for corporate exposures increased in 2019 (by 2.1 pp year on year to 60.6%).

47 See, for example, the guarantees under the Czech-Moravian Guarantee and Development Bank's programmes: https:/www.cmzrb.cz/podnikatele/zaruky/zaruka-covid-iii/ (in Czech only).

48 The slight growth in the leverage ratio was due to stronger year-on-year growth in capital (9.7%) than in the banking sector's balance and off-balance sheet (4.1%).

49 Under CRR II, compliance with the leverage ratio is mandatory from 28 June 2021. It is currently only monitored.

50 See https://ec.europa.eu/commission/presscorner/detail/en/ip_20_740.

III.2.2 Credit risk

Credit portfolio quality metrics reached their best-ever levels at the end of 2019…

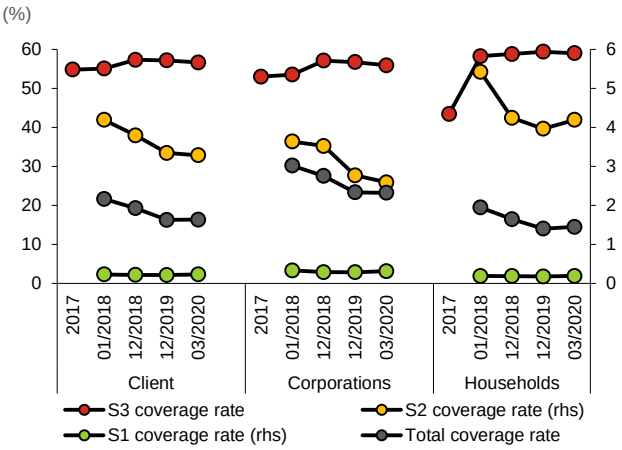
Institutions started 2020 at a historically low credit risk materialisation level. The ratio of non-performing loans (NPLs) to total loans, which is essentially identical to the share of impaired exposures (Stage 3),[51] fell to 2.1% at the end of 2019, its lowest level since 2007 (see Chart III.6).[52] By contrast, the ratio of loans showing no increase in credit risk (Stage 1) to total loans rose by 0.5 pp year on year to 91.8%. The NPL coverage ratio for households and non-financial corporations remained at a sufficient prudential level of 57.5% at the end of 2019. Total coverage by provisions nonetheless recorded a significant year-on-year decrease across portfolios. During 2019, the total coverage ratio gradually declined by 0.4 pp to 2.3% for non-financial corporations and by 0.3 pp to 1.4% for households. This was due mainly to the release of provisions, which dropped by 11.7% year on year to CZK 58 billion for client loans (see Table III.1 CB).[53]

Chart III.6
Loan structure by portfolio

Source: CNB

Note: The loan breakdown for 2017 corresponds to the classification into standard, watch and loss loans under the former IAS 39 standard. 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.7
Loan coverage by portfolio



Source: CNB

…but the consequences of the coronavirus crisis are highly likely to lead to significant credit risk materialisation…

The domestic banking sector showed the first changes in credit portfolio structure in March 2020, soon after the outbreak of the coronavirus crisis, in both loans to non-financial corporations and loans to households. Institutions took into account the change in economic conditions by reclassifying credit exposures into the category of significantly increased credit risk (Stage 2), whose share in client loans thus increased by 1.3 pp to 7.5% at the end of March (up 21.6%) (see Chart III.6; the yellow fill in the column). Non-financial corporations recorded an increase in the ratio of Stage 2 loans of 2.5 pp to 10.3% (up 32.5%), while households saw a rise of 0.7 pp to 6.5% (up 12.4%). At the portfolio level, a simultaneous increase in expected credit losses caused the decline in the cyclically conditional coverage ratios seen in previous periods to halt and stabilise at the end-2019 levels (see Chart III.7). Nevertheless, the growth in expected credit losses was uneven at the credit stage level. This was reflected in mixed trends in coverage ratios. Together with the rise in Stage 2 loans, the coverage ratio for households increased by 0.2 pp to 4.2%, whereas non-financial corporations saw a continuation of the downward trend observed in previous periods (a fall of 0.2 pp to 2.6%).

51 For the assessment of credit risk, the IFRS 9 accounting standard requires correct and timely recognition of both materialised credit risks (a backward-looking view), when loan impairment has already taken place (non-performing loans, Stage 3 – impaired) and future expected credit risks (a forward-looking view) for loans that do not currently show any evident signs of impairment (performing loans, Stage 1 – no increase and Stage 2 – increase). Institutions cover recognised materialised and future expected credit risks with provisions.

52 This fall was due to a combination of an increase in the volume of total loans (from 23%) and a decline in the volume of NPLs (from 77%).

53 Provisions for performing loans in the household and non-financial corporations sectors amounted to around CZK 14 billion at the end of 2019, accounting for 25% of the total volume. The value of provisions for NPLs in Stage 3 was roughly CZK 44 billion.

…which the current level of expected credit losses may not reflect sufficiently…

The change in economic conditions and the reclassification of exposures into higher credit risk categories were reflected in an increase in expected credit losses (see Table III.1 CB), but the expected credit losses in the sectors of households and non-financial corporations remain close to all-time lows in absolute terms.[54] Current expectations regarding future developments in the domestic and global economy (estimates of the contraction in GDP significantly exceed the adverse scenarios usually considered in central banks' stress tests; see section II)[55] suggest that the reactions of institutions' modelling systems in the credit risk area to the change in economic conditions have so far been gradual[56] and may reflect the application of flexibility in the regulatory and accounting frameworks (see Box 3), the effect of economic stabilisation measures, and a more favourable assessment of possible future economic developments.

BOX 3 Flexibility in the regulatory and accounting frameworks and measures to mitigate the impacts of the coronavirus crisis

Besides a proposed CRR-COVID amendment (see Box 4), the banking package with which the European Commission responded to the current coronavirus crisis contained an interpretative communication on the application of the accounting and prudential frameworks to facilitate EU bank lending (the "Communication"). The argumentational starting point for applying flexibility during the coronavirus crisis was the concern that strict application of the current accounting and regulatory frameworks might foster a sudden and sizeable increase in credit losses with negative impacts on institutions' performance and in turn on the credit supply. The CNB has long been pointing to these properties of IFRS 9 and takes them into account in its macroprudential policy regarding capital buffers.[57] Numerous institutions have advocated making use of the existing flexibility of the accounting and regulatory frameworks[58] to enhance institutions' role in resolving the impacts of the coronavirus crisis. The Communication summarises these recommendations and brings them under one roof. As regards the assessment of credit risk, the Communication covers (i) approaches to assessing the credit quality of exposures and (ii) approaches to determining expected losses.

(i) Assessing the nature of credit exposures in terms of credit quality

According to the Communication, exposures affected by stabilisation measures do not have to be automatically classified as foreborne or non-performing for regulatory purposes. The same applies to public and private moratoria if they are targeted at a wide range of classes of products or clients rather than individual obligors.[59] One case where an exposure is classified as non-performing is the determination of a defaulted exposure. By using a moratorium, the time limit of 90 days past due, which is one of the criteria for determining a defaulted exposure, may be suspended temporarily (for the duration of the moratorium). However, institutions are still obliged to assess on an ongoing basis the credit quality of exposures (the unlikely-to-pay criterion) to which the moratorium and other stabilisation measures apply, and to identify default where necessary.[60] The use of public guarantees does not give rise to separate grounds for identifying default.

Under IFRS 9, non-performing exposures are recorded as impaired loans (Stage 3). As regards the credit quality of exposures, however, it is also relevant to assess the criterion of a significant increase in credit risk (SICR) and take it into account appropriately in the classification of credit exposures (Stage 2). The use of public or private moratoria or other stabilisation measures alone should not be considered an automatic condition for the SICR criterion to be applied. Moreover, as with the determination of default, when assessing a significant increase in credit risk, the time limit of 30 days past due, which is one of the SICR criteria, is suspended for the duration of the loan moratorium.

54 Expected credit losses rose by CZK 2.7 billion in absolute terms in 2020 Q1. The expected credit losses on client loans were thus CZK 9 billion (13%) lower at the end of March 2020 than when IFRS 9 was introduced at the start of 2018. Client loans rose by CZK 500 billion (13%) in the same period.

55 According to the CNB's current forecast, the real GDP growth estimate for 2020 is -8%, while the cumulative decline in real GDP in the FSR 2018/2019 adverse scenario was 7%. See also, for example, Bank of England (2020), *Financial Stability Report*, at https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2020/may-2020.pdf.

56 For details see Box 3.2 in FSR 2018/2019, which discusses the impact of banks' expectations on timely and sufficient provisioning under IFRS 9.

57 See, for example, section 4 *Stress tests* in FSR 2017/2018 at https://www.cnb.cz/export/sites/cnb/en/financial-stability/.galleries/fs_reports/fsr_2018-2019/fsr_2018-2019_chapter_4.pdf.

58 See, for example, ECB communication of 12 March 2020 at https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr200312~43351ac3ac.en.html.

59 According to a statement made by the EBA, public and private moratoria should be treated equivalently if they have a similar purpose and features. For details see the EBA *Guidelines on legislative and non-legislative moratoria on loan repayments applied in the light of the COVID-19 crisis* at https://eba.europa.eu/sites/default/documents/files/document_library/Publications/Guidelines/2020/Guidelines%20on%20legislative%20and%20non-legislative%20moratoria%20on%20loan%20repayments%20applied%20in%20the%20light%20of%20the%20COVID-19%20crisis/882537/EBA-GL-2020-02%20Guidelines%20on%20payment%20moratoria.pdf.

60 According to the EBA, individual credit assessments should be conducted carefully, i.e. without automatic classification. The initial assessment should focus on exposures that are most likely to have an important impact. In the period immediately after the moratorium, credit institutions should pay special attention to exposures for which payments are delayed under a revised schedule and identify potential "unlikely-to-pay" default.

(ii) Approaches to determining expected credit losses
The Communication also provides an interpretation of the procedure for calculating expected credit losses under IFRS 9. Institutions should consider the complex nature of the situation, the likely expected longer-term future developments, and the availability and reliability of source information. Institutions should carefully assess to what extent the high degree of uncertainty and sudden changes in the economic outlook affect the obligation in question during its expected duration. When classifying exposures under the accounting framework, which affects the way expected credit losses are calculated, institutions should distinguish between obligors whose rating should not be affected significantly by the current situation in the long term and those whose previous creditworthiness is not likely to be restored. When calculating expected credit losses, institutions should also take into account the effect of government guarantees, which do not affect the obligor's probability of default but do reduce institutions' realised credit losses in the event of default.

…due in part to the application of flexibility in the regulatory and accounting frameworks…
Given the extraordinary situation, European authorities and numerous EU Member States advocated making use of the existing flexibility of the regulatory and accounting frameworks to enhance the banking sector's role in resolving the economic impacts of the coronavirus crisis (see Box 3). In some cases, the existing legislative rules needed to be changed to enable flexibility (see Box 4). The application of flexibility responds to the extraordinary situation caused by the coronavirus crisis, but cannot be seen as a permanent relaxation of the prudential requirements by supervisors. The aim is to spread over time the potential one-off shock to institutions' performance caused by consistent application of the IFRS 9 accounting and prudential principles and the capital regulatory framework. In terms of macroprudential policy, however, such application of flexibility requires a prudential approach to the macroeconomic management of capital buffers, as systemic losses may temporarily turn latent. Full and reliable calculation of those losses will be possible only after further economic developments become clearer, the regime of applying flexibility of the regulatory framework has been abandoned, and the long-term effectiveness of the stabilisation measures has been assessed.

BOX 4 The proposed CRR-COVID amendment

The Commission responded to the coronavirus crisis by proposing a banking package containing a draft amendment of CRR (CRR-COVID).[61] This initiative is intended to enhance institutions' ability to lend to firms and households while maintaining their resilience and thus enabling them to overcome the crisis and subsequently recover more quickly. The proposed revisions of CRR take into account the need to make some temporary and targeted changes to the legislative framework, changes which should further enhance institutions' key role in mitigating the negative impacts of the crisis. The banking package focuses on strengthening institutions' capital position by changing the dates of effect and parameters of selected regulatory rules.

(i) Strengthening capital by changing the date of application of regulatory rules
The first set of proposals postpones or conversely advances the date of application of selected regulatory measures. The amendments include an extension of the transition period for incorporating changes arising from IFRS 9 into regulatory capital and softening the capital requirements. Under the temporary IFRS 9-related measures, this will allow institutions to set off part of their expected credit losses due to COVID-19 against CET1 capital. The amendment postpones the date of implementation of the final phase of the Basel III reform by one year. Among other things, this affects the leverage ratio buffer requirement for global systemically important institutions. The date of application of the leverage ratio buffer is now 1 January 2023. Other measures include advanced application of the SME supporting factor and the infrastructure supporting factor, and earlier application of the exemption of software assets from capital deductions.

(ii) Strengthening capital by changing the parameters of regulatory rules
The second set of proposals extends the application of the existing regulatory rules to a wider group of entities and instruments and modifies the mechanisms for their application. For example, it changes the treatment of guarantees for the minimum loss coverage for non-performing loans (the prudential backstop) and extends the preferential treatment of non-performing exposures to a broader set of public guarantee providers.[62]

61 The banking package also included an interpretative communication on the EU's accounting and regulatory frameworks related to the coronavirus crisis (the "Communication"; see Box 3).

62 As regards the domestic financial sector, it is important in this context that the legislative amendment also covers the guarantee schemes managed in the Czech Republic by the Czech-Moravian Guarantee and Development Bank and counter-guaranteed by the state.

Another of the proposed legislative amendments concerns the discretion applied to the calculation of the leverage ratio. CRR II allowed institutions to temporarily exclude their central bank reserves from the leverage ratio denominator for up to one year provided that such exclusion was fully offset by an increase in the leverage ratio requirement. Under the proposal, the adjusted leverage ratio would be calculated only at the moment the institution exercises the discretion. The adjusted leverage ratio would remain unchanged throughout the period during which the discretion is exercised (even if exposures to the central bank increased). However, the unchanged application date of 28 June 2021 raises questions, as it may be insufficient in the current situation and thus represents a delay.

The CNB generally supports the Commission's initiative. In line with its long-term approach, the CNB simultaneously observes the need for a prudential approach to the creation and reporting of regulatory capital. In this sense, the need for a balanced approach is growing in importance, particularly as regards the proposed amendments in the area of the transition period for incorporating changes arising from IFRS 9 into regulatory capital, which disrupt the continuity of public policy and may potentially undermine its credibility. As regards financial stability and the mitigation of the negative impacts of the coronavirus crisis, it is conversely desirable to expand the range of eligible providers of public guarantees and their operation in the domestic banking sector.

…and the economic stabilisation measures adopted to reduce credit risk

The measures taken by the government and the CNB to mitigate the economic impacts of the coronavirus crisis reduce the risk of rapid materialisation of credit risks in institutions' balance sheets (see Table III.1). The fiscal measures aim to enhance the liquidity situation of non-financial corporations and households, and include direct support,[63] deferral of loan repayments (a loan moratorium) and state guarantees for bank loans. Direct support and loan moratoria favourably affect the default rates of non-financial corporations and households and thus enhance institutions' position by reducing expected credit losses and spreading them over time. State guarantees reduce institutions' potentially realised credit losses in the event of default. In the monetary policy area, interest rates have been lowered, fostering a potential decrease in the debt service of firms and households.[64]

The take-up of the loan moratorium…

A voluntary and statutory loan moratorium enabled institutions' customers to postpone their loan instalments in the event of a temporary loss of income due to the coronavirus crisis (see section V).[65] More than 320,000 applicants (firms and households), with loans totalling CZK 420 billion,[66] had exercised the statutory option to postpone their instalments as of the end of May 2020. Applications in the non-financial corporations sector amounted to CZK 190 billion, or 14.5% of non-financial corporations' portfolio. Most of the applications in the household sector involved mortgage loans, totalling CZK 175 billion (around 12% of the portfolio). Applications amounting to almost CZK 55 billion concerned consumer credit (23% of the portfolio).

…indicates potential growth in expected credit losses…

Foreign experience with moratoria shows that deferring instalments prevents default to only a limited extent.[67] A comparison of institutions' prudential approach to unimpaired loans (Stage 1 and Stage 2) with the potential losses on the loans under moratorium calls for a prudential assessment of institutions' existing expected credit losses. The observed trend in repayment deferral applications (see Chart III.8 and Chart III.9) indicates that the expected credit losses may be markedly higher, so the risk of latent credit losses must be assessed as being quite high. The fact that the amount of loans under moratorium may increase further over time should also be taken into account in this context.

…which macroprudential policy must take into account

On the one hand, the latency of credit risks and the lag in their pass-through to institutions' performance create favourable conditions for dealing with the economic impacts of the coronavirus crisis and enhance institutions' role in resolving them. On the other hand, they require a balanced macroprudential policy response in the area of the banking sector's resilience, especially as regards capitalisation.

63 Fiscal measures in the form of direct support include grants and/or compensation (e.g. the Antivirus employee protection programme and a compensation bonus for the self-employed) and tax and insurance relief (e.g. a tax liberation package).

64 However, the decrease depends on the response of the risk and liquidity components of the interest rate on new loans.

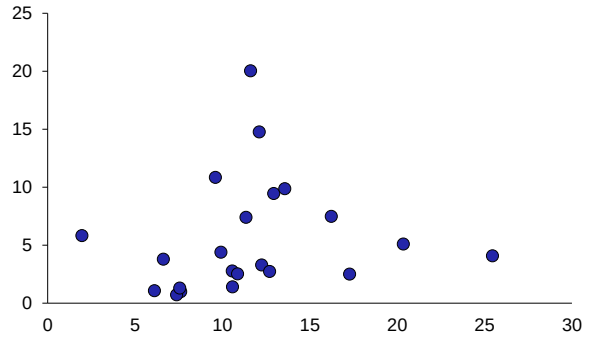
65 See Act 177/2020 Coll. on some measures in the area of loan repayment in connection with the COVID-19 pandemic. The moratorium is binding on all institutions and non-bank lenders. Instalments on consumer credit and corporate loans, including mortgages agreed and drawn before 26 March 2020, can be postponed for a grace period lasting until 31 October 2020 or, in the case of the shortened grace period, 31 July 2020.

66 This figure represents the collateral for loans with postponed instalments.

67 See, for example, Bartiloro, L., Carpinelli, L., Finaldi Russo, P., Pastorelli, S. (2012): *Access to Credit in Times of Crisis: Measures to Support Firms and Households.* Bank of Italy Occasional Paper No. 111, and Bank of Italy (2012), *Financial Stability Report* at https://www.bancaditalia.it/pubblicazioni/rapporto-stabilita/2012-3/index.html?com.dotmarketing.htmlpage.language=1.

Chart III.8
Potential losses from the loan moratorium and expected credit losses

(x-axis: shares of applications in institution's portfolio in %; y-axis: ratio of potential ECL exposures under moratorium to ECL on unimpaired loans)

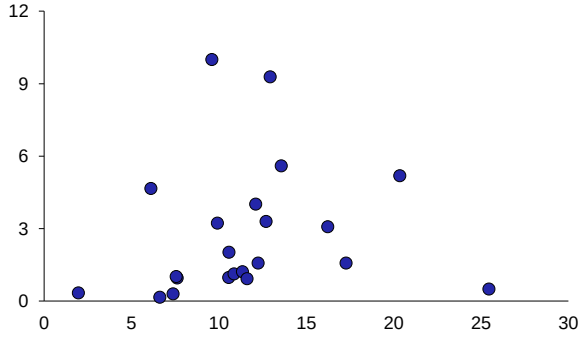


Source: CNB

Note: ECL – expected credit losses. Anonymised data from banks' quantitative reporting related to the COVID-19 pandemic as of 29 May 2020. The ECL from the moratorium are calculated assuming an upper limit on problem loans of 30% in line with Bartiloro et al. (2012) and Bank of Italy (2012). The expected loss given default (LGD) corresponds to the levels in the macro stress tests. An LGD of 10% was considered in the case of loans for house purchase. ECL on unimpaired loans as of 31 March 2020 – Stage 1 and Stage 2.

Chart III.9
Potential losses from the loan moratorium and migrations to stages with higher credit risk

(x-axis: shares of applications in institution's portfolio in %; y-axis: ratio of exposures under moratorium with potential credit risk deterioration to migrations from Stage 1 and Stage 2)



Source: CNB

Note: Exposures with potential credit risk deterioration are calculated using anonymised data from banks' quantitative reporting related to the COVID-19 pandemic as of 29 May 2020. The assumed upper limit is 30% in line with Bartiloro et al. (2012) and Bank of Italy (2012). Migrations comprise downward reclassifications from Stage 1 and Stage 2 as of 31 March 2020.

III.2.3 Profitability and liquidity

The profitability of the banking sector reached a historical high in 2019 but started to decline in 2020 Q1…

The banking sector's profit was up 11.6% year on year at the end of 2019, reaching a historical high of CZK 91 billion. The CNB repeatedly pointed to sources of profitability that are cyclical or otherwise situationally conditional – especially very low impairment losses and interest income on exposures to the central bank (see Chart III.10). The first impacts of the coronavirus crisis started to be felt in 2020 Q1. Profit fell by 20.7% year on year to CZK 14.5 billion. The main factors behind the drop were incipient growth in impairment losses and a continuing upward trend in administrative expenses.[68]

…the coronavirus crisis will lead to a further drop in profitability

Profitability will decline further in 2020, mainly because of growth in impairment losses and the impact of the monetary policy rate cut on interest profit. Impairment losses started to rise in 2020 Q1 (see Chart III.11). Going forward, they may be temporarily affected by the loan moratoria, the state guarantees for loans,[69] regulatory flexibility in assessing credit risk, and banks' internal approaches to provisioning (see section III.2.2). The reduction of the monetary policy rate from 2.25% in March 2020 to 0.25% in May 2020 will also exert downward pressure on profit. That pressure will be felt first of all in a drop in interest income on banks' excess liquidity held at the CNB (see Chart III.12) and may subsequently lead to a fall in interest rates on new loans.

Maintenance of current interest income on client loans is uncertain

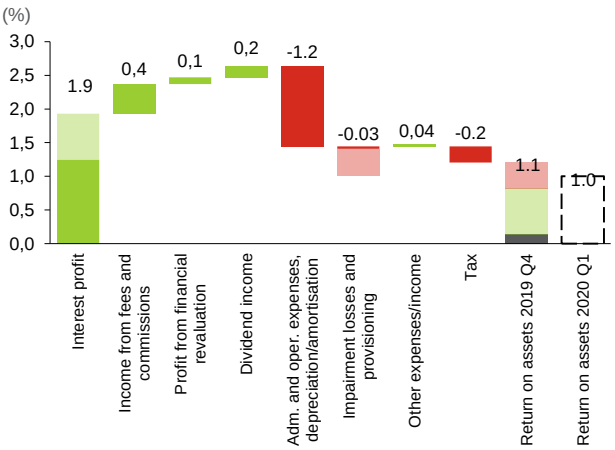
Total interest margins[70] kept following a downward trend (of -0.34 pp year on year to 3.31 pp) at the end of 2019. The only exception was margins on corporate loans (up 0.09 pp to 3.66 pp). In 2020 Q1, however, the trend changed (see Chart III.13). While margins on housing loans have gone up slightly since the end of 2019 (by 0.07 pp to 2.26 pp), those on corporate loans have already responded to the drop in monetary policy rates (down 0.61 pp to 3.04 pp). A further decline in margins may be hindered by growth in the risk premium. Interest income on client loans will be affected by credit activity in addition to loan margins. The negative impacts of the coronavirus crisis on the financial situation of households and non-financial corporations (see section II) and increased risk aversion of credit institutions may lead to a drop in both demand for and supply of credit from the banking sector. However, the loan moratorium and state loan guarantees, which reduce the risk of an acute credit contraction, should have a temporarily favourable effect. Moreover, the CNB has supported banks' capital capacity for lending (see section V) by partially releasing the CCyB.

68 Impairment losses increased by CZK 2.2 billion and administrative expenses by CZK 1.6 billion year on year as of 2020 Q1.

69 The impact of these measures on profitability will depend on their take-up and duration.

70 Margins are calculated as loan rates for the given sector minus the average deposit rate.

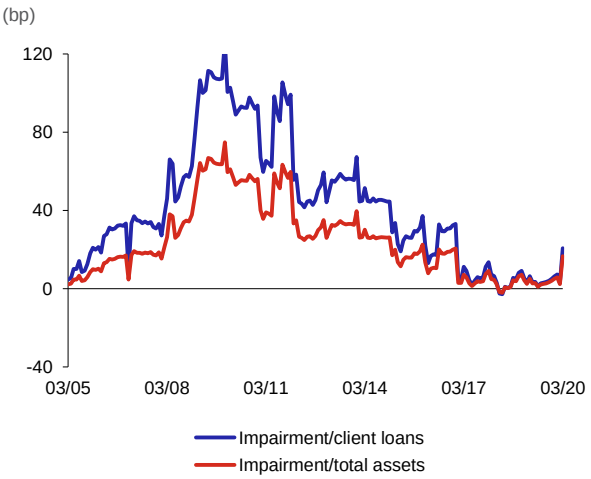
Chart III.10
Decomposition of return on assets



Source: CNB

Note: The given value is the ratio of the given type of income/expense to the level of assets. The light red fill is the level of impairment as of 2009 Q4 (the highest impairment level in the period under review) and its potential impact on return on assets in 2019 Q4. The light green fill is the share of interest profit from exposures to the central bank.

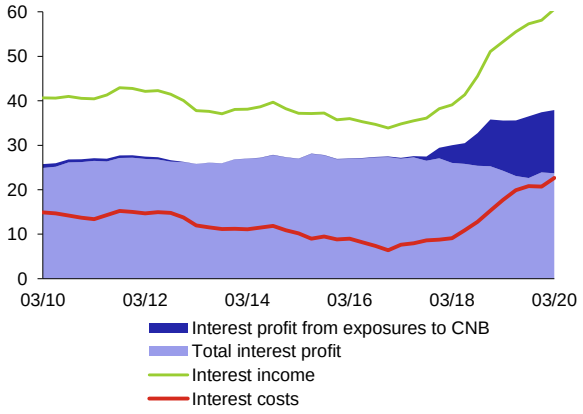
Chart III.11
Asset impairment losses



Source: CNB

Chart III.12
Decomposition of interest profit

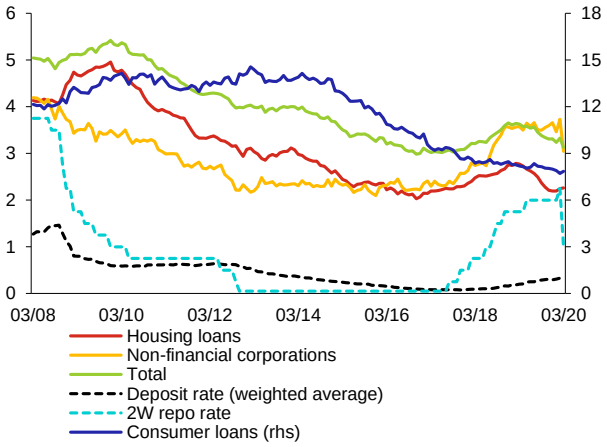
(quarterly contributions in CZK billions)



Source: CNB

Chart III.13
Interest margins on new loans

(rates in %; margins in pp)



Source: CNB

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.

Interest profit may adversely affect the limited manoeuvring space for deposit rates

In response to the decrease in financial market rates, interest rates on household deposits with agreed maturity (9.9% of total household deposits) also declined, doing so by 0.4 pp month on month to 1.4% as of 2020 Q1. Rates on demand deposits have not responded yet; the average deposit rate for Q1 was 0.29%. Banks' manoeuvring space for a further cut in deposit rates is thus much smaller than during the previous contraction of the business and financial cycle (see Chart III.13).[71] It may also be limited by the potential risk of migration of deposits outside the banking sector. However, this risk is not significant in the short term given the banking sector's good liquidity position.

The liquidity ratios confirmed the domestic banking sector's high resilience to liquidity risk

The banking sector's resilience to a short-term liquidity shock is assessed using the liquidity coverage ratio (LCR). Sufficient available stable funding is monitored using the net stable funding ratio (NSFR). The aggregate LCR for the banking sector as a whole was 172% as of 2020 Q1 and all credit institutions were compliant with the regulatory limit of 100% (see Chart III.14). The impact of the loan moratorium on the LCR should be limited due to the low, 6% share of

71 Other things being equal, a drop in deposit rates from their current level to 0% implies an increase in interest profit of CZK 15 billion.

inflows of repayments of claims on non-financial corporations and retail clients in total inflows under the LCR. The euro LCRs of most banks are below the 100% level (see Chart III.1 CB). As of 2020 Q1, the euro-denominated liquidity buffer for the banking system as a whole was 26% and the dollar-denominated one was 75%. The euro LCR is affected mainly by encumbered outflows within ownership groups and – together with potential access to euro liquidity through foreign parents – thus constitutes a lower systemic risk. No regulatory limit on the LCR in foreign currencies is set for institutions. The NSFR for the domestic banking sector was also at a sufficient aggregate level of 135% (see Chart III.14).[72]

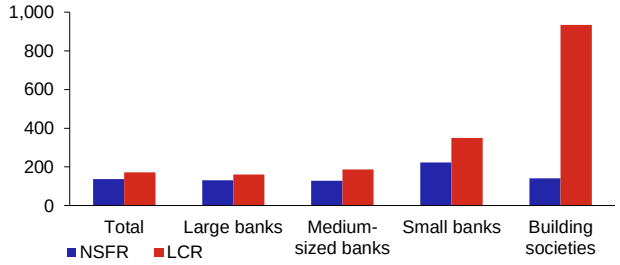
The high LCR and the NSFR levels were due in part to the composition of credit institutions' assets

Banks' balance sheets contain a large share of highly liquid securities, to which no haircuts are applied in the case of the LCR and which require no or very low coverage by stable funds in the case of the NSFR. The high ratios were also due to a strong base of retail deposits, which are considered stable funds subject to low expected outflows in crises (see section III.2 CB). For this reason in particular, building societies had the highest aggregate LCR. Unlike other bank groups, they traditionally have a high share of stable funds with a contractual maturity of over three months, which has a favourable effect on their LCR and NSFR (see Chart III.14). On the other hand, their assets requiring coverage by stable funds in the NSFR account for more than 60% of total assets, with loans to natural persons and non-financial corporations dominating (see Chart III.3 CB).

Chart III.14

Comparison of selected indicators of bank balance-sheet liquidity

(%; as of 31 March 2020)



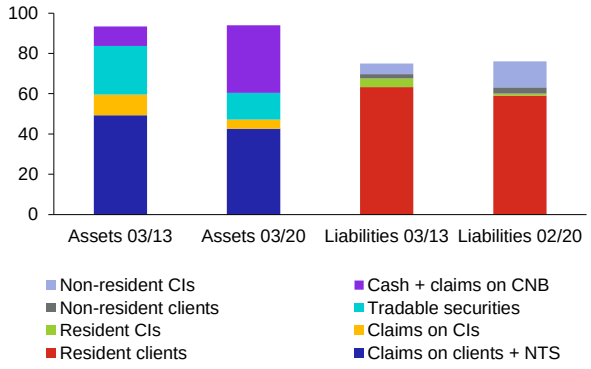
Source: CNB

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 European Commission 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 institutions.

Chart III.15

Selected balance-sheet items of the domestic banking sector

(% of balance sheet)



Source: CNB

Note: CIs = credit institutions. NTS = nontradable securities.

Despite a higher share of short-term liabilities to non-resident credit institutions, a strong liquidity position persists in banks

The high resilience of domestic banks to liquidity shocks is due mainly to a high share of liquid assets and a large excess of client deposits over client loans (see Chart III.15). An elevated share of liabilities to non-resident credit institutions persists in balance sheets. Loans from non-resident credit institutions rose from 5.2% of total assets (March 2013) to almost 13% (March 2020). However, their share took on a downward trend during 2019 and stood at 17% of total assets as of 31 December 2019. The banking sector's claims on the CNB grew from 10% to almost 34% of its balance-sheet total in the period under review (see Chart III.15).

According to banks' plans, coverage of loans by primary funds will remain high in the future

In their end-2019 funding plans, domestic institutions expected loans to the private sector to increase on average by 5.6% year on year, from CZK 3.4 trillion to around CZK 4 trillion at the three-year horizon (see Chart III.4 CB). They planned to increase private sector deposits and issuance of debt securities with maturities of at least three years from CZK 4.4 trillion to CZK 5.3 trillion. The planned funds of banks would sufficiently exceed their planned loans and would even cover credit growth over the entire three-year horizon in the *Baseline Scenario* (see section II.1, Table IV.1 and Chart III.4 CB). The three-year outlook for the coverage of loans by primary funds, i.e. the ratio of client deposits to loans, also remains high. Institutions are planning to stay at similar levels in the medium term. This ratio would drop below 100% assuming slightly higher-than-planned growth in client loans (10%) and unchanged client deposits (see Chart III.5 CB). These developments would force banks to cover growth in loans using other, potentially less stable, funds. Institutions can be expected to incorporate the economic impacts of the coronavirus crisis into their plans by lowering the expected growth in loans to the private sector. Other things being equal, this should strengthen the banking sector's liquidity position.

72 A minimum standard specifying the calculation of the NSFR in the EU will be introduced by an amendment to the CRR (CRR II) expected to take effect during 2021.

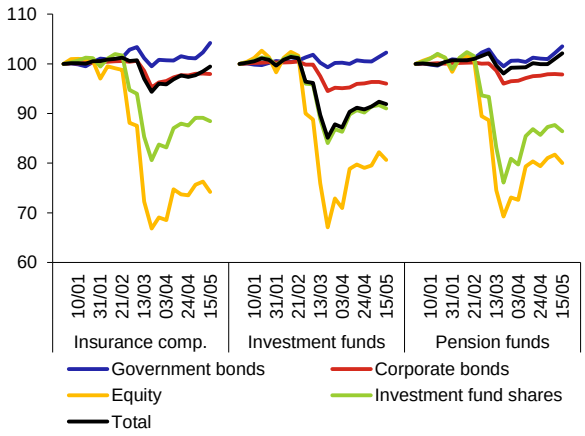
III.3 NON-BANK FINANCIAL INSTITUTIONS

The coronavirus crisis led to a drop in asset value, particularly in the case of investment funds

Investment and pension funds recorded growth in their balance sheets in 2019 (see Chart III.1). This reflected both domestic investors' continuing interest in investing through institutional investors, and returns on financial assets during 2019. In the case of insurance companies, by contrast, the gradual downward trend in assets continued in 2019. Due to the coronavirus crisis, the financial markets experienced a turnaround in 2020 Q1 (see section II.1). Of the assets held, shares were the most affected and government bonds the least affected by the crisis (see Chart III.16). Given the structure of assets (see Chart III.17) and their riskiness (see Chart III.18), the revaluation was the most pronounced in the investment portfolios of domestic investment funds.

Chart III.16
Relative values of portfolios

(relative index; 31 December 2019 = 100)

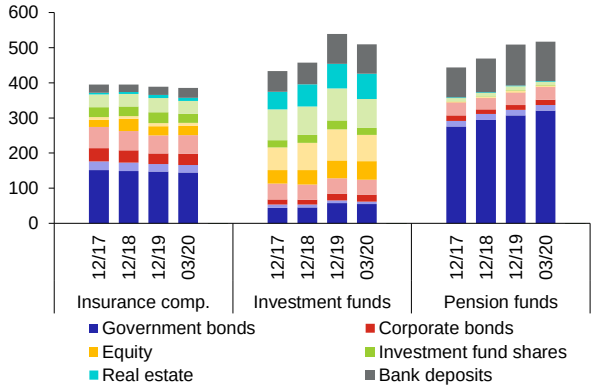


Source: CNB, Refinitiv

Note: The chart shows the weighted price indices calculated from the assets held by the given segments as of 31 Dec 2019, where the weights were the volumes of assets in the given categories. Only traded assets with available price quotations were included (in all segments this involved most assets, with the exception of shares held by insurance companies).

Chart III.17
Components of domestic institutional investors' assets

(CZK billions)



Source: CNB

Note: The light-coloured areas of columns show the values for foreign assets and the dark-coloured areas show domestic assets, with the exception of real estate and deposits, where domestic and foreign assets are not differentiated.

The revaluation of assets did not lead to systemic liquidity stress for domestic non-bank institutions

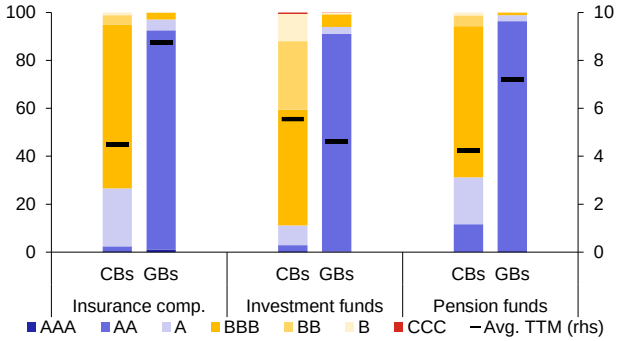
The financial market shock culminated globally in a liquidity stress on institutional investors' balance sheets and required central banks to respond by supplying liquidity to financial markets (see section II.1). For domestic insurance companies, pension funds and investment funds, two possible sources of liquidity stress are relevant: growth in terminations of investment products, and liquidity needs arising from the use of derivatives. In the first case, the possible liquidity stress is associated with the risk of a sudden increase in the termination of investment products by investors in response to the loss in the value of their shares.[73] Nevertheless, growth in terminations was not systemically significant in the first few months of 2020 (see Chart III.19).[74] Some domestic institutions did record liquidity needs arising from the use of derivative contracts during the first few months of 2020. These needs related mainly to certain derivatives through which domestic institutions were hedging against appreciation of the koruna. A weakening of the koruna in March 2020 led to losses on these transactions and related requirements from counterparties to replenish margins, which could have led to liquidity shortages in some institutions. According to the CNB's estimates, the additional liquidity requirements arising from derivative transactions mainly concerned certain investment funds. Their total liquidity shortage was estimated at almost CZK 5 billion.[75]

73 In the event of significant terminations, funds and insurance companies may not have a sufficient liquidity buffer to make payments. They would therefore be forced to sell off less liquid assets. This in turn would cause prices of financial assets to fall and multiply the initial shock and could result in a spiral of falling prices and sell-offs of assets, potentially with systemic impacts.

74 In the case of insurance companies, the liquidity stress associated with growth in terminations is limited by the existence of a statutory three-month period for insurance companies to pay the residual value of the product. The three-month period also applies to transformed pension funds. In the case of other segments, the period is shorter – one to two months for participation pension funds and two weeks to one month for investment funds (with the exception of real estate funds, where the period may be up to one year).

75 The CNB's estimate was based on the fact that the vast majority of the foreign currency positions of domestic insurance companies and pension and investment funds were hedged against exchange rate risk, and especially against appreciation of the koruna. Based on the size of foreign currency portfolios and the extent of the depreciation in March 2020, the size of the loss and subsequently the extent of the liquidity top-up need were estimated. The latter was compared with the liquid funds on the balance sheets of individual institutions. The CNB's estimate was based on data on selected derivative transactions of investment funds from the EMIR database.

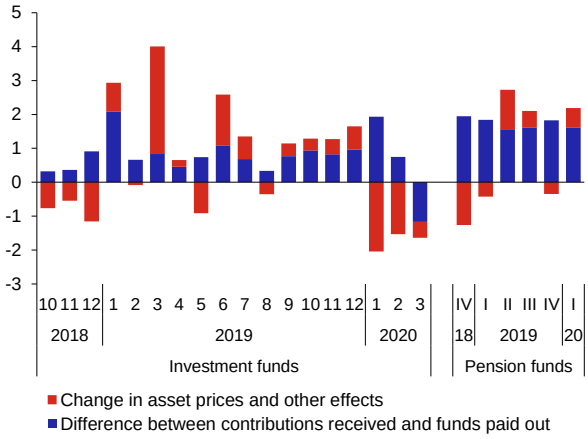
Chart III.18
Decomposition of bonds held by institutional investors by rating as of 31 December 2019
(%; right-hand scale: maturity in years)



Source: CNB, Refinitiv

Note: CBs = corporate bonds, GBs = government bond, TTM = time to maturity Time to maturity is calculated for all bonds held (including unrated bonds). The share of corporate bonds with an available rating in total corporate bonds held was 44% for insurance companies, 42% for investment funds and 66% for pension funds. The share of government bonds with an available rating exceeded 85% in all segments.

Chart III.19
Decomposition of the change in the value of investment and pension funds' assets
(% of assets as of end of previous period)



Source: CNB

Note: Monthly data for investment funds and quarterly data for pension funds.

Risks relating to increased volatility of market variables and the long-term impacts of the coronavirus crisis persist

The drop in prices on the financial market was most pronounced in March 2020, and the situation gradually began to stabilise in April. The risk of insufficient liquidity of domestic institutional investors was reduced by the extension of the CNB's instruments to include the option of conducting repo operations with non-bank institutions (see Box 1). The CNB's recommendation to suspend the pay-out of profits for 2019, directed at insurance companies and pension companies, also temporarily contributed to maintaining sufficient liquidity and solvency positions of these segments. Nevertheless, the risk of increased volatility returning to the markets persists, as does the uncertainty about the future course of the pandemic and related measures to counter its spread. The gradual uncovering of the economic consequences of the coronavirus crisis may also have a negative effect on stock prices and trigger a wave of downgrades with an impact on bond prices (see section II.1.1). Given the riskiness of bond portfolios, this would have the greatest impact on the domestic investment funds segment (see Chart III.18). A sustained decline in prices of financial assets and a simultaneous decrease in the liquidity buffers of households and non-financial corporations could lead to a gradual outflow of funds from the domestic non-bank segments of the financial market and cause structural changes in the domestic financial system.

Developments in the investment fund segment had the biggest effect on equity funds…

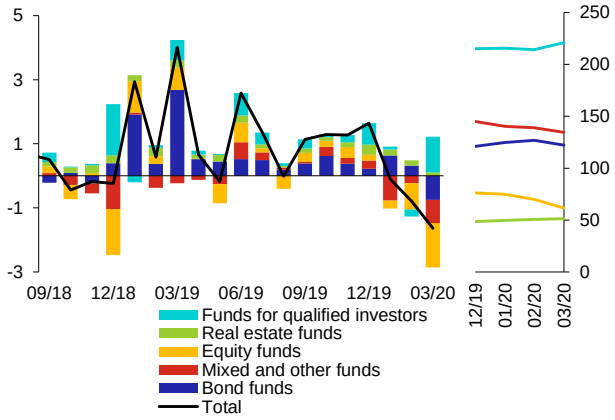
The growth in funds in the investment fund sector in 2019 (a year-on-year increase of 18.6% to CZK 606 billion) reflected both inflows of new funds and returns on investments (see Chart III.19). Bond funds recorded the fastest growth, due to inflows of new funds. Equity funds were favourably affected by the movement of prices on stock markets (see Chart III.20 and Chart III.21). The trend reversed after the outbreak of the coronavirus crisis in 2020 Q1 (a decrease in the segment's total assets of CZK 15 billion, or 2.5%, occurred between 31 December 2019 and 31 March 2020). Equity funds saw the biggest decline (of CZK 14.7 billion, or 19.3%, quarter on quarter), due to a drop in valuation.

…the increased net outflow from some investment funds in March 2020 did not attain systemic significance

Redemptions of bond fund units totalled CZK 8.4 billion during March 2020,[76] more than double the monthly average for 2019 (CZK 3.2 billion). The inflow of new funds to bond funds was CZK 3.9 billion in March, so the net outflow was CZK 4.5 billion (3.6% of assets as of 29 February 2020). Other categories of investment funds were less affected by outflows (see Chart III.21). Outflows of funds generally pose a risk to collective investment funds. In Q1, however, the outflow of funds in the order of a few per cent of assets did not represent a risk to financial stability, as collective investment funds held sufficient liquid funds (see Chart III.6 CB). A prolonged crisis associated with a gradual outflow of a higher volume of capital from funds could nevertheless force investment funds to gradually sell even less liquid assets. For some asset classes (such as real estate), this could lead to a more significant change in their prices. The potential risks arising from current developments and the contribution of investment funds to systemic risk are now assessed by the CNB by means of a macro-stress test of investment funds (see section IV.2.3).

76 For the purposes of the outflow analysis, the fund breakdown was performed according to the list used for the purposes of monetary and financial statistics.

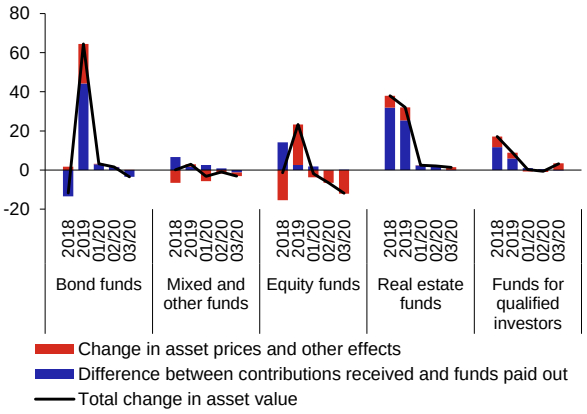
Chart III.20
Growth rates in the investment fund sector
(%; right-hand panel: CZK billions)



Source: CNB

Note: The right-hand panel shows the value of the assets managed by the given fund categories since the end of 2019.

Chart III.21
Decomposition of the change in the value of investment funds' assets by investment area
(% of assets as of end of previous period)



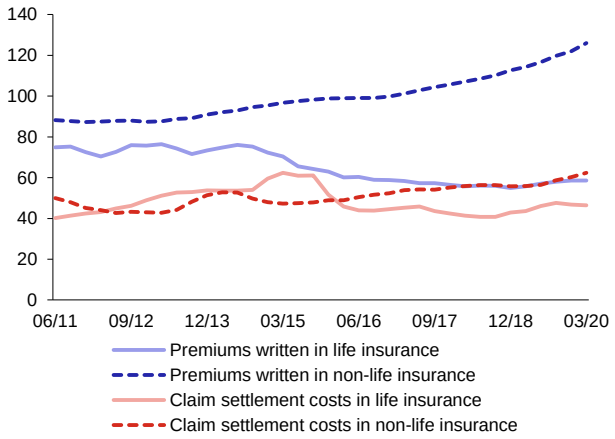
Source: CNB

Note: In this chart, the fund breakdown was performed according to the list used for the purposes of monetary and financial statistics.

Domestic insurance companies entered the coronavirus crisis in good shape…

The total assets of domestic insurance companies[77] continued to decline in 2019 (by 4.1%, or CZK 19 billion, year on year to CZK 457 billion). The main sources of this decline were a decrease in the rate of use of synthetic hedging[78] and a drop in the value of shares in controlled entities due to mergers of insurance companies. The decline in premiums written in life insurance halted in 2019 (a year-on-year increase of 6.7% to CZK 59 billion), while premiums written in non-life insurance continued to grow at a steady pace (by 8.2% to CZK 122 billion; see Chart III.22). The capital adequacy of domestic insurance companies remained sufficient in 2019, and the aggregate solvency ratio remained safely above the regulatory threshold (see Chart III.23). The sector's profitability increased in 2019 due to the one-off effects of mergers, and the results of the technical accounts for life and non-life insurance remain relatively stable (see Chart III.7 CB).

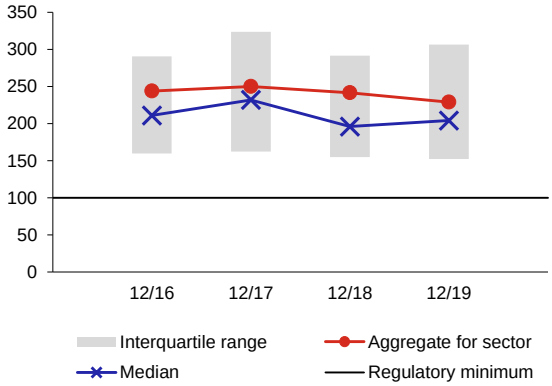
Chart III.22
Developments in the insurance sector
(CZK billions)



Source: CNB

Note: The Export Guarantee and Insurance Corporation is excluded from the calculation. The chart shows the moving sum of the values for four quarters in gross terms, i.e. unadjusted for reinsurers' share.

Chart III.23
Ratio of insurance companies' eligible own funds to the solvency capital requirement
(%)



Source: CNB

Note: Branches of foreign insurance companies and the Export Guarantee and Insurance Corporation are excluded from the calculation.

77 The description of developments in the domestic insurance sector excludes the Export Guarantee and Insurance Corporation. The stated values correspond to the balance sheet under the Solvency II framework.

78 In the case of synthetic hedging against appreciation of the koruna, institutions borrow in foreign currency, convert the loan into koruna and deposit it as a secured loan with a domestic bank. This operation thus leads to growth of assets and liabilities.

…the onset of the crisis did not pose a threat to the stability of the domestic insurance sector overall…
The coronavirus crisis did not significantly affect the key insurance variables or profitability in 2020 Q1. In life insurance, written premiums were flat and cost of claims fulfilment decreased; in non-life insurance, premiums written rose faster than claims paid. The increased volatility on the financial markets in March 2020 did not threaten the aggregate financial stability of the domestic insurance sector. Domestic insurance companies hold a significant share of their investment portfolios in domestic government bonds (see Chart III.17), whose prices were affected only temporarily and to a limited degree by the increase in risk aversion on financial markets (see Chart III.16 and section II.1.2).

…but the long-term effects of the crisis could affect domestic insurance companies
A prolonged economic decline could affect insurance companies in both the life and non-life areas. Given the global easing of monetary policies (see section II.1.1), a return to an environment of sustained low yields poses a risk to the attractiveness of life insurance products with an investment component, as it may be difficult for insurers to achieve returns on financial markets offering a positive real rate of return. Interest in these products may therefore start to fall again (see Chart III.22). Moreover, a low-yield environment may motivate insurance companies to search for yield, which would further increase the sensitivity of investment portfolios to a renewed rise in financial market volatility. The loss of income of firms and households may also mean a decline in demand for purely risk insurance products. The profitability of the insurance sector may thus decline in the coming years due to increased competition in some insurance sectors.

The assets administered by pension management companies (PMCs) continued to rise in 2020 Q1…
The total assets administered by PMCs' funds grew by CZK 37.4 billion (8%) to CZK 507.7 billion in 2019. Dynamic growth (of CZK 11 billion, or 2.2%) continued into 2020 Q1, so the outbreak of the coronavirus crisis did not affect the aggregate growth of the segment. The growth of assets in 2019 and in 2020 Q1 was due mainly to higher contributions received than sums paid out (see Chart III.19). This reflected both a slight increase in the number of participants, and conservative behaviour by participants – after the increase in uncertainty associated with the outbreak of the coronavirus pandemic, no significant increase in the number of surrenders was recorded at the end of 2020 Q1. However, in the event of a prolonged economic downturn, households facing a fall in income could be forced to reduce their contributions or to withdraw part of their savings for old age, which could halt or slow down the growth of pension funds.

…the coronavirus crisis affected pension funds' investment portfolios
The drop in prices on global financial markets (see section II.1.1) mainly affected non-conservative participation funds. The value of the assets they administer rose in Q1, but the growth was lower than in other types of pension funds (growth of CZK 0.6 billion, or 1.6%). The fall in asset prices had a smaller impact on the balance sheets of transformed and mandatory conservative funds. These funds have long held most of their portfolios in Czech government bonds, the prices of which were exposed to lower volatility (see Chart III.16). The largest fall in Czech government bond prices due to growth in risk aversion, which occurred in March 2020, was subsequently largely offset by monetary policy rate cuts, so the portfolio levels at the end of March 2020 did not reflect the previous volatility (see section II.1.2).[79]

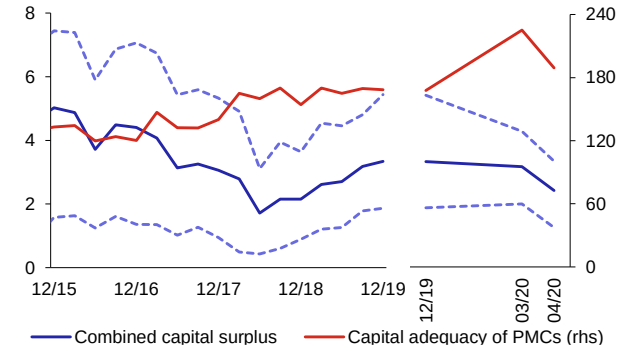
Low capitalisation exposes transformed funds to vulnerability in the event of continued volatility of Czech government bond prices
The aggregate combined capital surplus[80] increased to a level near 3% in 2019 and, owing to the above developments, remained there in 2020 Q1 (see Chart III.24). The stable capital surplus in 2020 Q1 reflected the favourable effect of growth in PMCs' capital ratios and at the same time an aggregate decrease in the surplus of transformed funds' (TFs) assets over their liabilities (see Chart III.25). The financial markets stabilised during April 2020, but the aggregate decline in the surplus of assets over liabilities continued due to the crediting of the previous year's profit shares to participants in most TFs. There is thus still a risk that in the event of a return to increased volatility in the Czech government bond market, the liabilities of TFs will outweigh their assets and PMCs will be forced to top up their funds. For the same reason, due to the relatively low capital surpluses of PMCs relative to the size of TFs, there is also a risk of PMCs failing to meet the capital requirements. From the size of the combined capital surplus at the end of April 2020, it can be concluded that the owners of three PMCs would be forced to top up capital due to non-fulfilment of the regulatory requirements in the event of impairment of the TFs' assets of less than 2%.

79 The favourable effect of the reduction in monetary policy rates was especially apparent in bonds with a fixed-coupon yield due to a reduction in the discount rates used to value the bonds. Bond prices with a variable-coupon yield are generally relatively immune to rate movements, as the effect of the change in the discount factor is offset by a change in the value of the coupon due to a change in monetary policy and reference rates. Therefore, the decline in Czech government bond prices due to increased risk aversion in March was not followed by a renewed rise in prices of variable-coupon bonds in connection with monetary policy developments, and their holders thus incurred losses.

80 The combined capital surplus is used as a measure of vulnerability. It is the sum of the capital surplus of PMCs and the difference between the assets and liabilities of transformed funds.

Chart III.24
Combined capital surplus and capital adequacy

(%)

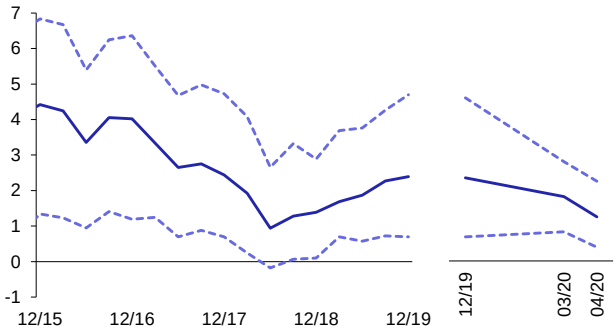


Source: CNB

Note: Dashed lines denote the minimum and maximum values of the combined capital surplus across TFs.

Chart III.25
Surplus of assets over liabilities of transformed funds

(% of total assets of TFs)



Source: CNB

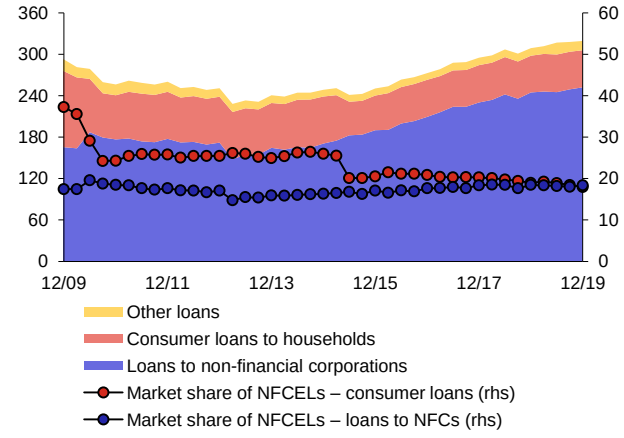
Note: Dashed lines denote the minimum and maximum values across TFs.

The trends in the market shares and loan riskiness of non-bank lenders are mixed

The total volume of loans provided by non-bank financial corporations engaged in lending (NFCELs) continued to grow (by CZK 10.5 billion year on year to CZK 319.3 billion). However, the pace of growth slowed slightly further compared with previous years (see Chart III.26). While the average year-on-year growth had been 8.1% in 2016 and 2017, it fell to 5.7% in 2018 and further to 4.2% in 2019. As in previous years, the year-on-year growth in loans provided by NFCELs was due largely to loans to non-financial corporations (3.0% year-on-year growth) and to a lesser extent also to loans for consumption (0.9%). The trends in the market shares and loan riskiness of NFCELs are mixed across segments. The market share of NFCELs in loans to non-financial corporations was flat in 2019, while the downward trend of recent years in loans to households (typically loans for consumption) continued. Loan riskiness for NFCEL loans to households, as expressed by the three-month default rate, increased by 23 bp year on year to 2.24%, whereas the default rate for NFCEL loans to non-financial corporations returned almost to the 2017 level after having gone up in 2018 (see Chart III.8 CB). In general, the longer-term conclusion regarding the riskiness of NFCEL loans compared with bank loans holds: NFCEL loans to households exhibit a higher degree of credit risk, whereas for loans to non-financial corporations broadly similar figures are observed in both segments of the financial sector, as secured leasing loans make up roughly three-quarters of NFCEL loans to non-financial corporations. In the coming months, NFCEL loan riskiness may be negatively affected by the coronavirus crisis, despite the fact that NFCELs are also subject to the Loan Moratorium Act.

Chart III.26
Loans provided by non-bank financial corporations engaged in lending

(stock of loans in CZK billions; right-hand scale in %)

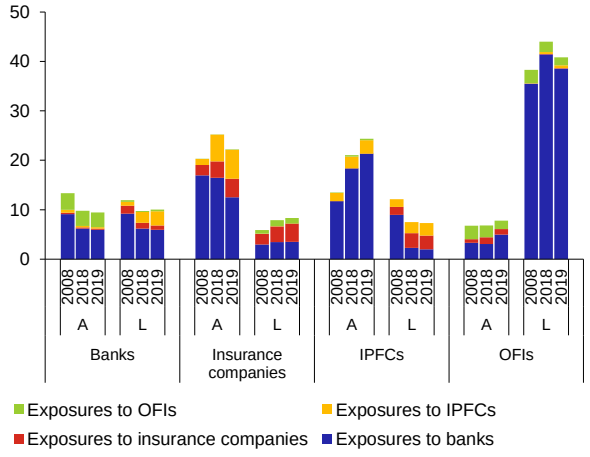


Source: CNB

Note: The market share of NFCELs relates to total loans provided to residents by banks and NFCELs combined. The market share of independent NFCELs relates solely to loans to residents provided by all NFCELs.

Chart III.27
Share of exposures to domestic financial counterparties

(% of financial assets and liabilities of segments)



Source: CNB

Note: A = assets, L = liabilities. IPFCs = investment and pension funds and companies. The segment of other financial intermediaries (OFIs) primarily comprises NFCELs and non-bank security dealers. Year-end values.

III.4 INTERCONNECTEDNESS OF THE FINANCIAL SYSTEM

Direct balance-sheet interconnectedness had only a limited effect on the spread of the adverse conditions following the onset of the coronavirus crisis…

Banks remained the most significant link of domestic direct balance-sheet interconnectedness in 2019 (see Chart III.27). The importance of bank deposits in the balance sheets of pension and investment funds and other financial intermediaries rose slightly year on year. This supported their liquidity position, making them more resilient on aggregate to the liquidity stress associated with the outbreak of the coronavirus crisis (see section III.2). Domestic insurance companies could face some transmission of the financial market stress via their holdings of shares in investment funds (see Chart III.16). However, the investment funds through which insurance companies invest in financial markets are often created specifically for this purpose. Insurance companies therefore have only limited exposure to the risk of transmission of any stress arising from growth in terminations of investment products by households or other domestic financial market participants. One long-term impact of the coronavirus crisis and the related economic downturn may be a decline in banks' earnings on shares in the profits of other entities in domestic financial groups.

…indirect interconnection through joint exposures was reflected in the government bond market

The growth in risk aversion in markets was reflected in a sharp rise in the bid-ask spread on Czech government bonds (see section II.1.2). This partly contributed to a temporary decline in Czech government bond prices during March 2020, which was also caused by an outflow of foreign investors from the domestic market. Liquidity shortages in domestic financial institutions in an environment of increased risk aversion could lead to fire sales of government bonds, with a knock-on effect on their prices and related transmission of the stress to other government bond holders. However, this risk did not materialise in the first few months of 2020 due to the sufficient liquidity position of domestic government bond holders (see sections III.2 and III.3), which was further supported by the CNB's new liquidity support measures (see section II.1.2).

Banks remain in a net creditor position in their ownership groups…

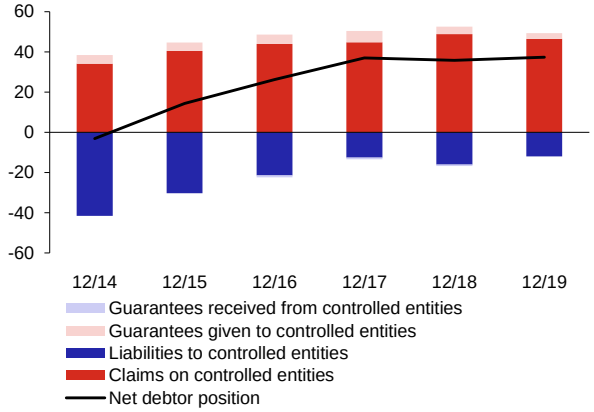
The overall creditor position of the five largest domestic banks in their groups was unchanged in 2020 Q1 (see Chart III.28). The net claim on controlled entities rose by CZK 23.6 billion year on year to CZK 146.8 billion, but domestic banks' net creditor position fell by 0.1 pp to 36.3% of the total regulatory capital of domestic banks. On banks' asset side, claims on own NFCELs rose (by CZK 4.2 billion year on year). NFCELs remain the largest debtor within bank groups (82.5% of all claims). Nevertheless, the high concentration of claims on NFCELs has long been stable and, given the nature of the controlled companies' transactions (leasing and factoring), does not give rise to increased risk. Liquidity from building societies also decreased year on year (by CZK 9.7 billion). As in previous years, however, this item represents the largest part of banks' liabilities within their groups (69.6%).

…but the upward trend in the net debtor position of banks vis-à-vis non-residents is gradually reversing

The net debtor position of the five largest domestic banks vis-à-vis foreign parent financial institutions decreased by 30.4 pp year on year to 215.8% of these banks' regulatory capital (see Chart III.29). The upward trend in the net debt position of recent years is thus slowly reversing.

Chart III.28
Interconnectedness in domestic bank groups

(% of regulatory capital of domestic parent banks)

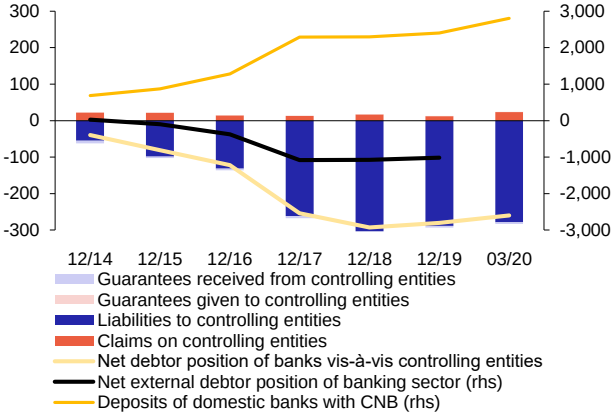


Source: Obligatory information to be disclosed pursuant to Decree No. 123/2007 and Decree No. 163/2014

Note: The chart depicts the aggregate credit interconnectedness of the largest domestic banks, i.e. Česká spořitelna, ČSOB (except Hypoteční banka), Komerční banka and Raiffeisenbank. UniCredit Bank is included only in the periods when it controlled entities.

Chart III.29
Interconnectedness vis-à-vis non-residents

(% of regulatory capital of domestic banks; right-hand scale: CZK billions)



Source: Obligatory information to be disclosed pursuant to Decree No. 123/2007 and Decree No. 163/2014, banks' annual reports, CNB

Note: The chart depicts the aggregate credit interconnectedness of the five largest domestic banks vis-à-vis their parent companies. The net debt position of the banking sector represents the overall net position of all banks vis-à-vis all non-residents excluding shares and other equity.

IV. STRESS TESTS

The resilience of selected sectors was tested in macro stress tests using a Baseline Scenario and an Adverse Scenario as usual (see section II.1). This year, the Baseline Scenario is similar in its parameters to the adverse scenarios of the tests performed in previous years. This year's Adverse Scenario assumes a resurgence of the pandemic and a long-running downturn in economic activity coupled with growth in government debt.

The macro stress test of the banking sector confirmed the sector's capital and liquidity resilience to the selected scenarios. However, if the Adverse Scenario were to materialise, the capital surplus held by banks would play a key role in keeping the sector's overall capital ratio above the 8% regulatory threshold over the test horizon. Currently solid capitalisation coupled with a strong client deposit base and a high proportion of liquid assets ensured banks' resilience to liquidity shocks. The results of the insurance sector stress tests showed that the sector as a whole is sufficiently resilient even if the adverse developments in financial markets were to continue. The stress test of pension management companies showed a slight increase in resilience. The outcome was favourably affected by growth in the excess of assets over liabilities and an improvement in the risk profile of the asset portfolio. The stress test of households with a mortgage is signalling a relatively low level of risk. Compared with 2019, however, the default rate among households is expected to increase after the loan moratorium ends. The vulnerable group will mainly comprise low-income households and households with a debt service-to-income ratio of over 45%. The CNB continues to regard credit institutions' sovereign exposures to the Czech government as systemically important. Despite the Czech Republic's current and expected state budget deficit, the results of the Czech public finance stress test did not show any need to require credit institutions to create an additional capital requirement to cover the risk of concentration of these exposures. A new test of investment funds, focusing on quantifying this sector's contribution to systemic network risk, revealed that this contribution was relatively small.

IV.1 STRESS TESTS OF BANKS

IV.1.1 Solvency macro stress test of banks

The solvency stress test is one of the most important tools for assessing the resilience of the domestic banking sector to potential risks to its stability. Particular attention is paid to credit risk, which has long been the most important risk in the Czech banking sector and whose evolution is closely linked with developments in the non-financial corporations and household sectors.

The modelling of credit losses is based on conservative assumptions
The modelling of credit losses is based, among other things, on an assumption of perfect foresight regarding the future evolution of the key credit risk parameters, which allows for the necessary level of conservatism.

The key stress test parameters take into account the government's and CNB's stabilisation measures
Both scenarios take into account the government's and CNB's stabilisation measures in the form of a loan moratorium for non-financial corporations and households, government-guaranteed loans, income support for some groups of the population, rent postponements/discounts, monetary policy rate cuts, a CNB recommendation to financial institutions to suspend dividend payouts, and partial release of the countercyclical capital buffer. However, the effect of the economic stabilisation measures would be weaker in the *Adverse Scenario*, mainly due to a persisting strong contraction in economic activity and potential exhaustion of the currently widened fiscal space on both the domestic and international scale.

In the *Baseline Scenario*, peaking credit losses cause the banking sector to incur a systemic loss in the second year
The *Baseline Scenario* is characterised by a pattern usually attributed to adverse scenarios. In this scenario, the economy contracts sharply in the first year of the test and recovers in the following two years (see section II.1.3). The sharp and strong contraction leads to a deterioration in the ability of non-financial corporations and households to service their debts. This is reflected in an increase in their default rates and loss given default (see Table IV.1). However, the economic stabilisation measures (the moratorium, government guarantees and income support) reduce the default rates, whose growth is not felt in full until the second year (see Table IV.1). The overall credit losses and provisions peak in the second year. A drop in the default rate in the third year of the test causes provisions for performing loans to stabilise.

Losses from market risk do not reach systemically material levels. Earnings for covering losses decline in the first two years, due mainly to a reduction in monetary policy rates. The banking sector's favourable starting position and the stabilisation measures enable the sector to stay profitable in the first year of the test. The impact of the coronavirus crisis is felt in full in the second year and the banking sector records an overall loss. It turns profitable again in the third year as the economy gradually stabilises.

Table IV.1
Key variables
(averages for given years in %)

	Actual value	*Baseline Scenario*			*Adverse Scenario*		
	2019	2020	2021	2022	2020	2021	2022
Macroeconomic variables (y-o-y)							
GDP	2.5	-8.0	4.2	3.9	-13.5	-0.9	2.0
Inflation	2.8	2.8	2.1	2.1	2.5	1.7	2.1
Unemployment*	2.0	3.5	4.8	4.3	4.0	7.9	7.9
Nominal wage growth	6.6	1.9	5.7	4.5	-2.2	4.2	1.6
Effective GDP growth in EMU	1.2	-6.0	5.2	3.0	-9.2	-0.8	2.7
Credit growth							
Non-financial corporations	4.2	3.2	-2.7	2.9	1.9	-6.8	-0.4
Loans for house purchase	7.3	4.6	3.0	4.6	4.2	-0.2	0.8
Consumer credit	5.0	1.3	2.1	5.7	-1.1	-2.7	3.2
Default rate (PD)							
Non-financial corporations	1.3	2.7	4.4	3.2	5.4	9.8	5.5
Loans for house purchase	0.6	0.6	1.8	1.6	1.7	5.5	4.8
Consumer credit	3.6	2.6	5.2	4.6	3.7	9.8	8.6
Loss given default (LGD)							
Non-financial corporations	32	35	38	38	44	53	51
Loans for house purchase	15	18	21	21	23	34	35
Consumer credit	42	48	53	51	50	65	65
Asset markets							
3M PRIBOR	2.1	0.9	0.6	1.1	0.0	-1.7	-0.8
5Y GB yield	1.5	0.8	0.8	1.5	1.1	1.7	2.1
3M EURIBOR	-0.4	-0.4	-0.5	-0.5	-0.4	-0.5	-0.5
5Y EUR GB yield	-0.6	-0.6	-0.5	-0.5	-0.5	-0.5	-0.5
Residential property prices	9.2	3.4	3.0	3.8	-2.2	-11.3	5.5
Share prices	-8.5		-15.0			-45.0	

Source: CNB, BRCI
Note: * The ratio of the number of unemployed persons to the labour force under ILO methodology.

Table IV.2
Impact of the scenarios on the banking sector

	Actual value	*Baseline Scenario*			*Adverse Scenario*		
	2019	2020	2021	2022	2020	2021	2022
Provisions for non-performing loans							
CZK billions	9.4	-16.6	-39.2	-49.1	-18.2	-116.6	-130.9
Provisions for performing loans							
CZK billions	0.0	-14.2	-12.1	5.2	-79.9	-35.1	28.0
Total provisions							
CZK billions	9.4	-30.8	-51.3	-44.0	-98.1	-151.7	-102.9
% of assets	0.1	-0.4	-0.7	-0.6	-1.3	-2.0	-1.4
Profit/loss from market risks							
CZK billions	6.4	3.0	-0.7	-2.3	3.1	-0.8	-0.8
Earnings for covering losses (adjusted operating profit)							
CZK billions	104.6	62.5	39.6	48.8	59.7	27.6	17.2
Pre-tax profit/loss							
CZK billions	108.8	34.7	-12.4	2.5	-35.3	-125.1	-87.9
% of assets	1.4	0.5	-0.2	0.0	-0.5	-1.7	-1.2
Capital ratio at end of period in %							
Total	21.2	22.4	19.1	17.5	20.0	14.2	10.1
Tier 1	20.7	21.9	18.7	17.1	19.6	13.8	9.8
Capital injections							
CZK billions			0.0			28.1	
% of GDP			0.0			0.5	
No. of banks below 8% capital ratio			0			13	

Source: CNB
Note: Provisions are presented with a minus sign.

The banking sector remains well capitalised in the *Baseline Scenario*

The sector's aggregate capital ratio falls by 3.7 pp to 17.5% over the three-year test horizon (see Table IV.2). The decrease is due mainly to dividend payments after the easing of the restrictions on profit distribution and to growth in the risk weights of credit portfolios (see Chart IV.1). The aggregate credit losses are not so large as to reduce the sector's capital over the test horizon, due partly to the stabilisation measures, which positively affect the default rate, loss given default and lending to the economy. The banking sector thus stays resilient and maintains sufficient capital buffers owing to its capital surplus. Without the surplus, the capital ratio would drop to the level of the systemic risk buffer (see Chart IV.3). The results indicate that no bank's capital ratio would fall below the regulatory minimum of 8% (see Table IV.3). However, the capital ratios of three banks could drop below the total supervisory review and evaluation process capital requirement (TSCR, the sum of the Pillar 1 and Pillar 2 requirements), implying a need to top up capital by CZK 0.6 billion.[81]

The *Adverse Scenario* assumes a fall into a deep and long-lasting recession…

The *Adverse Scenario* assumes that the coronavirus crisis will persist due to a resurgence of COVID-19, which will hit Europe, including the Czech Republic, at the end of 2020. Its global scale (see section II.1.3) would lead to a further decline in foreign and domestic economic activity (see Table IV.1). Labour demand would continue to fall and aggregate employment would rise due to gradual exhaustion of governments' fiscal capacity to mitigate the impacts of the crisis and the deep downturn in economic activity.

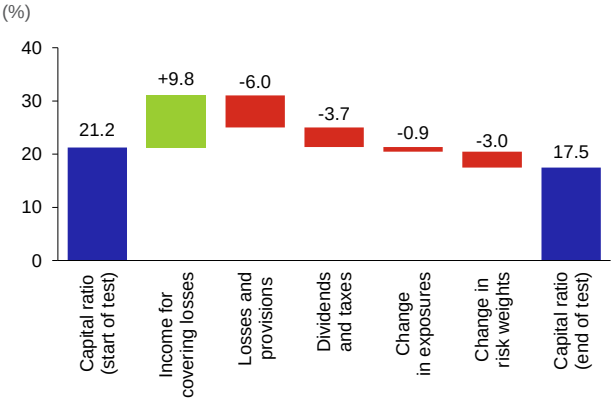
81 A bank may also get into a situation of an insufficient capital ratio because the stress test methodology assesses its business model as unsustainable even if this is not necessarily true. This is because the methodology is based on a universal bank model and may not be entirely accurate for specialised banking institutions. The CNB therefore takes institutions' specific characteristics into account when assessing the test results.

…which would result in the banking sector incurring significant losses

The risk parameters (PD and LGD) of the credit portfolio would increase sharply. However, the growth in the default rates of non-financial corporations and households would not manifest itself fully until the second and third years, as economic stabilisation measures would play a positive role in the first year, although their effect would gradually disappear. The growth in credit losses would peak in the second year (see Table IV.2). Losses from market risk would not reach systemically material levels. The high level of credit losses would lead to persisting systemic losses of the banking sector, which would also be caused by a drop in lending activity and an environment of sustained low monetary policy interest rates (see Table IV.2).

Chart IV.1

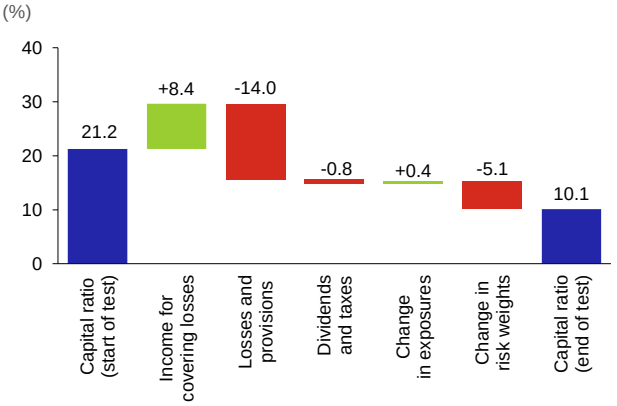
Decomposition of the change in the capital ratio of the banking sector in the *Baseline Scenario*



Source: CNB

Chart IV.2

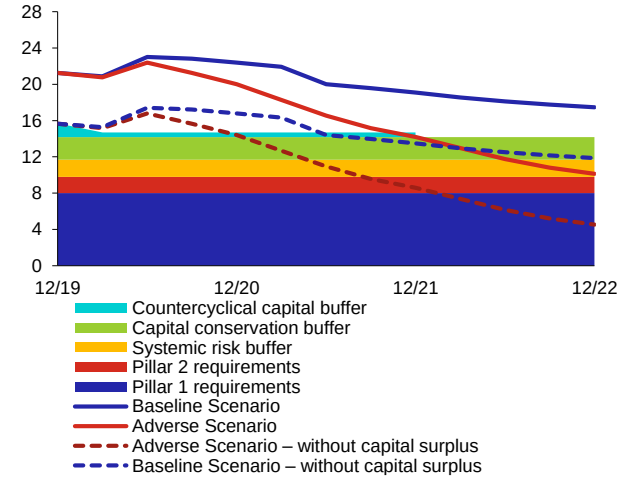
Decomposition of the change in the capital ratio of the banking sector in the *Adverse Scenario*



Source: CNB

Chart IV.3

Impact of the scenarios on the capital ratio and interactions with the capital requirements of the banking sector



Source: CNB

Note: The illustration depicts the macroprudential policy response as represented by full or partial release of the countercyclical capital buffer in the *Adverse Scenario*.

Table IV.3

Results of the stress tests for different minimum capital settings

	Baseline Scenario		***Adverse Scenario***	
Minimum settings	Capital injections in CZK billions	Banks below minimum	Capital injections in CZK billions	Banks below minimum
Pillar 1 (8%)	0.0	0	28.1	13
TSCR (Pillar 1 + Pillar 2)	0.6	3	62.6	17
TSCR + systemic risk buffer	0.6	3	96.5	18

Source: CNB

Note: Constant requirements in Pillar 2 and the systemic risk buffer over the entire test period are assumed for the calculation of capital injections.

In the *Adverse Scenario*, the capital ratio would fall sharply and would not comply with the regulatory minimum without the current capital surplus

The sector's aggregate capital ratio would fall by 11.1 pp to 10.1% over the three-year test horizon. The decline in the capital ratio would be due to significant credit losses (see Chart IV.2), which would be reduced to only a limited extent by the economic stabilisation measures, and growth in risk weights. The model results indicate that without the capital surplus, which would amount to 5.6% at the end of 2019, the capital ratio would decline to 4.5% and the sector would thus not comply with the regulatory minimum (see Chart IV.3) and the total supervisory review and evaluation process capital requirement (TSCR, the sum of the Pillar 1 and Pillar 2 requirements). The results show that the capital surplus

would play a key role in ensuring banking sector stability in the event of highly adverse economic developments. Thirteen banks would not comply with the 8% regulatory minimum in this model situation (see Table IV.3), implying a need to top up capital by CZK 28 billion (0.5% of GDP, or 5.2% of the banking sector's current capital). The capital ratios of 17 banks would fall below the TSCR, implying a need for a capital injection of CZK 63 billion (1.1% of GDP, or 11.5% of the banking sector's current capital).

The falling capital ratio would be reflected in the countercyclical capital buffer rate

The model impact of the *Adverse Scenario* shows that the capital ratio of the banking sector as a whole would gradually decrease, converging to the level of the capital requirements including the CCyB in the seventh quarter after the start of the test (see Chart IV.3).[82] It would subsequently fall to the level of the capital requirement excluding the CCyB at the end of the eighth quarter.[83] Under the model assumptions of the *Adverse Scenario*, it can be assumed that by this time, the CNB would respond by fully releasing the CCyB, allowing it to be used to absorb the adverse economic shock.

IV.1.2 Bank liquidity stress test

The CNB assesses the banking sector's resilience to liquidity risk by means of a stress test

The stress test of the banking sector's liquidity is idiosyncratic[84] and static.[85] The aim of the test is to monitor the extent to which each bank balances its liquidity outflows by means of its liquidity inflows and its initial counterbalancing capacity over a period of six months. The test results yield information about whether and which banks experience a shortage of liquidity, i.e. fully exhaust their counterbalancing capacity in the form of liquid assets, after the stress scenario is applied (see Box 5). It is assumed that banks do not respond to any shortage of liquidity over the entire test period.

BOX 5: Methodology of the idiosyncratic stress test of the banking sector's liquidity

The test methodology is based on a similar principle as the LCR requirement for covering net liquidity outflows[86] (see the equation). The bank's counterbalancing capacity (*b*) comprises its liquidity buffer (*LA*) in the given period (*t*) and its net liquidity outflows (*NO*) accumulated in the previous period (*t-1*). The bank uses its counterbalancing capacity to cover its net outflows (*NO*) in the given period (*t*). These net outflows represent the difference between its liquidity outflows (OUT_t) and inflows (IN_t). The test is dynamic and simply monitors over a period of six months (t = 1–6) whether the bank will exhaust its counterbalancing capacity (a negative liquidity gap; $LG < 0$):

$$\sum_{t=1}^{6} \mathrm{LG}_{\mathrm{t}}^{\mathrm{b}} = \sum_{t=1}^{6} \left(\sum_{\mathrm{i}=1}^{n} \mathrm{LA}_{\mathrm{i,t}}^{\mathrm{b}} (1 - \mathrm{h}_{\mathrm{i,t}}) - \sum_{T=1}^{t} \mathrm{NO}_{T}^{b} \right)$$

$$\mathrm{NO}_{t}^{b} = \sum_{\mathrm{i}=1}^{n} \mathrm{OUT}_{\mathrm{i,t}}^{\mathrm{b}} \mathrm{r}_{\mathrm{i,t}} - \sum\nolimits_{\mathrm{i}=1}^{n} \mathrm{IN}_{\mathrm{i,t}}^{\mathrm{b}} (1 - \mathrm{p}_{\mathrm{i,t}})$$

The liquidity buffer (*LA*) is made up of the following assets (*i*): cash, withdrawable central bank reserves and tradable assets (T-bills, government bonds and other securities). The calculation of outflows (*OUT*) includes the following items (*i*): liabilities from securities issued and collateralised loans, deposit outflows, maturity of derivatives, loan facilities provided (an increase in loans) and other outflows (e.g. guarantees received and monetary pledges received). The calculation of expected inflows (*IN*) includes the following items (*i*): due amounts from collateralised loans and capital market transactions (e.g. inflows from repurchase operations, and bonds) and from loans and other receivables (interest on loans), maturity of derivatives, maturing securities in own portfolio, and other inflows.

The test parameters are given by the scenario (see Table IV.1 CB). Specifically for this year's test, the haircut on assets (*h*) in the liquidity buffer (*LA*) was set similarly as in the LCR test, the rate of outflow/realisation of credit lines (*r*) was set partly by expert judgement given the current situation and partly in line with the LCR test, the haircut on the expected inflow for retail loans and NFC loans (*p*) linked with the loan moratorium was set by expert judgement, and the rest were the same as in the LCR test.

82 The point of intersection of the upper bound of the light blue band indicating the CCyB and the red line showing the path of the capital ratio in 2021 Q3.

83 The point of intersection of the lower bound of the light blue band indicating the CCyB and the red line showing the path of the capital ratio in 2021 Q4.

84 The test does not assume a simultaneous liquidity outflow in all banks, i.e. a liquidity outflow from the system. The test focuses on individual banks. The test results therefore cannot be simply summed. This is because, in reality, a liquidity outflow of one bank often means a liquidity inflow of another.

85 The method corresponds to the sensitivity analysis conducted by the ECB "Sensitivity Analysis of Liquidity Risk – Stress Test 2019".

86 Although the LCR requirement for covering net liquidity outflows has rather stricter scenario parameters than those used in this test, the LCR is a stress test with a horizon of "only" 30 days.

The test scenario reflected developments related to the coronavirus crisis

The liquidity stress test on a sample of 18 banks applied a scenario designed solely to test the resilience of domestic banks to liquidity risk. On top of the stress parameters used every year, such as an outflow of deposits and unstable liabilities and a decline in the value of tradable assets, this year's scenario reflected the developments related to the coronavirus crisis. In the context of the loan moratorium (see Table II.1), a haircut of up to 50% on the liquidity inflows from repayments of loans to households and non-financial corporations was applied over the test horizon. In response to the difficult liquidity situation of many sole proprietors and non-financial corporations (see section II.2.2), up to 15% drawdown of credit lines and increased provision of operating loans to non-financial corporations (up to 10% over the test horizon) are also simulated. The scenario parameters can be considered quite severe (see Table IV.1 CB).

The test confirmed banks' robust liquidity position…

The test results confirmed banks' resilience to the liquidity risk tested (see Chart IV.4). Only one bank showed a slightly negative liquidity gap, and only at the six-month horizon. The sufficient level of liquid assets together with the high volume of stable deposits of the banks tested was able to cover net outflows in the longer term in the event of the idiosyncratic shock simulated. This was aided by the composition of domestic banks' liquid assets, which are made up almost entirely (97%) of T-bills and CNB bills (see Table IV.4). The loan moratorium did not significantly affect the liquidity position of most domestic banks either, as it accounted for only a small proportion of total quick assets (around 17% at the end of March 2020). An additional sensitivity analysis based on stricter scenario parameters revealed greater sensitivity of domestic banks to the level of drawdown of credit commitments to retail and non-financial corporations, as for some banks such commitments account for a relatively large proportion of total quick assets (around 21% on average at the end of March 2020). Although the hypothetical growth in drawdown of credit facilities to 50% used up a large part of the liquidity buffer, the liquidity gap remained positive.

Table IV.4
Shares of inflows in quick assets

(CZK billions; as of 31 March 2020)

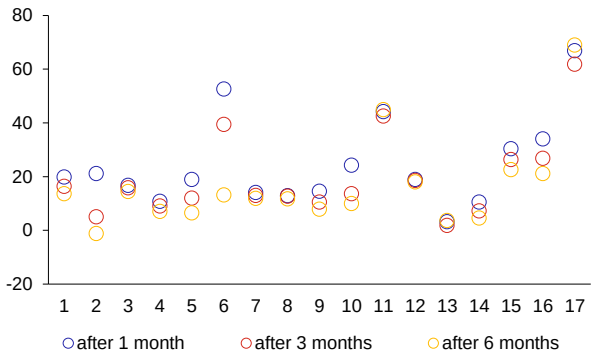
	Quick assets	Inflows from loans and other receivables in the following six months from:		Inflows as % of quick assets
		retail customers	non-financial corporations	
Banks, total	2,302	167	219	17
Large banks	1,698	128	159	17
Medium-sized banks	252	18	41	24
Small banks	292	10	18	10
Building societies	59	11	1	19

Source: CNB

Note: Quick assets are level 1 assets under Commission Delegated Regulation (EU) 61/2015. The definition of retail customers is also as set forth in this Regulation.

Chart IV.4
Results of the idiosyncratic test of the liquidity of individual banks

(liquidity gap in % of total assets; x-axis: bank; as of 31 March 2020)



Source: CNB

Note: The results take liquidity subgroups into account and exclude state-owned banks.

…but the CNB still broadened the range of collateral accepted in liquidity-providing repo operations for precautionary reasons

Although domestic banks' resilience to liquidity risk is high, the CNB for precautionary reasons added koruna mortgage bonds (MBs) to the range of collateral accepted in its liquidity-providing repo operations.[87] This change will enable domestic banks to expand their counterbalancing capacity of liquid assets to encompass MBs, as by pledging MBs they can obtain additional liquidity from the CNB in the amount set forth in the MB eligibility criteria (see Box 6). The koruna MBs held by the banks tested make up 4% of their total assets. If they were included, the counterbalancing capacity would rise by 13%. Koruna MBs account for almost 17% of the total mortgage loan portfolio.

87 See: https://www.cnb.cz/en/monetary-policy/bank-board-decisions/CNB-Board-decisions-1588862880000/?tab=statement and https://www.cnb.cz/en/financial-markets/money-market/parameters-of-the-liquidity-providing-repo-operations/.

BOX 6: Mortgage bonds as newly accepted collateral in the CNB's liquidity-providing operations

The CNB has been accepting MBs from banks as collateral for short-term credit since 18 May 2020 (see Box 1, section II.1.2). In simple terms, MBs are bonds issued by a bank and covered by an asset portfolio consisting largely of mortgage loans. MBs issued in CZK amounting to around CZK 332 billion had been issued as of the end of March 2020 (see Table 1). Most of them were held by banks, primarily within groups. These MBs had thus evidently not been issued to raise additional funding through the capital market.

Table 1 (BOX)
Mortgage bonds issued in CZK broken down by holder

(CZK billions; mostly as of 31 March 2020)

	Holder					
MB type by law	**Banks**	**Insurance companies (as of 9 Apr 2020)**	**Pension funds**	**Investment funds (as of 29 Feb 2020)**	**Holder not identified**	**Total**
MBs under the old Act	243.2	2.7	0.9	1.5	14.8	263.1
MBs under the new Act	60.9	4.5	1.4	0.174	1.8	68.8
Total	**304.1**	**7.2**	**2.3**	**1.6**	**16.6**	**331.9**

Source: CNB

MBs are issued pursuant to the Act on Bonds (No. 190/2004 Coll.), which was amended on 1 January 2019 (No. 307/2018 Coll.). The bulk of MBs issued in CZK (around CZK 263 billion as of 31 March 2020) are still issued under the old legislative framework (see Table 1). The amendment generally increased the legal certainty of MB holders, as it resolved their previously unclear position in insolvency proceedings in the event of bankruptcy of the issuer.[88] There are other differences as well (see Table 2): the upper LTV limit for individual cover mortgage loans, the level of over-collateralisation of the value of MBs, the number of cover pools created by issuers of covered bonds, and the treatment of cover-asset-related market risks. Cover mortgage loans may be covered by either residential or commercial property – the framework does not stipulate shares for them in the cover pool.[89] Cover pools made up of a higher share of mortgage loans backed by commercial property usually bear higher credit risk.

Table 2 (BOX)
Selected differences in legal frameworks

	Old framework	**Amended framework**
Limits for accepting assets into the cover pool	Individual LTV limit 200% and average for the entire portfolio max. 70%	LTV limit for individual receivables 100%, no limit for the entire portfolio but implicitly max. 100%
Rules for the cover pool*: over-collateralisation	NO: 100% collateralisation, i.e. the total value of all cover assets** is equal to the total value of the MBs they cover	YES: 2% over-collateralisation, i.e. the total value of all cover assets** must be equal to at least 102% of the total value of the MBs they cover
Rules for the cover pool*: coverage	One asset portfolio covering all MBs	A specific asset portfolio covers a specific MB. Together, they make up a cover block
Currency and interest rate risk related to the cover pool*:**	Derivatives not part of the cover pool	Derivatives may be part of the cover pool
Insolvency proceedings:	Insolvency trustee: risk of automatic acceleration of MBs (sale of loans in the cover pool at an "unfavourable" price)	Trustee: administers the portfolio of cover assets; no acceleration of MBs

Note: * Cover pool = the sum of the cover assets; ** Cover assets = the sum of mortgage loans with prescribed properties and a limited percentage of other assets (other high-quality assets or derivatives at market value); *** Significant where the cover assets are in a different currency than the MB they cover.

The eligibility criteria set by the CNB for accepting MBs[90] as collateral take into account the legislative framework under which the MBs were issued and also whether the MBs have been admitted to trading on an exchange, have received an external rating and meet the conditions for preferential treatment under CRR. The haircuts applied are derived from these criteria. They range from 6% for MBs with a high external rating to 42% for MBs issued under the legislation in effect until January 2019, in own use, with no rating, and not satisfying the condition for preferential treatment under CRR.[91]

88 The Act was amended mainly because of the unclear scope of mortgage assets and the regime applying to them, especially as regards the moment of inception of mortgage assets and the range of assets included in mortgage assets, as well as the actual effect of commenced insolvency proceedings on mortgage assets and liabilities arising from MBs and on the risk of automatic acceleration of liabilities arising from MBs when the issuer is declared bankrupt.

89 The framework stipulates "only" the maximum share of cover mortgage loans in the portfolio. The share of mortgage loans is 90% in the old framework and 85% in the new one. Other assets and derivatives account for the rest.

90 MB eligibility criteria (in Czech only): https://www.cnb.cz/cs/financni-trhy/penezni-trh/parametry-dodavaci-repo-operace/kriteria-prijatelnosti-pro-hypotecni-zastavni-listy-hzl-a-nastaveni-haircutu/

91 Covered bonds eligible for preferential treatment under Regulation No 575/2013 of the European Parliament and of the Council (EU) of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012. In simple terms, mortgage loans that cover these MBs have LTVs of 80% where the loan is secured by residential property and 60% where the loan is secured by commercial property. MBs worth almost CZK 400 billion met the condition for preferential treatment, regardless of the currency of the issue, at the end of 2019.

IV.2 MACRO STRESS TESTS OF NON-BANK FINANCIAL INSTITUTIONS

IV.2.1 Stress test of the insurance sector

This year's test focused mainly on the asset side of the sector's balance sheet

Given the high financial market volatility (see section II.1), the purpose of this year's macro stress test was to assess the domestic insurance sector's resilience to the risk of a further drop in investment asset prices.[92] The test therefore only assessed the impact of investment risks (equity risk, real estate risk and growth in risk premia on government and corporate bonds) on the net earnings of the companies tested and subsequently on their solvency capital ratio (the ratio of eligible capital to the solvency capital requirement, SCR) at the three-year horizon. Companies are required to maintain this ratio at a minimum of 100%. Only investment assets for which the company tested bears an investment risk were repriced (i.e. assets linked to unit-linked products were excluded). Due to the high uncertainty regarding economic developments (see section II.1), the test makes a one-off assumption of an neutral aggregate impact of general interest rate risk,[93] future profit, insurance risks, dividend payments and other variables on companies' capitalisation.[94] In line with the prudential approach, recalculation of the SCR was not assumed in the test and the SCR value as of 31 December 2019 was considered over the entire test horizon. If the SCR were recalculated, it could be expected to decline mostly after the materialisation of the risks considered. This would favourably affect the resulting solvency capital ratio.

Prices of investment assets were tested under the *Baseline Scenario* and the *Adverse Scenario*

The test was based on companies' balance sheets as at the end of 2019. It covered 25 domestic insurance companies (excluding branches of foreign insurance companies) and one reinsurance company, which together accounted for 85% of the life insurance market and 95% of the non-life insurance market in 2019 as measured by their share in net premiums written. Investment assets in the tested companies' portfolios were gradually repriced according to the *Baseline Scenario* and the *Adverse Scenario* (see Table IV.1). In 2020 Q1, both scenarios roughly mirror the actual financial market developments. In the following periods, the *Baseline Scenario* assumes a gradual return of optimism and related gradual growth in share prices and a drop in risk premia on bonds. By contrast, the *Adverse Scenario* would lead to a further fall on stock markets and growth in risk premia due to a resurgence of the coronavirus pandemic and renewal of the related economic restrictions. This is consistent with a drop in property prices on the domestic market (see section II.1.3).

The domestic insurance sector gradually returns to the initial situation in the *Baseline Scenario*

The fall in prices of investment assets in 2020 Q1 led to a decline in the aggregate ratio of eligible capital to the SCR of 40 pp to 188% (see Chart IV.5).[95] The biggest absolute contribution to the aggregate decline in eligible capital of CZK 19 billion came from equity risk, which caused eligible capital to decrease by CZK 8.5 billion, followed by the risk premium on Czech government bonds (which caused capital to drop by CZK 7 billion). Under the *Baseline Scenario,* the decline halts in the following quarters and prices of investment assets start to rise again. In line with this, the ratio of eligible capital to the SCR gradually returns to roughly its initial level (see Table IV.5).

The insurance sector as a whole would also remain sufficiently capitalised in the *Adverse Scenario*…

In the *Adverse Scenario* there would be a bigger fall in prices of investment assets throughout 2020. Its materialisation would lead to a drop in aggregate eligible capital of CZK 28 billion to CZK 79 billion and a decline in the ratio of eligible capital to the SCR of 60 pp to 169% at the end of 2020 (see Table IV.5). As in the *Baseline Scenario*, the main source of this drop in capital in 2020 Q1 would be equity risk, while the growth in risk premia on bonds, including Czech government bonds, would be the biggest contributor in the rest of the year (see Chart IV.6). In the following two years of

92 Like last year, the macro stress test is based on insurance and reinsurance companies' balance sheets under the Solvency II legislative framework and evaluates their dynamic evolution at quarterly frequency,

93 For simplicity, this year's test assumed a zero impact of general interest rate risk for two reasons. First, this risk had a small impact in the previous rounds of tests due to the degree of matching of cash flows arising from companies' assets and liabilities. Second, given the macroeconomic developments, risk-free rates can be expected to remain very low and show relatively low volatility over most of the test horizon, so the probability of them changing suddenly and impacting on insurance and reinsurance companies' balance sheets is low. Abstracting from interest rate risk resulted in the test not assessing the effect of the application of volatility adjustment this year.

94 This can be interpreted as an assumption of a drop in insurance and reinsurance companies' profit due to the partial materialisation of some insurance risks in both scenarios. The reduced profit would be paid out fully in dividends due to assumed pressure from shareholders. For prudential reasons, the test was based on the amount of eligible capital reported at the end of 2019, i.e. the amount reduced by the initially expected dividends. Likewise, the test did not consider future mergers and acquisitions in the insurance sector and did not account for the fact that the SCR of some small reinsurance companies was lower than the minimum capital requirement that insurance and reinsurance companies are also obliged to meet.

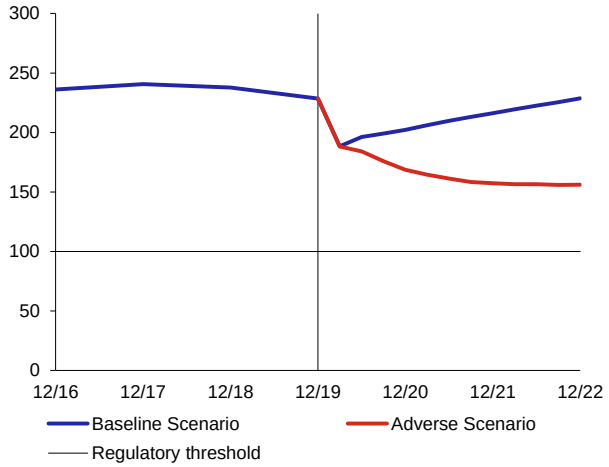
95 The data reported by companies covered as of 31 March 2020 showed that the actual decline in the aggregate ratio of eligible capital to the SCR in 2020 Q1 was 34 pp and was thus slightly smaller. Some specific effects also contributed to this decline, so the actual impact of the fall in prices on financial markets on capitalisation was lower as of 31 March 2020 than the test result under the *Baseline Scenario*. This was due, among other things, to the scenario assuming "average" repricing of assets in various risk categories, while the actual repricing differed across assets.

the test, the materialisation of the Adverse Scenario would give rise to a further moderate fall in prices of investment assets, which would lead to a drop in eligible capital of a further CZK 6 billion and a fall in the ratio of eligible capital to the SCR of 13 pp to 156%.

Chart IV.5

Ratio of eligible capital to the solvency capital requirement

(%)



Source: CNB

Table IV.5

Results of the macro stress test of the domestic insurance sector

(CZK billions; year-end values, impact of repricing for whole year)

	Actual value	*Baseline Scenario*			*Adverse Scenario*		
	2019	2020	2021	2022	2020	2021	2022
Total assets of companies covered	452						
Assets covered by tests	294	281	288	294	266	260	260
Shares and other equity	38	32	35	38	29	25	22
Czech government bonds	145	140	143	145	133	134	137
Foreign government bonds	26	26	26	26	25	25	25
Corporate bonds	67	65	65	66	62	61	60
Real estate	17	18	18	19	17	15	16
Impact of asset repricing							
CZK billions		-12	7	6	-28	-5	-1
% of previous year's assets		-4.2	2.3	2.0	-9.5	-2.0	-0.2
SCR	47	47	47	47	47	47	47
Eligible capital to cover SCR	107	95	101	107	79	74	73
Eligible capital/SCR (%)	229	202	216	229	169	157	156

Source: CNB

Note: SCR = solvency capital requirement.

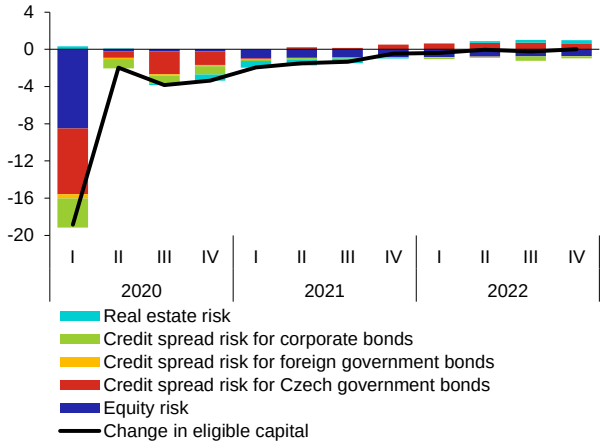
…the drop in eligible capital would lead to one of the tested insurance companies failing to meet the SCR

Under the *Adverse Scenario,* the continued decline in prices of investment assets would lead to one insurance company's ratio of eligible capital to the SCR dropping below 100%. Other companies would approach the 100% level from above. As of 31 December 2019, the ratio of eligible capital to the SCR was 120%–150% in five companies and exceeded 150% in the rest. After the application of the *Adverse Scenario*, it would fall below 120% in seven companies at the end of 2022 (see Chart IV.7).

Chart IV.6

Decomposition of the changes in eligible capital in the *Adverse Scenario*

(CZK billions)

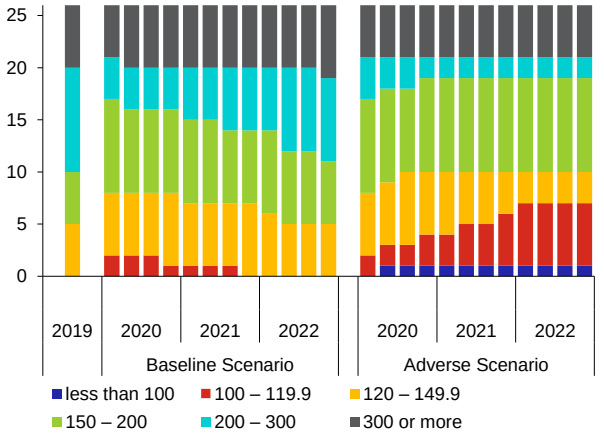


Source: CNB

Chart IV.7

Companies by ratio of eligible capital to the solvency capital requirement

(numbers)



Source: CNB

IV.2.2 Stress test of pension management companies

The stress tests of pension management companies assess the sector's resilience at the one-year horizon

The stress tests of pension management companies (PMCs) focus on assessing the risks to transformed funds (TFs) managed by PMCs[96] at the one-year horizon using the end-2019 data. Besides the *Baseline Scenario*, the sector's resilience to the model *Adverse Scenario* was also tested (see section II.1.3 and Table IV.1). Due to the financial market developments in the first few months of 2020, the *Baseline Scenario* is rather similar in its parameters to the *Adverse Scenario* of the tests performed in previous years. The *Adverse Scenario* assumes a resurgence of the pandemic, a long-running downturn in economic activity and gradual exhaustion of state budgets' fiscal room for supporting the economy. The tests were performed on TFs' portfolios using the end-2020 rate and risk parameter projections as stress scenario parameters. The parameter levels also reflect the developments observed on financial markets up to the end of 2020 Q1.

The assets of transformed funds would be favourably affected by a decline in risk-free rates in both scenarios…

Risk-free money market rates (IRS) would reprice significantly in both the *Baseline Scenario* and the *Adverse Scenario* (see Chart II.23F) in response to the monetary policy easing. A decline in IRS curves would lead to growth in TFs' total assets of 3.1% in both scenarios (see Table IV.6).

Table IV.6
Results of the stress test of PMCs

	Baseline Scenario		***Adverse Scenario***	
PMC equity (start of test, CZK bil)	10.5		10.5	
Capital ratio (start of test, %)	168.0		168.0	
Change in TF asset value due to:	CZK billions	% of TF assets	CZK billions	% of TF assets
general interest rate risk	13.6	3.1	13.9	3.1
credit spread risk for corporate securities	-2.7	-0.6	-6.7	-1.5
credit spread risk for government securities	-7.1	-1.6	-15.7	-3.5
exchange rate risk	0.0	0.0	-0.6	-0.1
equity risk	-0.7	-0.1	-1.9	-0.4
real estate risk	0.0	0.0	-0.3	-0.1
Total impact of risks on TF assets	3.1	0.7	-11.3	-2.5
TF asset top-up need (CZK billions)	0.0		3.9	
PMC equity (end of test, CZK billions)	11.2		7.0	
Capital ratio (end of test, %)	182.1		116.4	
Capital injection into PMCs (CZK billions)	0.0		1.0	

Source: CNB

Note: Start of test: end of 2019; end of test: end of 2020. TF stands for transformed funds. PMC stands for pension management company.

Table IV.7
Year-on-year comparison of PMC stress test results in the *Adverse Scenario*

Data on capital and exposures as of	31 Dec 2018	31 Dec 2018	**31 Dec 2019**
Scenario	Last year's (FSR 2018/2019)	This year's (FSR 2019/2020)	**This year's** (FSR 2019/2020)
Fall in TF asset value due to shocks considered (%)	1.8	2.7	**2.5**
TF top-up need (CZK billions)	3.4	6.4	**3.9**
Number of TFs needing top-ups	7	7	**7**
Injections by owners to meet capital requirements (CZK billions)	0.9	3.3	**1.0**
Number of PMCs needing capital injections to meet capital requirements	3	6	**3**

Source: CNB

Note: Remuneration for asset management is not included. This year's methodology includes an assessment of corporate bonds underwritten by the government as government bonds and other technical changes. This year's scenario also includes a change in the method for calculating the shock to corporate bonds. PMC stands for pension management company.

…but the growth in the risk premium would outweigh the positive effect in the *Adverse Scenario*

TFs' bond portfolio responds to a rise in the risk premium on bonds. An increase in the credit spreads on government and corporate bonds would result in a drop in TFs' assets of 1.6% and 0.6% respectively in the *Baseline Scenario* and would lead to a drop in TF's assets of 3.5% and 1.5% respectively in the *Adverse Scenario* (see Table IV.6). In the *Baseline Scenario* the overall impact of the materialisation of interest rate risk (the drop in risk-free rates and the rise in the risk premium) is positive, whereas in the *Adverse Scenario* the growth in the risk premium would outweigh the effect of the drop in risk-free rates, so the overall impact would be negative (see Table IV.6).TFs holding a large part of their assets in fixed-rate koruna bonds with longer durations would be hit hardest by the materialisation of credit spread risk. TFs would reduce the impact of the potential interest rate shock by holding bonds to maturity[97] (39% of the bond portfolio is valued at amortised cost)[98] and investing in floating-rate bonds (a further 23% of the bond portfolio).[99] The impacts of

96 Participation funds were not tested, as their market losses affect the funds' clients and not PMCs. Moreover, they account for 12.0% of the sector's total assets.

97 In the case of market repricing of all bonds regardless of their accounting classification, in the *Adverse Scenario* total assets would fall by a further 0.8 pp and the size of the capital injection by PMC owners would rise by CZK 1.6 billion due to a drop in IRS rates and a change in the credit spread. Market repricing of the portfolio held to maturity does not create a need for a capital injection in the *Baseline Scenario*.

98 The law allows TFs to include high-quality government bonds of up to 35% of their total assets in the portfolio classified as held to maturity, which is valued at amortised cost. This portfolio accounted for 30.2% of TFs' total assets in December 2019.

both shocks (especially in the case of koruna assets) would be reduced slightly by derivative hedging, which, however, TFs have long made little use of.

The other risks monitored have no material impact in the stress test

Foreign currency assets account for 10.8% of total assets in TFs' balance sheets. Due to long-term high-quality derivative hedging, however, exchange rate risk (see Chart IV.9) would not lead to material impacts and the value of TFs' assets would decrease by just 0.1% in the *Adverse Scenario* (see Table IV.6). Equity securities account for only 1.4% of TFs' assets, so the impact of equity risk would not be very significant despite a considerable fall in share prices of 45% in the *Adverse Scenario*. Risks associated with investment in real estate have a minimal impact.

In the *Adverse Scenario*, the capital adequacy of some PMCs would fall below the required minimum

PMCs guarantee non-negative returns for the clients of their TFs by law. If a TF's assets declined below its liabilities, the relevant PMC would be obliged to top up the TF's assets with capital. This situation does not arise in the *Baseline Scenario*. The *Adverse Scenario* would indicate a need to top up the assets of seven of the eight PMCs by a total of CZK 3.9 billion. The capital adequacy of three of them would simultaneously decline below the required level. The PMC owners would have to inject capital of CZK 1 billion in order for their PMCs to satisfy the capital adequacy requirement. This constitutes a slight increase compared with last year's stress test. However, it does not indicate any material systemic risks for PMCs.

Transformed funds and pension management companies increased their capitalisation compared to last year

After the application of this year's *Adverse Scenario* to last year's data, the capital injection need would amount to CZK 3.3 billion (CZK 1.0 billion this year) and would concern six PMCs (three this year). TFs would simultaneously be required to top up capital by CZK 6.4 billion,[100] as against CZK 3.9 billion this year (see Table IV.7). PMCs' enhanced resilience is due to an increase in the combined capital surplus, i.e. the capital surplus of PMCs and the surplus of assets over liabilities of TFs, and a simultaneous improvement in the risk profile of TFs' portfolios.

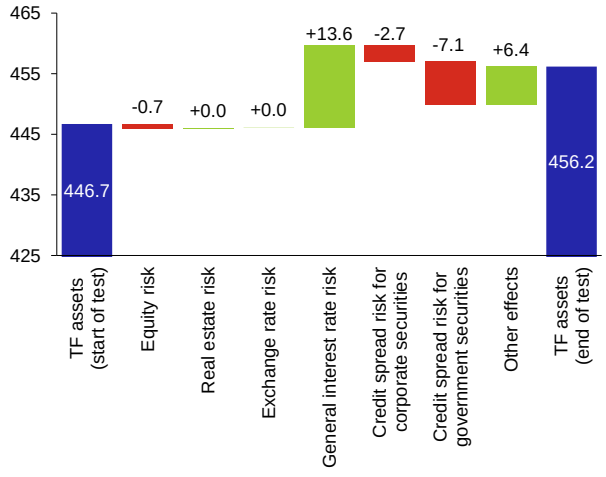
The higher combined capital surplus enhances the sector's resilience

Despite the strong stress of the *Baseline Scenario*, the year-on-year growth in capitalisation enables PMCs to absorb market shocks without the need to top up their TFs' assets. However, the impact of the *Adverse Scenario* would reveal a potential need to top up the capital of TFs and PMCs, indicating that larger capital surpluses of both TFs and PMCs (see section III.3) would further enhance their resilience to the risks associated with highly adverse economic developments.

Chart IV.8

Change in the value of assets of transformed funds due to the individual types of risks in the *Baseline Scenario*

(CZK billions)

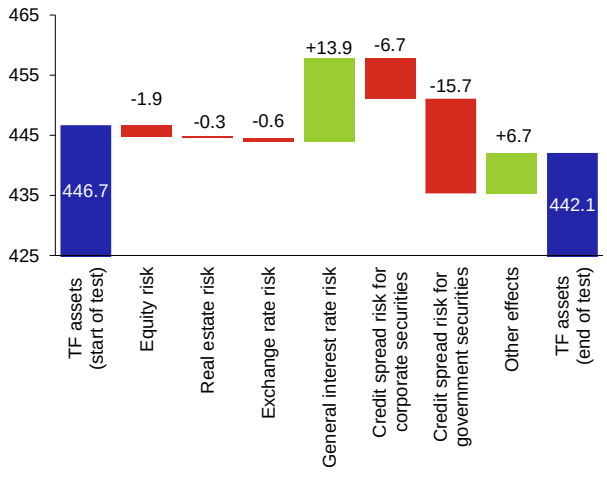


Source: CNB

Chart IV.9

Change in the value of assets of transformed funds due to the individual types of risks in the *Adverse Scenario*

(CZK billions)



Source: CNB

Note: Other effects represent dividend income, bond coupons received and the return on the HTM portfolio. Change in the value of foreign currency liabilities (cross-currency repos) is accounted for when considering exchange rate risk.

99 Floating-rate bonds held to maturity are not included in this 23%.

100 Of this amount, CZK 2 billion would be required due to a lower surplus of assets over liabilities and the remaining CZK 4.4 billion due to a riskier portfolio profile.

IV.2.3 Stress test of investment funds

A new macro stress test of investment funds assesses liquidity and fire sale risks

The CNB has created a new framework for macro stress testing open-ended investment funds. The aim of the test is to assess the contribution of investment funds to systemic risk in the domestic financial sector. The CNB has thus joined the ranks of central banks and institutions that use stress testing to assess the risks arising from the increasing importance of investment funds in financial intermediation (see section III.3). Investment funds contribute to systemic risks primarily through liquidity risk in the form of asset and liability liquidity mismatches.[101] These arise mainly in the event of adverse developments on financial markets, when sell-offs of investment fund units may increase. By redeeming units, investment funds exhaust their liquidity buffers and may be forced to sell assets if the buffers are insufficient. This, however, has an adverse impact on the prices of those assets. In this way, investment funds may contribute to an adverse liquidity spiral of falling prices of financial assets and outflows of investors (households or firms holding investment fund units) leading to sell-offs of those assets and affecting other market participants.

The test dynamically assesses the impact of initial repricing under the *Baseline Scenario* and the *Adverse Scenario* and investors' subsequent reactions…

The test is based on the balance sheets of individual open-ended investment funds as of the end of 2019. It covers 144 open-ended collective investment funds. At the end of 2019, the CZK 381 billion of assets managed by those investment funds accounted for more than 90% of this segment's assets. Financial asset holdings undergo a one-off initial repricing due to market shocks at the start of the test under the *Baseline Scenario* and the *Adverse Scenario* (see section II.1.3). The test considered adverse shocks in the form of an increase in the credit risk of corporate bonds, a shift in government bond yield curves, depreciation of the koruna, and a fall in equity and property prices.[102] These shocks were applied at the level of individual investments. The initial shock was followed by three rounds of secondary effects.[103] In each round, investors at first exit funds to an extent depending on the type of fund and the size of its losses (i.e. the drop in the unit value). The test assumed that a 10% decline in the value of a fund's assets would lead to an outflow of investors holding 4% of assets in the case of equity funds, 8% of assets in the case of mixed and other funds, and 12% of assets in the case of bond funds.[104] A need to fill in margins in currency derivatives contracts held by investment funds was considered as an additional source of liquidity stress in each round. The amount of the additional margins was estimated on the basis of information on derivatives held by funds at the end of 2019 and the path of the exchange rate in the scenarios considered.

…where potential liquidity shortages in investment funds lead to sales of financial assets

The test assumed two sell-off methods.[105] The first was the waterfall method, in which funds address their liquidity needs first by using cash and bank deposits and only then by selling less liquid assets. Using this method, the test-generated liquidity needed to satisfy redeeming investors and to top up margins was compared with the liquidity buffers of individual funds. Funds whose liquidity buffers were insufficient sold financial assets in the test. The second, "slicing" method assumed that funds maintain constant proportions of individual asset classes in the portfolio. Using this method, funds responded to the need for liquidity by partially reducing their liquidity buffers and by selling off all other components of their financial asset holdings equally and to the same extent.[106] Each round of the calculation ended with an assessment of the extent to which the sale of financial assets by investment funds reduced the prices of those assets. The

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101 Unlike other financial market segments, the contribution of investment funds to systemic risk is not associated directly with their resilience, as losses on investment portfolios are passed on to unit holders.

102 The scenarios considered for the purposes of the other stress tests are mostly dynamic, whereas the macro stress test of investment funds assumed a one-off initial impact. It therefore used shock values roughly equal in magnitude to the materialisation of the scenarios as of the end of their first year. In the case of the *Baseline Scenario*, whose degree of stress was broadly in line with the actual market developments in 2020 Q1, equity prices fall by 20%, the exchange rates depreciate to CZK 27.5/EUR and CZK 24.6/USD, and the credit spread on corporate bonds widens slightly. In the *Adverse Scenario*, equity prices fall by 40% and property prices by 20%, the exchange rates depreciate to CZK 29.7/EUR and CZK 27.8/USD, the Czech government bond yield curve shifts upwards, and the credit spread on corporate bonds, particularly those with worse ratings, widens significantly.

103 Three rounds of stress were chosen due to a relatively rapid drop in the contribution of each round to the overall stress. Only the first round of the test made a relevant contribution to the stress on the Czech government bond market.

104 These parameters were set on the basis of a combination of regression analysis performed on historical data for domestic investment funds and estimates employed by similar studies in other countries, such as Bank of England (2018): *Financial Stability Report*, June 2018. In the case of real estate funds, no outflow of investors was considered in this year's test, as these funds have a statutory time limit of up to two years to pay units to redeeming investors. Real estate funds were thus only exposed to stress from the requirement to have additional margins in derivatives transactions. The analysis does not reflect any duplication arising from the master-feeder arrangement of investment funds. The fund breakdown was performed according to the list used for the monetary and financial statistics.

105 The same approach was applied, for example, in European Securities and Markets Authority (2019): *Stress Simulation for Investment Funds*, ESMA Economic Report, September 2019.

106 Maintaining a constant ratio of asset components, including the share of very liquid assets, leads to a greater need to sell off assets and consequently to greater stress. However, this assumption is relatively strong, especially in the event of adverse market developments, as it can be expected that funds will prefer a drop in the relative share of their liquid assets to asset sell-offs in the event of a market fall and simultaneous liquidity stress. Also, however, funds cannot be expected to sell off assets only after they have completely exhausted their liquidity buffers. The actual response of funds will thus probably consist in a combination of both methods considered.

relationship between the amount of financial assets sold and the change in their prices was estimated on the basis of the depth of the market. This year's test considered and calibrated this effect only for Czech government bonds,[107] as domestic investment funds account for only a relatively negligible part of demand/supply on most of the other markets considered in the test. The drop in prices of the sold-off financial assets at the end of each round increased investors' losses, thereby creating another round of stress.

Table IV.8

Results of the macro stress test of investment funds

(CZK billions; value of unit in % of initial value)

Scenario		*Baseline Scenario*							*Adverse Scenario*						
Method	***As of 31 Dec 2019***	Initial shock	***Slicing***			***Waterfall***			Initial shock	***Slicing***			***Waterfall***		
Test round			1st	2nd	3rd	1st	2nd	3rd		1st	2nd	3rd	1st	2nd	3rd
Assets of funds covered by test	**380.8**	**342.9**	**324.4**	**326.3**	**326.3**	**324.5**	**326.7**	**326.7**	**304.5**	**270.6**	**272.3**	**272.8**	**270.7**	**272.9**	**273.6**
Equity funds	80.4	65.6	62.3	63.5	63.5	62.3	63.6	63.6	50.7	45.2	46.8	47.1	45.2	46.9	47.3
Bond funds	152.6	144.6	137.4	137.8	137.8	137.4	138.0	138.0	136.2	122.2	122.6	122.8	122.3	122.9	123.2
Real estate funds	49.6	46.7	46.7	46.7	46.7	46.7	46.7	46.7	43.7	43.7	43.7	43.7	43.7	43.7	43.7
Mixed and other funds	98.2	86.1	78.1	78.3	78.3	78.1	78.4	78.4	73.9	59.6	59.2	59.2	59.6	59.4	59.5
Unit value (%)															
Equity funds	100.0	78.0	79.0	79.8	79.8	79.0	79.8	79.9	60.6	61.7	62.4	62.5	61.7	62.5	62.7
Bond funds	100.0	94.0	94.2	94.3	94.3	94.2	94.4	94.4	87.3	87.4	87.5	87.5	87.5	87.7	87.7
Real estate funds	100.0	91.2	91.5	91.7	91.7	91.5	91.8	91.7	82.5	82.7	83.0	83.0	82.7	83.0	83.0
Mixed and other funds	100.0	86.4	86.5	86.6	86.6	86.5	86.7	86.7	72.9	72.7	72.4	72.2	72.7	72.5	72.4
Liquidity need – investor outflow			**20.8**	**0.2**	**0.0**	**20.8**	**0.2**	**0.0**		**36.4**	**0.6**	**0.2**	**36.4**	**0.5**	**0.2**
Equity funds			4.6	0.0	0.0	4.6	0.0	0.0		7.4	0.0	0.0	7.4	0.0	0.0
Bond funds			7.9	0.2	0.0	7.9	0.1	0.0		14.7	0.3	0.1	14.7	0.2	0.1
Real estate funds			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Mixed and other funds			8.3	0.1	0.0	8.3	0.1	0.0		14.3	0.2	0.1	14.3	0.2	0.1
Liquidity need – additional margins			**0.4**	**0.4**	**0.0**	**0.4**	**0.4**	**0.0**		**0.7**	**0.7**	**0.3**	**0.7**	**0.7**	**0.3**
Equity funds			0.1	0.1	0.0	0.1	0.1	0.0		0.2	0.2	0.1	0.2	0.2	0.1
Bond funds			0.1	0.1	0.0	0.1	0.1	0.0		0.2	0.2	0.1	0.2	0.2	0.1
Real estate funds			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Mixed and other funds			0.2	0.2	0.0	0.2	0.2	0.0		0.3	0.3	0.1	0.3	0.3	0.1
Assets sold			**19.7**	**0.6**	**0.1**	**9.7**	**0.4**	**0.0**		**34.0**	**1.2**	**0.5**	**22.2**	**1.0**	**0.4**
Equity funds			3.9	0.1	0.0	2.1	0.1	0.0		7.0	0.2	0.1	4.3	0.2	0.1
Bond funds			7.2	0.3	0.0	2.7	0.1	0.0		13.1	0.4	0.2	7.0	0.3	0.2
Real estate funds			0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Mixed and other funds			8.1	0.3	0.0	5.0	0.2	0.0		13.8	0.5	0.2	10.9	0.5	0.2
Impact on Czech government bond market															
Czech government bonds sold			3.1	0.0	0.0	1.3	0.1	0.0		5.0	0.3	0.1	3.7	0.3	0.1
Decrease in bond price (%)			0.4	0.0	0.0	0.2	0.0	0.0		0.9	0.1	0.0	0.6	0.1	0.0

Source: CNB

Note: The fund breakdown was performed according to the list used for the monetary and financial statistics.

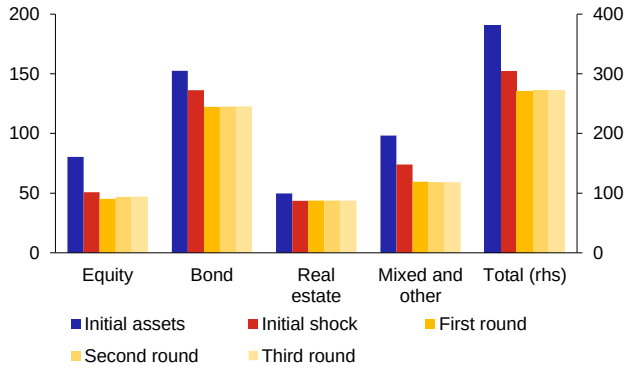
Equity funds were hit the hardest by the initial shock but recorded no significant secondary effects…

The *Baseline Scenario* leads to a drop in equity funds' assets of CZK 17 billion (21%) to CZK 64 billion due to the initial shock and the subsequent three rounds of stress multiplication (see Table IV.8 and Chart IV.10). This decline is caused mainly by the initial shock in the form of a fall in the value of equity holdings of CZK 15 billion and by a subsequent outflow of investors totalling almost CZK 5 billion due to a fall in the value of investment fund units (see Chart IV.11). The liquidity need due to growth in margins in derivatives transactions is relatively negligible (CZK 0.2 billion). The exchange rate depreciation considered fosters an increase in the koruna value of holdings of foreign currency financial assets, which partly offsets the impact of the initial shock (by up to CZK 2 billion at the end of the third round of the test). In the *Adverse Scenario*, equity fund assets would fall by a total of CZK 33 billion (or 41%) to CZK 47 billion, with an initial drop in equity value of CZK 30 billion leading to a subsequent investment outflow of CZK 7 billion. In the case of the *Adverse Scenario*, the effect of the exchange rate depreciation on equity funds' liquidity needs would again be negligible (CZK 0.5 billion), while leading to additional growth in the koruna value of assets of CZK 2 billion (in the first round) to CZK 4 billion (at the end of the third round). The liquidity stress was partly covered in both scenarios by equity funds'

107 The calibration was similar as in Cont, R., Kukanov, A., Stoikov, S. (2010): *The Price Impact of Order Book Events.* Journal of Financial Econometrics, Volume 12, Issue 1. The drop in bond prices is directly proportional to the amount of bonds sold and indirectly proportional to market depth (i.e. the historical average daily trading volume relative to bond price volatility). The sale of CZK 10 billion of Czech government bonds in one month would cause their value to decrease by 1.8% in this calibration. The depth of the Czech government bond market was calibrated on the basis of daily data from the MTS trading platform.

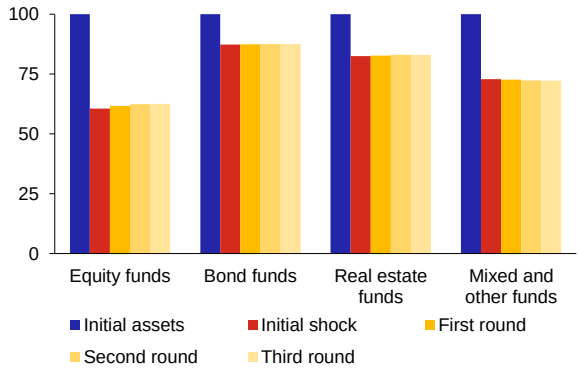
existing liquidity buffers. When the waterfall method is applied, equity funds have to sell shares or other assets of CZK 2.2 billion in the *Baseline Scenario* (in the *Adverse Scenario* equity funds would have to sell shares or other assets of CZK 4.6 billion). Equity sell-offs under the slicing approach were higher (CZK 4.0 billion in the *Baseline Scenario* and CZK 7.3 billion in the *Adverse Scenario*).

Chart IV.10
Value of assets in the *Adverse Scenario* (slicing approach)
(CZK billions)



Source: CNB
Note: The fund breakdown was performed according to the list used for the monetary and financial statistics.

Chart IV.11
Average unit value in the *Adverse Scenario* (slicing approach)
(% of unit value as of 31 December 2019)



Source: CNB
Note: The fund breakdown was performed according to the list used for the monetary and financial statistics.

…sales of Czech government bonds would be limited and would not lead to multiplication of the initial stress

Some bond, mixed and other investment funds covered by the test held Czech government bonds totalling CZK 46 billion in their balance sheets at the end of 2019. For these funds, the test considered potential multiplication of the initial price drop due to subsequent fire sales of those bonds. As the amount of Czech government bonds sold off was relatively low, the initial stress did not multiply materially after the application of the scenarios considered. On the aggregate level, the initial drop in the aggregate value of bond fund assets of CZK 16 billion (or 11%) would result in an investor outflow of CZK 15 billion in the *Adverse Scenario*. In the case of mixed and other funds, a drop in assets of CZK 24 billion (or 25%) would lead to investor redemptions of CZK 14 billion. The additional contribution of the liquidity stress due to top-ups of margins in derivatives transactions would total CZK 0.5 billion for bond, mixed and other funds in the first round of the test and would again be substantially lower than the liquidity stress stemming from the outflow of investors. As in the case of equity funds, the change in the exchange rate of the koruna would have a favourable effect on the value of these funds' assets, fostering growth after the initial fall (see Chart IV.10). Under the slicing approach, the existing liquidity buffers would cover just 9% of the overall aggregate liquidity need (of CZK 30 billion) of bond, mixed and other funds in the first round (but 39% under the waterfall method). The funds would have to sell off their assets, including Czech government bonds, to satisfy the remaining needs. The first round of stress in the *Adverse Scenario* would lead to sales of Czech government bonds of CZK 5 billion (CZK 3.7 billion under the waterfall method). This would result in a drop in Czech government bond prices of 0.9% (0.6%). Such a slight impact of the sell-offs on bond prices would draw only a negligible response from investors in the second round of the test (see Table IV.8) and would not lead to any additional stress on the Czech government bond market in the subsequent test rounds.

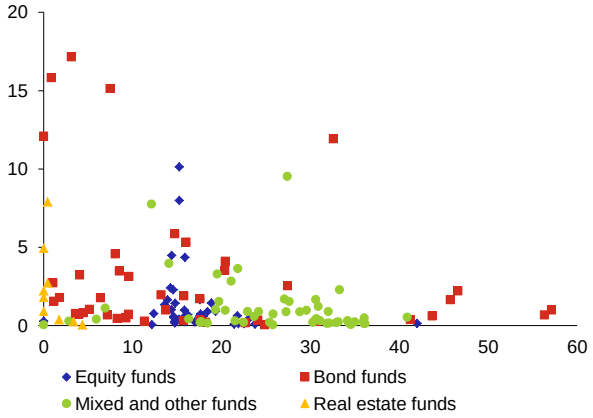
The resulting level of stress reflected the riskiness of the hardest hit investment funds

The relatively low volume of Czech government bonds sold off was also linked with the relative distribution of the stress according to the size and riskiness of investment funds. The overall liquidity needs of most bond investment funds would not exceed 20% of their total assets even under the *Adverse Scenario* and the higher-stress slicing method (see Chart IV.12). The larger impact of the initial shock, the investor outflow, and the formation of a liquidity need would mainly concern smaller funds, which do not hold large quantities of Czech government bonds. Under the slicing approach, these bonds therefore would make up only a small proportion of the sell-offs conducted to raise additional liquidity. Under the waterfall method, moreover, the funds would use their liquidity buffers first. These buffers would be sufficient to cover a relatively large share of the liquidity needs of a large proportion of bond funds, so the necessity to subsequently sell off assets, including Czech government bonds, would be relatively low (see Chart IV.13). The relatively small stress stemming from the above developments is also due to the fact that the test did not consider the effect of other Czech government bond holders (banks, insurance companies and pension funds) on the shift in market equilibrium following the initial shock and in the subsequent rounds of sell-offs. Some of these entities may be more sensitive to changes in price than investment funds. This, in turn, would multiply the contribution of investment funds to systemic risk.

Chart IV.12

Relationship between liquidity need and fund size in the *Adverse Scenario* (slicing approach)

(x-axis: fund's relative liquidity need in % of assets; y-axis: investment fund's assets in CZK billion)



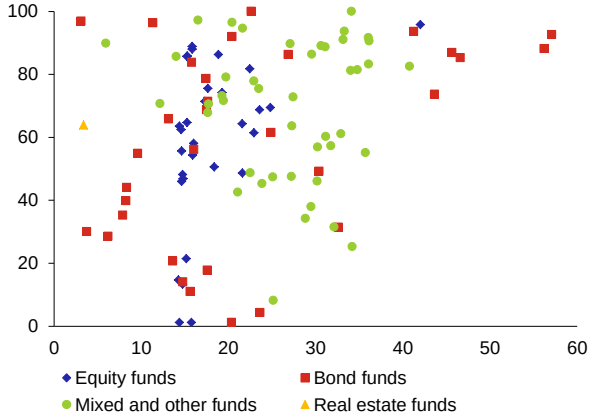
Source: CNB

Note: Assets following initial repricing. For reasons of anonymisation, the chart does not show several of the largest funds. Their relative liquidity needs were in the range of 0.3%–16.6% of assets. The fund breakdown was performed according to the list used for the monetary and financial statistics.

Chart IV.13

Relationship between liquidity need and asset sales in the *Adverse Scenario* (waterfall method)

(x-axis: fund's relative liquidity need in % of assets; y-axis: coverage of liquidity need by asset sales in %)



Source: CNB

Note: Only funds that had to resort to asset sales when the waterfall method was applied are shown. The fund breakdown was performed according to the list used for the monetary and financial statistics.

IV.3 THE HOUSEHOLD STRESS TEST[108]

The household stress test enables the sector's resilience to be assessed

The household stress test focuses on the risk of overindebtedness of households, whose potential debt service problems could cause credit risk in the banking sector to increase. The stress test is based on data on individual loans secured by residential property (mortgage loans), whereas the identification of the risk of default is based on the concept of the maximum hypothetically repayable loan and that of the financial reserve for repaying debt under stress.[109] A household's financial reserves are considered insufficient if they are negative. Households with a negative financial reserve are identified as potentially "at risk of default". If a household is unable to cover the negative financial reserve from its savings, its mortgage loan is identified as "defaulting" after 90 days. Using this framework, the resilience of the sector of households with mortgage loans was assessed against adverse economic shocks, and the credit risk associated with these loans was estimated.

The monthly mortgage loan instalment of the median household increased markedly in 2019

The test is performed on the portfolio of mortgage loans provided over the period of 2005–2022. Until 2019 the portfolio is based on actually provided mortgage loans and from 2020 it is based on a simulation of inflows and outflows of individual loans in the given scenario. The total size of the mortgage portfolio as of the end of 2019 was CZK 1,262 billion, while the addition of new loans for 2019 was CZK 171 billion. The median net monthly income for households with mortgage loans taken out in 2019 exceeded CZK 40,000 (see Table IV.9). In addition to incomes, property prices rose, leading households to draw larger loans. The median mortgage loan value in 2019 was CZK 1,815,000. Households with a principal applicant aged under 35 applied for higher loans on average (see Table IV.10). Strong year-on-year growth was recorded for the median mortgage loan instalment, which rose from CZK 7,500 to CZK 8,100. Higher instalments are more frequently paid by persons above the age of 50. However, comparing the median mortgage loan size in this age category, it is clear that the higher instalments are mainly due to shorter maturity. After having fallen in 2018, the median value of the additional debt of a mortgage loan applicant returned above CZK 80,000. The highest additional debt was recorded for applicants aged 36 to 50. Significantly less additional debt is observed in the category of applicants under 35 years of age.

Table IV.9

Median values of households at the time of mortgage loan provision

	2016	2017	2018	2019
Net monthly income (CZK thousands)	32.6	36.8	39.1	42.2
Year-on-year change (%)		12.6	6.3	8.0
Property purchase price (CZK thousands)	1,900	2,190	2,350	2,500
Year-on-year change (%)		15.3	7.3	6.4
Loan size (CZK thousands)	1,500	1,562	1,705	1,815
Year-on-year change (%)		4.1	9.2	6.5
Mortgage loan instalment (CZK thousands)	6.4	7.1	7.4	8.1
Year-on-year change (%)		11.2	4.9	9.0
Client's other debt (CZK thousands)	90.0	88.3	77.3	81.3
Year-on-year change (%)		-1.9	-12.4	5.2

Source: CNB

Table IV.10

Median values of households at the time of mortgage loan provision by age category for 2019

(CZK thousands)

	18–35	36–50	51 +
Share in survey (%)	47%	45%	8%
Net monthly income	38.20	46.61	48.20
One client	30.10	36.34	35.36
More than one client	46.64	54.77	56.87
Property purchase price	2,450	2,600	2,467
One client	2,150	2,375	2,200
More than one client	2,852	2,920	2,600
Loan size	2,000	1,720	1,392
One client	1,710	1,600	1,247
More than one client	2,400	1,900	1,500
Mortgage instalment	8.03	8.05	9.03
One client	7.09	7.35	8.40
More than one client	9.46	8.88	9.68
Client's other debt	33.11	157.00	109.90
One client	10.00	75.84	52.00
More than one client	97.95	287.00	189.61

Source: CNB

The share of low-income households at risk of default is expected to increase over the next few years

The average share of households at risk of default stood at 1.3% in 2019. However, it is expected to increase significantly over the three-year horizon of both the *Baseline Scenario* and the *Adverse Scenario* (2020–2022; see section II.1.3). This increase will be due mainly to a sharp drop in the income of a proportion of households during 2020 caused by the measures introduced to counter the coronavirus pandemic (see section II.1.2 and section II.2.3). The most at-risk group are low-income households (less than CZK 25,000). Under the *Baseline Scenario*, up to 7% of these households will experience loan repayment problems on average during the scenario period (see Chart IV.14).

108 The household stress test is focused on households with a mortgage.

109 More detail on these concepts can be found in Gregor, J. and Hejlová, H. (2020): *The Household Stress Test*, Thematic Article on Financial Stability 4/2020.

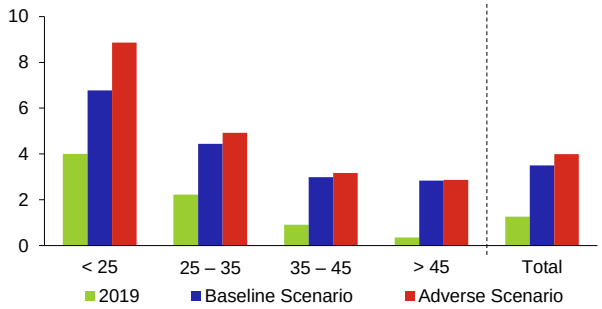
In the *Adverse Scenario*, the situation would be more serious

In the *Adverse Scenario*, up to 9% of households with net income of less than CZK 25,000 would experience repayment problems on average during the stress period (see Chart IV.14). This indicates that low-income households are significantly more sensitive to adverse economic developments than other income groups. The total share of households at risk of default across all household income groups could average 4% over the horizon of the *Adverse Scenario*. However, there significant differences in the individual stress years, with the share of vulnerable households peaking in 2020 and then gradually declining.

Chart IV.14

Shares of households at risk of default by income group

(share of households in %; x-axis: borrower's net income in CZK thousands)



Source: CNB

Note: All households with a negative financial reserve are considered to be at risk of default. The share of these households is calculated as the average over the individual quarters of the three-year scenario.

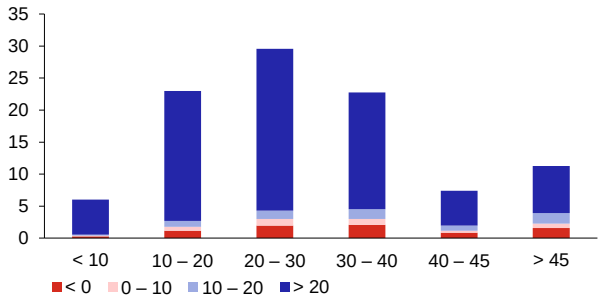
A potential escalation of the coronavirus crisis would impede loan repayment for all households in the first year of stress…

Households' default rate in the first year of the stress test will be influenced by the postponement of mortgage repayments in both scenarios analysed. In the *Baseline Scenario*, almost 8% of households with a mortgage loan will experience repayment difficulties in the first year and another 3% of households will have a reduced financial reserve (under 10% of net income). In total, this roughly matches the mortgage deferral applications registered so far (see section II.2.3). In the *Adverse Scenario*, repayment problems could arise for up to 12% of households with a mortgage loan. The potential risk of default would affect all categories of households regardless of the size of the DSTI and DTI ratios (see Chart IV.15 and Chart IV.16). In view of the number of mortgage loans in the given category, however, a slightly higher level of credit risk is still evident for households with a DSTI ratio of over 40% and a DTI ratio of over 8.

Chart IV.15

Classification of loans by DSTI ratio and financial reserves under stress in the first year of stress

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



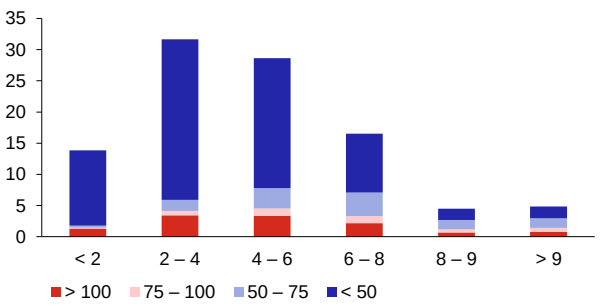
Source: CNB

Note: The colours reflect the size of the financial reserve in per cent of net income (colour scale below the chart). The values correspond to the average for the first year of stress.

Chart IV.16

Classification of loans by DTI ratio and ratio of loans provided to the hypothetically repayable loan in the first year of stress

(share of loans in %; x-axis: DTI ratio in number of net annual incomes)



Source: CNB

Note: The colours indicate the ratio of the loan provided to the hypothetically repayable loan (colour scale below the chart). The values correspond to the average for the first year of stress.

…according to the stress test, the mortgage loan default risk will probably not rise significantly until 2021

Due to the loan moratorium (see section II.1.2, Table II.1), which will help households experiencing a loss of income to bridge the period of highest risk, the risk of non-repayment of loans will be significantly reduced in 2020. Nevertheless, for some households with a sustained drop in income, the deferral of mortgage loan instalments will only postpone their

potential default. This becomes apparent in both the *Baseline Scenario* and the *Adverse Scenario* in the second year of the test. Households with loans where the DSTI ratio exceeds 40% and the DTI ratio is above 8 will be affected particularly strongly (see Chart IV.17 and Chart IV.18). Due to the assumption of a high unemployment rate even in the third year of both the *Baseline Scenario* and the *Adverse Scenario* (see Chart II.23D), the default rate among households with mortgage loans will stay relatively high in 2022.

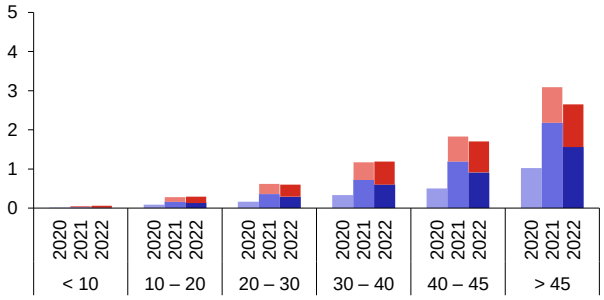
The number of defaulting households could increase further in the event of a sharp increase in interest rates

As part of the stress testing, a sensitivity analysis was performed in which an additional rise in the unemployment rate and mortgage rates – of 1, 3 and 5 pp in the final quarter of the scenario – was simulated in excess of the *Adverse Scenario*[110] (see Chart IV.1 CB and Chart IV.2 CB). In the sensitivity analysis, it is assumed that indebted households with mortgage loans have a greater incentive to find a new job, so the duration of unemployment among indebted households is only short.[111] Given a temporary loss of employment, households would thus be able to cover the short-term loss of income from their savings. This, combined with the later onset of the increased unemployment rate (in 2021 Q2; see Chart IV.1 CB), would lead to only a small rise in the cumulative default rate over the entire three-year stress period (see Chart IV.19). In the event of a change in interest rates, the effect on the cumulative default rate would be more pronounced, as the rise in interest rates and the ensuing increase in loan instalments would be of a long-term nature and could not be permanently covered from savings. An additional rise in interest rates of 5 pp would have a particularly significant effect, with the default rate among households with a DSTI ratio of between 40% and 45% increasing by just under 2 pp and that among households with a DSTI ratio of over 45% by almost 3 pp (see Chart IV.20).

Chart IV.17

Non-performing loans in each year of the scenario by DSTI ratio

(share of non-performing loans in %; x-axis: DSTI ratio in %)

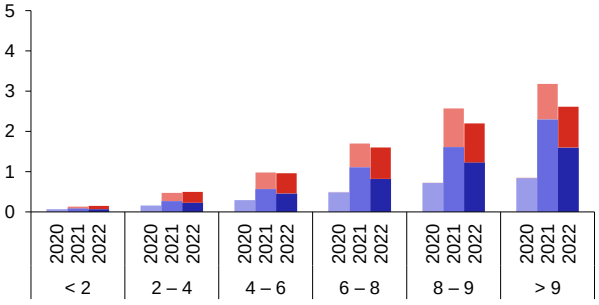


Source: CNB

Chart IV.18

Non-performing loans in each year of the scenario by DTI ratio

(share of non-performing loans in %; x-axis: DTI ratio in number of net annual incomes)



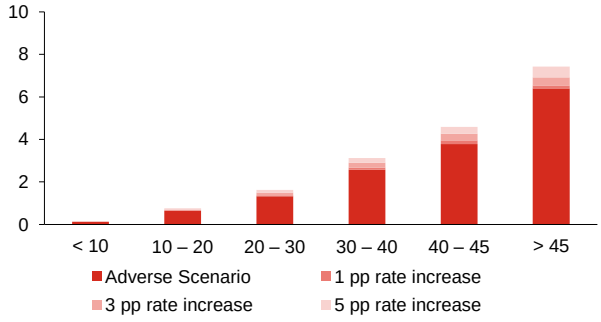
Source: CNB

Note: The share of non-performing loans in the *Baseline Scenario* is shown in blue and the additional share of non-performing loans in the *Adverse Scenario* is shown in red. A loan is indicated as non-performing if the borrower has a negative financial reserve which they are unable to cover from their savings for a period of 90 days.

Chart IV.19

Shares of non-performing loans by DSTI ratio given an additional increase in the unemployment rate

(share of non-performing loans in %; x-axis: DSTI ratio in %)



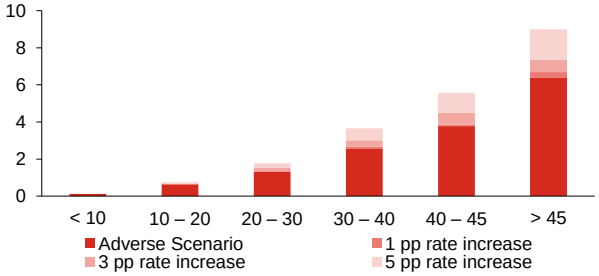
Source: CNB

Note: The chart presents the cumulative default rate for 2020–2022.

Chart IV.20

Shares of non-performing loans by DSTI ratio given an additional increase in interest rates

(share of non-performing loans in %; x-axis: DSTI ratio in %)



Source: CNB

Note: The chart presents the cumulative default rate for 2020–2022. The simulation of growth in interest rates maintained the contractual fixed-rate terms negotiated when the mortgage agreement was concluded.

110 Maintenance of fixed-rate terms is assumed in the event of a change in interest rates. A rise in interest rates will thus only affect borrowers who refixed their loans in the given period.

111 The duration of unemployment is set at 3–6 months for all the stress test scenarios.

IV.4 THE PUBLIC FINANCE STRESS TEST

The CNB reviews and evaluates the risks of concentration of sovereign exposures

Since 2015, based on its internal methodology, the CNB has been annually reviewing and evaluating the risks of concentration of exposures to sovereign issuers in the balance sheets of credit institutions having their registered offices in the Czech Republic. In its *Financial Stability Reports* it informs the market about which sovereign exposures it has identified as systemically important and whether it will require relevant credit institutions to meet an additional capital requirement to cover the risk of concentration of these exposures at a three-year horizon. The methodology defines an important sovereign exposure as an exposure to a sovereign issuer with a minimum ratio of 100% to the credit institution's eligible capital. It becomes systemic if the assets of credit institutions with important sovereign exposures exceed 5% of the total assets of all the credit institutions operating in the Czech Republic, including branches of foreign banks. It is indicated that an additional capital requirement must be met if the three-year outlook for the sovereign risk indicator (ISR) exceeds one of its thresholds.[112] The CNB requires additional capital where the credit institution holds exposures in excess of the limit and this above-limit exposure is not already sufficiently covered by capital.[113]

The CNB has recalibrated the modelling system

As part of deriving the ISR, the CNB carries out regular recalibrations. This is done mainly in order to include new observations and instances of sovereign debt crises, but also to reflect data revisions and transitions to new statistical methodologies. The public finance stress test presented below is based on an updated methodology available on the CNB website.[114]

Exposures to Czech government debt were assessed as systemically important…

The CNB assessed domestic credit institutions' investments in Czech government bonds as a systemically important sovereign exposure. The value of these exposures fell by CZK 15 billion year on year to CZK 514 billion at the end of 2019, accounting for 7.5% of these institutions' total assets. Despite this decrease, the number of institutions with important exposures went up from eight to ten. Their assets accounted for 62% of the sector's total assets, as against 43% a year earlier. Exposures to other governments, the EU and the EIB were not found to be systemically important.

…but their riskiness did not exceed the thresholds, despite the current outlook

The ISR was estimated for systemically important exposures. Its three-year outlook attained a highest value of 0.66% in 2020 (see Table IV.11). It is thus very far from the supervisory thresholds of 5% and 8%. The CNB will therefore not require credit institutions having their registered offices in the Czech Republic to meet an additional capital requirement to cover the risk of concentration of exposures to the Czech government.

In the *Adverse Scenario* only a few variables exceeded their critical limit

The *Adverse Scenario* (see section II.1.3) assumes that the first wave of the pandemic would recede more gradually and, above all, that another wave would emerge in late 2020. As a result of this second wave, the contraction in GDP would deepen and its year-on-year change would significantly exceed the critical limit (see Table IV.11). A decline in general government revenue and a massive rise in government expenditure related to the ongoing coronavirus pandemic and the impacts of stabilising fiscal measures would cause the primary balance to deteriorate to -7.5% of GDP in the first year of stress and to exceed the critical limit as a result. Negative financial market sentiment would increase the required credit premia for 10Y government bond yields. The increase in yields and concurrent deep decline in GDP, coupled with a slowdown in inflation, would cause the difference between the real 10Y government bond yield and real GDP growth to exceed the critical limit as well in the first year of the *Adverse Scenario*. The critical limits for the variables monitoring rule of law and the share of foreign holders of government debt, the levels of which are already regarded as risky in terms of the ISR, are exceeded over the entire forecast horizon. The ISR would thus reach 0.66% in 2020 (see Chart IV.21). In the years ahead, the *Adverse Scenario* assumes that general government would remain in a primary deficit in excess of the critical limit. At the same time, the long end of the yield curve would rise relatively fast owing to a rising credit premium. This would cause the year-on-year difference in the 10Y government bond yield to exceed the critical limit in 2021 and 2022. However, debt service costs would not rise significantly as a result, since a large part of interest costs at the test horizon stem from debt instruments issued in the past. Moreover, the average yield on debt instruments newly issued to finance future borrowing requirements in the *Adverse Scenario* would still be relatively low by historical comparison.

112 The CNB primarily monitors two ISR thresholds: a soft threshold of 5% indicating the creation of an additional capital requirement where an additional expert analysis proves this to be necessary, and a hard threshold of 8% indicating unconditional creation of an additional capital requirement.

113 The above-limit part of a sovereign exposure is determined using the ISR where the latter exceeds its thresholds. The ISR provides a simplified assessment of the risk of default on a sovereign exposure. The threshold separating the limit and above-limit parts of a sovereign exposure gradually falls as this indicator increases. As a result, the above-limit part rises. The highest effective limit is 222% and the lowest is 0%.

114 https://www.cnb.cz/en/financial-stability/stress-testing/public-finance-sector/.

Table IV.11

Czech public finance stress test

(%)

	Actual value[#]	*Adverse Scenario*			
	2019	2020	2021	2022	Critical limit
Macroeconomic variables					
Year-on-year difference in real GDP growth (pp)	-0.3	-16.0	12.0	3.4	< -1.0
Current account balance (% of GDP)	-0.4	-1.3	-0.9	0.0	< -1.4
Gross national savings (% of GDP)*	25.9	25.9	25.9	25.9	< 19.3
External debt (% of GDP)*	77.6	77.6	77.6	77.6	> 113.5
Difference between real 10Y GB yield and real GDP growth (pp)	-3.9	13.7	2.5	-0.5	> 6.4
Fiscal variables					
Government debt (% of GDP)	30.8	43.0	47.2	49.8	> 61.4
Government budget primary balance (% of GDP)	1.0	-7.5	-4.5	-3.5	< -2.4
Year-on-year difference in 10Y government bond yield (pp)	-0.3	0.4	1.1	0.5	> 0.5
Government debt maturing within one year (% of GDP)	3.7	6.8	7.6	7.3	> 15.1
Share of government debt maturing within one year (%)	12.0	15.8	16.1	14.6	> 33.2
Share of foreign currency debt (%)	14.9	12.8	6.9	3.0	> 29.0
Share of non-residents in debt holdings (%)*	39.7	39.7	39.7	39.7	> 25.9
Institutional variables					
Government effectiveness (WGI score)*	0.9	0.9	0.9	0.9	< 0.7
Political stability (WGI score)*	1.0	1.0	1.0	1.0	< 0.8
Rule of law (WGI score)*	1.0	1.0	1.0	1.0	< 1.2
Banking crisis	No	No	No	No	= Yes
Past sovereign defaults	No	No	No	No	= Yes
Sovereign risk indicator (ISR, %)	**-**	**0.66**	**0.64**	**0.64**	

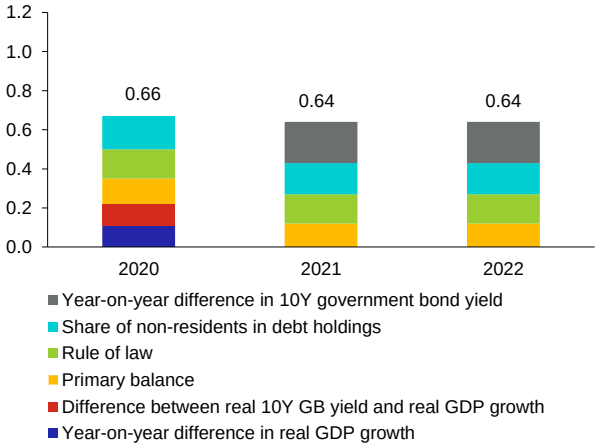
Source: CNB, CZSO, ECB, World Bank

Note: The symbol > (< or =) denotes that a higher (lower or equal) value means a breach of the critical limit and indication of increased risk. The figures are rounded. Indications of a breach of the critical limit are based on unrounded figures. Where the limit is breached, the relevant variables are further indicated in red. * Variable not modelled; last known value assumed in projection. # Values known when Inflation Report II/2020 was being prepared.

Chart IV.21

Decomposition of the sovereign risk indicator in the *Adverse Scenario*

(%)

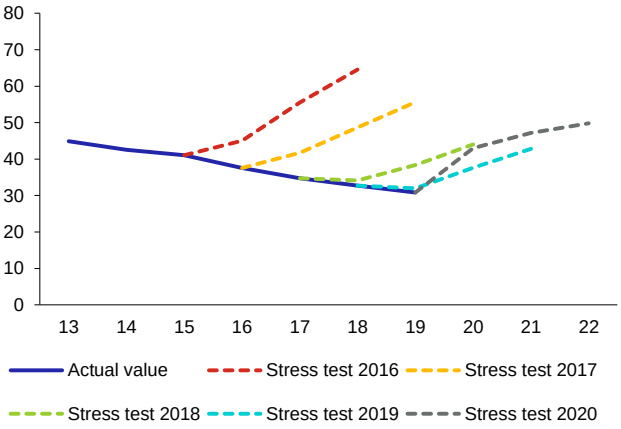


Source: CNB, World Bank

Chart IV.22

Comparison of the trajectories of public debt in the public finance stress tests

(% of GDP; right-hand scale: bp)



Source: Refinitiv

Note: Year-end data.

The government's discretionary measures to mitigate the impacts of the second wave of the pandemic would increase the general government deficit

The overall general government budget balance would widen to -8.3% of GDP in 2020 under the *Adverse Scenario* (see section II.2.1). The second pandemic wave assumed in the *Adverse Scenario* would lead to a deeper downturn in economic activity and higher tax revenue shortfalls. The government would reintroduce support expenditure measures, though on a smaller scale due to the risk of high deficits and rapidly rising debt. The stabilising fiscal measures to support the economy would be one-off in nature and their impacts would largely fade out in the subsequent years of the scenario. Nonetheless, the overall balance would reach -5.2% of GDP in 2021 and -4.4% of GDP in 2022. Beyond the impacts of the pandemic, the general government deficit in these years would be exacerbated by the increase in state budget mandatory expenditure recorded before the pandemic broke out (see section II.2.1). Total current primary expenditure of general government increased by a sizeable 7.7% year on year in 2019 (and even by 8.2% in 2018).

Government debt would surge in the *Adverse Scenario*

The Czech Republic's government debt stood at 30.8% of GDP at the end of 2019. Government debt would rise significantly under the *Adverse Scenario*, reaching almost 50% of GDP. The speed of the growth in government debt is unprecedented by comparison with previous stress tests (see Chart IV.22). At the three-year horizon, however, government debt would remain below the "debt brake" threshold of 55% of GDP[115] and does not exceed its critical limit of 61.4% of GDP. The stress test assumes that the government guarantees provided are not called (see Table II.1). If they were, the need to finance them by issuing new debt instruments would cause an additional increase in government debt.

A reassessment of the sustainability of government debt by foreign investors poses a medium-term risk

Confidence in the sustainability of Czech public finances has proved to be robust so far (see section II.1.3). However, a sharp increase in government debt followed by a moderate public finance consolidation could foster adverse market sentiment on the bond market and portfolio reallocation mainly by non-residents, resulting in higher interest costs for new issues of Czech government bonds. The impact of higher debt service costs would be simultaneously moderated in the test by low government debt and a dominant proportion of funding in the domestic currency.[116] The share of non-residents in holdings of Czech government debt is 39.7%, relatively high above the critical limit.

115 Under Article 14 of Act No. 23/2017 Coll., on Budget Responsibility, the government must take steps leading to sustainable public finances if general government debt net of a cash reserve exceeds 55% of GDP. This does not apply if the economy is in a recession or recovering after a crisis.

116 The low share of government debt issued in foreign currencies (14.9%) means that the domestic government sector is facing low exchange rate risk.

V. 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 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. It introduces the intermediate objectives of macroprudential policy and the instruments available for fulfilling those objectives. It then evaluates the settings of the capital buffers used to enhance the resilience of the Czech banking sector. It goes on to provide detailed information about risks relating to property exposures. It describes the ESRB's activities during the coronavirus crisis and the regulatory approach in the area of sustainable finance. To conclude, it discusses operational risk, which may also become systemic in certain conditions.

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

The CNB sets macroprudential policy instruments on the basis of an assessment of the intensity of systemic risks. In conformity with an ESRB recommendation, it focuses on the fulfilment of intermediate objectives (see Table V.1) reflecting the existence of several sources of systemic risk and their own transmission mechanisms.

Table V.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	Strong credit recovery accompanied by easing of lending standards	Yes	Countercyclical capital buffer	Yes, lowered to 1.0% from 1 April 2020 and to 0.5% from 1 July 2020	V.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 (in particular real estate exposure)	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, eased on 1 April 2020	V.4
	Risk of excessive household indebtedness and debt service	Yes	LTI, DTI, LSTI, DSTI caps	No, DTI abolished from 1 April 2020, DSTI abolished from 1 July 2020	V.4
Mitigate excessive maturity mismatch and illiquidity	Long-term liquidity risk	Potential	Macroprudential NSFR	Microprudential general requirement since 2016	III.2.3
	Short-term liquidity risk	No	Macroprudential LCR	Microprudential minimum standard since 2015	III.2.3
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	IV.4
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)	No, O-SIIs identified, different instrument applied	V.2
		Yes	Systemic risk buffer	Yes, since 2017 for five banks	V.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	-

Source: CNB

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 macroprudential policy (ESRB/2013/1).

Among the most important macroprudential instruments in the current regulatory framework defined in CRD IV/CRR are capital buffers, which are applied on top of the 8% minimum capital requirement, and the Pillar 2 requirements (see section III.2.1). The CNB currently applies three capital buffers to increase the resilience of the banking sector (see Table V.2). The buffer rates reflect the cyclical and structural characteristics of the Czech banking sector.

The capital conservation buffer (CCoB) and the countercyclical capital buffer (CCyB) are used to absorb losses with the aim of mitigating the negative impacts of shocks on the functioning of the banking sector. The CCoB has applied to all banks in the Czech Republic since 2014 at the maximum rate of 2.5%. Although the required CCoB rate should not change over time, a temporary breach can be expected in times of stress, in line with its purpose. The CNB expects that the CCoB may be breached by some institutions during the coronavirus crisis in order to cover losses or prevent a credit crunch, and will tolerate such breaches. The CCyB is created when cyclical risk are accumulating in institutions' balance sheets and released when those risks are decreasing (see section V.3).

The systemic risk buffer (SRB) can be used to suppress various sources of structural risks to banking sector stability. The CNB currently uses it to mitigate the risks associated with the existence of systemically important banks. Since 2017, five systemically important banks have been required to maintain a non-zero buffer, with rates ranging between 1% and 3%. After the transposition of CRD V/CRR II, however, it will only be possible to use the capital buffer for other systemically important institutions (the O-SII buffer) to mitigate risks connected with the systemic importance of institutions (see section V.2). The buffer mitigating the risks associated with systemically important institutions should be used only as the last-resort capital buffer so that the functioning of the banking sector is not disrupted in very adverse economic situations. At the time of publication of this Report, the sum of the capital buffers – the combined capital buffer – ranges between 3.0% and 6.0% for individual banks depending on their systemic importance.

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

Capital buffer	Rate	Date of effect
Capital conservation buffer (CCoB)	2.50	2014
Countercyclical capital buffer (CCyB)	0.50	1 July 2020
Systemic risk buffer (SRB)	1.00-3.00	2014
Buffer for other systemically important institutions (O-SIIs)	-	-

Source: CNB

Since 2015, the CNB has been applying instruments taking the form of recommended credit ratio limits in order to mitigate risks associated with the provision of retail loans secured by residential property. Section V.4 provides a more detailed description of the risks associated with the residential property market and mortgage lending and of the reasons for easing the instruments used to mitigate these risks.

V.2 STRUCTURAL CAPITAL BUFFERS

Robust capital buffers are the basis for maintaining banks' stability…
The main task of microprudential and macroprudential policy in the current situation is to ensure that the banking sector is sufficiently resilient to the impacts of the coronavirus crisis – both those that have already been felt, and the long-term ones. The capitalisation of the Czech banking sector is still robust. Besides the combined capital buffer (the sum of the CCoB, the CCyB, the SRB and the O-SII buffer), the capital buffer in excess of the regulatory minimum consists of a capital surplus on top of the regulatory requirements (see section III.2.1).

…and the CNB regards the combined capital buffer as a loss absorption instrument
In the current situation, the CNB views the capital buffer mainly as an instrument enabling the banking sector to absorb potential systemic losses.[117] If such losses were to occur, the CNB expects that it would first completely release the CCyB (see section IV.1). It also expects that, where necessary, institutions will use the CCoB to absorb potential losses, i.e. maintain their capital ratios at least at a level corresponding to the sum of Pillar 1, Pillar 2 and, where relevant, the current SRB. The CNB also does not rule out the use of the SRB by systemically important institutions where necessary to maintain the smooth flow of credit to the real economy in very adverse economic situations. Overall, the CNB therefore considers it natural that, following the potential release of the CCyB, banks would temporarily not maintain the combined capital buffer in full and would use the CCoB and the SRB in order to be able to continue providing services to their clients in the event of strongly adverse developments like the economy is currently experiencing.

The current buffers may not fully cover the increased risks and uncertainties associated with the present situation
The potential level of the banking sector's systemic losses depends on the future evolution of non-performing loans and the expected credit losses arising from them.[118] The current trend of low provisioning despite evident growth in credit risk, coupled with the high probability of materialisation of significant credit losses in the quarters ahead (see section III.2.2) and the high level of uncertainty regarding future developments, signals a need for a high degree of prudence. Another factor is legislative changes that will take effect in 2021. Besides the impact of macroeconomic risks on capital, the banking sector's resilience will be affected by previously approved and planned changes to EU regulations. One change scheduled to take effect in 2021 will lead to a decrease in the capital buffers of domestic systemically important institutions.

No later than after the transposition of CRD V/CRR II into Czech law, the CNB will start to apply the O-SII buffer to mitigate the risks of systemically important institutions…
The CNB, like several other national macroprudential authorities in Europe, currently applies the SRB to mitigate risks associated with systemically important institutions. After the transposition of CRD V/CRR II, it will only be possible to use the capital buffer for other systemically important institutions (the O-SII buffer) for these purposes. The highest O-SII buffer rate will be 3%.[119] In the case of domestic institutions that are subsidiaries of foreign institutions identified by their domestic regulators as nationally or globally systemically important (O-SIIs or G-SIIs), the CNB will be able to set the upper limit on the O-SII buffer no more than 1% above the foreign parent institution's O-SII or G-SII buffer rate as set by its domestic regulator. The transposition will also allow the CNB to set the sum of the structural buffers (the O-SII buffer and the SRB) at a maximum level of 5% without consulting the European Commission (the EC).[120]

…the CNB will apply the bucketing approach to calibrate the O-SII buffer…
The CNB will calibrate the O-SII buffer using a methodology based on the bucketing approach with supervisory assessments,[121] which uses systemic importance scores calculated according to the EBA Guidelines.[122] The calculated systemic importance score will classify institutions into score buckets, with a specific O-SSI buffer rate assigned to each bucket. This approach seems appropriate mainly because of its transparency and use as best practice by EU Member States on the basis of the ECB's methodological guidelines. This facilitates communication with the relevant authorities in this area. The highest rate for the calibration of the buffer rate in the highest-score bucket will correspond to the

117 Systemic losses are losses where the banking sector as a whole records a loss.
118 However, factors of future interest profit are also highly relevant.
119 This is an increase of 1 pp compared with the current regulation, which caps the O-SII buffer rate at 2% or the parent's O-SII/G-SII buffer rate.
120 It will be possible to apply a higher rate after consulting the EC and obtaining its approval.
121 The decision also takes into account information obtained in the course of supervising the relevant institutions.
122 EBA (EBA/GL/2014/10: https://eba.europa.eu/eba-publishes-criteria-to-assess-other-systemically-important-institutions-o-siis-).

legislative O-SII buffer rate limit of 3%. It will thus be equal to the highest SRB rate the CNB is currently using to mitigate systemic importance risks.[123]

…using the systemic importance score calculated at the consolidated level

The systemic importance score used to calibrate the O-SII buffer will be calculated at the consolidated level. The same method is also used to identify O-SIIs. This is because the complexity of intra-group links may create or increase systemic risk for the institution. Calibrating the O-SII based on the score calculated at the consolidated level eliminates this risk and ensures that a symmetrical approach is applied to institutions.[124]

The future O-SII buffer rate for institutions with a currently non-zero SRB rate will be lower than the current one

The CNB will be able to set the upper limit on the O-SII buffer rate no more than 1% above the O-SII or G-SII buffer rate of the foreign parent institution as set by its domestic regulator. Based on the aforementioned O-SII buffer rate calibration method and the said cap equal to the foreign parent institution's O-SII or G-SII buffer rate, the total capital buffers of some domestic systemically important institution will in all probability decline.

It will still be possible to use the SRB to cover structural risks

Under the current legislation, the SRB can only be applied universally to all exposures or all domestic exposures of the banking sector or one or more parts thereof. By contrast, CRD V/CRR II also allows the SRB to be applied to a sectoral subset of exposures, which can be defined using three main dimensions[125] and three sub-dimensions (see Table V.3). The application of the sectoral SRB is conditional on the systemic risk level of the subset of exposures, which should be assessed using three criteria: the size of the exposures concerned, their riskiness, and their interconnectedness with other types of exposures.

Table V.3

Main dimensions and sub-dimensions for defining the subsets of exposures to which the SRB can be applied

Main dimension	Sub-dimension
Debtor or counterparty sector	Economic activity
Type of exposure	Risk profile
Type of collateral	Location of collateral

Source: CNB

Banks must apply a very prudent approach to capital management

Given the unfavourable economic outlook and the high degree of uncertainty about future developments, it is vital that banks apply a highly prudential approach to capital management. If the probability of macroeconomic developments following the *Adverse Scenario* were to increase, the capital buffers might not be sufficient to absorb the losses and the current capital surpluses might have to be used. In such a situation, premature use of a large proportion of banks' capital surplus could become a source of systemic risk. Banks should thus refrain from making dividend payouts and taking any other action that might jeopardise their resilience until both the acute and longer-term impacts of the coronavirus crisis disappear. The CNB stands ready to use all its regulatory instruments to mitigate the risk of a decrease in the banking sector's resilience and its ability to lend to the real economy.

123 The CNB's current and previous analyses show that the upper O-SII limit should be at least 3% to cover the risks associated with systemic significance; see the thematic article *An Additional Capital Requirement Based on the Domestic Systemic Importance of a Bank* by Skořepa and Seidler in FSR 2012/2013.

124 Any specificities not reflected in the score at the consolidated level can be accounted for on the basis of the subsequent supervisory assessment.

125 As a result, the subset of exposures should never be broader than the four specific sectoral exposures defined in CRD V. They comprise exposures to natural persons secured by residential property, other exposures to natural persons, exposures to legal entities secured by commercial property and other exposures to legal entities.

V.3 THE COUNTERCYCLICAL CAPITAL BUFFER

The CNB has been setting the countercyclical capital buffer (CCyB) since 2014 with the aim of eliminating the negative impacts of the financial cycle on the banking sector and thus preventing the transmission of negative 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 estimates the appropriate CCyB rate on the basis of a comprehensive assessment of a set of macrofinancial indicators specific to the banking sector. The CNB regards as appropriate a CCyB rate that is sufficient to cover the potential losses stemming from cyclical risks while maintaining banks' capital capacity for lending at a sufficient level.[126]

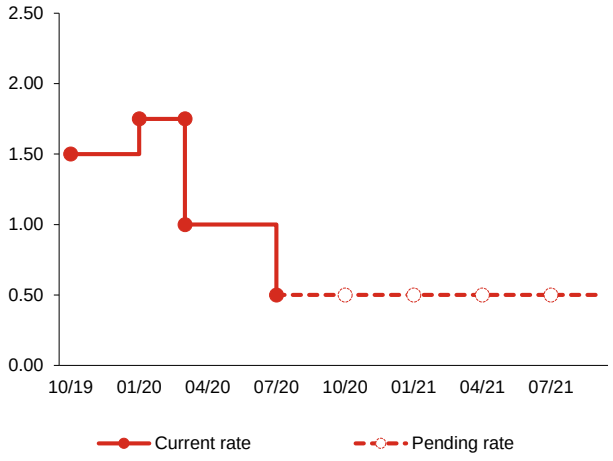
The CNB lowered the CCyB rate to 1% with effect from April this year in direct response to the coronavirus pandemic

In March 2020, the CNB responded to the emerging economic downturn and markedly worse economic outlook caused by the global coronavirus pandemic by adopting a set of stabilisation and support measures (see section II.1.2 and Table II.1). One measure was a reduction of the CCyB rate from 1.75% to 1%.[127] This was intended to send out a signal that banks had sufficient room to cover the expected growth in the business sector's operational funding needs despite the expected worsening of credit portfolio quality (see Chart V.1). The reduction in the CCyB of around CZK 20 billion will allow banks to absorb part of the credit losses that will in all probability occur in the coming quarters.

Chart V.1

Current and pending CCyB rate in the Czech Republic

(% of total risk exposure)

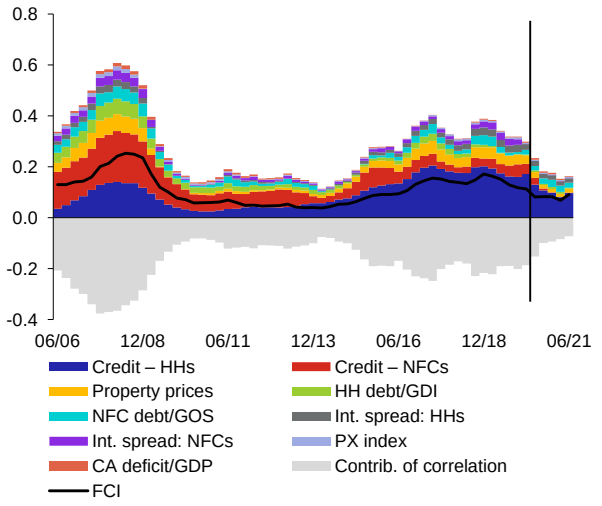


Source: CNB

Chart V.2

Financial cycle indicator and its estimate in the *Baseline Scenario*

(0 minimum, 1 maximum)



Source: CNB

Note: The black vertical line separates the observed levels from those based on the forecast of the individual FCI components. GDI denotes gross disposable income of households, GOS stands for gross operating surplus of non-financial corporations. The interest spread is 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 due to 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. The method for constructing the FCI is described in Plašil, M., Seidler, J., Hlaváč, P. (2016): *A New Measure of the Financial Cycle: Application to the Czech Republic*, Eastern European Economics, 54(4).

The financial cycle indicator points to a drop in newly accepted cyclical risks in the next 12 months

The aggregate financial cycle indicator (FCI) serves as a starting point for assessing shifts of the domestic economy in the financial cycle (see Chart V.2). The path of the indicator observed in 2019 points to a gradual decrease in newly

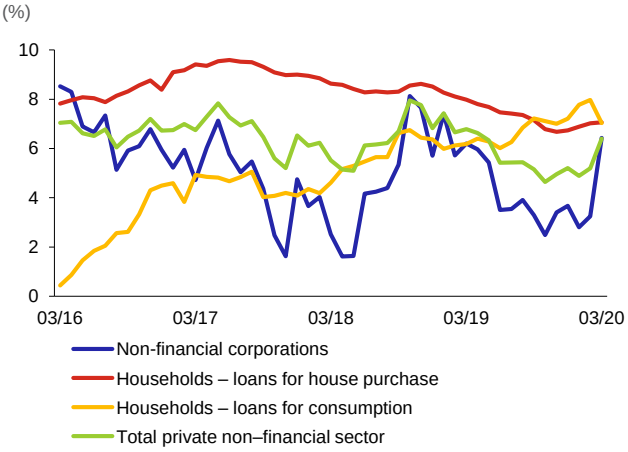
126 For more details on the setting of the CCyB rate see the methodological document *The CNB's approach to setting the countercyclical capital buffer*, which can be found on the CNB website, and Hájek, J., Frait, J., Plašil, M. (2017): *The Countercyclical Capital Buffer in the Czech Republic*, thematic article, FSR 2016/2017, or 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.

127 The history of CCyB rate decisions is available at: https://www.cnb.cz/en/financial-stability/macroprudential-policy/the-countercyclical-capital-buffer/.

accepted cyclical risks in banks' balance sheets, mainly due to weakening credit growth (see Chart V.3 and Chart V.4). If the economic situation were to worsen markedly (see section II.1.2), the domestic economy would very likely enter a recessionary phase of the financial cycle this year. The *Baseline Scenario* assumes a continuing downward trend in the FCI at least until the start of 2021. Newly accepted cyclical risks will thus decrease further if the *Baseline Scenario* materialises in the quarters ahead.

Chart V.3

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

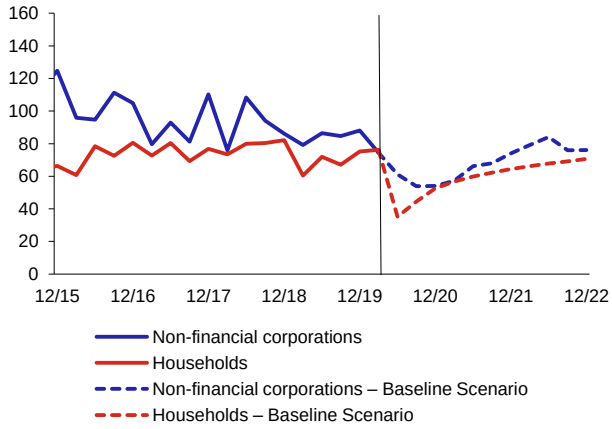


Source: CNB

Chart V.4

Genuinely new loans to the private non-financial sector

(three-month totals in CZK billions)



Source: CNB

Credit activity weakened during 2019 and can be expected to fall further

Year-on-year growth in loans to the private non-financial sector slowed steadily during 2019. Increased borrowing by non-financial corporations was seen in March 2020 owing the negative impacts of the anti-pandemic measures on their operating cash flows (see Chart V.3 and section II.2.2). However, drawdown of new loans slowed markedly in April. New loans may rise temporarily in the months ahead in line with the roll-out of the COVID III and COVID Plus credit and guarantee programmes. Despite the state support schemes, the *Baseline Scenario* (see Table II.1) assumes a significant drop in credit activity in 2020 and 2021 and, in the case of non-financial corporations, a temporary drop to negative levels (see Chart II.33 and Chart II.40). Consistent with this is a sharp fall in drawdown of genuinely new loans (see Chart V.4).

The cyclical risks in banks' balance sheets remain elevated and expected credit losses are growing

The cyclical risks in banks' balance sheets increased in the previous expansionary phase. Despite the sharp economic deterioration, these risks are not materialising at the systemic level yet. This is due mainly to the stabilisation and support measures adopted by the government (see Table II.1). However, loan impairment losses surged in March and April 2020 (see Chart V.5), indicating an upward revision of banks' expectations regarding credit losses (see section III.2.2). The growing expected losses and greater prudence of banks are reflected not only in an increase in the costs of risk, but also in indications provided by banks themselves in the Bank Lending Survey (see Chart V.1 CB and Chart V.3 CB).

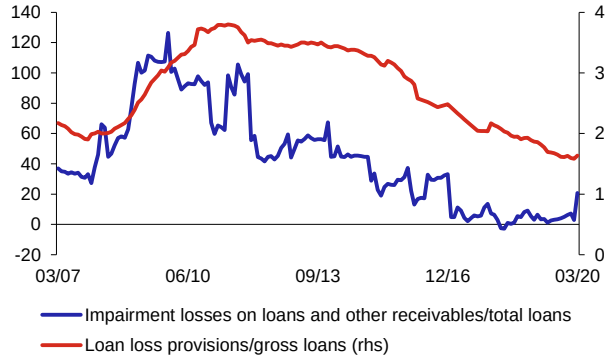
Risks weights remain low and the banking sector's vulnerability is still elevated

Risk weights on loan portfolios under the IRB approach are an important indicator for assessing the banking sector's vulnerability over the financial cycle. The CNB derives the necessary countercyclical buffer for covering banks' vulnerability caused by the cyclicality of implicit risk weights from the difference between the actual and the hypothetical capital requirement.[128] For regulatory and methodological reasons, risks weights respond with a lag, so the sudden slowdown in the domestic economy has not been reflected in their growth yet (see Chart V.6). A drop in risk weights for loans to households was even seen in late 2019 and early 2020. At the end of 2019 Q4, the actual capital requirement was CZK 182 billion, while the hypothetical capital requirement with the risk weights observed at the start of the expansionary phase of the financial cycle (2015 Q4) was CZK 209 billion (see Chart V.7). The difference between the two requirements is around CZK 27 billion. The economic deterioration, accompanied in all probability by a drop in credit portfolio quality and growth in the default rate, is likely to lead to a gradual rise in risk weights in the years ahead. The banking sector's increased vulnerability is confirmed by an alternative vulnerability indicator – the ratio of the margin on the stock of loans to provisions per unit of credit[129] – which, unlike the FCI, rose further in 2019 (see Chart V.8).

128 Specifically, the CNB monitors the difference between the combined capital requirement with risk weights fixed at the levels observed at the start of the strongly expansionary phase of the financial cycle, and the combined capital requirement in the current period.

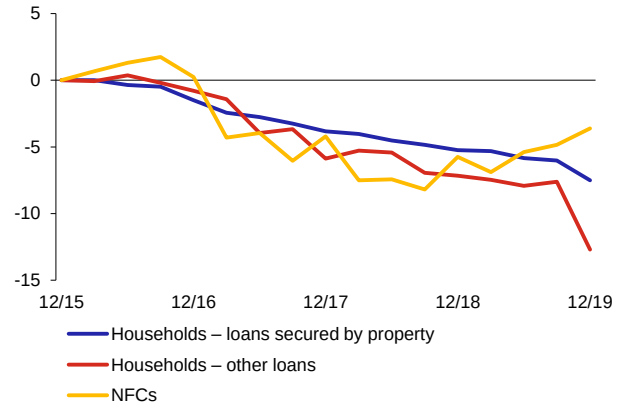
129 The indicator's construction, properties and relevance to CCyB rate decisions are discussed in Pfeifer, L., Hodula, M. (2018): *A Profit-to-Provisioning Approach to Setting the Countercyclical Capital Buffer: The Czech Example*, CNB Working Paper 5/2018, Czech National Bank.

Chart V.5
Loan impairment losses and loan loss provisions
(bp; right-hand scale: %)



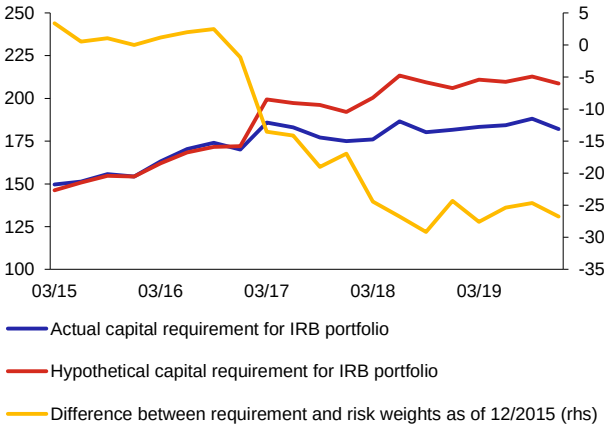
Source: CNB
Note: Impairment losses are the ratio of growth in net impaired loans to total bank loans. Data adjusted for exposures to the Czech Export Bank and the Czech-Moravian Guarantee and Development Bank.

Chart V.6
Change in risk weights compared with the start of the strongly expansionary phase of the financial cycle
(pp)



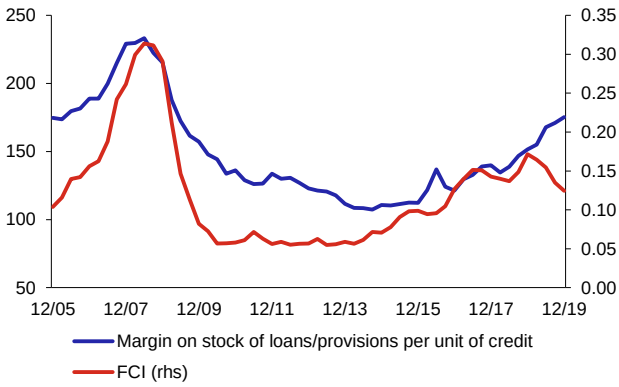
Source: CNB
Note: According to the CNB's analyses, the strongly expansionary phase of the financial cycle started in 2015 Q4.

Chart V.7
Actual and hypothetical capital requirements based on the application of risk weights from 12/2015
(CZK billions)



Source: CNB
Note: 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.

Chart V.8
Ratio of the interest rate margin to provisions and the FCI
(%; right-hand scale: 0 minimum, 1 maximum)



Source: CNB
Note: The margin on the stock of loans is the difference between the client lending rate and the client deposit rate.

The CCyB rate should cover the cyclical risks in the banking sector's balance sheets

The prudential estimate of unexpected losses[130] (see Chart V.9, line: *Conditional distribution of credit losses*) is around CZK 14.8 billion. This indicates a need to set the CCyB rate at 0.75% in the current phase of the cycle.[131] The same CCyB rate is indicated by the conversion based on the FCI (see Table V.1 CB; the last known FCI value is 0.124).[132] These approaches primarily provide information about the absolute size of unexpected credit losses associated with the developments in real economy. In order to comprehensively evaluate the optimum CCyB rate, it is also desirable to take

130 The CNB estimates potential unexpected losses using the conditional probability distribution of credit losses. This is one of the quantitative approaches used by the CNB as a guide to setting the CCyB rate. More detailed information about the construction can be found in Appendix 3 of *The CNB's approach to setting the countercyclical capital buffer*.

131 The estimate of potential unexpected losses of around CZK 14.8 billion implies 0.58% of risk-weighted assets.

132 Both estimates are close to the threshold between the 0.5% and 0.75% rates.

into account the coverage of the banking sector's vulnerability caused by cyclically lowered risk weights on IRB loan portfolios. At the current relative levels of the capital requirements (excluding the CCyB), a return of risk weights to the level observed at the start of the expansionary phase of the financial cycle would imply an absolute increase in the capital requirements of CZK 27 billion (1.06% of risk-weighted assets). The simple sum[133] of the potential unexpected losses (CZK 14.8 billion) and the expected shift of risk weights to a higher level (CZK 27 billion) implies a capital need of CZK 41.2 billion. This amount of capital represents 1.62% of risk-weighted assets as of the end of 2019 (CZK 2,537 billion), implying a CCyB rate of 1.75% (see Chart V.9).

The CNB lowered the CCyB rate further to 0.5%…

The above quantitative approaches imply a CCyB rate of 1.75%. The lowering of the CCyB rate to 1% at the start of April was a forward-looking response to a significant increase in tensions in financial markets (see Chart II.15), a marked deterioration of the outlook for the domestic economy, and an increased probability of growth in potential credit losses. Given the high likelihood of adverse developments in the domestic economy, the Bank Board decided to lower the CCyB rate further to 0.5% with effect from 1 July 2020. The banking sector's current capital surplus should be sufficient to absorb the expected losses, so there is no need to reduce the CCyB rate to 0% at the moment. Keeping the rate at a non-zero level will simultaneously provide some room to soften the capital requirement further in the event of significant rise in risk weights or credit losses and a decline in spare capacity to lend to the economy.

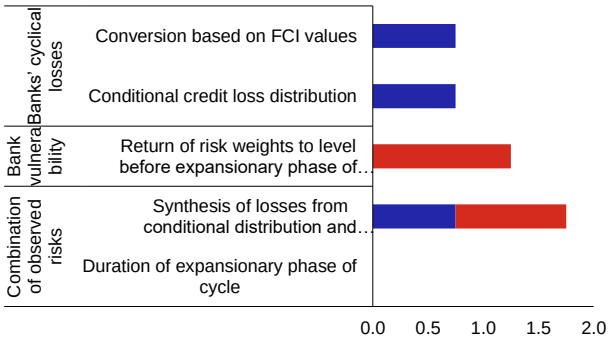
…and stands ready to fully release the CCyB

The CNB remains ready to release the CCyB fully. The direct signal for such a step will be the materialisation of cyclical risks accepted earlier as credit losses and an increase in risk weights.

Chart V.9

CCyB rate covering financial cycle effects monitored

(% of total risk exposure)

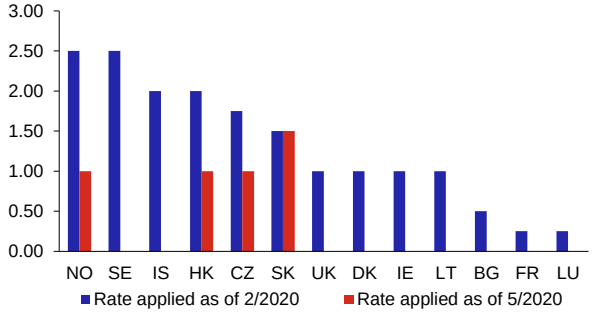


Source: CNB

Chart V.10

Countries with non-zero CCyB rates

(% of total risk exposure)



Source: ESRB, BCBS

Note: Data as of 29 May 2019. The Czech Republic will lower the CCyB rate to 0.5% with effect from 1 July 2020.

Other European countries responded to the coronavirus pandemic by releasing the CCyB rate

In an effort to ease conditions sufficiently and maintain the supply of credit, other European countries also lowered the CCyB rate (see Chart V.10). Most of these countries fully released their CCyBs, albeit from lower rates than in the Czech Republic or with generally lower capital surpluses in their banking sectors. As for non-European countries, Hong Kong has a non-zero CCyB rate. It lowered its CCyB rate from 2% to 1% in March 2020.

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,[134] 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 2019 Q4, the ratio was 88% and the relevant gap -4.4 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.[135] 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 (see Chart V.2 CB). However, this indicator must be also viewed as only a very rough way of assessing the position in the financial cycle, with limited direct usefulness as regards deciding on the CCyB rate.

133 The sum has to be adjusted for defaulted exposures from the conditional credit distribution, for which the effect of change in risk weights is not considered (i.e. CZK 0.6 billion, or 0.02%).

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

135 A critique of this approach is presented in *The CNB's approach to setting the countercyclical capital buffer* (Appendix 1) and in Geršl, A. and Seidler, J: *Excessive Credit Growth as an Indicator of Financial (In)Stability and its Use in Macroprudential Policy*, thematic article, FSR 2010/2011.

V.4 RISKS ASSOCIATED WITH PROPERTY MARKETS

V.4.1 Risks associated with residential property markets

The CNB has paid increased attention to risks associated with the residential property market in recent years
A spiral between rising property prices and increasing debt financing of property purchases has been a major source of systemic risks in recent years. The CNB responds to these risks by applying instruments of macroprudential policy and microprudential supervision. The assessment of the risks is based on the set of rules contained in the Official Information *Recommendation on the management of risks associated with the provision of retail loans secured by residential property* (the "Recommendation"). The main source of information for aggregate analyses in this field is the semi-annual *Survey of loans secured by residential property* (the "Survey"). It contains detailed information on individual loans and enables the CNB to check compliance with the recommended limits across the banking sector. Besides conducting a detailed assessment of newly accepted risks, the CNB carefully analyses the impacts of the current economic situation on the materialisation of previously accepted credit risks in financial institutions' balance sheets (see section IV.3).

The recommended limits on credit ratios were eased because of the coronavirus pandemic…
Based on expectations of a significant change in market conditions, the CNB Bank Board at its meeting on 1 April 2020 eased the credit ratio limits applying to mortgage lending. The limit on the loan-to value (LTV) ratio for new mortgage loans was increased from 80% to 90%. Lenders may apply a 5% exemption to mortgages with higher LTVs. The recommended limit on the debt service-to-income (DSTI) ratio was raised from 45% to 50%, with the option of applying a 5% exemption to loans provided in the quarter. The cap on the debt-to-income (DTI) ratio was simultaneously removed from the Recommendation.

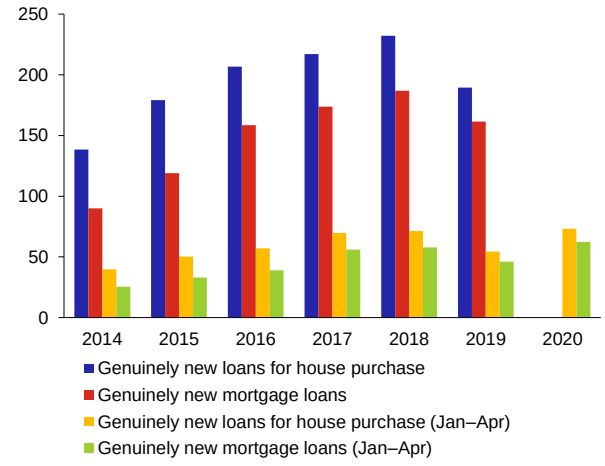
…the softening or abolition of the recommended limits should not result in imprudent assessment of the risks associated with the provision of loans secured by residential property
The CNB's analyses have long indicated that loans with a DSTI ratio of over 40% or a DTI ratio of over 8 may be associated with significantly increased credit risk and should only be provided in justified cases (see section IV.3). Owing to the expected economic developments and the increased risk of a temporary partial loss of income, even loans with a DSTI ratio below 40% may show increased risks in certain categories of households (see section IV.3). The CNB expects lenders in this situation to carefully assess the risks associated with loans secured by residential property and proceed very prudently when assessing loan applications.

The volume of new loans remained high until April despite the outbreak of the pandemic…
The reduction in household incomes caused by the measures associated with the coronavirus pandemic was not reflected in mortgage market activity in the first four months of this year. The volume of genuinely new housing loans and mortgage loans (excluding refinanced and refixed loans) was at a record high in the first four months of 2020 compared with the same period in previous years (see Chart V.11). Market participants' earlier statements that the introduction of DSTI and DTI limits in October 2018 would have a strongly negative impact on lending in the long term, were thus not confirmed. Although the credit market saw a partial correction in 2019 H1 (due, among other things, to frontloading before the new limits on credit indicators took effect), the volumes of house purchase loans later returned to growth[136] and remained high by historical comparison until April 2020 (see Chart V.12). However, it can be expected that the impacts of the coronavirus crisis will manifest themselves in the months ahead and lending for house purchase will decrease, despite the easing of the recommended limits in April. The introduction of the loan moratorium led to a significant increase (of around CZK 50 billion) in other renegotiations[137] of contractual terms between lenders and clients in April.

136 This reflects an increase in the average loan size and a renewed rise in the number of loans provided.

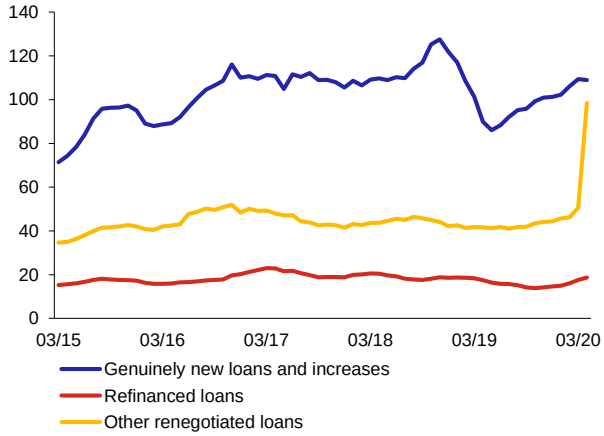
137 This category mainly includes refixations for existing contracts under normal circumstances.

Chart V.11
Housing loans and mortgage loans
(CZK billions)



Source: CNB

Chart V.12
Six-month totals of components of new loans for house purchase
(CZK billions; moving six-month totals)

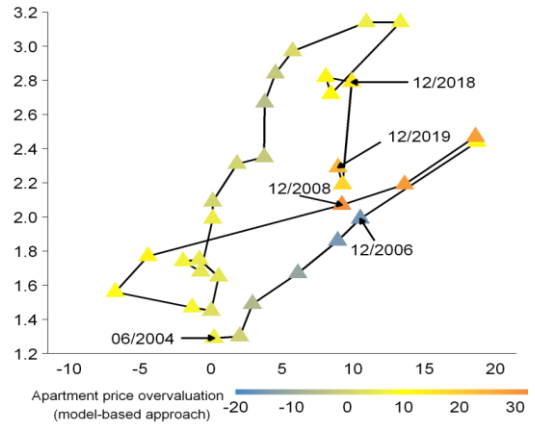


Source: CNB

The economic slowdown will break the spiral between loans for house purchase and property prices

The spiral between debt funding of property purchases and optimistic expectations regarding future property price growth weakened during 2019 (see Chart V.13). The conditions for purchasing property nonetheless remained favourable. A downturn in household income growth, a deterioration in consumer and investment sentiment and a decline in demand for new mortgage loans can be expected following the onset of the economic slowdown. Overall, this should halt the spiral.

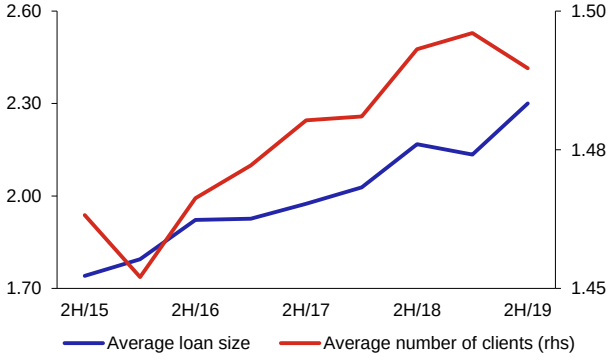
Chart V.13
Spiral between apartment price growth and new loans for house purchase in relation to the level of wages
(x-axis: y-o-y growth in apartment transaction prices in %; y-axis: new loans in relation to wages)



Source: CNB

Note: The spiral is derived on the basis of apartment price growth and the amount of new loans for house purchase in relation to the level of wages.

Chart V.14
Average mortgage loan size and number of declared incomes according to the Survey
(CZK millions; right-hand scale: number of persons)



Source: CNB

According to the Survey, the average loan size also rose in line with the growth in property prices in 2019

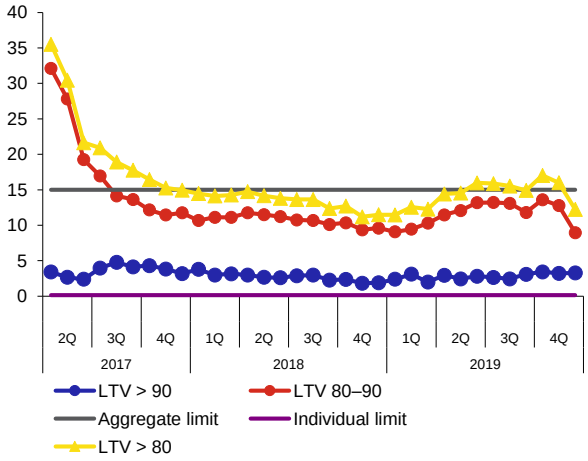
Growth in residential property prices (see section II.1.2) slightly exceeded growth in the average housing loan size, which amounted to around 6% last year (see Chart V.14). The median total debt per loan applicant was around CZK 2.4 million in 2019 H2 (see Chart V.4 CB and Chart V.5 CB).[138] Clients with the median debt included households with both high and relatively low incomes. Around half of the applicants declared a net monthly income of below CZK 35,000 (see Chart V.4 CB). The average number of declared incomes per loan application decreased slightly after around three years of growth and to some extent ceased to act as the main adjustment channel of compliance with the limits on income credit ratios.

138 The client's average total debt was CZK 3.05 million and the most frequent amount (mode) after rounding the debt to the nearest one hundred korunas was CZK 2 million. In addition to the mortgage loan itself, the total debt takes consumer credit, mortgage loans taken out earlier and any other revolving loans and credit lines into account.

Compliance with the recommended LTV limits remained satisfactory overall…

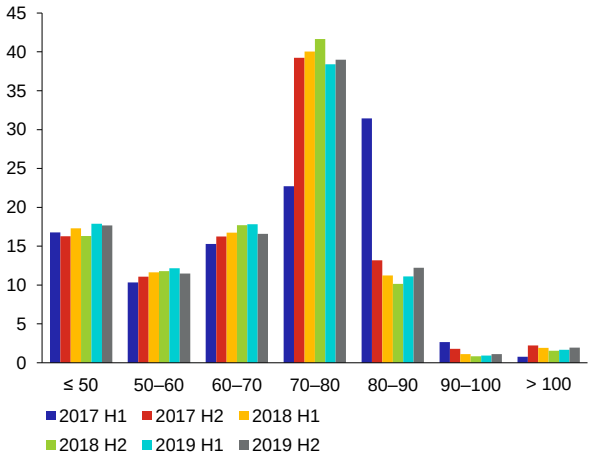
Data from the Survey for 2019 H2 indicate that banks were broadly compliant with the Recommendation as regards LTV limits. The share of loans with LTVs of 80%–90%, which was subject to a recommended limit of 15% of new loans, was below that limit throughout 2019 (see Chart V.15). The annual average was 11.6%. However, banks continued to provide some loans with an individual LTV of over 90%, the level above which no loans should be provided under the Recommendation. The share of these loans in total loans averaged 2.8% of new loans last year, remaining relatively constant over time. When these loans are added to loans with LTVs of 80%–90%,[139] the 15% exemption was exceeded temporarily, but the share of loans with LTVs of over 80% was down significantly at the end of 2019, and compliance with the Recommendation for the sector as a whole remained satisfactory (see Chart V.15). The LTV distribution of new loans remains fairly constant over time (see Chart V.16).

Chart V.15
Fulfilment of the recommended LTV limits
(share of loans in volume provided in %)



Source: CNB

Chart V.16
LTV distribution of loans
(x-axis: LTV in %, y-axis: share of loans in volume in %)



Source: CNB
Note: Interval closed from the right.

…but the CNB will continue to monitor some risk tendencies

Although most credit institutions are compliant with the recommended LTV limits, some tendencies identified on the basis of the data from the Survey indicate that in good times lenders' have a natural tendency to value collateral on the basis of current market prices, regardless of the fact that those prices may become overvalued in an upward phase of the cycle (see section II.2.1). The Survey also revealed that almost 16.5% of loans had an LTV ratio exactly equal to the aggregate 80% limit and 5.3% of loans had an LTV ratio exactly equal to the individual 90% limit in 2019 (see Chart V.6 CB). In the LTV bands of 79%–80% and 89%–90%,[140] which can also be viewed as thresholds, the figures are 6.4% and 1.9% of loans respectively (see Chart V.17). Altogether, the said shares are thus as high as 22.9% and 7.2% respectively. These results may indicate partial optimisation of collateral value (adjustment of the denominator of the LTV ratio). In the case of the most frequently granted loan of CZK 2 million, the collateral value has to be valued only CZK 32,000 and CZK 25,000 higher respectively in order to reduce the LTV ratio from just above 80% to 79% and from just above 90% to 89% respectively.[141] The CNB will continue to monitor the prudential collateral valuation process,[142] but it currently assumes that banks are inclining to a more conservative approach in the current situation. The CNB also monitors concurrent provision of unsecured loans and mortgage loans aimed at circumventing the LTV limit. According to the available data, however, this practice is not going on to an increased extent (see Chart V.7 CB).

Lenders were mostly compliant with the recommended DTI and DSTI limits…

The process of adjustment to the limits had been far from complete in 2018, whereas the share of loans with a DSTI ratio of over 45% and a DTI ratio of over 9 dropped to 5.4% and 2.9% respectively in 2019 (see Chart V.18 and Chart V.19). Banks overall were therefore compliant with these limits or, in the case of the DSTI ratio, were only very slightly above the recommended limits. A reduction in the supply of loans to clients with higher additional debt and ensuing debt service

139 The spirit of the Recommendation says that new loans with LTVs of over 80% should account for no more than 15% of new loans, as the provision of loans with LTVs of over 90% is not recommended at all.

140 Intervals open from both sides.

141 This is just 1.3% and 1.1% respectively of the actual collateral value considered.

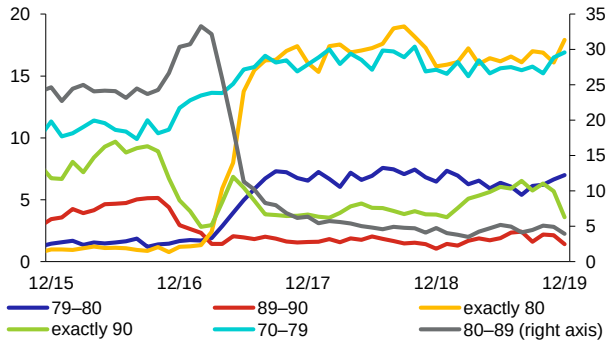
142 A potential risk to financial stability would arise if institutions did not take consistent and systematic account of cyclical developments in the property market when valuing collateral.

can be regarded as the main channel of adjustment to the recommended limits for both ratios. This is clear from the distribution of loans according to risky LTI and LSTI levels, which remain relatively stable across the Surveys (see Chart IV.8 CB and Chart IV.9 CB). Loans with a DSTI ratio of over 50% stood at 3.2% last year. The DSTI and DTI distributions remain relatively unchanged after the initial phase of adjustment to the recommended limits (see Chart V.20 and Chart V.21).

Chart V.17

Shares of loans secured by residential property with a threshold LTV ratio

(%)



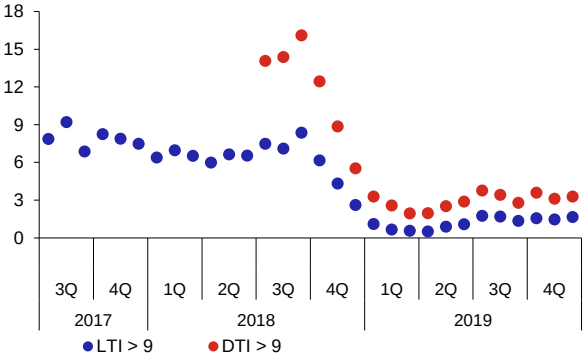
Source: CNB

Note: Weighted by individual loan size. Intervals 70–79 and 80–89 closed from the right. Intervals 79–89 and 89–90 unclosed.

Chart V.18

Fulfilment of the recommended DTI limits

(share of loans in volume provided in %)



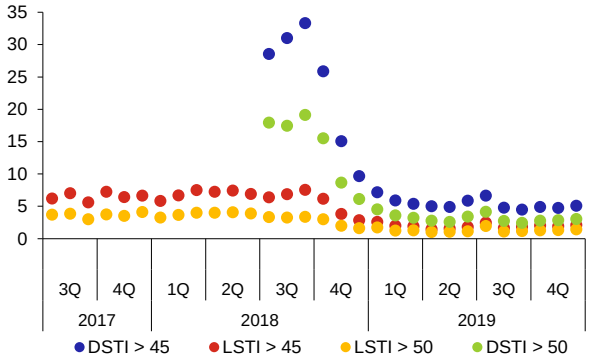
Source: CNB

Note: Volume provided means the reference volume in the Recommendation applicable at the time.

Chart V.19

Fulfilment of the recommended DSTI limits

(share of loans in volume provided in %)



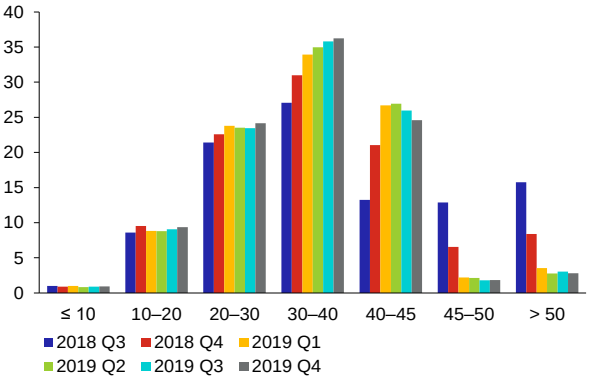
Source: CNB

Note: Volume provided means the reference volume in the Recommendation applicable at the time.

Chart V.20

DSTI distribution of new loans

(x-axis: DSTI in %, y-axis: share of loans in volume in %)



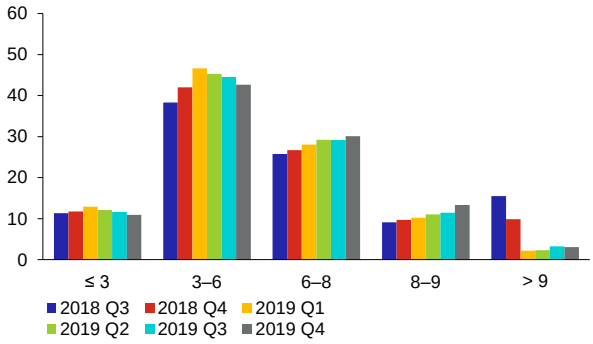
Source: CNB

Note: Interval closed from the right.

Chart V.21

DTI distribution of new loans

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



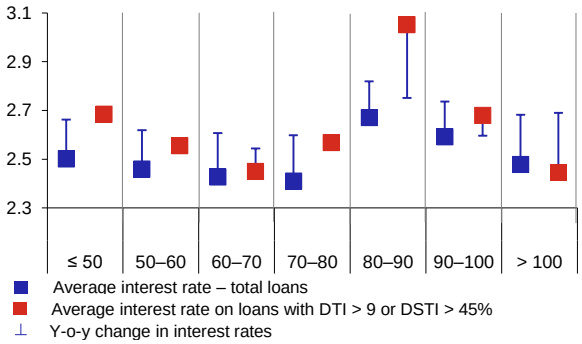
Source: CNB

Note: Interval closed from the right.

Chart V.22

Average interest rates by loan characteristics

(x-axis: LTV in %, y-axis: average interest rate in %)



Source: CNB

Note: Data for 2019 H2. Weighted average interest rates with the sizes of individual loans as weights. Interval closed from the right.

In 2019 H2, lenders took greater account of the level of risk undertaken when setting interest rates

Interest rates on mortgage loans mostly fell on average year on year. However, there was a clear effort by banks to differentiate loan rates based on the LTV ratio in 2019 H2. The level of risk undertaken was incorporated above all into rates on loans with LTVs of over 80% (see Chart V.22). In addition to elevated loan riskiness, the higher interest rates in this category may reflect clients' high demand for this type of loan and the limited supply thereof by lenders. Interest rates increased significantly further in the category of loans with LTVs of 80%–90% where the loan also exhibited a DTI of over 9 or a DSTI of over 45%. This again reflect a tendency to incorporate higher credit risk into the level of interest rates. The completely opposite trend was recorded for loans with LTVs of 90%–100% and high DTI and DSTI ratios. However, such loans are not common and may include specific loan cases.

The CNB does not deem it necessary to set DTI and DSTI limits in the current situation; the other parameters of the Recommendation are unchanged

The CNB Bank Board's decision to relax the LTV, DTI and DSTI limits was based on expectations of a significantly adverse change in market conditions. Given the materialisation of these expectations, the Bank Board decided at its meeting on financial stability issues in June in to abolish the recommended upper limit on the DSTI ratio with effect from July this year (the DTI limit had been abolished in April). At the same time, the Bank Board decided that it is not desirable at the moment to change the current recommended LTV limit of 90% (with the option of applying a 5% exemption) given the persisting overvaluation of house prices. The CNB assumes, given the expected economic impacts of the coronavirus pandemic, that lenders and their clients will be well aware of the risks and will act in a very conservative way. Nevertheless, based on the conclusions of its analyses and stress tests, the CNB continues to point out to lenders that loans can usually be regarded as very risky above certain thresholds (a DTI of 8 and a DSTI of 40%). Lenders should therefore provide such loans with great caution and only to applicants who are highly likely to repay without problems.

The CNB is still seeking the statutory power to set upper limits on the LTV, DTI and DSTI ratios for mortgage loans

The CNB and the Czech Ministry of Finance have submitted into the legislative process an amendment to the Act on the CNB that would empower the CNB to set upper LTV, DTI and DSTI limits in a legally binding manner through provisions of a general nature. The limits on all three ratios are currently regulated by the Recommendation. A switch to setting these indicators in a legally binding manner will have no major impact on current bank providers of secured loans or on consumers. However, the limits must be legally binding in order to ensure a level playing field on the market and to prevent unfair competition between lenders in the future. In this respect, entry of new (especially non-bank[143] and foreign) providers into this market segment would be problematic, as enforcement of the rules set out in the Recommendation would not be as effective for them as it is for domestic banks. The relevant legislative amendment is currently being discussed in the Czech Parliament.

V.4.2 Risks associated with commercial property markets

The amount of new banking loans secured by commercial property declined…

New loans secured by commercial property amounted to CZK 33 billion in 2019 H2, which represents a decline compared with previous half-years and the lowest level ever recorded in the Survey.[144] Generally, loans for investment and construction declined for all types of commercial property (see Chart V.23). This decline is accompanying a fall in construction of new commercial space in recent years (see section II.2.1).

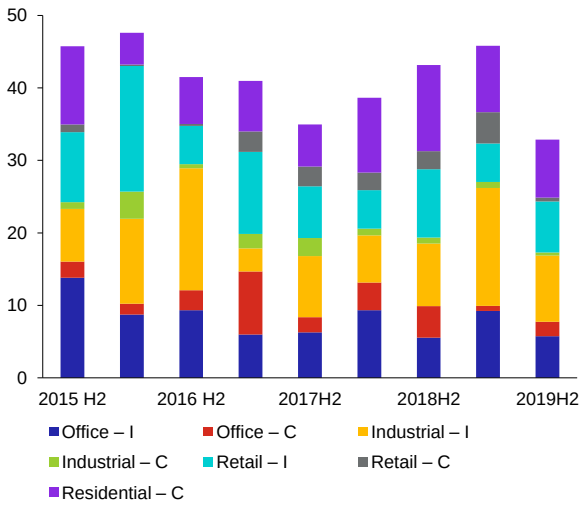
…and the risks associated with commercial property markets continue to be largely exported

Owing to the limited share of exposures secured by commercial property in the balance sheets of Czech banks, developments in this market should not pose an immediate risk to financial stability even in the event of major impacts caused by the coronavirus crisis. A large proportion of commercial property is financed by foreign capital and any materialisation of risks would primarily affect the financial systems in investor countries. A potential threat to domestic financial stability could arise in the future from the growing investments of Czech households and other domestic investors in real estate funds, whose performance is directly or indirectly linked with developments in the commercial property market. However, the importance of these investments remains marginal from the financial stability perspective.

143 In European countries, most mortgage loans are provided by banks. In some of them, however, the share of non-bank lenders has risen sharply in recent years. In the Netherlands, non-banks currently account for around one-quarter of the market. Outside Europe, for example in the USA, non-bank firms have provided (or raised) around half of all mortgage loans in recent years. This represents a significant rise compared with the pre-crisis years. It is due in part to the fact that banks have partially withdrawn from the market after their negative experience during the crisis and are concentrating mainly on high-quality mortgages, and in part to the fact that non-bank lenders enjoy laxer regulation.

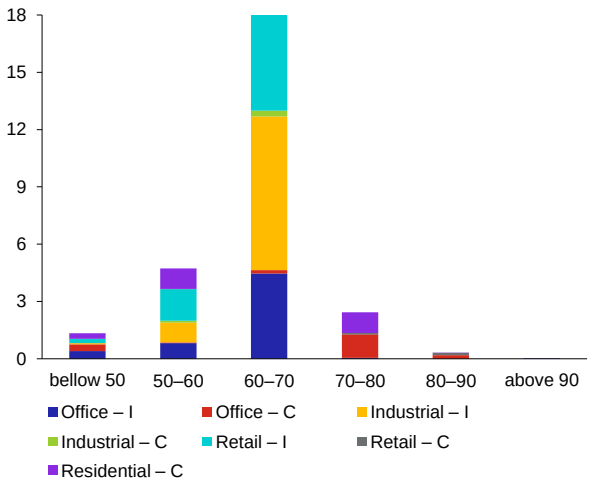
144 The results are based on a semi-annual survey of loans secured by commercial property among eight banks covering around 70% of the market.

Chart V.23
Amount of new loans secured by commercial property
(CZK billions)



Source: CNB
Note: I: investment in commercial property, C: construction of commercial property.

Chart V.24
LTV distribution of new loans in 2019 H2
(x-axis: LTV in %, y-axis: CZK billions)

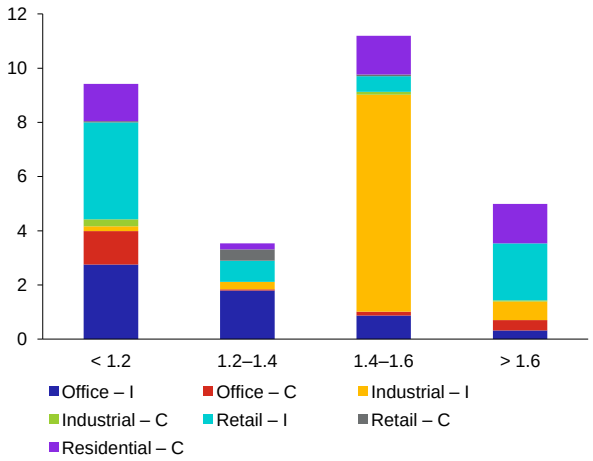


Source: CNB
Note: I: investment in existing property, C: construction. Interval closed from the right.

The risk characteristics of new loans improved slightly overall in 2019 H2

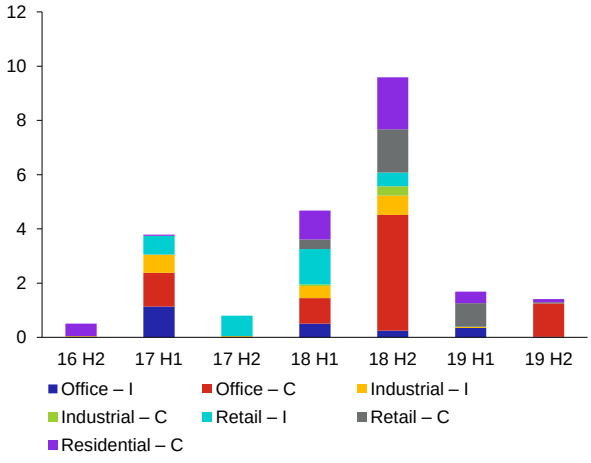
Most of the new loans provided in 2019 H2 had LTVs of 60%–70% (see Chart IV.24). A tendency to provide loans with a DSCR of over 1.4 was also observed in 2019. This represents something of a change from the previous period (see Chart V.25). However, the observed DSCR levels do not necessarily imply a decline in credit risks. On the contrary, they may signal over-optimistic estimates of future property income in the favourable phase of the business cycle. A reduction in the extent of credit risks undertaken may be suggested by a decrease in loans with simultaneously riskier levels of collateral (an LTV of over 70%) and a low ability to generate income to cover debt (a DSCR of below 1.2). These loans amounted to around CZK 1.4 billion in 2019 H2, down more than 85% from 2018 H2 (see Chart V.26). However, given the low volumes of loans secured by commercial property, the results may reflect ad hoc factors and the risk characteristics of a very limited number of loans.

Chart V.25
DSCR distribution of new loans in 2019 H2
(x-axis: DSCR; y-axis: CZK billions)



Source: CNB
Note: I: investment in commercial property, C: construction of commercial property.

Chart V.26
Amount of new loans with an LTV of more than 70% and a DSCR of less than 1.2
(CZK billions)



Source: CNB
Note: I: investment in commercial property, C: construction.

V.5 THE ESRB'S ACTIVITIES SINCE THE ONSET OF THE CORONAVIRUS CRISIS

Analyses of the current situation by the ESRB resulted in the identification of five priority areas from the financial stability perspective. These areas are:

(i) monitoring the financial stability implications of the fiscal measures taken,
(ii) safeguarding the resilience of the financial sector using a coordinated approach to restraints on profit distribution,
(iii) assessing the impact of large-scale downgrades of non-financial corporations' credit ratings on financial sector balance sheets,
(iv) liquidity risks of investment funds,
(v) liquidity risks of central counterparties.

While the documents were being prepared, the CNB followed developments in all the above areas and actively commented on the wording of the recommendation coordinating the approach to restraints on profit distribution and share buybacks of banks, insurance companies, reinsurance companies and central counterparties (area ii). The final wording of the Recommendation incorporated several of the CNB's proposals. The final recommendation states that restrictions may be applied in justified cases at a sub-consolidated or individual level at least until the end of 2020. The CNB supported the amended text of the recommendation. At this time of unprecedented levels of uncertainty, temporary restriction of profit distributions at a sub-consolidated or individual level enhances the resilience of the Member States' financial markets and, in turn, the functioning of the single market.

The ESRB is also monitoring the financial stability implications of national fiscal measures introduced to contain the coronavirus crisis (area i). It recommends closer cooperation between national fiscal authorities and national macroprudential authorities on collecting data and using it to analyse the implications of the fiscal measures for financial stability in Member States and potential cross-border implications. However, the CNB does not currently see any fundamental obstacles in this area. It is in favour of sharing and assessing experience with the measures and their implications for financial stability in the European context. From the CNB's perspective, the impact of government measures on credit risk materialisation (see section III.2.2) is particularly important.

The potential direct impact of large-scale downgrades of non-financial corporations' credit ratings (area iii) on individual parts of the Czech financial sector is relatively limited given the structure of financial institutions' asset portfolios. Fire sales due to rating downgrades are affecting financial institutions via several channels, namely a shock to all bond yields, a stronger shock to yields on downgraded bonds, and the price impact of fire sales from portfolios. According to the ESRB's analysis, these shocks have resulted in losses of EUR 200–300 billion in the European financial sector, with fire sales accounting for 20%–30% of the total.

A structurally higher share of investment funds in the financial sector's assets in some EU countries compared with the Czech Republic (see section III.3) has led the ESRB to examine in more depth the issue of asset and liability maturity mismatches in open-ended investment funds (especially money market funds, corporate bond funds and real estate funds (area iv) and the related liquidity risks. At times of market uncertainty, requests by investors to exit funds and redeem their shares may rise substantially. If funds are unable to satisfy these requests from their liquidity buffers, they must sell less liquid assets. This is usually accompanied by a fall in the prices of those assets. This may exacerbate the price declines on financial markets and lead to an adverse spiral between investor exits and fire sales. Funds may face this risk using liquidity management tools enabling them to temporarily halt or otherwise regulate share payouts.

Systemically important central counterparties are an important infrastructure component of the financial system, and maintaining their business continuity is essential for the functioning of financial markets. The ESRB is therefore also assessing liquidity risks arising from the margin calls and collateral requirements of central counterparties and other institutions in derivatives transactions and secured transactions (area v). This is because these requirements may suddenly be increased markedly during a period of market uncertainty, causing liquidity problems for holders of derivatives and recipients of secured funding. Central counterparties should therefore use methods of calculation of margins and collateral requirements that do not lead to a sharp rise in requirements, and at the same time should offer flexible conditions for accepting margins and collateral. The CNB welcomes the effort to limit excessive increases in requirements, as it enables stabilisation of a financial market infrastructure component that is also indirectly used by domestic financial institutions in some types of transactions.

The CNB expects that the priority areas may be gradually reassessed as the coronavirus crisis progresses and its impacts are dealt with. It remains ready to actively promote positions supporting the long-term effectiveness of macroprudential policy and its instruments.

V.6 SUSTAINABLE FINANCES AND THE RISKS ASSOCIATED WITH CLIMATE CHANGE

The issue of sustainable finance, which reflects, among other things, the impact of climate change on the financial sector, is one of the most discussed financial market topics, and will remain so in the coming years. This is evidenced the development of many international initiatives addressing this issue and the increased interest of many institutions, including central banks.

Climate change has the potential for major negative social and economic impacts, including adverse effects on the stability of the financial system. The international community is seeking to respond to climate change through a global climate policy, the objectives of which are defined by commitments under international climate agreements, in particular the Paris Agreement and the UN 2030 Agenda for Sustainable Development. Though the fulfilment of these commitments is primarily the responsibility of the signatory governments, the impacts of climate change on the economy and the financial sector, including the effects of climate change mitigation and adaptation policies, are topics to which central banks are also paying due attention.

Central banks are currently exploring ways to respond to the wide range of climate change challenges. As climate change represents a relevant source of financial risks, central banks (including the CNB) are seeking to identify these risks as accurately as possible and subsequently develop effective tools that could help mitigate them. However, other key issues are also being discussed, such as the possibility of adjusting central banks' asset portfolios so that central banks can contribute actively to the response to climate change, and the possibility of adapting the prudential framework for assets that have a positive impact on sustainability.

The CNB is currently focusing on monitoring the approaches of international organisations and other countries to analysing the impact of climate change and climate change policies on the stability of financial institutions and systems. In parallel, CNB is preparing models for stress testing the impacts of climate change on financial markets.

V.6.1 Definition of climate change risks

Sustainability risks[145] are becoming increasingly significant. In assessing these risks, emphasis is placed on climate risks that represent the potential negative impact of climate change-related events and changes on the fair value of financial assets.[146] Two main categories of climate risks are distinguished: physical risks and transition risks.[147]

Physical risks represent the potential negative impact on the value of assets due to economic costs stemming from the increasing severity and frequency of extreme climate change-related weather events (such as heatwaves, landslides and floods) and from longer-term progressive climate change (e.g. changes in rainfall frequency and volume, extreme weather volatility and changes in average temperatures).

Risk factors in this respect include both the current more frequent manifestations of extreme weather, and gradual climate change. Manifestations of extreme weather have a negative impact on health, damage infrastructure, and reduce the value of wealth and productivity. They can disrupt economic activity and trade, have the potential to significantly exacerbate to resource scarcity, and reallocate capital from more productive use to the reconstruction and renewal of damaged property. Uncertainty regarding future losses may also foster higher preventive saving and lower investment. In the longer term, climate change is also associated with growth in the risks of food and water scarcity and rising sea levels. This increases the likelihood of other negative phenomena with significant financial impacts.

Transition risks are connected with the transition to a low-carbon economy, which will involve a process of reducing emissions in order to meet EU environmental policy objectives.[148] This transformation will lead to significant structural changes in the economy and will have effects, among other things, on business financing and the value of assets in relation to specific economic activities.

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145 Sustainability risks mean environmental, social or governance events or conditions that, if they occur, could cause an actual or a potential material negative impact on the value of the investment, in the broader sense of a financial asset.

146 In the context of financial market risks, climate risks are often confused with environmental risks. Environmental risks relate to financial market participants' exposures linked to activities that may be adversely affected by environmental degradation, which may or may not be caused by climate change (such as air and water pollution, scarcity of freshwater resources and soil contamination).

147 In addition to these main climate risk categories, reference is made to liability risks, which relate to compensation claims that would be made as a result of the negative effects of climate change (for example, someone suing a company in which they have invested and which is making losses due to climate change, assuming that they were not informed about the risks).

148 At the European Council in December 2019, EU leaders, with the exception of Poland, endorsed the objective of achieving a climate-neutral EU by 2050, in line with the objectives of the Paris Agreement. The Paris Agreement obliges nations to set national reduction contributions to achieve the long-term goal of climate protection, i.e. to contribute to holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. The agreement was adopted in December 2015. This agreement was ratified by all EU member states. The Czech Republic became a signatory on 4 November 2017.

The main factors are regulatory changes, technological change, and changes in consumer behaviour. Promoting sustainability policy objectives through regulation, for example in the areas of carbon pricing, support for low-emission energy sources and more efficient use of water resources, is a key factor influencing the level of transition risks. That level, in turn, is closely related to the speed, timing, transparency and nature of regulatory changes, because transition risks increase in the event of sudden and quickly implemented large-scale changes. Technological change also has a major impact on transition risks. Besides its positive impact on savings and efficiency, it brings uncertainty, especially when the replacement of existing technologies with new ones disrupts parts of the current economic system. In addition, the transformation of the economy could be accompanied by substantial changes on the demand side, reflecting evolving preferences and changes in the behaviour of consumers, who are becoming more sensitive to environmental issues.

The relationship between physical and transition risks tends to be seen as substitutive: while a zero or insufficient response of the economy to climate change entails higher physical risks and lower transition risks, transformation of the economy associated with greater resilience to physical risks carries increased transition risks. The substitutive nature of the relationship is often used as one of the starting points in the methodology of scenario analysis.

BOX 7 Overview of selected sustainable finance regulations

The EU aspires to become a global leader of sustainable finance initiatives.[149] This is reflected in a marked rise in EU regulation in this area. In March 2018, the Commission adopted an *Action Plan on Financing Sustainable Growth* with three main objectives: (i) re-orient capital flows towards sustainable investment in order to achieve sustainable and inclusive growth, (ii) manage financial risks stemming from climate change, resource depletion, environmental degradation and social issues, and (iii) foster transparency and long-termism in financial and economic activity.

Based on the action plan, three regulations were published in May 2018 which form a regulatory package whose declared objective is to integrate sustainability factors ("ESG factors"[150]) into the financial system. Two of these directives legally binding on all EU Member States and directly applicable have already entered into force:

The Sustainability Finance Disclosure Regulation (SFDR)[151] introduces disclosure obligations for how financial market participants integrate ESG factors into their risk management processes, how they provide information on financial products promoted as "sustainable", and the principal adverse impacts of investment activities on the environment. The Regulation empowers the Joint Committee of the European Supervisory Authorities (ESAs) to develop six technical standards on the content and form of the information disclosed. Five of them, concerning environment-related disclosure obligations, should be drafted by the end of 2020, and the remaining one, on disclosure in relation to adverse social and employment impacts, should be finalised a year later.

The Sustainable Finance Benchmarks Regulation (SFBR)[152] establishes two new categories of (climate) benchmarks:

(1) EU Climate Transition Benchmarks for investment portfolios containing the underlying assets of companies that will be on a decarbonisation trajectory, i.e. companies that will gradually lower their carbon footprint by 2022. The benchmarks so labelled should offer a low-carbon alternative to the commonly used benchmarks;

(2) EU Paris-aligned Benchmarks for investment portfolios whose resulting carbon footprint is aligned with the long-term objectives of the Paris Agreement in the area of global warming. The benchmarks so labelled should only include companies that can demonstrate adherence to a Paris-aligned decarbonisation trajectory.[153]

The Regulation also introduces a general obligation for benchmark administrators (applied to all benchmarks except interest rate and foreign exchange benchmarks) to explain how key elements of their benchmark methodology take the ESG factors into account.

149 Sustainable finance generally refers to the process of taking due account of environmental, social and governance (ESG) considerations in investment decision-making, leading to increased investment in longer-term and sustainable activities.

150 Environmental (E), social (S) and governance (G) factors. Sustainability factors in the environmental field include implementing measures to combat climate change, reducing carbon footprints, ensuring the protection of water resources, and applying responsible waste management policies.

151 Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector.

152 Regulation (EU) 2019/2089 of the European Parliament and of the Council of 27 November 2019 amending Regulation (EU) 2016/1011 as regards EU Climate Transition Benchmarks, EU Paris-aligned Benchmarks and sustainability-related disclosures for benchmarks.

153 In the case of the EU Paris-aligned Benchmarks, the relevant regulation (BMR) states that the underlying assets are *selected, weighted or excluded in such a manner that the resulting benchmark portfolio's carbon emissions are aligned with the objectives of the Paris Agreement*. It meanwhile holds that the objectives of the Paris Agreement were set on the basis of the 1.5°C scenario of the Intergovernmental Panel on Climate Change (IPCC). The IPCC constantly updates this scenario on the basis of new scientific knowledge. Under the current scenario, it would be necessary to achieve carbon neutrality by 2050 in order to meet this objective. This means that the EU Paris-aligned benchmark portfolios should be carbon neutral by 2050 and that all efforts should be geared towards that goal.

The Regulation also empowers the Commission to adopt delegated acts laying down minimum methodology standards and mandatory disclosure obligations for both types of climate benchmarks, as well as mandatory disclosure obligations for how the ESG factors are taken into account in the methodology for all types of benchmarks. All the delegated acts are expected to be adopted in 2020.

The final part of the legislative package on sustainable finance – the "Taxonomy Regulation" – could enter into force in summer 2020:

The Regulation of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment (the "Taxonomy Regulation") sets out the conditions and framework for the creation of a common classification system ("taxonomy") for distinguishing between economic activities contributing to the achievement of environmental objectives, and the rest.

The Regulation sets out general requirements for criteria for assessing economic activity in relation to six environmental objectives (climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems). In connection with these requirements, the Regulation empowers the Commission to issue a delegated act for each of these objectives defining technical screening criteria for assessing whether an economic activity contributes to the achievement of the objective(s), i.e. whether it qualifies as environmentally sustainable according to the taxonomy. The delegated acts for the first two objectives should be issued by the end of 2020 with effect from the end of 2021, and those for the other objectives by the end of 2021 with effect from the end of 2022.

The Regulation also stipulates an obligation to use the taxonomy in relation to sustainable financial products of an investment nature in the pre-contractual transparency framework, on websites and in periodic reporting. In this context, it empowers the ESAs (through their Joint Committee) to develop draft technical standards on the content and presentation of information disclosed pursuant to the Taxonomy Regulation. In addition, under the Regulation, companies that are required to disclose non-financial information pursuant to the directive on annual financial statements[154] are obliged to state in their (consolidated) non-financial statement information on how and to what extent the company's activities are linked to activities that qualify as environmentally sustainable according to the taxonomy (the Commission will adopt a delegated act clarifying these requirements by 1 June 2021).

The creation of a taxonomy of sustainable economic activities opens up room for more EU regulation. The taxonomy will be used, among other things, in the EU Green Bond Standard and in ecolabels for financial products.

The new disclosure requirements in the legislative package should be complementary to the existing reporting requirements for non-financial information under the Non-Financial Reporting Directive (NFRD),[155] which applies to large undertakings which are public-interest entities and have over 500 employees. In June 2019, the Commission published a Supplement on Reporting Climate Related Information to this Directive, which complements the Non-Binding Guidelines on Non-Financial Reporting under the NFRD.

Besides the above legislative package for sustainable finance, the Commission has initiated other legislative activities aimed at integrating sustainability factors into the sectoral legislation regulating financial markets. Among other things, it has prepared delegated acts issued under MiFID II[156] and IDD[157] concerning assessment of the suitability of financial products for clients, the aim of which is to include ESG considerations into the advice that investment firms and insurance distributors offer to clients. The Commission, in close cooperation with the ESAs, also intends to integrate sustainability risks and possibly other sustainability factors in the areas of organisational requirements, operating conditions, risk management and review of the target market, either by amending existing (sectoral) legislation[158] or by

154 Directive 2013/34/EU of the European Parliament and of the Council of 26 June 2013 on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC.

155 Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups.

156 Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU.

157 Directive 2016/97/EC of the European Parliament and of the Council of 20 January 2016 on insurance distribution.

158 In this context, this refers specifically to UCITS (Directive 2009/65/EC of the European Parliament and of the Council on the coordination of laws, regulations and administrative provisions relating to enterprises for collective investment in transferable securities), AIFMD (Directive 2011/61/EU on Alternative Investment Fund Managers), MiFID II (Directive 2014/65/EU of the European Parliament and of the Council on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU), Solvency II (Directive 2009/138/EC of the European Parliament and of the Council, on the taking-up and pursuit of the business of insurance and reinsurance) and IDD (Directive 2016/97/EC on insurance distribution).

adopting new delegated acts. Another measure being considered in the longer run as regards the integration of sustainability risks into the prudential framework is the option of adjusting the capital requirements.

Specifically for the banking sector, EBA is empowered to assess the possibility of special prudential treatment of assets linked to the achievement of environmental and social objectives, which would subsequently be reflected in the Pillar 1 capital requirements.[159] The possible inclusion of the ESG factors in assessing the riskiness of credit institutions under the SREP is also being explored. The introduction of a special approach for assets that are linked with economic activities that have negative impacts on sustainability is being considered at the level of general discussions.

The possibility of taking sustainability risks into account in the Pillar 1 capital requirements (under Solvency II) is also being considered for insurance companies. EIOPA believes that the medium to long-term effects of climate change cannot be fully captured in the capital requirements, which are designed to mitigate the risks to which insurance companies are exposed over a one-year horizon. However, instead of changing the time horizon in the design of Pillar 1, EIOPA considers it more appropriate to integrate stress testing and analysis of (long-term) scenarios into risk management, insurance company governance and the ORSA.

It is clear from current developments that the EU's activities in the area of sustainable finance regulation will continue. According to the European Green Deal, a communication issued by the European Commission in December 2019, the Commission will present a renewed sustainable finance strategy in the third quarter of 2020 that will focus on further embedding sustainability into the corporate governance framework, providing increased opportunities to invest in sustainable financial products, and better integrating climate and environmental risks into the financial system.

V.6.2 Climate risks and their impacts on financial stability

The most significant potential impacts of climate risks on financial stability are associated with the categories of physical and transition risks.

The financial impacts of *physical risks* can be significant regardless of whether or not the potential impairment losses are insured. If they are insured, more frequent and more serious cases of, for example, extreme weather affect insurance companies directly through higher claims and their customers indirectly through higher premiums. If the losses are uninsured, the burden falls on the budgets of households, firms and, ultimately, governments. Physical risks also have the potential to adversely affect borrowers' ability to service their debts or reduce the value of collateral. This may increase the credit risks for banks and other creditors.

In relation to financial stability, the indirect effects of physical risks stemming from the interconnectedness of the financial system and the real economy are also significant, as this interconnectedness can amplify the losses caused by their materialisation (for example, a decrease in the value of assets used as collateral due to extreme weather can cause banks significant losses, leading them to restrict lending in certain regions). These losses simultaneously reduce the wealth of economic agents and lead to a decline in aggregate demand, productivity and output.

Transition risks also have the potential to affect financial stability through various channels. The transition to a low-emission economy is associated with extensive structural effects and reinvestment activities, which can lead to asset impairment losses and substantial asset revaluation. Specifically, the transition may be accompanied by the emergence of "stranded assets", which cease to be used before the end of their life as they are incompatible with the achievement of sustainability targets (e.g. fossil fuels and cars with internal combustion engines). The increase in energy prices resulting from the growing share of (currently more expensive) alternative energy sources in the energy mix may also be of considerable importance. Moreover, transition risks also involve indirect effects on the financial sector, as their materialisation can lead to a reduction in aggregate expenditure and output, which in turn further worsens the conditions on financial markets.

The above-mentioned categories of climate risks are characterised by specific features, in particular non-linear impacts and delayed materialisation. For this reason, the most suitable tools for integrating them into the macroprudential policy framework appear to be stress tests and scenario analyses based on a forward-looking approach.

159 The EBA's assessment report will probably not be published until 2025.

V.7 RECENT DEVELOPMENTS IN THE AREA OF OPERATIONAL RISKS

Failures of people, processes and systems, and external events are considered to be the main sources of operational risk (OR). While failures of people and processes are likely to affect only the institution concerned, system failures and external events can be expected to have a negative impact on a significant proportion of market participants under certain conditions. This may have repercussions for financial stability. The dominant ORs stemming from system failures are currently risks connected with institutions' resilience to cyber threats and risks arising from dependence on third parties (for example, in connection with the use of cloud computing).[160]

The map of vulnerabilities and hence of potential cyber threats is changing as a result of the ongoing digitalisation and rising openness of the financial sector. Their materialisation may cause a loss of availability of financial services to clients, damage to the reputation of the bank and other affected institutions, and a financial loss to part of – or, in the extreme case – the entire, financial sector.

Other important ORs include the risk of concentration of key services in a single provider of IT/IS services (outsourcing). This risk started to increase with the growing use of cloud computing services. In its supervisory activities, the CNB monitors this risk in on-site examinations and off-site surveillance, while banks are required to notify the CNB of significant shares of outsourced services. Cloud computing risks are currently low from the supervisory point of view, but the CNB will continue to monitor developments in this area closely.

Structural changes leading to fundamental technical innovations, the creation of new products, services and processes, and therefore to a new form of financial markets and market infrastructure can be expected to continue in the future. This process will probably be accelerated by the reaction of institutions and the real economy to the coronavirus crisis. In addition, it will always be affected to some extent by the business cycle. Prolonged periods of economic growth generate optimistic expectations, making institutions and their clients more willing to assume higher ORs, for example in the area of investment in modern IT services and distribution channels. In an economic growth phase, these are subject to increased competition, which, during economic booms, motivates institutions to change their business and IT strategies and accelerate the development of information and financial technology (new products and services), often to an extent that may increase the level and probability of materialisation of these ORs.

When assessing the effects of the potential materialisation of OR on financial stability, difficult systemic quantification is a major practical problem. The processes and methods for quantifying OR (except for the Pillar 1 capital requirements) applied by individual institutions are not standardised and may differ significantly. This makes determining the potential level of exposure to operational risk at the macro level even more difficult. There are basically two options: use the Pillar 1 capital requirements, or use the historical data on losses arising from operational risk events. The latter approach was applied in the preparation of the supervisory stress tests in the area of operational risk. However, it does not take sufficient account of the large and infrequent losses that are linked with cyber risks and services concentration risks. Therefore, the Pillar 1 capital requirements are used to quantify potential losses arising from operational risk at the macro level.[161] They amount to approximately CZK 30 billion for the domestic banking sector on a consolidated basis. The CNB will continue to analyse whether this level sufficiently covers the risks arising from new technological trends. At the same time, it will carefully assess banks' resilience to cyber risks to mitigate the risk of major disruptions to the provision of financial services to the real economy.

160 See, for example, the ESRB report: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report200219_systemiccyberrisk~101a09685e.en.pdf.

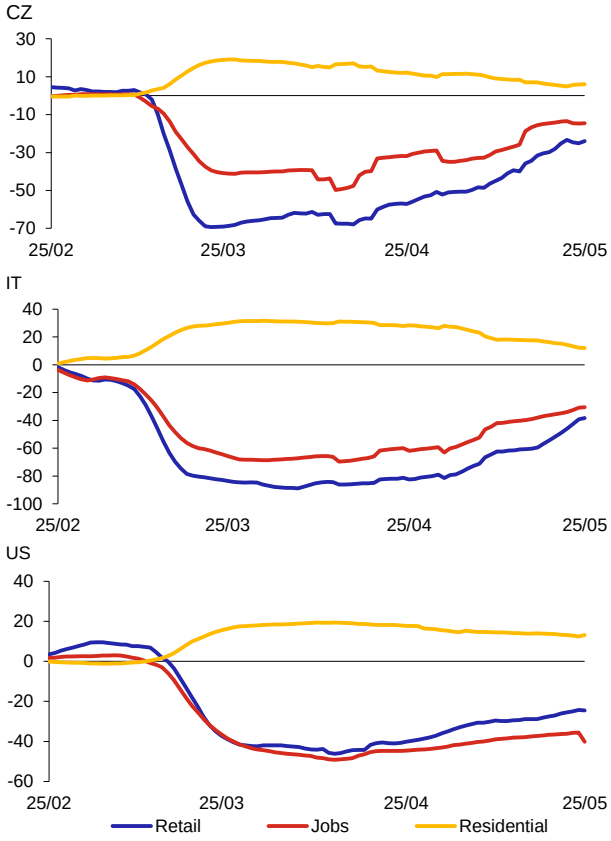
161 In line with the BCBS, the methods for setting capital requirements for operational risk were calibrated using a confidence interval of 99.9%.

VI. CHARTBOOK

SECTION II

Chart II.1 CB
Changes in population mobility during the pandemic

(change in visits in %, weekly moving average)

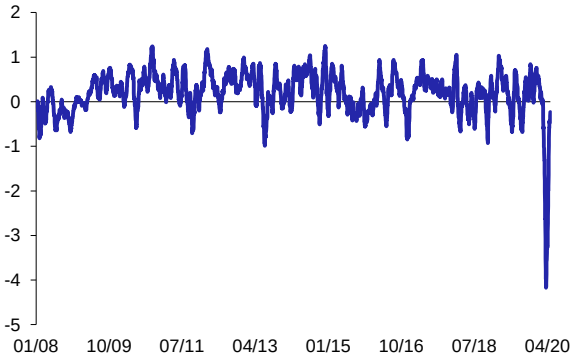


Source: Google Mobility, CNB calculations

Note: Google uses anonymised aggregated data collected from its apps to monitor mobility. The charts show the change compared with the pre-pandemic period.

Chart II.2 CB
Outflow of portfolio investment from EMEs

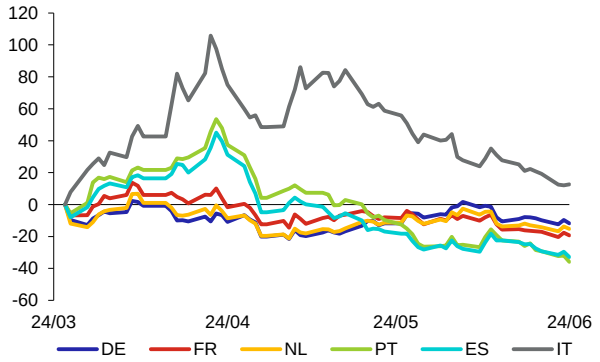
(daily data, 28-day moving average, USD billions)



Source: IMF

Chart II.3 CB
Yields on five-year government bonds of selected EA countries

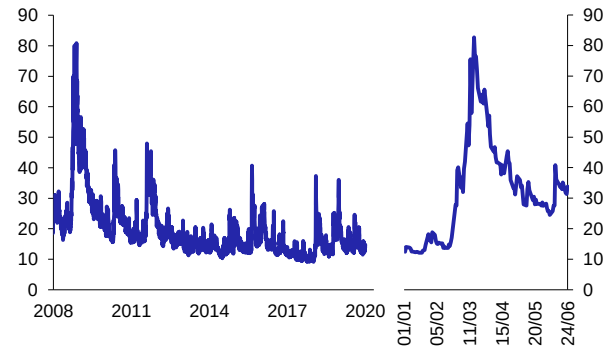
(bp, change since 26 March 2020)



Source: Refinitiv

Chart II.4 CB
VIX index

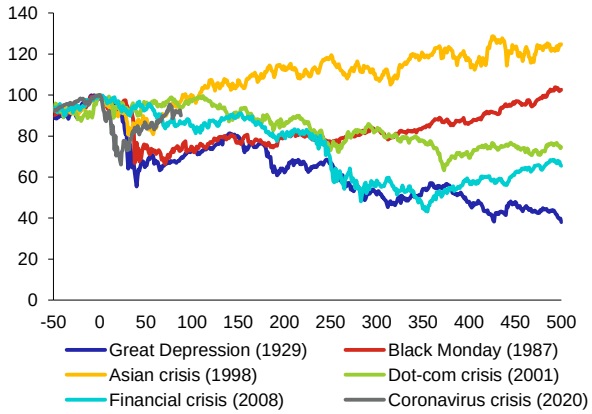
(points; right-hand panel: developments during 2020)



Source: CBOE

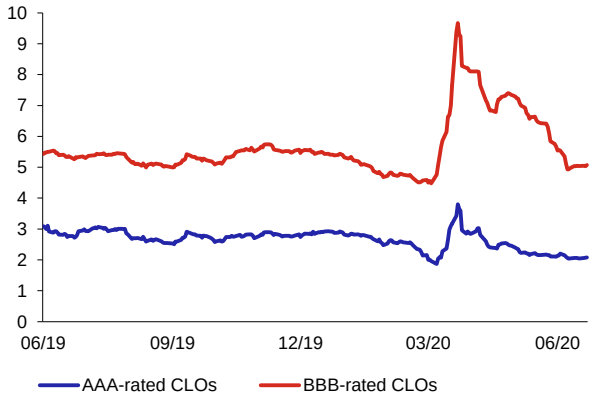
Chart II.5 CB
Comparison of the extent and pace of the stock index decline

(S&P 500 index, pre-crisis peak = 100; x-axis: trading days following peak)



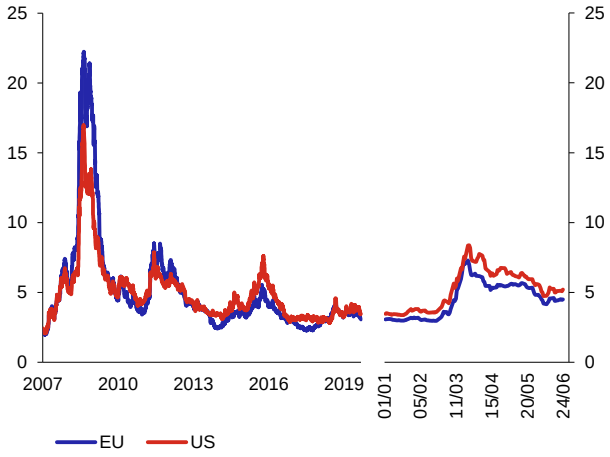
Source: Refinitiv

Chart II.6 CB
Yields on bonds secured by loans
(CLOs, %)



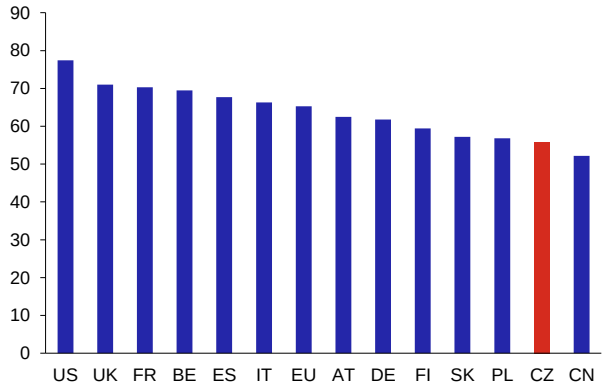
Source: Bloomberg

Chart II.7 CB
Spread between corporate bond yields in the speculative and investment rating grades
(pp; right-hand panel: developments during 2020)



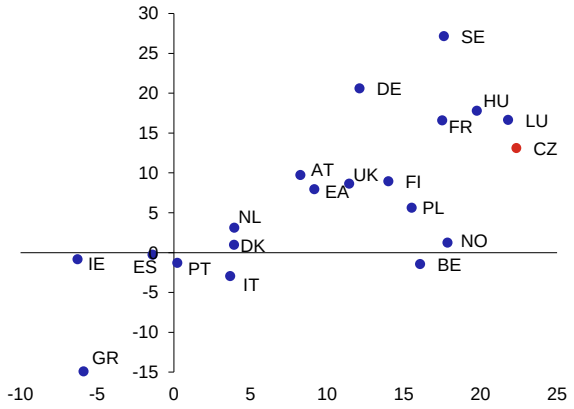
Source: Bank of America Merrill Lynch

Chart II.8 CB
Shares of services in GDP
(%, 2018)



Source: World Development Indicators, World Bank
Note: Data for US for 2017.

Chart II.9 CB
Credit growth in selected European countries in 2019
(three-year growth in %; x-axis: households; y-axis: non-financial corporations)



Source: BIS
Note: Credit comprises loans provided by credit institutions and is expressed in EUR. For this reason, the data on credit growth in this chart may differ from those in other parts of this Report or those reported by other institutions. End-2019 data.

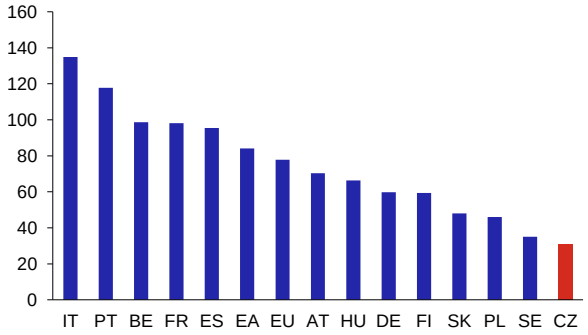
Table II.1 CB

Overview of economic measures introduced in response to the coronavirus crisis

CENTRAL BANK MEASURES
Monetary policy rates
Monetary policy rates were cut. In their communications, central banks emphasise that rates will stay at the current low levels until an adequate economic recovery occurs. At the same time, many central banks have committed to using the extraordinary measures that normalisation of the economy will require.
Fed (key policy rate at 0–0.25% since 15 March), ECB (rate on main refinancing operations being kept at 0% and overnight deposit rate at -0.5%), Bank of England (0.1% since 19 March), Sveriges Riksbank (repo rate at 0% since 19 December 2019), Norges Bank (0% since 7 May), Bank of Canada (policy rate at 0.25% since 27 March), New Zealand's RBNZ (0.25% since 16 March).
Liquidity-supporting facilities
1. Opening of swap lines for foreign central banks (Fed providing USD liquidity, ECB providing EUR liquidity).
2. Support for liquidity on short-term funding markets (Fed, ECB, BoC).
3. Support for liquidity on government and corporate bond markets (Fed, ECB, Bank of Japan, RBNZ).
The ECB made changes to its longer-term refinancing operations programme used to provide banks with long-term loans for lending to small and medium-sized enterprises and announced a new volume of TLTRO III. In addition, the ECB launched the PELTRO (Pandemic Emergency Longer-term Refinancing Operations) programme on 19 May, at a rate 25 bp below the key rate and with no limit on the amount borrowed.
4. Facilities for lending against high-quality collateral introduced to support operation of primary dealers (Fed's Primary Dealer Credit Facility, PDCF).
Credit support
1. Funding schemes to support firms, households and municipalities.
The Fed launched a programme totalling USD 2.6 trillion (Coronavirus Aid, Recovery, and Economic Security Act, CARES)
The ECB launched the PEPP (Pandemic Emergency Purchase Programme), which will enable the purchase of government and corporate bonds of EUR 750 billion until the end of 2020. In June, it increased the amount to EUR 1,350 billion and extended the net purchases at least until June 2021.
The Bank of England is providing banks with advantageous four-year funding for lending to small and medium-sized enterprises (the Term Funding Scheme with additional incentives for SMEs, TFSME).
2. Direct funding schemes (the Bank of England is working with the government to finance an assistance programme for large corporations – the COVID Corporate Financing Facility; the RBNZ has set up a facility providing three-year loans for lending to small enterprises, TLF).
GOVERNMENT MEASURES
Financial assistance
1. Measures to mitigate shortfalls in corporate revenues (government guarantees, advantageous loans, participation in rent payments, subsidies).
2. Postponement of loan and mortgage instalments for consumers and firms.
3. Relief in the tax area (an extension of the deadline for filing tax returns and paying taxes, a decrease in, or postponement of, tax advances, tax holidays, and across-the-board forgiveness of fines for filing tax returns late).
4. Introduction of unconditional income supporting economic recovery.
The USA is paying an extraordinary benefit to all taxpayers of USD 1,200 for individuals, USD 2,400 for spouses and USD 500 per child (the Economic Impact Payment).
Japan is planning an across-the-board payment of a one-off benefit to all inhabitants of Japan totalling JPY 100,000 (around CZK 23,500).
Spain is considering the introduction of regular basic income for low-income persons. The entitlement will probably be derived from monthly income and total assets; the envisaged amount is EUR 400 (the minimum wage in Spain is EUR 950 or EUR 1,108).
Social policy
1. Measures to protect jobs (postponement of, and decrease in, social security contribution payments, contributions for wage costs).
2. One-off contributions for self-employed persons.
3. Extension of, and increase in, attendance allowance
4. Extraordinary immediate assistance benefits.
Regulatory measures
1. Easing of regulatory requirements (in EU banks not required to meet P2G, CCB and LCR requirements; in USA leverage ratio lowered).
2. Temporary flexibility in assessment of loan categorisation and calculation of provisions by banks.
3. Recommendation to banking sector to refrain from making dividend payouts until end of January 2021.

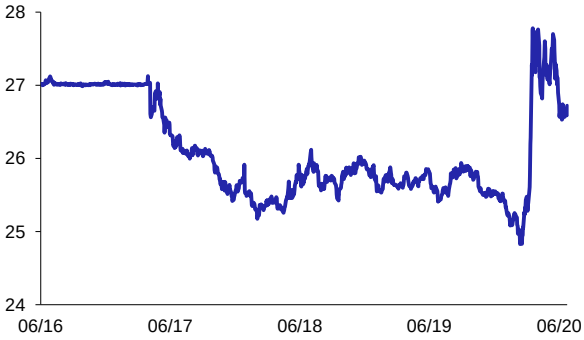
Note: Data as of 9 June 2020.

Chart II.10 CB
Government debt in selected EU countries as of the end of 2019
(% of GDP)



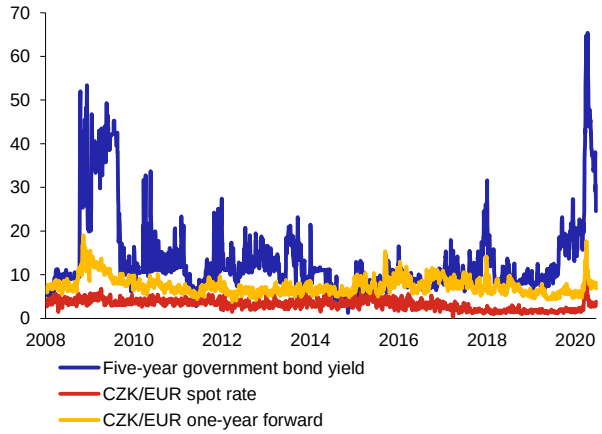
Source: Eurostat

Chart II.11 CB
CZK/EUR exchange rate



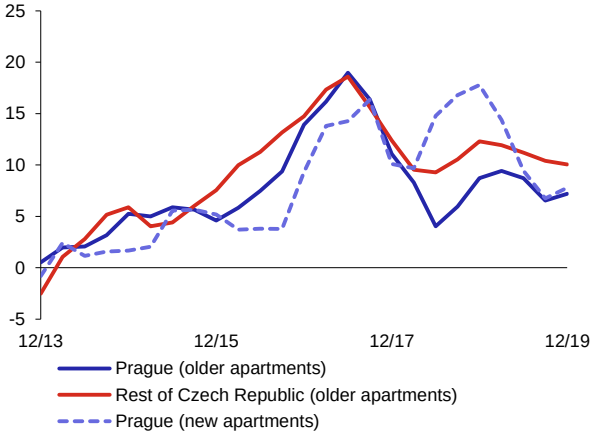
Source: Refinitiv

Chart II.12 CB
Bid-ask spreads on selected financial instructments
(yield in basis points, exchange rate in hellers)



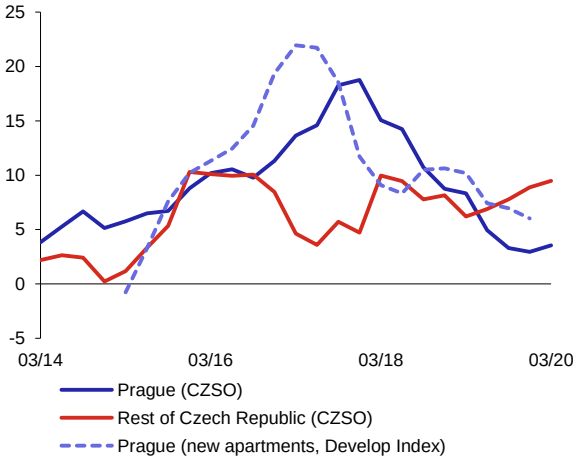
Source: Refinitiv

Chart II.13 CB
Apartment transaction prices by region
(year-on-year growth in %)



Source: CZSO

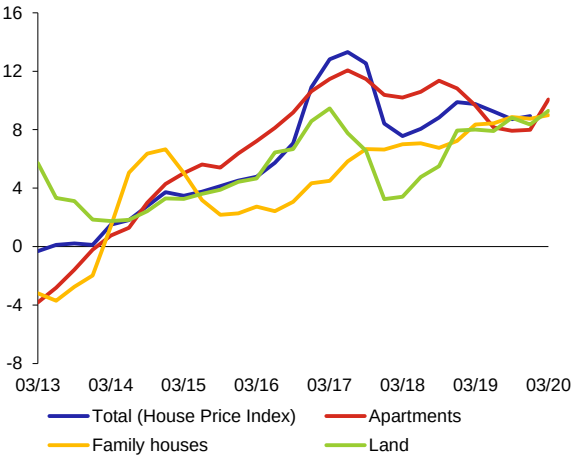
Chart II.14 CB
Apartment asking prices by region
(year-on-year growth in %)



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

Note: Transaction prices from a CZSO survey. 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.

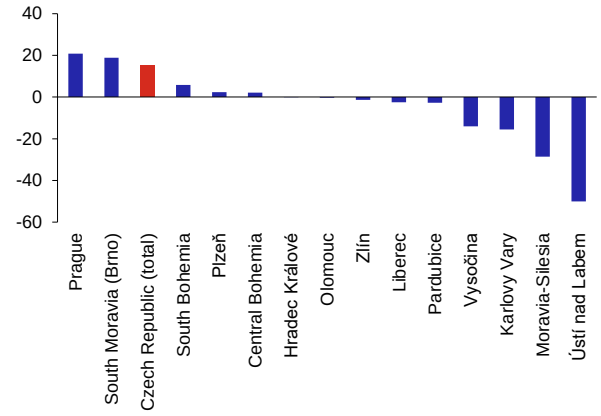
Chart II.15 CB
Transaction prices by type of property
(year-on-year growth in %)



Source: CZSO, HB Index

Chart II.16 CB
Apartment price overvaluation by region

(%)

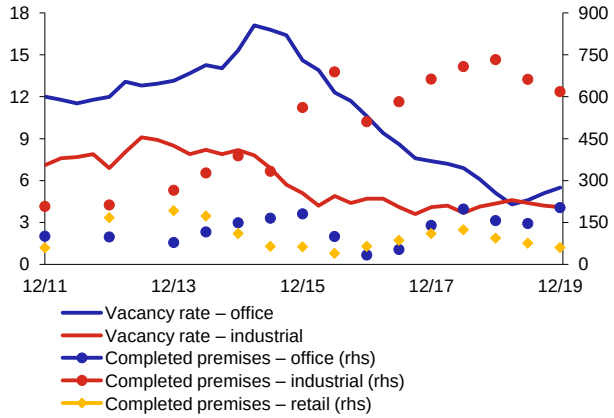


Source: CZSO, Společnost pro cenové mapy ČR, s.r.o.

Note: Estimate based on the macroprudential approach to determining fundamental prices. This approach gauges transaction prices against levels that are in line with low risks to financial stability. Therefore, the calculation does not take into account qualitative characteristics of the apartments sold and the attractiveness of the locality.

Chart II.17 CB
Vacancy rates and completed premises for commercial property

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

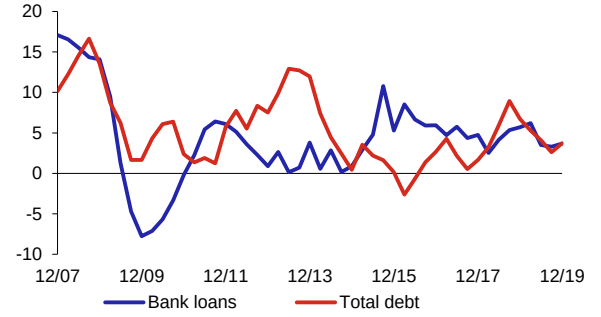


Source: Jones Lang LaSalle

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

Chart II.18 CB
Year-on-year growth in bank loans and total debt of non-financial corporations

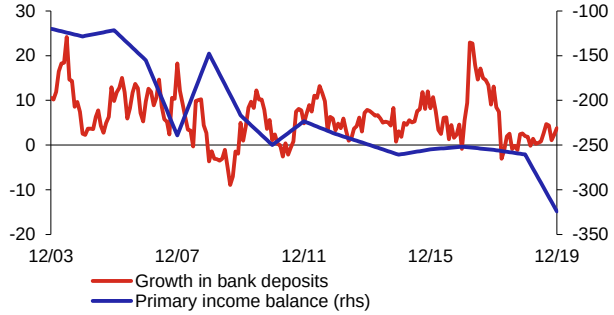
(%)



Source: CNB

Chart II.19 CB
Primary income balance and growth in bank deposits of non-financial corporations

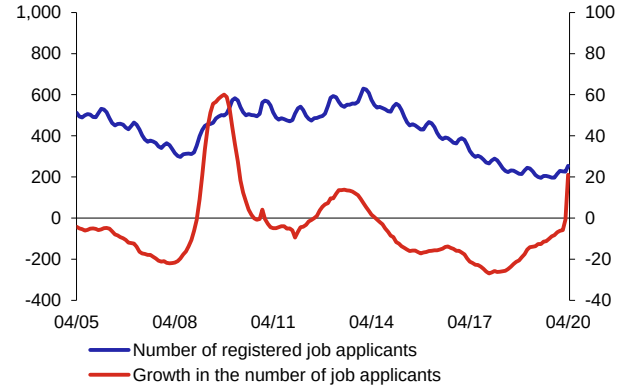
(%; right-hand scale: CZK billions)



Source: CNB

Chart II.20 CB
Number of job applicants

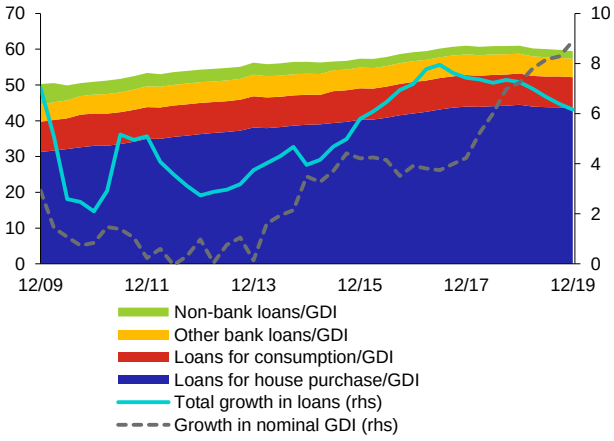
(thousands of persons; right-hand scale: year on year in %)



Source: MLSA

Chart II.21 CB
Household indebtedness and income indicator

(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.

SECTION III

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

Client		Exposures		Provisions		Coverage ratio	
Stage	Date	Volume (CZK billions)	Q-o-q change (%)	Volume (CZK billions)	Q-o-q change (%)	Ratio (%)	Q-o-q change (pp)
Total	12/19	3,510	4.2	58	4.6	1.66	0.01
	03/20	3,659		61		1.67	
S1	12/19	3,287	2.8	7	10.9	0.22	0.02
	03/20	3,378		8		0.23	
S2	12/19	216	26.6	7	24.1	3.35	-0.07
	03/20	273		9		3.28	
S3	12/19	77	1.2	44	0.4	57.10	-0.44
	03/20	78		44		56.66	

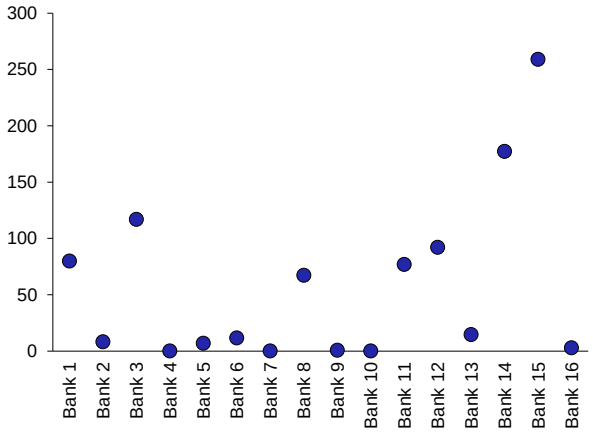
Households		Exposures		Provisions		Coverage ratio	
Stage	Date	Volume (CZK billions)	Q-o-q change (%)	Volume (CZK billions)	Q-o-q change (%)	Ratio (%)	Q-o-q change (pp)
Total	12/19	1,845	1.4	26	4.8	1.40	0.05
	03/20	1,871		27		1.45	
S1	12/19	1,708	0.6	3	8.4	0.18	0.01
	03/20	1,718		3		0.19	
S2	12/19	106	13.9	4	20.3	3.96	0.22
	03/20	121		5		4.19	
S3	12/19	31	1.2	19	0.7	59.29	-0.28
	03/20	32		19		59.01	

NFC		Exposures		Provisions		Coverage ratio	
Stage	Date	Volume (CZK billions)	Q-o-q change (%)	Volume (CZK billions)	Q-o-q change (%)	Ratio (%)	Q-o-q change (pp)
Total	12/19	1,357	4.6	32	4.2	2.33	-0.01
	03/20	1,420		33		2.32	
S1	12/19	1,207	1.8	3	11.8	0.29	0.03
	03/20	1,229		4		0.32	
S2	12/19	106	38.4	3	29.2	2.78	-0.19
	03/20	146		4		2.59	
S3	12/19	45	1.6	25	0.3	56.67	-0.74
	03/20	45		25		55.94	

Source: CNB
Note: S1 and S2 comprise performing loans; S3 can be considered identical to non-performing loans.

Chart III.1 CB
LCR in EUR

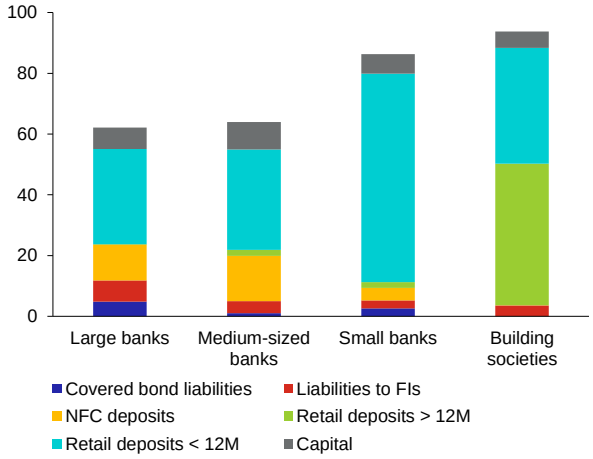
(%; as of 31 March 2020)



Source: CNB
Note: The chart only covers institutions that recorded a non-zero net outflow in EUR as of the given period.

Chart III.2 CB
Structure and amount of items ensuring stable funding

(% of balance sheet as of 31 March 2020)

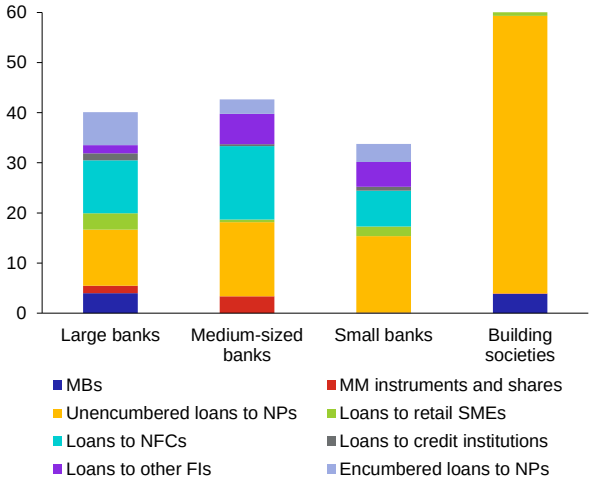


Source: CNB

Note: M = month, FIs = financial institutions, NFC = non-financial corporation.

Chart III.3 CB
Structure and amount of items requiring stable funding

(% of balance sheet as of 31 March 2020)

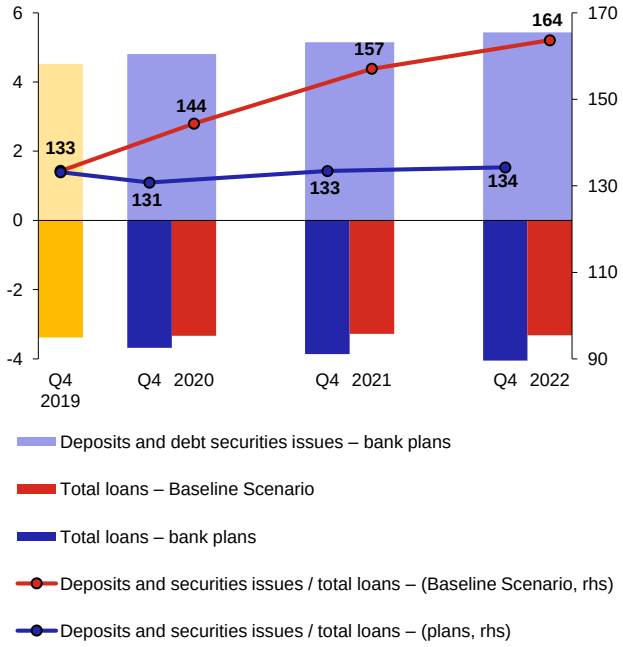


Source: CNB

Note: MBs = mortgage bonds, NPs = natural persons, NFCs = non-financial corporations, MM = money market, FIs = financial institutions, SMEs = small and medium-sized enterprises.

Chart III.4 CB
Funding plans of domestic banks

(CZK trillions; right-hand scale: %)

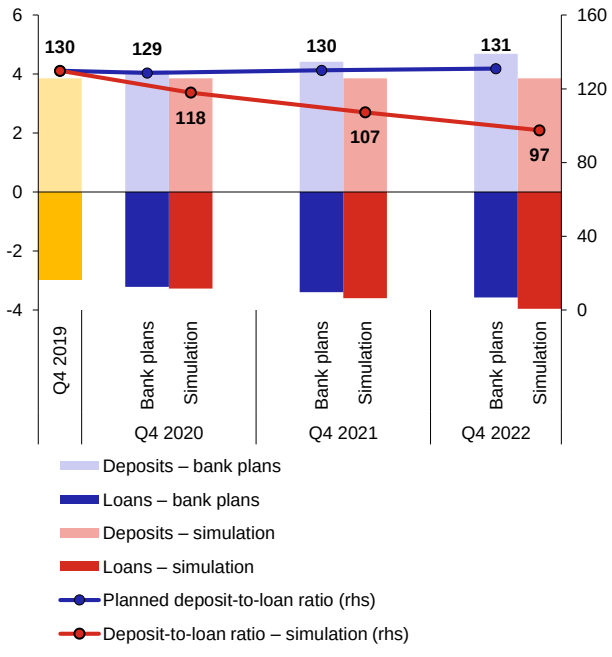


Source: CNB

Note: Includes loans and deposits to the private sector defined as households, non-financial corporations and financial institutions. Also includes debt securities with maturities equal to or more than three years. The yellow columns denote the position as of 2019 Q4; positive values are deposits and securities issues and negative values are loans.

Chart III.5 CB
Comparison of planned and encumbered client deposits and loans

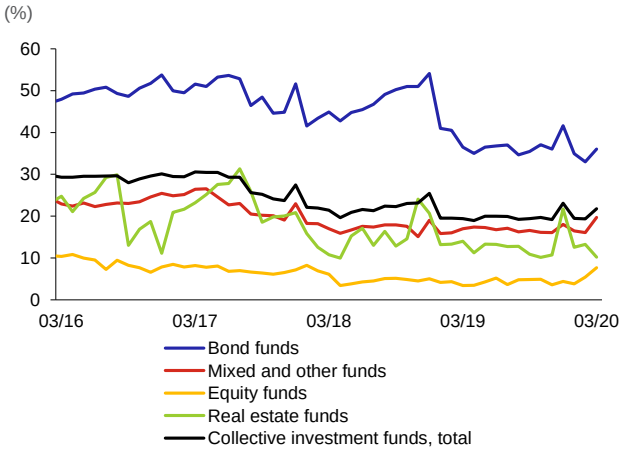
(CZK trillions; right-hand scale: %)



Source: CNB

Note: Clients comprise households and non-financial corporations. The simulation involves 10% year-on-year growth in loans and unchanged deposits. The yellow columns denote the position as of 2019 Q4; positive values are deposits and negative values are loans.

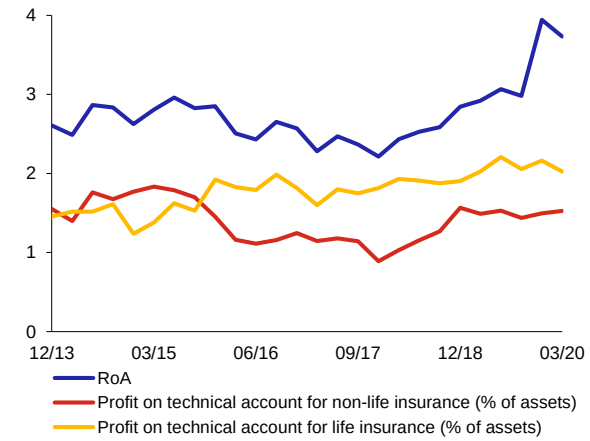
Chart III.6 CB
Quick assets on the balance sheets of collective investment funds



Source: CNB

Note: Quick assets comprise cash, debt securities issued by general government, and bank deposits and other claims payable on demand.

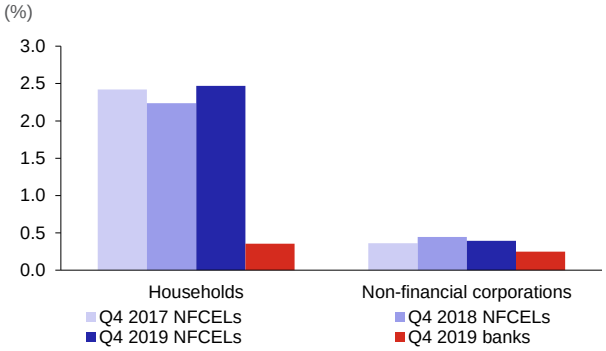
Chart III.7 CB
Insurance sector profitability



Source: CNB

Note: The Export Guarantee and Insurance Corporation is excluded from the calculation. The values are the sum of the profit/loss figures for the last four quarters.

Chart III.8 CB
3M default rate on loans provided by credit institutions



Source: CBCB, CNCB, SOLUS, CNB

Note: The default rate on loans provided to households by NFCELs is calculated as the average of the data from the NRCI and SOLUS. Only the NRCI is used for non-bank loans to non-financial corporations. Loans for consumption in the case of households.

SECTION IV

Table IV.1 CB
Liquidity stress test scenario

Outflow items, rate of outflow:	1M	2M and 3M	over 3M
Stable retail deposits	2%	1%	1%
Other retail deposits	3%	2%	1%
Operating deposits	10%	7%	5%
Non-operating deposits of credit institutions	100%	100%	100%
Non-operating deposits of other financial customers	25%	25%	25%
Non-operating deposits of central banks	0%	0%	0%
Non-operating deposits of non-financial corporations	10%	7%	5%
Non-operating deposits of other counterparties	15%	10%	5%
Liabilities from secured loans		100%	
Liabilities from securities issued		100%	
Maturity of derivatives		100%	
Other outflows		100%	
Increase in NFC loans		10% per 6M (1.6% per M)	
Retail credit lines	5%	5%	5%
NFC credit lines	15%	15%	15%

Inflow items, inflow haircut:	for each month
Retail loans (due to moratorium)	50%
Corporate loans (due to moratorium)	50%
Loans to other non-financial counterparties other than NFCs and retail	50%
Loans to and receivables from credit institutions and financial customers	0%
Other inflows	100%
Inflows from secured operations	0%

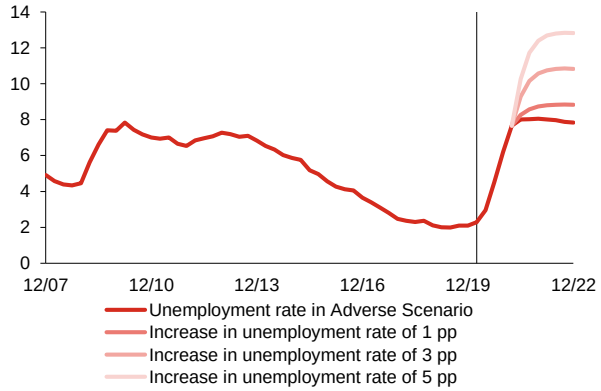
Liquid assets, haircut on liquid assets:	for each month
Corporate bonds	10–100% depending on quality
Covered bonds	10–100% depending on quality
Share prices	40–100% depending on quality
Central government	10–20% depending on quality
Cash, T-bills, government bonds	0%

Source: CNB

Note: M = month.

Chart IV.1 CB
Additional increase in the unemployment rate

(%)

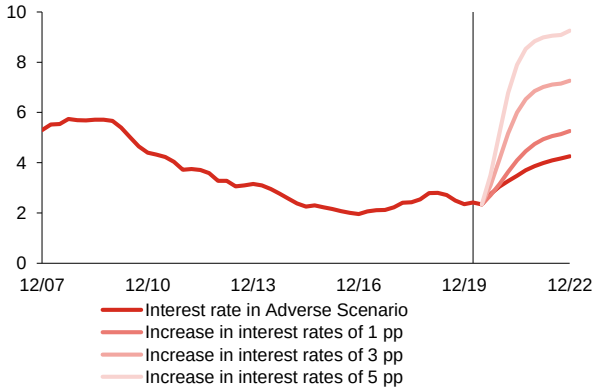


Source: CNB

Note: The increase in the unemployment rate always corresponds to the level in the final quarter of the stress period.

Chart IV.2 CB
Additional increase in interest rates

(%)



Source: CNB

Note: The increase in interest rates always corresponds to the level in the final quarter of the stress period. The average rate on new mortgage loans is used as the interest rate.

SECTION V

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

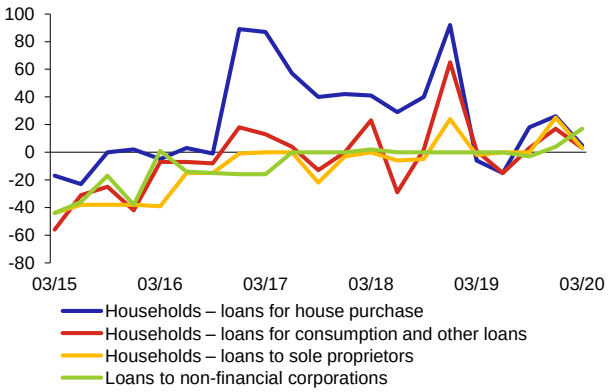
Range of FCI values		CCyB rate
from	to	
0	0.09	0.00%
0.09	0.10	0.25%
0.10	0.12	0.50%
0.12	0.14	0.75%
0.14	0.16	1.00%
0.16	0.19	1.25%
0.19	0.22	1.50%
0.22	0.25	1.75%
0.25	0.28	2.00%
0.28	0.31	2.25%
0.31	1.00	2.50%

Source: CNB

Note: The financial expansion in the domestic economy just before the onset of the global financial crisis was so strong that if the tool had been available, a CCyB rate of at least the "threshold" level of 2.5% would have been required. For this reason, the historical maximum of the FCI is linked with a CCyB rate of 2.5%. Input data are normalised in the FCI calculation. The historical FCI values may therefore change as new data arrive, so the conversion table must be recalibrated regularly.

Chart V.1 CB
Credit standards in the Czech Republic

(net percentages)

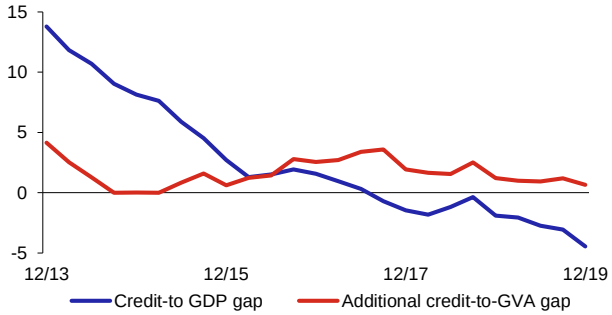


Source: CNB

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.

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

(pp)

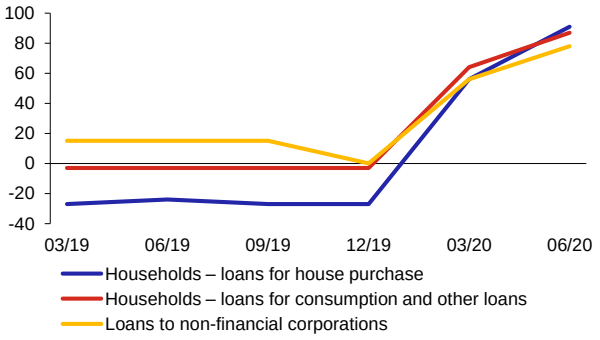


Source: CNB

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 V.3 CB
Change in the expected 12M probability of default

(net percentages)

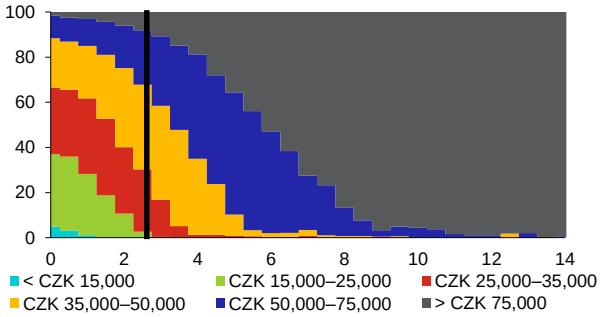


Source: CNB

Note: The data represent the difference between the market share of banks that reported an increase in expected losses and banks that reported a decrease in expected losses in the following three months. More information on the indicator methodology can be found on the CNB website.

Chart V.4 CB
Total debt distribution by declared income

(x-axis: CZK millions; y-axis: % of given category)

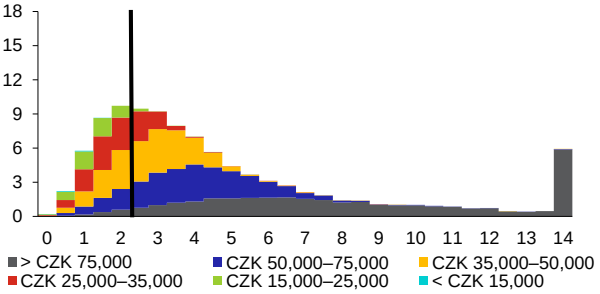


Source: CNB

Note: The vertical line represents the median debt. Data for 2019 H2.

Chart V.5 CB
Total debt distribution by declared income

(x-axis: CZK millions; y-axis: % of total debt)

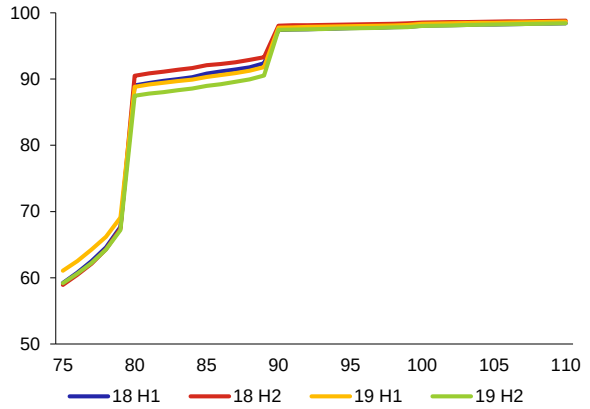


Source: CNB

Note: The vertical line represents the median debt. Data for 2019 H2. The sharp jump for the highest debt category is due to the fact that the highest categories of income and debt are limited only from the left.

Chart V.6 CB
Empirical cumulative distribution function of loans by LTV

(x-axis: LTV in %, y-axis: cumulative percentage of loans)

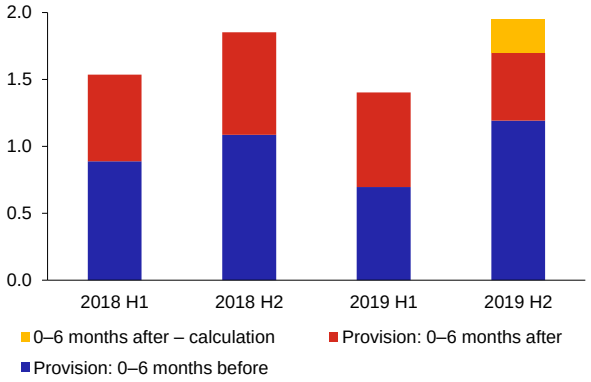


Source: CNB

Note: The curves plot the percentage share of loans with the given or lower LTVs.

Chart V.7 CB
Concurrent provision of unsecured and mortgage loans

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

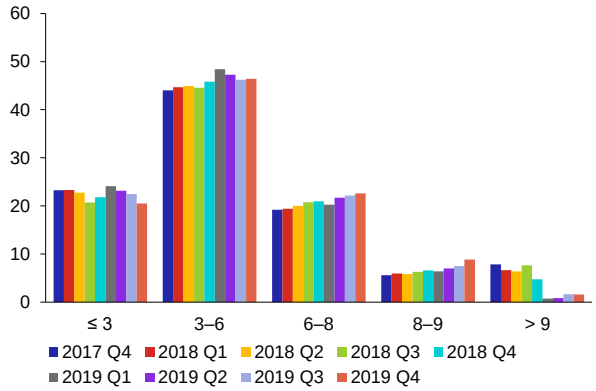


Source: CNB

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

Chart V.8 CB
LTI distribution of new loans

(x-axis: LTI in years; y-axis: share of loans in volume in %)

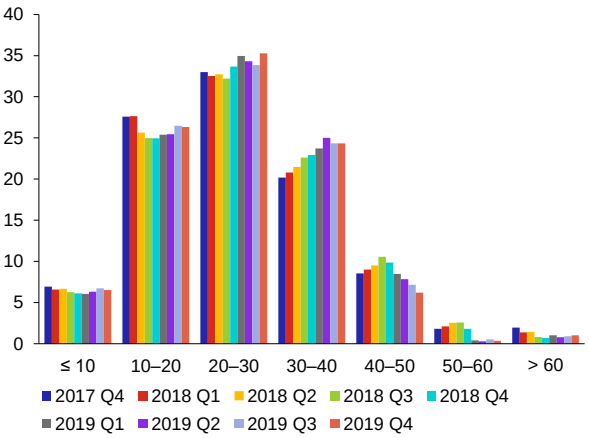


Source: CNB

Note: Interval closed from the right.

Chart V.9 CB
LSTI distribution of new loans

(x-axis: LSTI in %; y-axis: share of loans in volume in %)

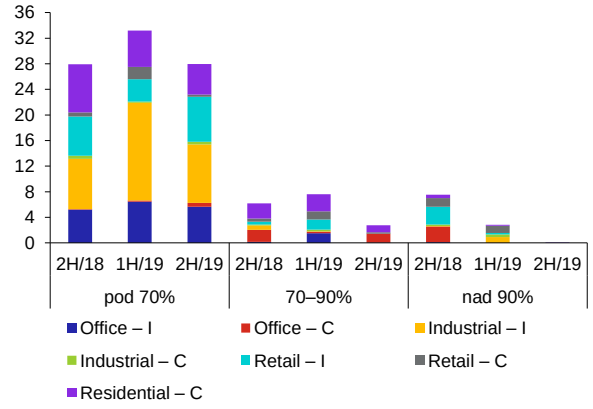


Source: CNB

Note: Interval closed from the right.

Chart V.10 CB
LTV distribution of new loans over time

(x-axis: LTV in %; y-axis: CZK billions)

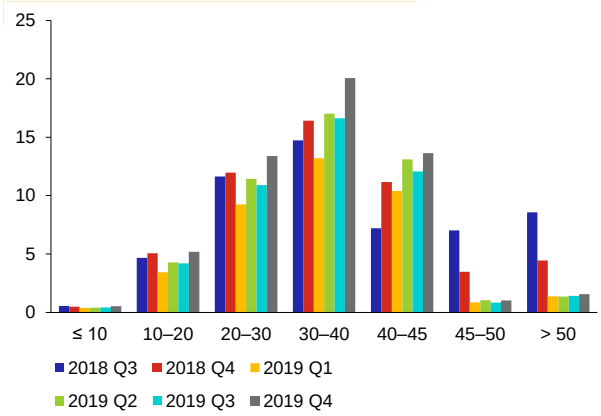


Source: CNB

Note: I: investment in commercial property, C: construction.

Chart V.11 CB
DSTI distribution of new loans

(x-axis: DSTI in %; y-axis: volume of loans in CZK billions)

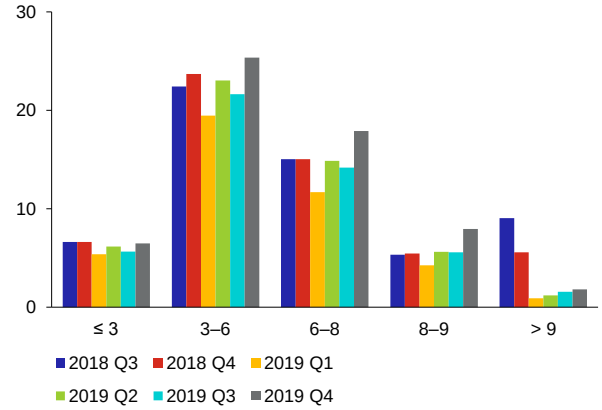


Source: CNB

Note: Interval closed from the right.

Chart V.12 CB
DTI distribution of new loans

(x-axis: LTV in %; y-axis: CZK billions)



Source: CNB

Note: Interval closed from the right.

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 new 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.

Collateralised loan obligation (CLO): A derivative based on securitisation of debt of usually highly indebted corporations with a low rating and high risk. In recent years, the volume of CLOs has risen significantly and large cross-border investors, among others, have purchased them. CLOs are thus a significant channel of global contagion between the corporations concerned and the financial sector.

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.

Common Reporting Framework (COREP): A common reporting framework in the EU, prepared by the European Banking Authority (EBA) for data reporting in accordance with prudential requirements (under CRR). It covers the areas of capital, capital adequacy, risk exposures, operational risk, market risk and credit risk.

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.

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. 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.

Deleveraging: A process consisting in the reduction of leverage, i.e. the reduction of indebtedness, which decreases the profitability of economic agents, but also the degree of risk associated with them.

Household insolvency: A situation where a household is unable to cover its current expenditures by its current income and the sale of its asset holdings. Insolvency is defined in legal terms in Act No. 182/2006 Coll., on Insolvency and Methods of Resolution Thereof.

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 fund 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: A loan intended for the acquisition of residential property.

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 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 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 financial assets: The difference between the sum of financial assets and the sum of liabilities.

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-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.

Overnight indexed swap: A term contract between economic agents consisting in the mutual exchange of interest payments corresponding to a fixed rate and a floating overnight financial market reference rate.

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 (PR): 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 price gap: The deviation of the price of property from its estimated equilibrium value.

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.

Quantitative easing: A method for implementing monetary policy in a situation where the central bank is no longer able to lower its monetary policy rate because it has already reduced it almost to zero. Quantitative easing involves the central bank buying assets from commercial banks and thereby creating a sizeable stock of free reserves with those banks. The purpose of this type of policy is to strengthen the balance-sheet and market liquidity of the banking system and minimise the risk of growth in interest rates due to insufficient liquidity. In the past ten years, quantitative easing has been applied in Japan and the USA. A similar policy is now being pursued, for example, by the ECB.

Rental return: The ratio of the annual supply rent to the asking price of the apartment. It is the inverse of the price-to-rent ratio.

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

Return on equity (RoE): The ratio of net profit to equity of a firm.

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

Saving rate (households): A flow indicator showing the ratio of savings to gross disposable income of households. In simplified terms, savings are the part of income not spent on consumption in a given period.

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.

Solvency (insurance companies): Solvency in the insurance sector is the ability of an insurer to meet its insurance obligations, i.e. to settle eligible insurance claims arising from insured losses.

Solvency II: A European regulatory framework (directive) for European insurance companies and reinsurers laying down quantitative and qualitative requirements and prudential rules, including requirements to comply with market discipline and disclosure duties. It entered into force in 2016, when it replaced the Solvency I regulatory framework.

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.

Yield spread: Also yield differential; the spread between the yield on a bond and the yield on a reference (“benchmark”) bond.

Abbreviations

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
CI	credit institution
CLO	collateralised loan obligation
ČMZRB	Českomoravská záruční a rozvojová banka
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
EME	emerging market economies
EMIR	Regulation on OTC derivatives, central counterparties and trade repositories
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
Fed	Federal Reserve systém
FI	financial institution
FINREP	Financial Reporting
FSR	Financial Stability Report
G20	Group of TwentyGB 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
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
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
MREL	minimum requirement for own funds and eligible liabilities
MSCI	Morgan Stanley Capital International
NACE	General Industrial Classification of Economic Activities
NBER	The National Bureau of Economic Research
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
OECD	Organisation for Economic Cooperation and Development
OFIs	other financial intermediaries
O-SII	Other systemically important institutions
PD	probability of default
pp	percentage point
PRIBOR	Prague InterBank Offered Rate (reference interest rate on the interbank market)
PTI	price-to-income
Q	quarter
QA	quick assets
RoA	return on assets
RoE	return on equity
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
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
TF	transformed fund
TLTRO	Targeted Longer-Term Refinancing Operations
TSCR	total supervisory review and evaluation process capital requirement
TTC	through the cycle
TP	technical provision
ULI	Unit Linked Insurance
USA	United States
VIX	Volatility index
WGI	Worldwide Governance Indicators
WP	Working Paper
Y	year

Country abbreviations

AT	Austria	IS	Iceland
AU	Australia	IT	Italy
BE	Belgium	JP	Japan
BG	Bulgaria	KR	South Korea
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	NL	Netherlands
DK	Denmark	NO	Norway
EA	euro area	NZ	New Zealand
EE	Estonia	PL	Poland
ES	Spain	PT	Portugal
FI	Finland	RO	Romania
FR	France	RU	Russia
GR	Greece	SE	Sweden
HK	Hongkong	SI	Slovenia
HR	Croatia	SK	Slovakia
HU	Hungary	TH	Thailand
CH	Switzerland	TR	Turkey
ID	Indonesia	UK	United Kingdom
IE	Ireland	US	United States
IN	India	ZA	Republic of South Africa

Selected indicators

FINANCIAL STABILITY INDICATORS – PART 1

		2014	2015	2016	2017	2018	2019	2020 Jan.	2020 Feb.	2020 Mar.
Macroeconomic environment										
ME.1	Real GDP growth (year on year, %)	2.7	5.4	2.4	4.5	2.8	2.4			
ME.2	Consumer price inflation (average annual index growth, %)	0.4	0.3	0.7	2.5	2.1	2.8	3.6	3.7	
ME.3	General government balance / GDP (%)	-2.1	-0.6	0.7	1.6	1.1	0.6			
ME.4	General government debt / GDP (%)	42.2	40.0	36.8	34.7	32.6	30.9			
ME.5	Trade balance / GDP (%)	5.1	4.1	5.2	5.1	4.1	4.3			
ME.6	External debt in % of banking sector external assets	152.7	133.7	120.2	114.0	113.7	112.2			
ME.7	Balance of payments current account / GDP (%)	0.2	0.2	1.6	1.7	0.3	0.4			
ME.8	Monetary policy 2W repo rate (end of period, %)	0.05	0.05	0.05	0.50	1.75	2.00	2.00	2.25	1.00
Non-financial corporations										
NC.1	Return on equity (%)	10.5	11.9	11.4	11.6	10.6	10.8			
NC.2	Debt (% of total liabilities)	57.2	56.3	56.8	55.8	55.8	55.0			
NC.3	Credit indebtedness (% of GDP)	53.8	51.1	51.5	49.4	50.2	49.2			
NC.4	– loans from Czech banks (% of GDP)	20.3	20.0	20.5	20.2	20.3	19.8			
NC.5	– loans from Czech non-bank financial corporations (% of GDP)	4.0	4.1	4.4	4.6	4.6	4.5			
NC.6	– other (including financing from abroad, % of GDP)	29.6	27.0	26.7	24.6	25.3	24.9			
NC.7	Interest coverage (pre-tax profit + interest paid / interest paid, %)	15.9	18.5	22.5	26.9	22.6	22.0			
NC.8	12M default rate (%)	1.5	1.4	1.1	1.2	1.2	1.0			
Households (including sole traders)										
H.1	Total debt / gross disposable income (%)	56.5	57.4	59.2	61.0	61.0	59.5			
H.2	Total debt / financial assets (%)	28.1	27.8	25.4	26.0	26.0	25.4			
H.3	Net financial assets (total financial assets − total liabilities, % of GDP)	72.0	73.2	86.8	85.7	87.1	89.7			
H.4	Debt / GDP (%)	30.3	30.1	31.1	31.7	32.2	32.2			
H.5	– loans from Czech banks to households (% of GDP)	26.5	26.9	27.9	28.5	29.1	29.2			
H.6	– loans from Czech non-bank fin. corporations to households (% of GDP)	1.8	1.3	1.3	1.2	1.2	1.2			
H.7	– loans from Czech banks to sole traders (% of GDP)	0.8	0.8	0.8	0.8	0.8	0.8			
H.8	– loans from Czech non-bank fin. corporations to sole traders (% of GDP)	0.2	0.2	0.2	0.2	0.2	0.2			
H.9	– other (including financing from abroad, % of GDP)	1.1	1.0	1.0	0.9	0.8	0.7			
H.10	Net interest expenses / gross disposable income (%)	3.1	2.6	2.4	2.4	2.4	2.6			
H.11	12M default rate (%, excluding sole traders)	4.0	3.1	2.4	1.9	1.5	1.5			
Financial markets										
FM.1	3M PRIBOR (average for period, %)	0.4	0.3	0.3	0.4	1.3	2.1	2.2	2.3	2.0
FM.2	1Y PRIBOR (average for period, %)	0.5	0.5	0.5	0.6	1.5	2.2	2.3	2.5	1.0
FM.3	10Y government bond yield (average for period, %)	1.6	0.6	0.4	1.0	2.0	1.5	1.6	1.5	1.3
FM.4	CZK / EUR exchange rate (average for period, %)	27.5	27.3	27.0	26.3	25.6	25.7	25.2	25.1	26.6
FM.5	Change in PX stock index (% year on year, end of period)	-4.3	1.0	-3.6	17.0	-8.5	13.1	2.8	-8.8	-26.5
Property market										
PM.1	Total change in residential property prices (transaction prices, % year on year)	3.7	4.5	10.9	8.4	9.9	8.9			
PM.2	Change in apartment prices (asking prices according to CZSO, % year on year)	2.1	4.3	15.1	11.6	6.5	10.8			
PM.3	Apartment price / average annual wage	8.8	8.9	9.8	10.3	10.2	10.5			
PM.4	Apartment price / annual rent (according to IRI)	25.7	24.5	26.9	27.8	26.1	25.9			

Note: Owing to data revisions, some historical values of the indicators may not be comparable to those published in previous FSRs. Also, owing to the later date of table update, the values of the indicators may not be the same as those referred in the text of the document *Risks to financial stability and their indicators*. Missing values were unavailable at the time of preparation of the table.

FINANCIAL STABILITY INDICATORS – PART 2

		2014	2015	2016	2017	2018	2019	2020 Jan.	2020 Feb.	2020 Mar.
Financial sector										
FS.1	Financial sector assets / GDP (%)	157.2	152.6	160.3	175.4	173.0	169.7			
FS.2	Shares of individual segments in financial sector assets (%)									
FS.3	banks	77.7	77.4	77.4	78.7	78.7	78.4			
FS.4	credit unions	0.3	0.3	0.3	0.3	0.3	0.3			
FS.5	insurance companies	7.1	6.8	6.4	5.7	5.6	5.1			
FS.6	pension management companies and funds	5.0	5.3	5.2	5.0	5.1	5.3			
FS.7	investment funds*	4.3	4.8	5.3	5.4	5.5	6.3			
FS.8	non-bank financial corporations engaged in lending	5.2	5.0	5.0	4.6	4.6	4.5			
FS.9	investment firms	0.5	0.5	0.4	0.3	0.2	0.1			
Banking sector										
BS.1	Bank assets / GDP (%)	123.1	119.0	125.0	138.7	136.7	133.5			
BS.2	Assets structure (%, end of period)									
BS.3	loans to central bank	13.0	16.0	21.5	32.8	31.6	31.9			
BS.4	interbank loans	6.5	4.5	3.8	3.5	3.3	2.9			
BS.5	client loans	50.7	51.8	50.8	45.3	46.8	47.2			
BS.6	bond holdings	22.5	20.8	18.1	13.5	13.6	12.9			
BS.7	– government bonds	16.2	14.1	11.4	7.9	8.2	7.6			
BS.8	– Czech government bonds	14.8	12.5	10.0	7.0	7.4	7.0			
BS.9	other	7.3	6.9	5.9	8.1	4.7	5.2			
BS.10	Liabilities structure (%, end of period)									
BS.11	liabilities to central bank	0.1	0.2	0.2	0.3	0.2	0.1			
BS.12	interbank deposits	10.3	7.4	10.2	16.2	15.1	12.7			
BS.13	client deposits	66.3	65.9	65.2	61.2	62.8	64.5			
BS.14	bonds issued	8.6	11.9	11.5	11.1	10.9	11.3			
BS.15	other	14.7	14.6	13.0	11.2	10.9	11.4			
BS.16	Client loans / client deposits (%)	76.4	78.6	77.9	74.0	74.4	73.1			
BS.17	Sectoral breakdown of total loans (%)									
BS.18	non-financial corporations	33.2	33.1	33.1	33.1	32.7	32.5			
BS.19	households	43.3	44.4	45.1	46.6	46.9	47.8			
BS.20	sole traders	1.3	1.3	1.2	1.3	1.3	1.3			
BS.21	others (including non-residents)	22.1	21.3	20.6	19.0	19.1	18.4			
BS.22	Growth in loans (%, end of period, year on year):									
BS.23	total	4.8	5.6	6.0	4.6	7.2	4.4			
BS.24	non-financial corporations	0.9	5.3	5.9	4.8	5.7	3.7			
BS.25	– real estate activity (NACE L)	3.6	5.6	12.1	-1.7	5.2	7.5			
BS.26	households	4.5	8.2	7.7	8.0	7.9	6.4			
BS.27	– loans for house purchase	5.6	8.0	8.4	9.0	8.5	6.7			
BS.28	– loans for consumption	-0.6	8.9	4.5	4.1	6.4	7.1			
BS.29	sole traders	-4.0	0.0	4.4	10.1	5.6	8.1			
BS.30	Non-performing loans / total loans (%):									
BS.31	total	6.1	5.8	4.8	4.0	3.3	2.5			
BS.32	non-financial corporations	6.7	5.7	5.2	4.2	3.6	3.2			
BS.33	households	4.7	4.0	3.2	2.5	2.1	1.6			
BS.34	– loans for house purchase	3.1	2.6	2.0	1.8	1.5	1.2			
BS.35	– loans for consumption	12.0	11.1	8.9	6.0	5.1	4.0			
BS.36	sole traders	12.6	11.0	8.6	6.7	5.0	4.3			
BS.37	Coverage of non-performing loans by provisions (%)	55.9	54.9	57.2	54.8	58.2	57.4			
BS.38	Capital ratio (%)	18.0	18.4	18.4	19.3	19.6	21.3			
BS.39	Tier 1 capital ratio (%)	17.5	17.9	17.9	18.7	19.1	20.8			
BS.40	Leverage (assets as a multiple of Tier 1)	13.7	13.3	13.9	15.3	15.2	14.3			
BS.41	Leverage ratio (Tier 1 capital / total exposures)	n.a.	n.a.	7.1	6.6	6.6	7.0			
BS.42	Return on assets (%)	1.2	1.2	1.2	1.1	0.8	1.2			
BS.43	Return on Tier 1 (%)	16.8	16.7	17.7	16.9	17.5	18.1			
BS.44	Quick assets / total assets (%)	29.8	31.8	34.4	42.0	41.2	40.7			
BS.45	Quick assets / client deposits (%)	44.1	47.1	52.1	68.0	65.1	62.8			
BS.46	Net external position of banking sector (% of GDP)	0.6	-2.2	-7.8	-21.4	-20.2	-18.0			
BS.47	Banking sector external debt / banking sector total assets (%)	15.1	16.4	19.1	26.1	25.0	23.1			

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FINANCIAL STABILITY INDICATORS – PART 3

		2014	2015	2016	2017	2018	2019	2020 Jan.	2020 Feb.	2020 Mar.
Non-bank financial corporations										
NI.1	Share in financial sector assets (%)	21.7	22.0	22.0	20.9	20.9	21.3			
	Insurance companies									
NI.2	Premiums written / GDP (%)	3.6	3.3	3.1	3.0	2.9	3.0			3.0
NI.3	Ratio of eligible own funds to the solvency capital requirement (in %)	n.a.	n.a.	238.1	230.0	243.6	202.4			196.6
NI.4	Change in financial investment of insurance companies (%, year on year)	2.2	-1.6	0.9	4.2	1.4	-6.7			-2.1
NI.5	Return on equity of insurance companies (%)	16.4	17.0	15.7	14.7	15.8	24.1			23.9
NI.6	Claim settlement costs / net technical provisions (life, %)	20.0	17.8	15.1	14.4	15.3	16.6			17.2
NI.7	Claim settlement costs / net technical provisions (non-life, %)	51.5	55.6	58.1	59.4	57.8	62.7			63.4
	Pension management companies (PMCs) and PMC funds									
NI.8	Change in assets of funds managed by PMCs (%)	14.1	10.0	7.8	10.8	5.6	8.0			
NI.9	Nominal change in value of assets of PMC funds	3.3	1.0	0.3	3.6	-1.7	0.9			
	Investment funds									
NI.10	Growth in net assets (= equity; year on year, %)	19.6	18.5	17.7	20.9	6.3	21.0	15.6	13.4	6.7
	Non-bank financial corporations engaged in lending									
NI.11	Growth in loans from non-bank financial corporations engaged in lending (%):									
NI.12	total	3.3	0.8	8.9	8.2	4.7	3.4			
NI.13	households	5.0	-26.4	7.0	0.7	-1.6	0.9			
NI.14	non-financial corporations	3.7	11.4	10.1	10.0	6.3	3.0			

Note: Owing to data revisions, some historical values of the indicators may not be comparable to those published in previous FSRs. Also, owing to data revisions and the later date of table update, values of the indicators may not be the same as those referred in the text of this document.

ADDITIONAL INFORMATION ON THE INDICATORS

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 Czech-Moravian Guarantee and 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 – 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.
NI.13	The change in the amount of loans provided to households by non-bank financial corporations engaged in lending in 2015 was due to the conversion of one of these lenders into a foreign bank branch.

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