

RISKS TO FINANCIAL STABILITY
AND THEIR INDICATORS – DECEMBER 2018

2018

The publication “Risks to financial stability and their indicators – December 2018” was discussed by the CNB Bank Board at its regular meeting on financial stability issues on 29 November 2018. With a few exceptions, it contains information available as of 30 September 2018. 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. A list of [abbreviations](#) can also be found there.



Dear Readers,

Our main publication in the area of financial stability and macroprudential policy is the *Financial Stability Report*, which we have published every June since 2005. It is the key document for the regular spring Bank Board meeting on financial stability issues. For the regular autumn meeting, our experts draw up an update of the Financial Stability Report. This update had not been published until last year. Given the increasing public interest in our macroprudential policy decisions, we decided a year ago to publish the document ***Risks to financial stability and their indicators***, which is based on this update, on the CNB website every year. The pilot version of this document, based on the December 2017 update of the Report, was published in January 2018. The second issue, based on the November 2018 update of the Report, is now at your disposal. In the years ahead, the CNB will publish this document in December.

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 supervisory and monetary 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 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 departments at regular meetings on financial stability issues. At these meetings, a wide range of information on developments of risks in the domestic financial system and abroad is presented and 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.

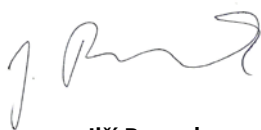
The CNB is a member of the joint EU institution for the identification of systemic risks and macroprudential policy – the European Systemic Risk Board (ESRB). Together with three pan-European sectoral supervisory authorities (EBA, ESMA and EIOPA) and national authorities, the ESRB makes up the European 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 we use include above all a set of prescribed capital buffers for credit institutions. We set a countercyclical capital buffer and a systemic risk buffer for systemically important banks at regular intervals. In recent years, we have dealt intensively with risks associated with property market developments and mortgage lending. To mitigate these risks, we use a set of recommendations regarding the provision of mortgage loans. We are also pushing for a legislative change in this area, aimed at effective prevention of the relevant risks.

The publication is divided into four sections. Following the opening *Summary*, the section titled *The real economy and financial markets* focuses on risks connected with the macroeconomic environment, developments in the sectors of non-financial corporations and households, and financial market trends. The section called *The financial sector* assesses developments in the banking sector and the non-banking institutions sector. The closing section, *Risks to financial stability and macroprudential policy*, contains information on macroprudential instruments for mitigating risks identified. This section focuses mainly on the setting of the countercyclical capital buffer and the assessment of risks associated with mortgage lending. The publication newly includes a *Chartbook* containing numerous useful charts showing indicators of developments and risks in the financial sector.

On behalf of the Czech National Bank



Jiří Rusnok
Governor

FOREWORD	2
1 SUMMARY	5
2 THE REAL ECONOMY AND FINANCIAL MARKETS	10
2.1 THE MACROECONOMIC AND FINANCIAL ENVIRONMENT	10
2.2 THE NON-FINANCIAL SECTOR	16
3 THE FINANCIAL SECTOR	21
3.1 THE BANKING SECTOR	21
3.2 THE NON-BANKING FINANCIAL SECTOR	29
3.3 BANKING SECTOR STRESS TESTS	32
4 RISKS TO FINANCIAL STABILITY AND MACROPRUDENTIAL POLICY	34
4.1 THE COUNTERCYCLICAL CAPITAL BUFFER	35
4.2 RISKS ASSOCIATED WITH PROPERTY MARKETS	41
CHARTBOOK (CB)	48
SELECTED FINANCIAL STABILITY INDICATORS	57
BOXES	
Box 2.1: MEDIAN CZECH HOUSEHOLD WITH A LOAN SECURED BY RESIDENTIAL PROPERTY	17

1 SUMMARY

The CNB Bank Board decided at its meeting on 29 November 2018 to increase the countercyclical capital buffer rate to 1.75% with effect from 1 January 2020. The CNB does not deem it necessary to change the current LTV, DTI and DSTI limits applicable to mortgage loans. It has left the list of other systemically important institutions unchanged.

The financial conditions in Europe remain very easy

Monetary policy rates remain low or negative in many European countries even in a situation of economic recovery and inflation fluctuating around target levels. Easy monetary and financial conditions in some countries are supporting a shift into the growth phase of the financial cycle, characterised by faster growth in loans and property prices. The CNB has made substantial progress in normalising monetary policy, having increased its main monetary policy rate seven times since August 2017 to 1.75% as from November 2018. The CNB's monetary and macroprudential policies are thus working in the same direction and their countercyclical nature is contributing to the stability of the domestic economy and financial system.

Low returns on safe assets are causing changes in the structure of institutional investors' and households' portfolios

Despite a rise in nominal yields, real yields on Czech government bonds remain at record lows. As a result, institutional investors are continuing to reallocate their portfolios towards riskier assets, most notably equities and corporate bonds. Negative real yields on deposit products are also motivating households to reallocate their funds into more profitable assets – especially investment fund units – and to buy property on credit.

A global repricing of risk premia in an environment where many European countries are highly indebted remains an external risk to financial stability in the Czech Republic.

The economic recovery and favourable financial conditions have allowed the average debt ratio in some euro area countries to decrease. However, the private and government debt ratios are still above sustainable levels in many countries. Debt sustainability risk is thus highly relevant from the medium-term perspective in some countries. Indebted economies are more sensitive to an increase in interest rates, which could accelerate the onset of a recession after a long period of accommodative financial conditions. This is associated with a risk of a sudden repricing of risk premia on financial markets, where distrust of debt sustainability could lead to a rise in risk aversion and trigger massive sell-offs of financial assets. The current prices of many such assets are highly overvalued relative to fundamentals. A spiral between growing risk premia, declining asset prices and asset sales would result in the financial sector incurring increased losses. It would also probably foster growth in longer-term yields on the financial market and substantially raise the cost of funding for both the private and public sector.

Developments in the non-financial corporations sector are being driven by a tight labour market

The labour market showed persisting signs of overheating in 2018 H1. Wage growth exceeded 8% and was the biggest contributor to the growth in total costs and the decline in profitability of non-financial corporations. Although wage growth has now peaked according to the CNB's current forecast, it is expected to remain relatively high in the years ahead. For this reason, downward pressure on the sector's profitability can be expected to persist.

Credit risk in the private non-financial sector continued to follow a downward trend, which, however, is probably at an end

Credit risk in the non-financial corporations sector as measured by the 12-month default rate fell slightly and continued to follow a downward trend. A similar trend could be seen in the household sector. This decline was due to the positive trend in household income and the current low debt servicing costs. In the case of loans to households for consumption, though, moderate growth in credit risk was observed. However, room for a further decline in credit risk for exposures to the non-financial private sector is limited. In line with the favourable trend in credit risk, the ratio of non-performing loans to total loans, measuring the extent of materialisation of risks taken on in the past, also dropped.

The debt of the Czech private non-financial sector is currently low but gradually rising

Economic growth in the Czech Republic is being driven by robust domestic and foreign demand. According to the CNB forecast, annual GDP growth will exceed 3% for 2018 as a whole and stay at a similar level in the years ahead. Domestic demand is being supported by robust household consumption, reflecting rapid growth in disposable income amid a tight labour market and low unemployment. The observed growth in income is boosting optimism regarding future developments and raising households' demand for loans. The growth rates of loans in the household sector were above-average from the medium- and long-term perspective. The absolute debt level is rising relatively rapidly, but relative indebtedness remains at a reasonable level thanks to buoyant income growth. However, gradual growth in debt would become a source of structural risks in the medium or long term. If an economy moves into a downward phase of the business cycle, excessive debt can affect the depth and duration of the recession.

The Czech banking sector continued to develop favourably in the second half of 2018

Despite a modest fall in the capital ratio, banks' capitalisation remains sufficient and their profitability is still high. The current phase of the business and financial cycle is being reflected in a further fall in risk weights and expected losses on banks' main credit portfolios. In the long run, low risk weights for residential property purchase loans can result in excess capacity in this market segment and growing concentration in banks' portfolios. Risk weights and provisions can both be expected to rise markedly in the event of a change in the cycle and particularly in the event of a sustained downturn. An important element enhancing banks' resilience to such developments is capital buffers, whose levels will gradually increase following increases in the countercyclical buffer rate in the Czech Republic and other countries in which domestic banks have exposures (primarily Slovakia).

Banks and insurance companies remain resilient to potential adverse shocks

Hypothetical adverse economic developments in a bank macro stress test with a five-year horizon were reflected in a significant fall in the sector's capital ratio (of 8.8 pp to 9.9%). Nevertheless, the capital ratio remained above the regulatory minimum of 8%. However, if banks had no voluntary capital surpluses (3.0 pp) at the start of the test, the capital ratio of the sector as a whole would fall below the regulatory minimum. This highlights the need for adequate capital buffers to cover cyclical risks. Insurance companies also showed a high degree of resilience in the stress test.

The pension management companies sector remains vulnerable to market developments

Financial market developments were not favourable for pension management companies, however, and led to a weakening of their resilience. Several transformed funds saw their assets fall below their liabilities, mainly because of a decline in the market prices of Czech government bonds. Several pension management companies thus had to top up their transformed funds. Many transformed funds might need further top-ups if market prices of assets continue to decline. The CNB is monitoring the situation and is engaged in an intense dialogue with the pension management companies affected about their capital planning.

The Czech economy has moved further into the growth phase of the financial cycle

An evaluation of the position of the domestic economy in the financial cycle is a starting point for deciding on the countercyclical capital buffer rate. In its decision, the CNB takes account of the dynamics in the overall debt level in the economy, indicators of activity and conditions in the financial sector and indicators of the banking sector's vulnerability to adverse shocks related to cyclical fluctuations. The main indicator of an economy's financial leverage is the ratio of total loans provided to the private non-financial sector to gross domestic product. The indicators of activity and conditions mainly include credit growth, lending standards, residential and commercial property prices and returns on financial assets. The main banking sector vulnerability indicators examined are the sustainability of current profitability, the adequacy of capital and capital buffers and the level of provisioning. According to the CNB's overall assessment of the available information, the domestic economy has moved further into the growth phase of the financial cycle and the banking sector's vulnerability to an economic downturn has simultaneously increased. This is due in part to the financial conditions, which remain very relaxed despite an increase in interest rates. Optimistic expectations regarding future income and asset prices are supporting rapid credit growth. Despite a slowdown in credit growth, housing prices are continuing to rise apace and remain overvalued by the CNB's estimation. Banks' profitability is being supported by exceptionally low asset impairment losses. Those turned temporarily negative in 2018 Q2. However, this is unsustainable from the long-run perspective. Falling risk weights for some

types of loans are another source of increased cyclical sensitivity. This means banks need less capital to provide a given volume of loans. If their current earnings are not used partly to boost capital, some banks might get into an unfavourable capital position after a turn in the cycle leading to growth in risk weights. The risk that the buffers being created to cover future losses will not be entirely sufficient is amplified by the fact that the ratio of provisions to total loans started to return to a downward trend in the rest of 2018 following an initial increase linked with the switch to the new IFRS 9 accounting standard.

Consistent with the assessment of cyclical risks and the degree of vulnerability of the banking sector is an increase in the countercyclical capital buffer rate

Based on the above assessment, the CNB Bank Board decided at its meeting on 29 November 2018 to increase the CCyB rate to 1.75% with effect from 1 January 2020. The decision also takes into account the fact that one of the implications of the switch to the IFRS 9 standard remains an additional potential source of banking sector vulnerability. IFRS 9 is supposed to be beneficial to financial stability from the long-term perspective, because unlike the previous IAS 39 standard it creates conditions for early and sufficient loan loss provisioning. However, the results of the macro stress tests of banks published in FSR 2017/2018 support the view that the expected loss concept under IFRS 9 may have a significant effect in the form of a rapid and sharp pass-through of an adverse economic situation to capital in certain conditions.

A potential cooling of credit growth will not constitute the main reason for immediately lowering the CCyB rate

Most banks are 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, by a sufficient margin. Assuming reasonable dividend policies, banks have sufficient space for prospective increase in the CCyB and growth in their credit portfolios on the aggregate level. The CNB stands ready to increase the CCyB rate further in the event of continued rapid credit growth, increasing risks connected with property purchase financing, a build-up of cyclical risks in the banking sector and a rise in the vulnerability of the banking sector. By contrast, the CNB will lower or completely zero the CCyB rate in the event of a sudden turnaround in the financial cycle. However, a decrease in lending activity or more prudential lending will not alone constitute the main reason for lowering the rate, as the cyclical risk assumed at times of above-average credit growth and relaxed financial conditions stays in banks' balance sheets. Clear signals of risk materialisation, reflected in rising risk weights, increased provisioning and a growing volume of non-performing loans, would be grounds for reducing the CCyB rate. The process of lowering the CCyB rate must be optimally timed, as a premature reduction would increase the banking sector's voluntary capital surplus, which in certain situations might not be maintained prudently to cover future losses and higher Pillar 1 capital requirements and the draining of which might increase the sector's vulnerability. Conversely, releasing the buffer too late, when materialised losses are being fully reflected in growth in capital requirements, could result in a credit crunch and would render it impossible to smooth the downward phase of the financial cycle.

The affordability of housing has deteriorated further due to growth in residential property prices

Transaction prices of residential property rose further in 2018 H1 and are almost one-quarter higher compared to their pre-crisis peak. The rate of price growth started to slow at the end of 2017. However, the year-on-year growth of 7.5% recorded in 2018 Q2 is still relatively buoyant in the European context. Both the methods used by the CNB to assess the potential overvaluation of housing prices indicate that due to the developments observed in 2018 Q2 the degree of overvaluation has increased slightly overall since the end of 2017, reaching 10% on average at the end of 2018 H1. The price-to-income (PTI) and loan service-to-income (LSTI) indicators of housing affordability have been steadily worsening over the last two years. The CNB regards apartment undersupply in Prague and some other large cities as the main cause of this trend.

The spiral between property prices and property purchase loans has halted

In FSR 2016/2017, published in June 2017, the CNB identified a continued spiral between property prices and property purchase loans as the most significant domestic risk. The spiral halted in 2017 H2 and can be assessed as still stationary in 2018 H1. This is due primarily to a slowdown in housing price growth. However, the conditions for financing housing purchases on credit remain attractive. Interest rates on loans for house purchase are well below the long-term average and, accounting for wage inflation, the perceived real costs of debt are still negative. Households' willingness to finance their

spending with debt remains high in an environment of rising household income and low interest payments. A risk scenario going forward is thus a situation where a large proportion of households start to consider the current income growth to be permanent and succumb to the illusion that it will be easy to service increasing debt levels. Another risk is a situation where households start to believe that house prices will continue to rise indefinitely.

Volumes of new house purchase loans remain high

Despite a gradual tightening of the LTV limits and increases in interest rates, the volume of new housing loans and new mortgage loans grew last year and this year. The “forecasts” made last year by some market participants that the market would contract by one-fifth or even one-third after the LTV limit was tightened in April 2017 thus did not materialise. Genuinely new mortgage loans excluding refinancing and refixations amounted to CZK 175 billion last year, exceeding the 2016 level by several billions. This amount increased further during the 12 months from October 2017 to September 2018, reaching CZK 183 billion. The strong growth in 2018 Q3 might have been due in part to the media and marketing campaign preceding the introduction of DTI and DSTI limits in October 2018. It resulted in high volumes of mortgage loans being provided in the months immediately before these limits started to apply. The volume of refinanced loans declined. This, however, is not related to the CNB’s macroprudential measures.

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

Mitigation of systemic risks relating to the residential property market and housing loans 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”). It sets quantitative LTV, DTI and DSTI limits, maximum maturities and qualitative criteria for prudent provision of such loans. The CNB assesses the risks associated with mortgage lending and banks’ compliance with the Recommendation twice a year. The main source of information for the aggregate analyses is the sector-wide *Survey of loans secured by residential property* (the “Survey”). The assessment conducted on the basis of data on loans provided in 2018 H1 shows that some loans have highly risky characteristics. Nevertheless, the overall risks associated with mortgage lending are not increasing further.

Banks are mostly compliant with the recommended LTV limits and the CNB considers the current limits to be sufficient

Banks are broadly compliant with the Recommendation in force as regards LTV limits. Loans with LTVs of 80%–90% accounted for around 10% of new lending in 2018 H1, so the recommended limit of 15% was complied with at the aggregate level. Given the slowdown in residential property price inflation, the rapid growth in household income and the halt in the increasing overvaluation of apartment prices, the CNB considers the current recommended LTV limits to be sufficient and does not deem it necessary to tighten them further at the moment. However, taking into account the persisting overvaluation of housing prices and the prevailing valuation of collateral on the basis of purchase prices, the CNB continues to regard the current LTV limits as boundary. The CNB will therefore check compliance with the prudential collateral valuation rules to prevent individual lenders from acquiring market shares at the expense of others by circumventing the limits using approaches that do not conform to the Recommendation. It will also strictly require providers to report purchase price and collateral value data in a methodologically correct manner in the Survey. It will additionally check compliance with the principles contained in the supervisory benchmark (a summary of prudential principles describing how banks should proceed when lending, published in November 2017 in the *Supervisory benchmark on the provision of loans to households by credit institutions*). The CNB reacts – and stands ready to react further – to the risks associated with insufficient compliance with the Recommendation and prudential rules for the management of risks using an additional capital requirement under SREP.

The LTI and LSTI distribution of new loans remains stable, but indicates increased risk-taking

The CNB Recommendation was amended to include upper limits on the DTI and DSTI ratios of, respectively, 9 times and 45% of the applicant’s net annual income with effect from 1 October 2018. The CNB regards loans with a DSTI ratio of over 40% and an LTI ratio of over 8 as highly risky and recommends that lenders should assess such applications with particular prudence. The CNB does not currently ask for information on DTI and DSTI ratios for individual loans in the Survey and will

do so only after the above limits take effect. However, the CNB assesses the risks on the basis of LTI and LSTI ratios calculated using mortgage loan amounts. The LTI and LSTI distribution of loans is almost constant over time. New loans with LTIs of over 9 accounted for 6.5% and loans with LSTIs of over 45% for only 5.8% of loans in 2018 H1. Since the loans in the two categories partly overlap, less than 9% of loans provided would have LTIs of over 9 and LSTIs of over 45% in 2018 H1 overall. The CNB took account of the existence of specific cases by allowing lenders to apply a 5% exception, so the new DTI and DSTI limits should not affect a large number of applicants. However, many applicants have additional financial obligations. According to a statement made by the Czech Banking Association, one-fifth of successful applicants would not have met the DTI and DSTI limits last year. The CNB considers the announced impact of 20% as exaggerated. For it to have materialised, a large number of mortgage loans would have had to be provided to applicants with already high levels of debt. This would have indicated a significantly increased level of risk. The DTI and DSTI limits are suitable instruments for mitigating growth in these risks.

The CNB is 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. These three ratios have been chosen because the CNB cannot carry out its statutory duties properly using LTV alone. The income-oriented DTI and DSTI ratios are of critical importance, as they limit the risks associated with excessively large and long-maturity household debt. Setting a debt ceiling is key to keeping systemic risks at an acceptable level in lengthly good times. The proposed amendment was prepared primarily for preventive reasons, because in the future mortgages may be provided to a much greater extent by foreign institutions falling outside the scope of prudential supervision by the CNB. In this situation, the only way to ensure a level playing field on the market and prevent unfair competition between lenders was to set legally binding conditions applicable to all entities.

The list of other systemically important institutions is unchanged

The CNB is required to identify other systemically important institutions (O-SIIs) and to review the list at least once a year. According to the CNB's latest evaluation, there are still seven other systemically important institutions in the domestic financial sector (Československá obchodní banka, Česká spořitelna, Komerční banka, UniCredit Bank, PPF FH B.V., Raiffeisenbank and Jakobovič & Tkáč), so the list of O-SIIs for 2019 is unchanged. The CNB does not currently consider it necessary to set an additional capital requirement for banks that are members of the relevant regulatory consolidated groups due to their designation as O-SIIs. Five banks with a high level of domestic systemic importance are required to maintain a systemic risk buffer. The CNB is obliged to perform a review of this duty every two years. Following the review conducted in the second half of 2018, the buffer rates for individual banks were confirmed at their current levels.

2 THE REAL ECONOMY AND FINANCIAL MARKETS

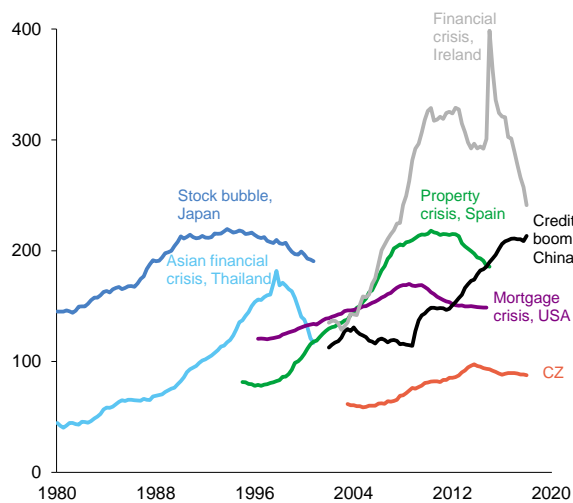
2.1 THE MACROECONOMIC AND FINANCIAL ENVIRONMENT

High debt remains a global risk

High private sector debt is the main risk to global financial stability and indirectly also to the domestic economy. Historical experience shows that rapid debt growth has been a cause of many past financial crises (see Chart II.1). High private sector debt levels pertain mainly to advanced countries (see Chart II.1 CB), but several years of global search for yield have also supported debt growth in emerging economies, China in particular. The materialisation of debt sustainability risk has been suppressed so far by an environment of low interest rates and satisfactory economic growth, which are facilitating debt repayment. However, the economic growth outlooks for this year and the next have been revised slightly downwards (see Chart II.2 CB and *GEO*, November 2018). The revision primarily reflects increasing political uncertainty connected with the introduction of protectionist measures in trade between major economic centres (see Chart II.3 CB). The risk of lower-than-expected growth in advanced economies is being exacerbated by an economic deterioration in emerging countries.¹

Chart II.1

Private non-financial sector debt
(% of GDP)

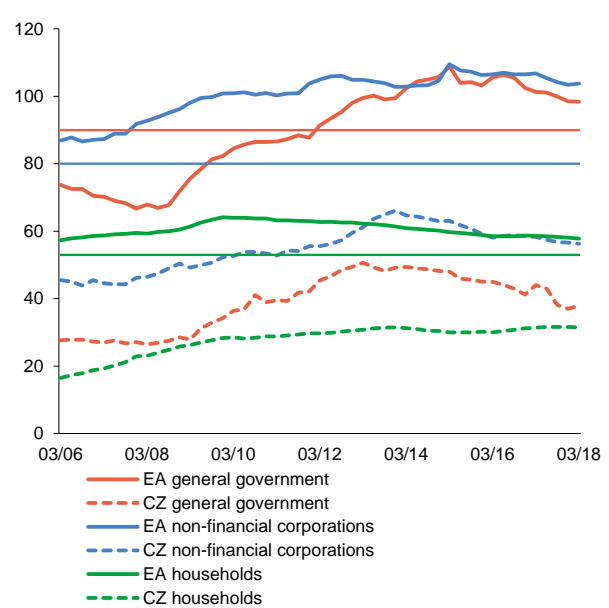


Source: BIS

Note: Debt is the sum of all credit provided by domestic banks, non-banks and non-residents. The private sector comprises non-financial corporations, households and NPISHs. The BIS debt calculation methodology may differ from the methodologies used by national authorities. For this reason, the data in the chart may differ from those reported by other institutions. The 2018 debt figure is as of 31 March 2018.

Chart II.2

Debt in the Czech Republic and the euro area
(% of GDP)



Source: BIS, CNB

Note: Horizontal lines illustrate debt sustainability levels. For households and non-financial corporations, they correspond to the thresholds for the given indicators applied by the European Commission in the Macroeconomic Imbalance Procedure (MIP), i.e. a private sector debt ratio of 133%. In the case of general government debt, the threshold used is based on the literature dealing with this area.

¹ Increasing US interest rates, a strengthening of the US dollar and risks associated with protectionist tendencies are being reflected in falling capital inflows into emerging economies. In countries with large external imbalances, the exchange rate is weakening and credit premia are rising (*Global Financial Stability Report*, October 2018).

The euro area is growing, but debt may have already reached the sustainability threshold in some countries

The euro area economy as a whole is growing this year, but its outlooks are being revised downwards (see Chart II.2 CB). Differences in economic performance persist across the member countries and there are still concerns about the impacts of Brexit.² Economic growth and favourable financial conditions have allowed the average debt ratio in the euro area to decrease. However, the ratio is still above its theoretical sustainability threshold (see Chart II.2). Although debt levels differ considerably across countries (see Chart II.4 CB), elevated risks connected with private sector debt are already perceived in a significant proportion of them (see Table II.1). Private sector debt is closely linked with general government debt and the country's liabilities to the rest of the world. A highly indebted government sector without sufficient room for increasing fiscal expenditures is unable to act in a countercyclical manner and help dampen the impact of the materialisation of private sector credit risk. Since the last global crisis, government debt has – despite the economic growth – increased in many euro area countries, in some of them in parallel with private sector debt (see Chart II.5 CB). Debt sustainability risk thus is highly relevant in some countries.

Table II.1

Potential sources of risks to financial stability as perceived by selected national authorities

	PL	AT	ES	DE	DK	HU	CZ	FI	BE	SE	SK	NO	NL	UK	FR	IT
Bank profitability	Orange	Orange	Orange	Orange	Green	Green	Green	Green	Orange	Green	Orange	Green	Green	Orange	Orange	Orange
Insurance sector	Green	Green	Orange	Orange	Green	Green	Green	Orange	Green	Green	Orange	Orange	Orange	Orange	Orange	Green
Pension fund sector	Green	Green	Green	Green	Green	Green	Orange	Green	Green	Green	Green	Orange	Orange	Orange	Orange	Green
Asset quality	Green	Green	Green	Green	Green	Orange	Green	Green	Green	Green	Green	Green	Green	Orange	Orange	Green
Sovereign risk	Orange	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Orange	Orange	Red
Corporate debt	Green	Green	Green	Green	Green	Green	Green	Green	Green	Orange	Orange	Green	Orange	Orange	Orange	Orange
Macroeconomic risk	Green	Green	Green	Green	Green	Green	Green	Green	Green	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Household debt	Green	Green	Green	Green	Green	Green	Green	Orange	Orange	Red	Red	Red	Red	Orange	Orange	Green
Residential property	Green	Green	Green	Orange	Orange	Orange	Orange	Orange	Red	Red	Red	Red	Orange	Orange	Green	Green
Credit growth	Green	Green	Green	Green	Orange	Orange	Orange	Orange	Orange	Orange	Red	Orange	Green	Orange	Orange	Green

Level of risk: ■ High ■ Moderate ■ Low

Source: CNB

Note: The assessment is based on a qualitative evaluation of the relevant countries' latest financial stability reports. Where a risk is not mentioned in the report, the assessment is based on the CNB's interpretation of the indicators used in the ESRB Risk Dashboard. The ordering of countries and risks in the table is obtained using a visual contrast-optimising algorithm.

Highly indebted countries are more vulnerable to an increase in interest rates and risk premia

Highly indebted countries are very vulnerable to an increase in interest rates, as even a fairly small rise in rates can cause sizeable growth in interest payments and accelerate the onset of a recession.³ Monetary conditions in most advanced countries are still very relaxed (see Chart II.6 CB),⁴ so the high debt does not pose an immediate risk. However, the easy monetary conditions are fostering strong credit growth and a further rise in prices of assets, including property. In 2018 Q2,

2 Annual real GDP growth in the biggest euro area economies in 2018 Q2 was as follows: Spain 2.5%, Germany 1.9%, France 1.7%, Italy 1.2%.

3 In the second half of the 1980s, the relative debt of Swedish households rose quite rapidly, followed by relative housing prices. Nominal interest rates climbed to high levels in the early 1990s in reaction to macroeconomic imbalances, inflation pressures and the Riksbank's response to the situation. This was reflected in sizeable growth in households' interest payments (to as high as 16% of disposable income in 1992). The combination of tight macroeconomic policies, a recession, subsequent problems with repayment of property purchase loans and asset market volatility caused the Swedish banking sector as a whole to go bankrupt.

4 The ECB reduced its monthly net asset purchases to EUR 15 billion in October 2018. Subject to incoming data confirming the medium-term inflation outlook, net purchases will be terminated at the end of this year. However, the principal payments from maturing securities will continue to be reinvested for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation. Key interest rates are unchanged and are expected to remain at their present levels (i.e. 0% on the main refinancing operations, 0.25% on the marginal lending facility and -0.40% on the deposit facility) at least through the summer of 2019.

annual growth in loans to households was above 6% in nine EU countries. In the case of loans to non-financial corporations, credit growth was above this level in twelve EU countries.⁵ One-year growth in residential property prices exceeded 5% in fifteen EU countries (see Chart II.3). Prices of other assets are also high and overvalued relative to fundamentals (see Chart II.4). A sudden and disorderly repricing of risk premia leading to a jump in financial market yields, especially longer-term ones, thus remains an additional risk to financial stability. Such repricing would lead to sales of overvalued assets, a further rise in risk aversion and a spiral between growing risk premia, declining asset prices and asset sales. Markets have experienced several short-term swings this year, mainly in reaction to good news from the US economy and in connection with increased uncertainty following elections in Italy and a sharp depreciation of the Turkish lira. So far, repricing of risk premia on risky corporate bonds and stock prices has been most visible on emerging markets. Increased uncertainty on global financial markets is also indicated by the SKEW index, which reflects investors' activity in hedging their portfolios against exceptionally adverse events (tail risk).

Chart II.3
Property price growth in selected countries

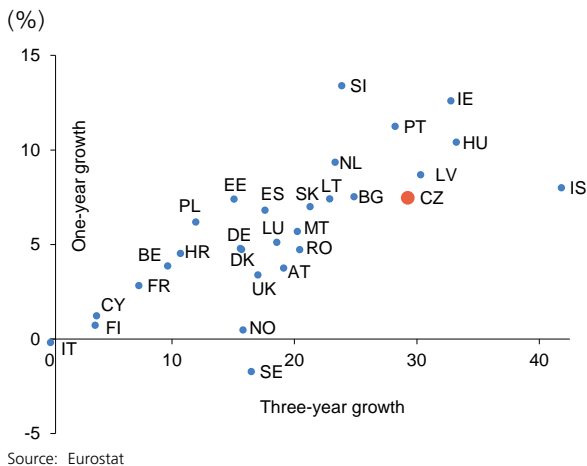
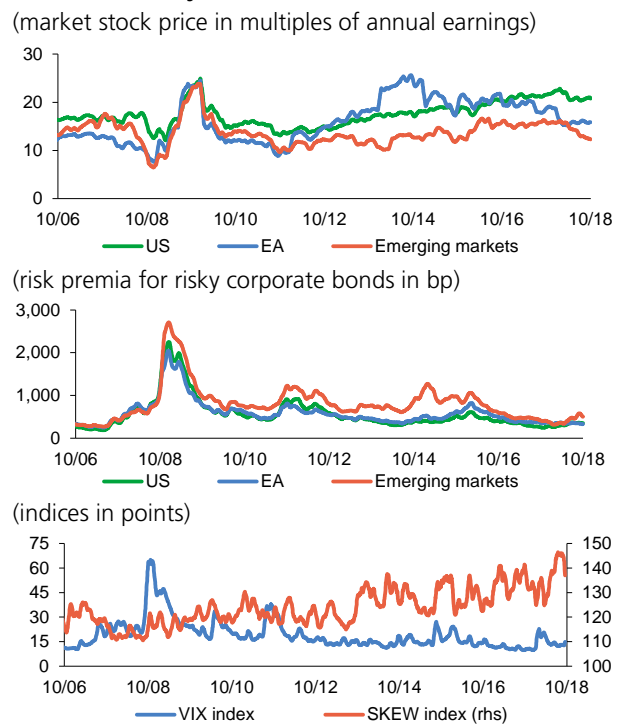


Chart II.4
Indicators of stock and bond price adequacy and market volatility



Note: Stocks – SP500 for US, Euro Stoxx 50 for EA and MSCI Emerging for emerging markets. Bonds – yield spread for speculative-grade bonds (BB+ or lower) vis-à-vis government bonds adjusted for any embedded options (option-adjusted spread). Smoothed by the 20-day moving average.

⁵ The year-on-year growth rate of bank loans to households was over 6% in BG, CZ, EE, LT, LU, MT, RO, SI and SK. The following countries recorded year-on-year growth in bank loans to non-financial corporations of above 6%: AT, BE, BG, DE, EE, FR, HU, LT, LU, MT, PL and SK (*ESRB Risk Dashboard*, September 2018).

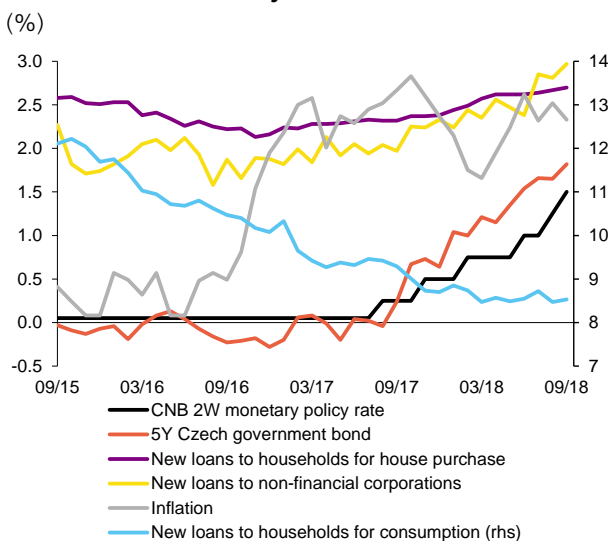
Non-financial private sector debt in the Czech economy is relatively low but rising

Economic growth in the Czech Republic, which slowed slightly to 2.4% in 2018 Q2, was driven by strong domestic and foreign demand. According to the CNB forecast, annual GDP growth will exceed 3% for 2018 as a whole and stay at a similar level in the two years ahead (*Inflation Report IV/2018*). Domestic demand is being supported by robust household consumption, reflecting rapid growth in disposable income amid a tight labour market and low unemployment. The observed growth in income is making economic agents highly optimistic about the future and inducing them to take on more debt. The absolute debt level is rising relatively rapidly, but relative debt remains at a reasonable level thanks to the buoyant income growth (see Chart II.2 and Chart II.5 CB). However, gradual growth in debt could give rise to a structural risk in the medium or long term. Should the economy fall into recession, the high debt of the Czech non-financial private sector will increase the depth and duration of the recession. Materialisation of external risks, associated mainly with the above repricing of global risk premia and with the high debt levels in euro area countries, can currently be considered the most likely trigger of a deep recession.

Real yields remain negative despite continuing growth in nominal rates

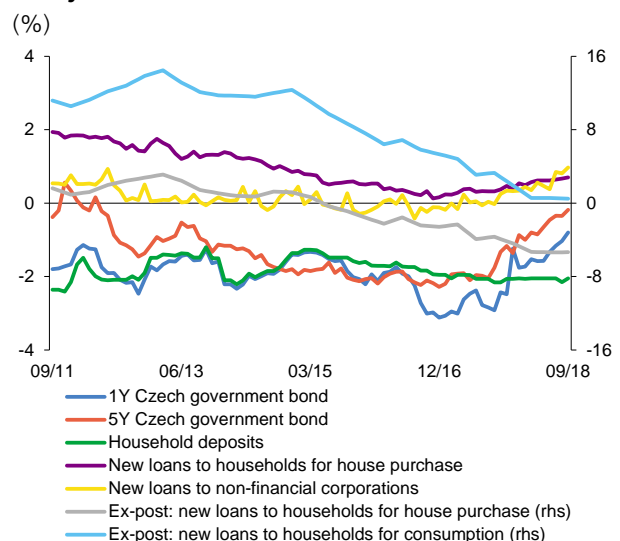
The CNB, like a number of other central banks (CA, UK and US), has continued to normalise monetary policy this year. The monetary policy rate has been 1.75% since November 2018 (see Chart II.6 CB). The policy rate increases between January and September 2018 were reflected in Czech government bond yields (which in the case of 5Y maturity rose by 118 bp over the same period; see Chart II.5). Interest rates on loans to households for house purchase and loans to non-financial corporations rose only modestly in this period (by 32 bp and 64 bp respectively). However, real yields remain at record lows (see Chart II.6). This is resulting in continued reallocation of institutional investors’ portfolios towards riskier assets, most notably shares and corporate bonds (see section 3.2). Negative real yields on deposit products are also motivating households to reallocate their funds into more profitable assets – especially investment fund units (see Chart II.9 CB) – and to buy property on credit (see section 2.2).

Chart II.5
Selected interest rates, yields and inflation



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

Chart II.6
Real yields and interest rates



Source: CNB
Note: Ex-post real rates on loans to households represent the perceived real cost of borrowing and are calculated as the difference between nominal rates on new loans and historical wage inflation. The other real yields and rates are calculated ex ante using expected inflation. Expectations one year ahead are considered for the 1Y Czech government bond and household deposits. Expectations three years ahead are considered for the other yields and rates. Quarterly data are converted into monthly data using linear interpolation.

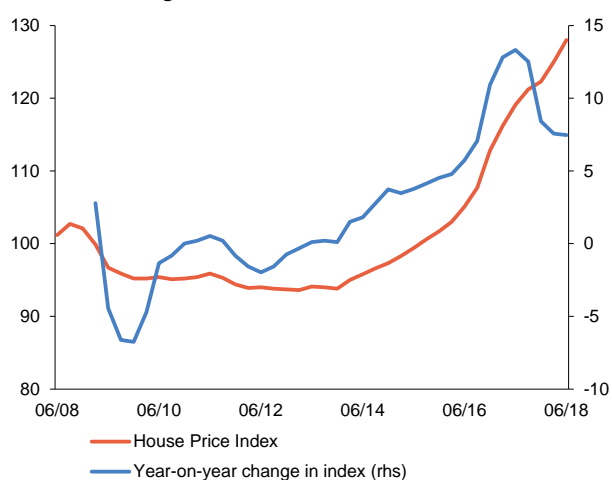
Residential property prices have continued to rise, but their growth is slowing markedly

Transaction prices of residential property rose further in 2018 Q2 and are almost one-quarter higher compared to their pre-crisis peak in 2008 (see Chart II.7). The year-on-year growth of 7.5% recorded in 2018 Q2 is still relatively buoyant in the European context and the medium-term price growth is among the highest in the EU (see Chart II.3). The rate of growth started to slow at the end of 2017. The slowdown occurred to a large extent across the entire Czech Republic. Asking prices also slowed across the board, in line with transaction prices (see Chart II.10 CB).

Chart II.7

Transaction prices of residential property

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

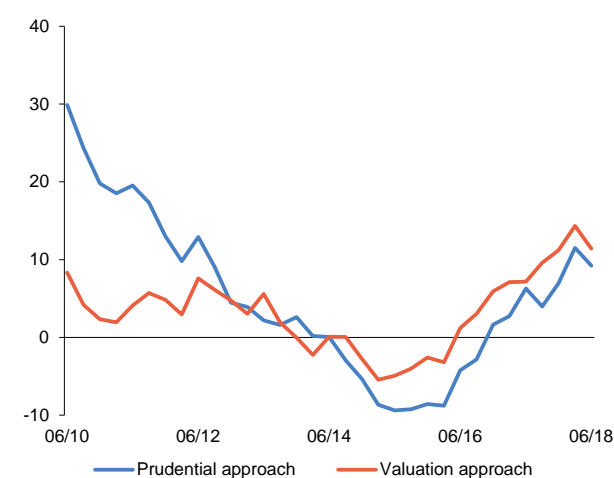


Source: CZSO

Chart II.8

Estimated overvaluation of apartment prices

(%)



Source: CNB

Note: Both approaches are based on the CNB's official forecast.

Apartment price overvaluation remains elevated according to both approaches used, while the affordability of housing has deteriorated

The estimate of apartment price overvaluation is newly obtained using two different metrics. The first metric measures price overvaluation on the basis of the criterion of safe and sustainable servicing of debt used to finance property purchases (the "prudential approach"). The indicator takes into account the CNB forecast for household income and interest rates on loans for house purchase. The second metric is based on the asset pricing theory and defines the value of a property as the stream of discounted future rental income (the "valuation approach").⁶ The assessments based on both metrics suggest that current prices remain overvalued and the degree of overvaluation has increased slightly since the end of 2017 (see Chart II.8). Observed apartment prices may thus not be sustainable and reflect a tight property market despite the decline in year-on-year price growth. The worsening situation with regard to housing affordability is also illustrated by the price-to-income (PTI) and loan service-to-income (LSTI) ratios. Both have risen substantially over the last two years (see Chart II.11 CB). The CNB regards apartment undersupply in Prague and some other large cities as the main cause of this trend. The supply-side constraints are due to the current regulations governing the building permit process. Owing to their nature, these constraints may put sustained upward pressure on property prices.

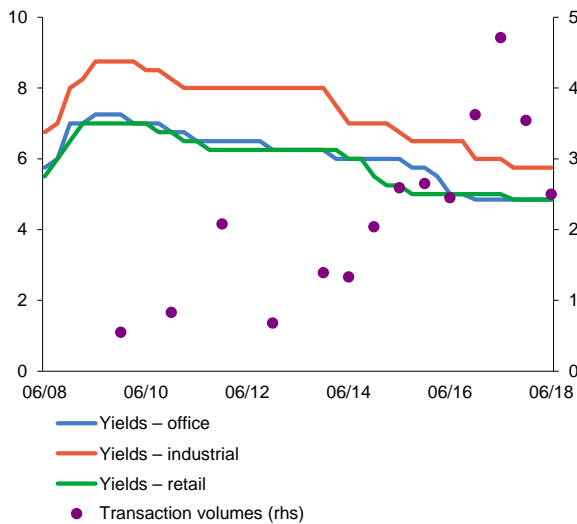
⁶ This metric can be interpreted in simple terms as the value determining whether it is more profitable to invest in residential property or to rent it in the long term (the buy-or-rent problem). It, too, is based on the CNB's current official forecast.

Prime yields on commercial property remain at historical lows

Prices of all types of prime commercial property remained high in 2018 H1, with yields demanded by investors in this segment reaching historical lows (see Chart II.9). The estimated degree of overvaluation increased slightly for all types of property and remains particularly elevated for office and industrial property (see Chart II.10). Following a temporary rise in the volume of transactions in 2017, activity on this market returned to the levels observed in previous years. A market recovery could be driven by a slight drop in the vacancy rate for existing property, which is being accompanied by a rising stock of newly completed premises (see Chart II.12 CB).

Chart II.9
Yields on commercial property and transaction volumes

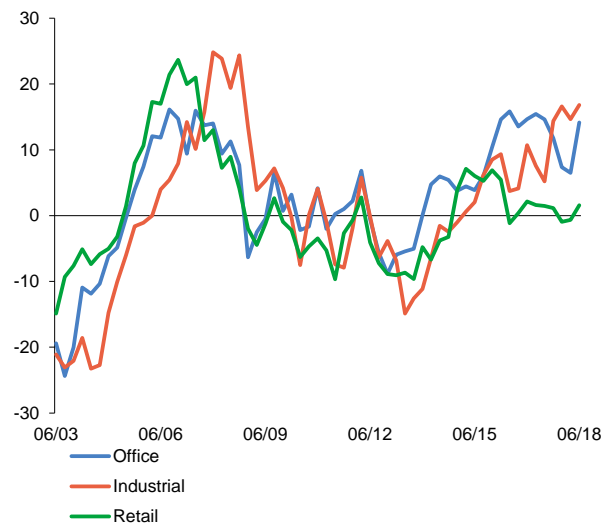
(%; right-hand scale: transactions in EUR billions)



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

Chart II.10
Estimated overvaluation of commercial property prices

(%)



Source: Jones Lang LaSalle, CNB
 Note: Overvaluation as estimated by panel regression on a sample of Central and Eastern European countries (CZ, SK, PL, HU and RO) and also DE. Final overvaluation estimate determined as the four-period average.

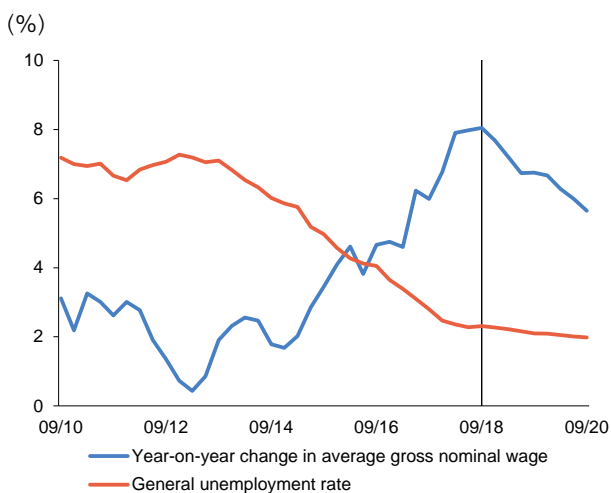
2.2 THE NON-FINANCIAL SECTOR

Developments in the non-financial sector are being driven mainly by a tight labour market

Unemployment continued to decrease gradually in 2018 H1 and the labour market showed signs of overheating. Wage growth exceeded 8% (see Chart II.11) and was the key factor underlying the improvement in households' overall income situation. The strong wage growth was reflected in households' expectations and consumption behaviour (see Chart II.13 CB). However, wage growth has been pushing up the total costs of non-financial corporations for some time now, fostering a decline in their profitability (see Chart II.12). The current forecast published in *Inflation Report IV/2018* assumes that wage growth has now peaked. However, it will remain relatively high in the years ahead and is expected to return only gradually to a sustainable level. For this reason, the downward pressure on profitability in the non-financial corporations sector can be expected to persist.⁷

Chart II.11

Labour market indicators



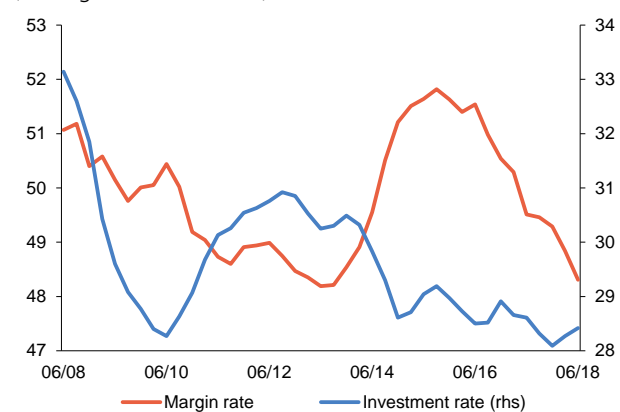
Source: CNB, CZSO

Note: The general unemployment rate is seasonally adjusted. The vertical line divides the observed values and the macroeconomic forecast in *Inflation Report IV/2018*.

Chart II.12

Margin rate and investment rate in the non-financial corporations sector

(% of gross value added)



Source: CZSO

Note: The margin 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. Calculated using annual moving sums.

Positive expectations were reflected in a rise in lending to non-financial corporations...

The year-on-year growth rate of bank loans to non-financial corporations reached 5.4% in September 2018 (see Chart IV.4). Other components of their external financing also rose significantly, most notably bond financing (up by 14.9% year on year as of 30 June 2018) and financing from non-bank financial corporations engaged in lending (up by 6.4% year on year as of 30 June 2018). Following a temporary decrease, the growth rate of foreign currency bank loans to non-financial corporations remains higher than that of total loans. Accordingly, the share of foreign currency loans rose to 30.9% of total bank loans provided to this sector at the end of 2018 Q3 (up by 1.4 pp year on year; see Chart II.14 CB). Following a lengthy period of annual declines, new loans to non-financial corporations returned to rapid growth in 2018 Q2 and Q3 (the annual growth rate smoothed by the three-month average reached 23.3% in September 2018; see Chart II.13). This is consistent with the results of a statistical survey conducted by the CNB and the Confederation of Industry of the Czech Republic, in which non-financial corporations indicated a rise in investment activity in 2018 H2.

⁷ This effect may be amplified by exchange rate movements. The CNB forecast assumes continued appreciation of the koruna against the euro, which would further increase the pressure on the profitability of non-financial corporations, exporters in particular.

Chart II.13

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

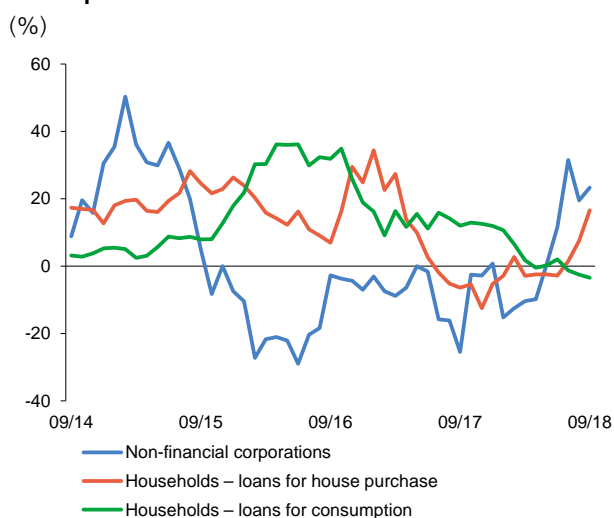
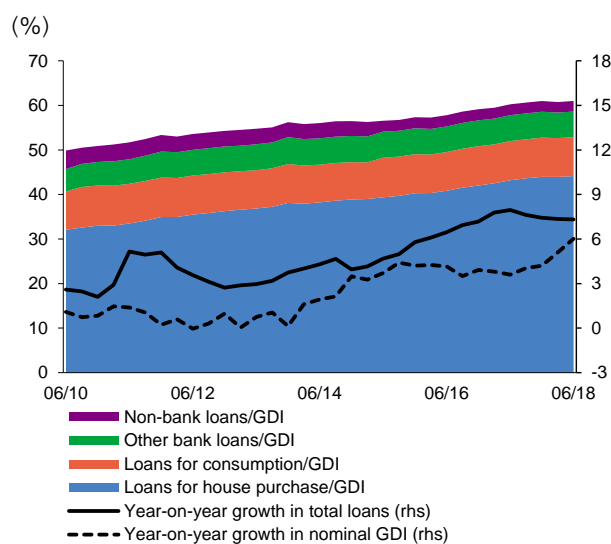


Chart II.14

Household indebtedness and income indicators



...and the volume of new loans to households remained high

Bank loans also continued to rise apace in the household sector (see Chart IV.4). Loans for house purchase increased by 8.3% and loans for consumption by 6.6% year on year in September 2018. In addition to optimistic expectations, lending to households was driven by still low interest rates on loans, which have so far only partly reflected the monetary policy tightening in recent months (see Chart II.5). Adjusted for wage growth, the perceived real cost of borrowing for house purchase remains negative (see Chart II.6). New bank loans to households for house purchase recorded high growth in 2018 Q3 (the year-on-year growth rate smoothed by the three-month average was 16.6%; see Chart II.13) and their volume remains elevated.⁸ Box 2.1 describes selected median characteristics of new retail loans secured by residential property in more detail.

BOX 2.1: MEDIAN CZECH HOUSEHOLD WITH A LOAN SECURED BY RESIDENTIAL PROPERTY

The median Czech household that borrowed to buy property in 2018 H1 took out a loan of CZK 1.62 million for a property with a purchase price of CZK 2.37 million on a monthly income of CZK 38,410 (see Table II.1 Box). The median purchase price increased by 8.3% in 2018 H1 compared to 2017, outpacing the median loan amount (3.8%) and the median monthly income (4.5%). The youngest applicants (18–30 years of age) had the biggest median loan, while applicants aged 30–50, who financed a larger proportion of the property value from their own funds, had the highest median purchase price (see Table II.2 Box). With 13% of the total loans provided, Prague stands out among the regions in terms of median loan size, purchase price and monthly income (see Table II.1 CB). The distribution of the number of loans is broadly in line with the number of inhabitants of each region. As regards property price and

⁸ A new CNB Recommendation on the management of risks associated with the provision of retail loans secured by residential property of 12 June 2018 entered into force in October 2018. As a result, the growth rates of loans may have been partly elevated by the frontloading effect.

loan size, the overall medians are exceeded in Central Bohemia and South Moravia as well as Prague. Together with Prague, Central Bohemia is also above the overall median monthly income. The share of households with a monthly income equal to or lower than CZK 25,674 (the median wage in 2018 Q1 for the economy as a whole) which took out a mortgage loan in 2018 H1 was 16%. For these households, the median loan amount was CZK 1.10 million and the median purchase price CZK 1.55 million.

Table II.1 Box**Median values for loans to households for house purchase**

	2016	2017	2018 H1
Median loan amount (CZK millions)	1.50	1.56	1.62
year-on-year change (%)		4.00	3.84
Median purchase price (CZK millions)	1.90	2.19	2.37
year-on-year change (%)		15.26	8.26
Median monthly income (CZK)	32,660	36,740	38,410
year-on-year change (%)		12.49	4.55

Source: CNB

Table II.2 Box**Median values of loans to households for house purchase by age category in 2018 H1**

	18–30	31–50	51+
Share in survey (%)	24%	68%	8%
Median loan amount (CZK millions)	1.71	1.65	1.20
One applicant	1.50	1.52	1.10
More than one applicant	2.12	1.80	1.35
Median purchase price (CZK millions)	2.08	2.57	2.20
One applicant	1.90	2.38	2.06
More than one applicant	2.47	2.85	2.37
Median monthly income (CZK)	30,866	41,020	44,110
One applicant	25,144	32,945	33,429
More than one applicant	40,019	47,598	52,555

Source: CNB

The relative indebtedness of households has increased only slightly owing to faster income growth...

Despite the rapid credit growth, household debt has increased only slightly in relation to income over the last year (see Chart II.14). It is still relatively low in the European context and does not currently represent an immediate source of systemic risk. However, the pace of growth of disposable income observed in 2017 and 2018 is probably unsustainable in the long run. Assuming that wage growth returns to lower levels and credit growth stays elevated, the debt ratio could thus start to rise more markedly.

...and growth in relative debt would adversely affect debt servicing ability...

Servicing a higher relative debt would consume an increasingly large proportion of households' income even with unchanged interest rates. Moreover, households would become ever more sensitive to interest rate changes with a rising debt-to-income ratio. From the macroeconomic perspective, growth in interest rates would have a significant impact on household consumption and hence foster an overall slowdown in economic activity.⁹

...as documented by simulations

The situation described above can be documented using a simple model example simulating three alternative scenarios for the interest rate path over the next ten years. All the scenarios work with economic growth consistent with the long-term growth path for the period from 2018 Q3 to 2028 Q2, with GDP at current prices and the gross disposable income (GDI) of households rising by 5% a year. In the simulation, credit rises at the average pace observed between mid-2013 and mid-

⁹ Households could potentially finance a drop in their disposable income by taking on more debt. This would lead to even faster growth in debt and aggravate the problem.

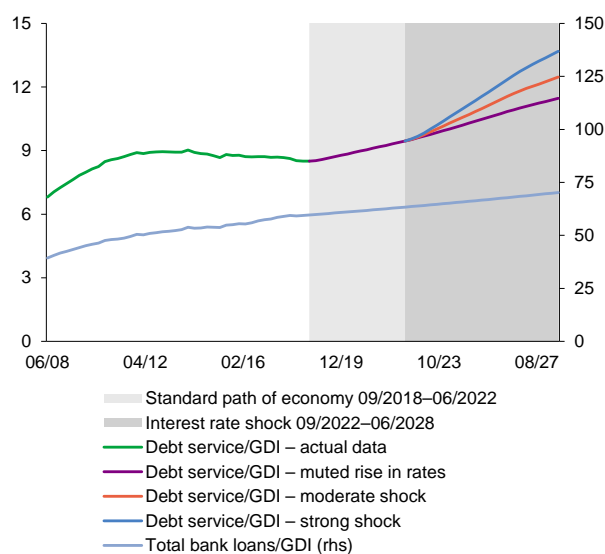
2018. These assumptions imply a rise in the sector's debt ratio of 11 pp to 70% of GDI. Interest rates rise gradually in the first part of the period under review (09/2018–06/2022). Subsequently, an interest rate shock of three different sizes is considered.¹⁰

Following the interest rate shock, the interest rate on the stock of loans begins to rise gradually from the current 3.9% to 6.0%, 7.4% and 9.2% respectively at the simulation horizon depending on the strength of the shock. Coupled with an increasing ratio of debt amortisation to disposable income, total net debt service costs in the simulation rise from around 8.5% of GDI in 2018 Q2 to 11.5% of GDI in the case of a modest rise in interest rates, 12.5% of GDI in the case of a moderate shock and 13.7% in the case of a strong shock (see Chart II.15). So, in the event of a rise in the debt ratio of households of 11 pp to 70% of GDI (36% of GDP) – which is still much lower than the usual level in the EU, where the debt ratio was 100.4% of GDI at the end of 2017 – a rise in rates will lead to a relative decrease in disposable income net of debt service and could have a significant impact on household consumption.¹¹

Chart II.15

Model example of household debt: debt service and debt/GDI ratio

(% of gross disposable income)

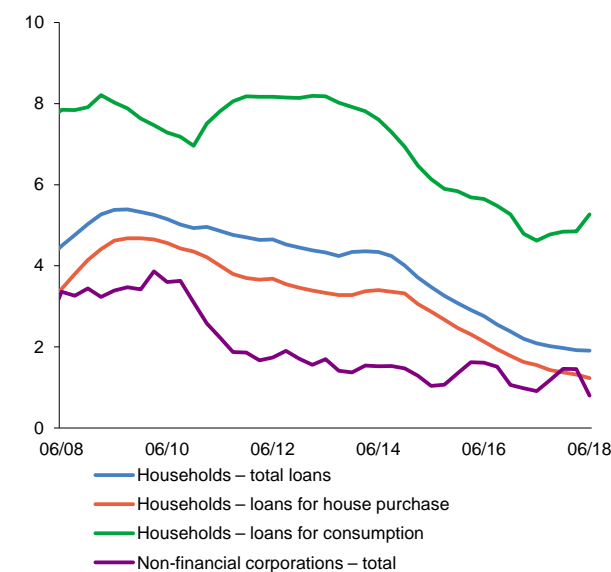


Source: CNB, CZSO

Chart II.16

12M default rate in the private non-financial sector

(%)



Source: CNB, CIBR

¹⁰ Continued muted economic developments are represented by a gradual rise in interest rates on loan stocks of 1.5 pp for loans for house purchase, 3 pp for loans for consumption and 2 pp for other loans. The moderate shock corresponds to a gradual rise in interest rates on loan stocks of 3 pp for loans for house purchase, 5 pp for loans for consumption and 4 pp for other loans. Finally, the strong shock assumes a gradual rise in interest rates on loan stocks of 4.5 pp for loans for house purchase, 8 pp for loans for consumption and 6 pp for other loans. Average refixation periods and maturities were estimated as of 2018 Q2 and remain constant over the entire exercise.

¹¹ This model example uses a number of simplifying assumptions and does not address in depth the links between consumption, savings and interest rates. Similarly, it does not take into account the size of savings and household wealth, nor does it deal with changes in credit growth, GDP and GDI when interest rates change. The simulation does not aim to identify a threshold for the sustainable debt ratio of Czech households (the CNB will continue to work on that issue) – the model example is only intended to demonstrate how significantly the size of debt and debt service affects households' disposable income and limits the room for countercyclical economic policies.

Credit risk continued to follow a downward trend

Credit risk in the non-financial corporations sector as measured by the 12-month default rate fell slightly (see Chart II.16). A similar trend could be seen in the household sector. This decline was due to the positive trend in household income and the current low debt servicing costs. In the case of loans to households for consumption, though, growth in credit risk was observed. A further marked decrease in credit risk in the two non-financial sectors under review is now unlikely and room for a future decline is limited. From the perspective of the classification of economic activities, construction has the highest default rate, followed by mining and quarrying. In line with the favourable trend in credit risk, the ratio of non-performing loans to total loans, measuring the extent of materialisation of risks taken on in the past, also dropped in both sectors (see Chart II.15 CB). This drop was partly due to strong credit growth increasing the denominator of this ratio.

3 THE FINANCIAL SECTOR

The financial sector's assets continue to rise, with the total assets of investment funds exceeding those of insurance companies

All main segments of the financial sector saw year-on-year growth in total assets in mid-2018 (see Chart III.1 CB).¹² For the fourth consecutive year, investment funds recorded the highest year-on-year growth (of CZK 60.9 billion, or 13.7%). This caused them to become the second-largest segment of the domestic financial sector, as their total assets exceeded those of the slowly growing insurance segment (by CZK 2.3 billion, or 0.5%). The banking sector recorded the largest year-on-year increase in total assets in absolute terms (of CZK 361.0 billion, or 5.1%) and now accounts for more than 80% of the financial sector's assets.

The list of other systemically important institutions is unchanged

According to the CNB's evaluation, there are still seven other systemically important institutions (O-SIIs) in the domestic financial sector, so the list of O-SIIs for 2019 is unchanged (see Chart III.1). The CNB does not currently consider it necessary to set an additional capital requirement for banks that are members of the relevant regulatory consolidated groups due to their designation as O-SIIs.¹³

3.1 THE BANKING SECTOR

Banks' capitalisation decreased moderately...

The total regulatory capital in the Czech banking sector rose by CZK 9.8 billion in 2018, reaching CZK 470.4 billion as of 2018 Q3.¹⁴ The overall capital ratio decreased by 0.5 pp to 18.5% (see Chart III.2) and the Tier 1 capital ratio fell by 0.3 pp to 18.2%. Credit growth made a major contribution to the drop in the overall capital ratio (-1.9 pp). Its impact was partly offset by a decline in aggregate risk weights (of 0.9 pp) and by growth in retained earnings (of 0.4 pp). The leverage ratio remained unchanged from the previous year at 6.2% as of 2018 Q3 (see Chart III.2 CB). The leverage ratio adjusted in the denominator for exposures to the central bank (roughly one-third of banks' total assets)¹⁵ fell by 0.2 pp year-on-year to 9.2%. All banks were compliant with its preliminary minimum required level of 3.75% (see Chart III.3 CB).

...but its level still allows banks' balance sheets to grow...

The overall capital requirement consists 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 1.7% on aggregate) and capital buffers. Most banks meet the overall capital requirement by a sufficient margin. The capital surplus of systemically important banks amounts to CZK 47.2 billion (3.3 pp) and that of other banks to CZK 47 billion (6.0 pp). Banks should thus have sufficient space overall for credit growth and, assuming reasonable dividend policies, also for any increase in the countercyclical buffer (see section 4.1 for details).

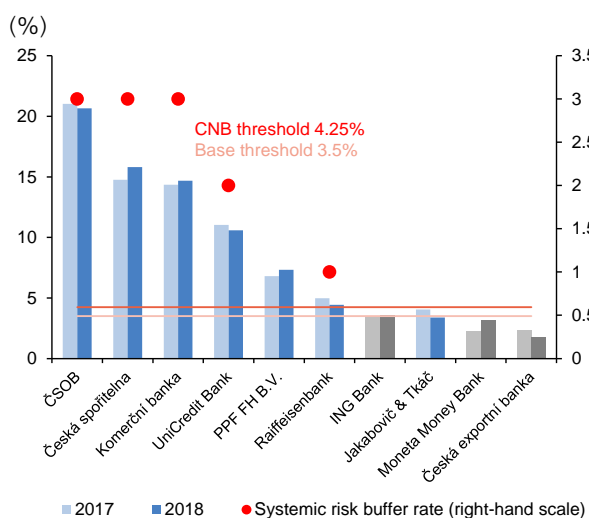
¹² Data for 2018 Q3 were not available at the time of publication of this report.

¹³ Five banks with a high level of domestic systemic importance are still required to maintain a systemic risk buffer (SRB), with rates ranging between 1% and 3%. The main methodological difference is that the EBA methodology for O-SIIs works with data for consolidated groups containing banks and (selected) non-bank entities, including foreign subsidiaries, whereas the CNB methodology for setting the SRB rate uses data for individual banks on an individual basis.

¹⁴ 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 3.1. 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.

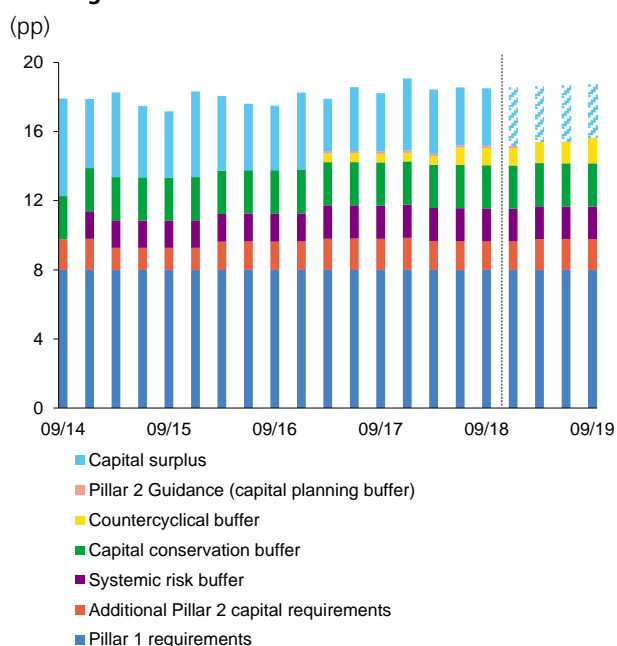
¹⁵ For details see FSR 2017/2018, section 3, pp. 42–43.

Chart III.1
Comparison of O-SIIs' scores as of mid-2017 and mid-2018



Source: CNB
 Note: Grey denotes institutions not included in the list of other systemically important institutions.

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



Source: CNB
 Note: Due to partial overlap of the capital conservation buffer requirements with the Pillar 2 requirement, the Pillar 2 requirements have since July 2014 been adjusted for the requirements arising from the stress tests conducted for supervisory purposes. The capital surplus prediction (patterned fill) assumes constant risk weights. Risky exposures are calculated on the basis of banks' assumptions about future loans, which banks report in the statement "Bank financing plans" (FPSIFE10).

...although it may not be sufficient for some banks in an adverse phase of the financial cycle

The overall impact of the *extended Adverse Scenario* of the CNB's stress tests (see section 3.3 for details) on the banking sector reveals that the capital ratio satisfies only the Pillar 1 capital requirement. In individual cases, however, it implies that some banks might not be able to satisfy the total capital requirement in the scenario. A total of 12 banks would fall below the regulatory threshold. The CNB takes stress test results into account in the assessment of capital adequacy in the SREP.

The extended decline in aggregate risk weights for exposures under the IRB approach continues

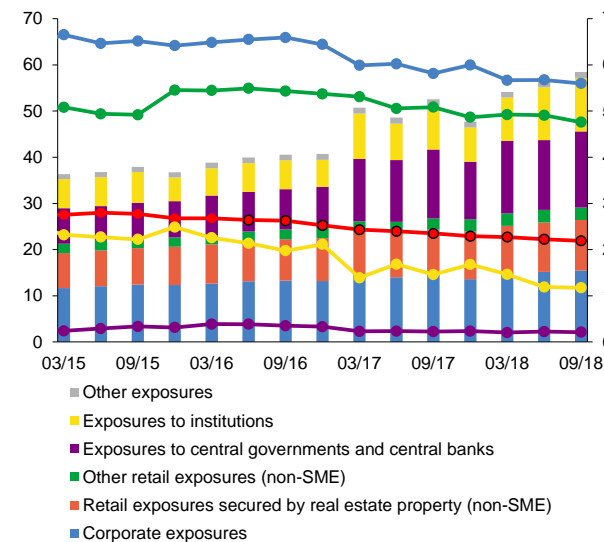
The aggregate risk weights¹⁶ for exposures determined using internal models (CZK 5.8 trillion, or 75.7% of the banking sector's exposures) continued to decline in 2018 (by 4.2 pp to 25.2%; see Chart III.2 CB). The average risk weights fell across all the main exposure categories (see Chart III.3). The downward trend in risk weights for house purchase loans, which have fallen by one-third over the last three years, also continued (with a decline of 1 pp to 21.9%).¹⁷ Very low risk weights for house purchase loans can have structural distorting effects. House purchase loans are "cheap" in terms of required capital in this situation. This boosts supply among existing providers and attracts new providers to the sector. This can result in excess capacity and growing concentration of banks' assets in property-related credit segments.

16 The analysis of risk weights uses data on implicit risk weights. These are calculated as the weighted value of the exposure divided by the value of the exposure under the COREP single European reporting framework.

17 The share of property exposures in total loans to the private non-banking sector has risen by 2.1 pp to 58.7% over the past three years.

Chart III.3

Average risk weights and the size of the main categories of exposures under the IRB approach
(%; right-hand scale: CZK trillions)

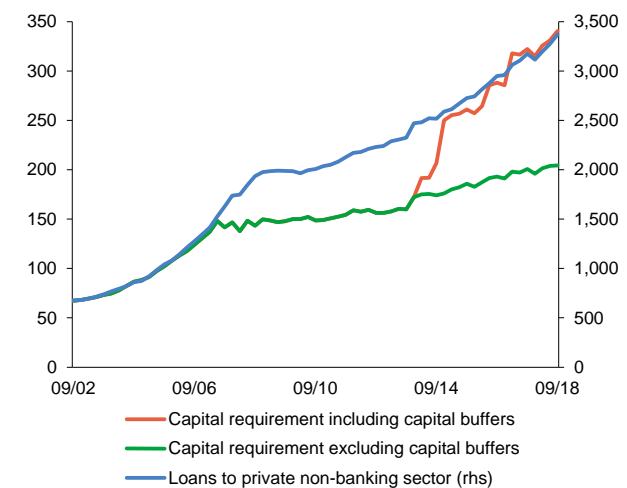


Source: CNB

Note: The points connected by lines denote the level of the risk weights for individual categories of exposures (left-hand scale). The height of the columns denotes the size of the exposure (right-hand scale). The colour coding of the points corresponds to the colour coding of the columns.

Chart III.4

Capital requirement and loans to the private non-banking sector
(CZK billions)



Source: CNB

Note: Loans to the private non-banking sector comprise loans to households, non-financial corporations and other financial institutions (except credit institutions).

The decline in risk weights may lead to growth in the vulnerability of the banking sector

The decline in the risk weights of IRB banks is due to the favourable economic situation, as the favourable observations recorded in the post-crisis period are starting to prevail in the parameters of internal models.¹⁸ This is curbing growth in banks' capital requirement for exposures to the private non-banking sector (see Chart III.4). However, this may increase the banking sector's vulnerability in the event of risks materialising during an economic downturn. Some of the capital buffers¹⁹ and any capital surpluses in excess of the regulatory requirements serve to mitigate this risk. Setting risk weight thresholds for certain types of exposures under Article 458 of the CRR could be another option for reducing potential risks stemming from falling risk weights (for details see FSR 2015/2016, section 4.3.2). However, this option has so far been exercised in the EU only by the supervisory authorities in Sweden and Finland. The sufficiency of banks' capitalisation is assessed using a solvency stress test. Growth in risk weights due to a deterioration in risk parameters in the *Adverse Scenario* is among the main factors which led to a drop in the banking sector's capital ratio over the five-year test horizon (see section 3.3 for details).

¹⁸ For details on the risk of procyclicality of risk weights under the IRB approach, see Brož, V., Pfeifer, L., Kolcunová, D. (2017): *Are the Risk Weights of Banks in the Czech Republic Procyclical? Evidence from Wavelet Analysis*. CNB WP 15/2017 and Malovaná, S. (2018): *The Procyclicality of Risk Weights for Credit Exposures in the Czech Republic*. CNB WP 12/18. Regulatory authorities (the Basel Committee and the EBA) have responded to these risks. They have proposed that adequate representation of data from a period of economic contraction in the data sets used for calibrating the parameters of IRB models be required from 2020; see <https://www.eba.europa.eu/regulation-and-policy/model-validation/guidelines-on-pd-lgd-estimation-and-treatment-of-defaulted-assets>.

¹⁹ In the domestic banking sector, these consist of the capital conservation buffer and the countercyclical capital buffer. However, a decline in risk weights also enters the calculation of capital buffers and hence directly affects their final levels.

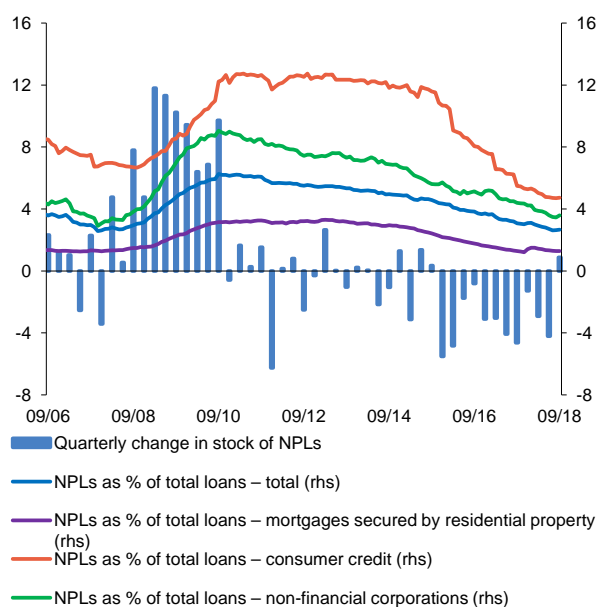
The new IFRS 9 accounting standard emphasises a forward-looking approach to credit risk

The assessment of credit risk involves a need to differentiate between expected losses, which are linked to an estimate of future developments, and realized losses, where credit risk has already materialised. The new IFRS 9 accounting standard puts greater emphasis on the forward-looking element to allow for timely and sufficient provisioning. The standard creates potentially more space for taking into account expected future losses on performing loans in Stage 1 – no significant increase in risks (expected losses in the coming 12 months) and in Stage 2 – a significant increase in risks but no credit impairment or credit loss (lifetime expected losses). Stage 3 covers impaired and loss loans, i.e. non-performing loans (lifetime expected losses). Stage 3 is therefore determined largely by events that have already occurred and hence serves as a backward-looking indicator of materialised credit risk.

Chart III.5

Non-performing loans in the domestic banking sector

(client loans; CZK billions; right-hand scale: %)



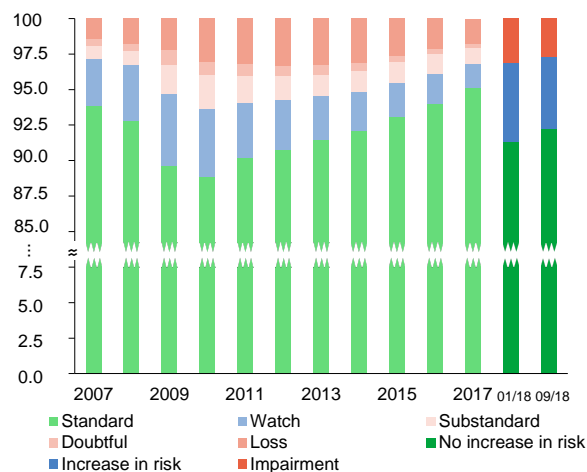
Source: CNB

Note: Non-performing loans (NPLs) under the new IFRS 9 accounting standard (in effect from 1 January 2018) correspond to loans classified in Stage 3 – impaired loans.

Chart III.6

Structure of loans

(%)



Source: CNB

Note: Classification of exposures according to the new IFRS accounting standard – no increase in risk (Stage 1), increase in risk (Stage 2), impairment (Stage 3). The classification into standard, watch, substandard, doubtful and loss loans corresponds to the loan classification under CNB Decree No. 163/2014.

The favourable phase of the business and financial cycle is being accompanied by a further decline in the NPL ratio...

The ratio of non-performing loans (NPLs) to total loans went down by 0.6 pp in 2018 and stood at 2.6% in Q3 (see Chart III.5). The NPL ratio thus equalled the historical low recorded in 2007. The decrease in the NPL ratio was achieved through a combination of growth in total loans and particularly a decline in NPLs (accounting for 31% and 69% of the total change respectively).

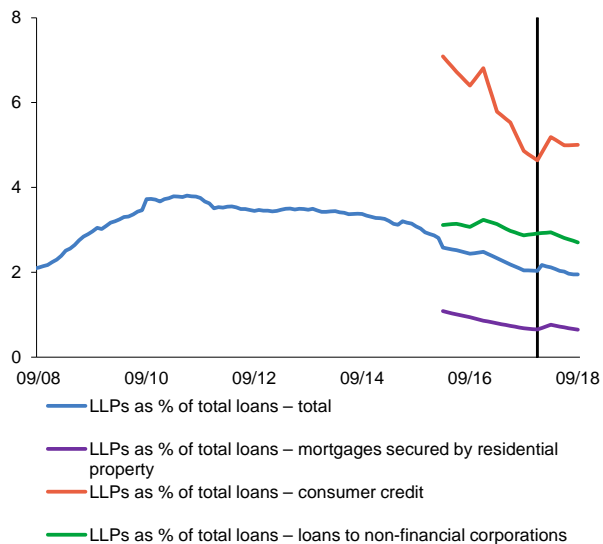
...and the ratio of loans with no significant increase in credit risk to performing loans is rising

The weight of performing loans with no significant increase in credit risk (Stage 1) to performing loans has risen by 0.6 pp to 94.9% since the start of 2018. This primarily reflects an absolute increase in loans linked with the continuing credit growth (see section 2.2) in Stage 1 (+7.9%) coupled with a decline in total loans in Stage 2 (-1.0%; see Chart III.6).

Chart III.7

Ratio of provisions to total loans

(%)



Source: CNB

Note: LLPs = loan loss provisions. Data for the sectoral breakdown of the ratio of LLPs to gross loans are available only from 2016 Q1 onwards. The vertical black line shows the switch to IFRS 9 in January 2018.

The introduction of IFRS 9 led to a transient increase in provisions and loan coverage

The switch to the new IFRS 9 accounting standard was accompanied by a one-off increase in both provisioning and the coverage of loans by provisions (growth of CZK 5.2 billion to CZK 70 billion and of 0.1 pp to 2.2% respectively as of 31 January 2018). In Q3, however, provisions and loan coverage both recorded levels comparable with the end of 2017 (growth of CZK 2.4 billion and a drop of 0.1 pp as of 30 September 2018; see Chart III.7).

The coverage of performing loans by provisions decreased compared to the level seen during the switch to IFRS 9...

The coverage of performing loans is showing a downward trend in both the household and non-financial corporations sectors (and fell by 0.02 pp to 0.42% and by 0.07 pp to 0.51% respectively in Q3). The coverage ratio in Stage 1, which contains the bulk of performing credit exposures, dropped in both sectors due to growth in loans amid flat provisions (see Table III.1). In the non-financial corporations sector, the coverage ratio in Stage 2 fell as a result of a drop in provisions coupled with growth in loans (of -7.3% and +3.9% respectively).²⁰ This is signalling a lower level of losses expected by banks, which may have been caused by the fact that the 12-month default rate as a significant indicator of credit risk stayed close to historical lows in Q3 in both the non-financial corporations and household sectors (see Chart II.16). The expected loan losses perceived by banks are therefore at very low levels.

²⁰ Provisions for performing loans in the non-financial corporations and household sectors amounted to around CZK 14 billion in 2018 Q3, accounting for 18.5% of the total volume. The value of provisions for NPLs in Stage 3 was CZK 52 billion.

Table III.1

Structure of exposures as of 30 September 2018 according to level of risk and coverage by provisions after the introduction of IFRS 9

	Households		NFCs		Aggregate	
	Stock	Change	Stock	Change	Stock	Change
Coverage ratio (%)						
Total	1.7	-10.6%	2.7	-10.5%	2.2	-10.3%
of which: No increase in risk (Stage 1)	0.2	-5.4%	0.3	-9.3%	0.2	-7.2%
Increase in risk (Stage 2) Performing	5.4	0.2%	3.2	-10.8%	4.2	-5.2%
Impairment (Stage 3) Non-performing	59.5	2.1%	56.1	4.7%	57.5	3.5%
Exposures (CZK billions)						
Total	1,702	5.2%	1,345	8.0%	3,047	6.4%
of which: No increase in risk (Stage 1)	1,588	5.8%	1,199	9.1%	2,787	7.2%
Increase in risk (Stage 2) Performing	76	-0.2%	93	3.9%	169	2.0%
Impairment (Stage 3) Non-performing	38	-9.6%	53	-7.5%	91	-8.4%
Provisions (CZK billions)						
Total	30	-6.0%	36	-3.3%	66	-4.5%
of which: No increase in risk (Stage 1)	3	0.2%	4	-1.0%	7	-0.5%
Increase in risk (Stage 2) Performing	4	-0.1%	3	-7.3%	7	-3.3%
Impairment (Stage 3) Non-performing	23	-7.7%	30	-3.2%	52	-5.2%

Source: CNB

Note: The change is calculated between 31 January 2018 and 30 September 2018, with blue denoting an increase and yellow a decrease. The "Aggregate" values aggregate the information for the household and non-financial corporations sectors.

...coverage of materialised risks for NPLs is growing

The NPL coverage ratio increased slightly in both the household and non-financial corporations sectors due to provisions falling at a lower rate than NPLs (by 5.2% and 8.4% respectively at the aggregate level). The total coverage of NPLs by provisions for both sectors thus reached 57.2% in 2018 Q3 and has risen by 2.2 pp (or 4%) since the introduction of IFRS 9 (see Chart III.4 CB). Given the losses recorded historically and the conservative loss projections in macro-stress tests (see section 3.3) for NPLs,²¹ the NPL coverage ratios in individual sectors seem sufficient.

Effects of the expected loss concept will become apparent during changes in the business cycle

The structure of the credit portfolio in terms of credit risk classification (Stage 1 to Stage 3) and the relevant level of provisioning reflect the current phase of the business cycle. A low default rate and higher recovery rates are reflected in low expected losses and cyclically conditioned low provisioning, especially for performing loans with a low level of credit risk. In practice, therefore, IFRS 9 does not lead to substantially higher provisioning compared with the previously used IAS 39 standard in this phase of the business cycle. During the switch to an adverse phase of the cycle, however, there will very likely be significant shifts in the structure of loans into higher-risk categories and a considerable increase in provisioning to an extent which will depend on the intensity of growth in the shares of loan categories with higher degrees of risk and expected losses.²²

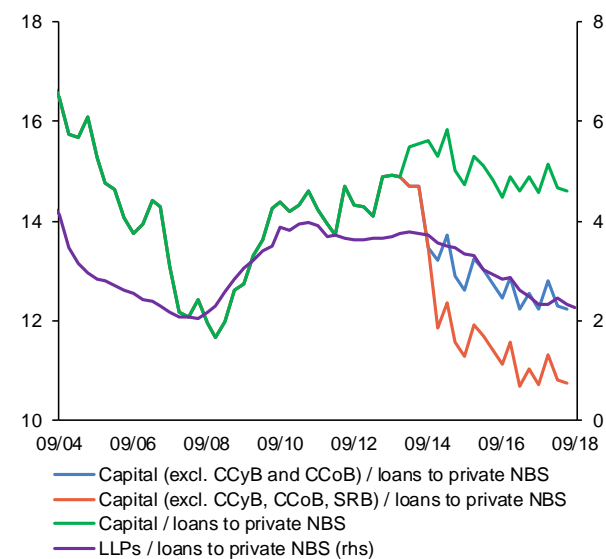
21 Banks' NPL losses are available from the results of the recovery rate survey that the CNB conducts every two years among the nine most important banks and building societies (the most recent round of the survey took place in March 2017). In this survey, banks state their actual and expected NPL recovery rates broken down into several categories of loans to non-financial corporations and households. For the purposes of the sectoral analysis of NPL coverage by provisions, NPL losses are calculated as (1 - the recovery rate).

22 A macro-stress test quantifies the potential impact over a five-year horizon (see section 3.3).

Chart III.8

Ratio of banks' capital and provisions to loans to the private non-banking sector

(%)



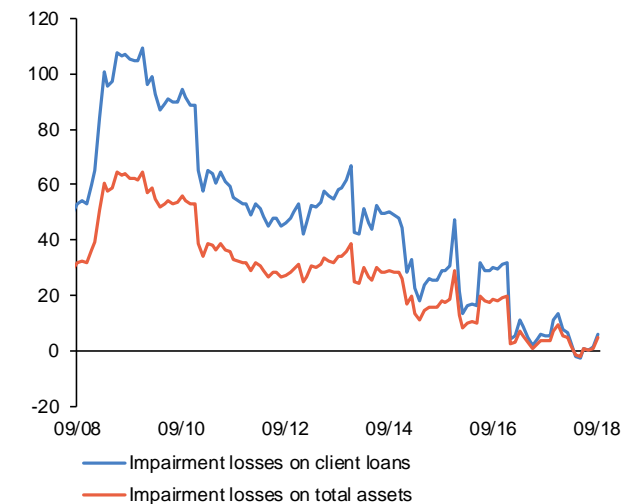
Source: CNB

Note: LLPs = loan loss provisions, NBS = non-banking sector. Loans to the private non-banking sector comprise loans to households, non-financial corporations and other financial institutions (except credit institutions).

Chart III.9

Asset impairment losses

(bp)



Source: CNB

Trends in risk weights and some aspects of IFRS 9 increase the importance of having a sufficient level of the CCyB

The cyclically conditioned decline in risk weights, the low share of higher-risk loans (in Stage 2 and particularly in Stage 3) and the relatively low expected losses on performing loans have increased banks' capital adequacy and profitability. However, the ratio of capital excluding the combined buffer and the ratio of provisions to loans to the private non-banking sector have been falling over the past four years (see Chart III.8). Risk weights and provisions can both be expected to rise in the event of a change in the cycle and particularly in the event of a sustained downturn. Combined, they could thus cause a sizeable drop in capital adequacy and a deterioration in profitability. As there is great uncertainty regarding the effects due to the short period of use of IFRS 9 and the as yet unobserved effect of a turn in the cycle on risk weights,²³ increased conservatism in setting the CCyB rate would seem to be the right approach. The current level of the cyclical component of the capital buffers may not be sufficient to ensure the necessary resilience of the banking sector as the current phase of the business cycle lengthens and risk parameters continue to follow their cyclical pattern.

The profitability of the banking sector remains high, due in part to low impairment losses...

The banking sector turned in a profit of CZK 62.6 billion in 2018 Q3, a rise of 4.5% on a year earlier. Banks are maintaining high profitability due in part to very low impairment losses (see Chart III.9). If the ratio of impairment losses on client loans were to increase to the level of 2009 Q3,²⁴ the banking sector's profit would drop by 41.5% year on year to CZK 35.1 billion. A change in the phase of the business and financial cycle thus poses a key risk to profitability. The CNB is responding to the risks associated with the upward phase of the business and financial cycle by gradually raising the countercyclical capital buffer rate (see section 4 for details).

²³ The IRB approach started to be phased in in the Czech Republic after 2007.

²⁴ This period was characterised by growth in NPLs connected with the Great Recession.

...and growing interest profit

Interest profit, which is the main source of profitability, rose by 13.8% year on year to CZK 93.9 billion as of 2018 Q3 (see Chart III.5 CB). An increasing share of total interest profit was recorded for exposures to the central bank (24.5% of total interest profit; see Chart III.10) due to their rising share of total assets (33.7% of total loans and receivables as of 2018 Q3)²⁵ and to increasing monetary policy rates.²⁶ In the case of loans to the private sector, the growth in interest profit was driven by an increase in client loans (of 5.7% year on year) and also by a rising interest margin on new loans. The latter went up by 0.4 pp year on year to 3.4 pp as of 2018 Q3 after an eight-year decline. Margins increased in year-on-year terms for all types of loans except consumer credit (see Chart III.11). An increase in monetary policy rates could foster further growth in interest margins, as the transmission of monetary policy rates to deposit rates can be expected to remain slower than their transmission to lending rates given the ample liquidity in the banking system.

Chart III.10
Shares of financial assets vis-à-vis the government and the CNB in total financial assets and the resulting share of interest profit on those assets in total interest profit

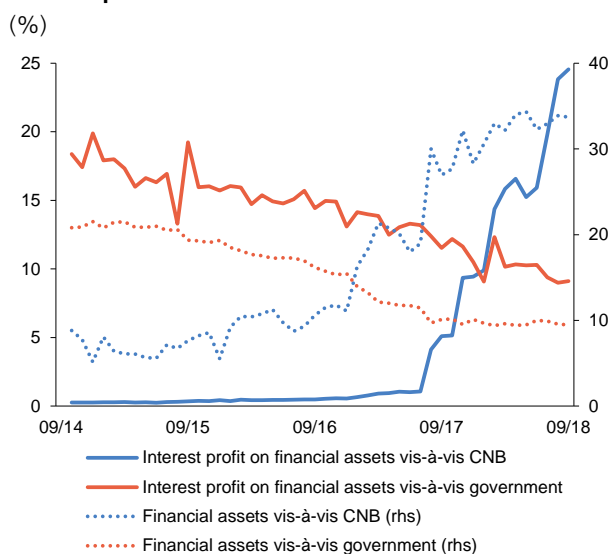
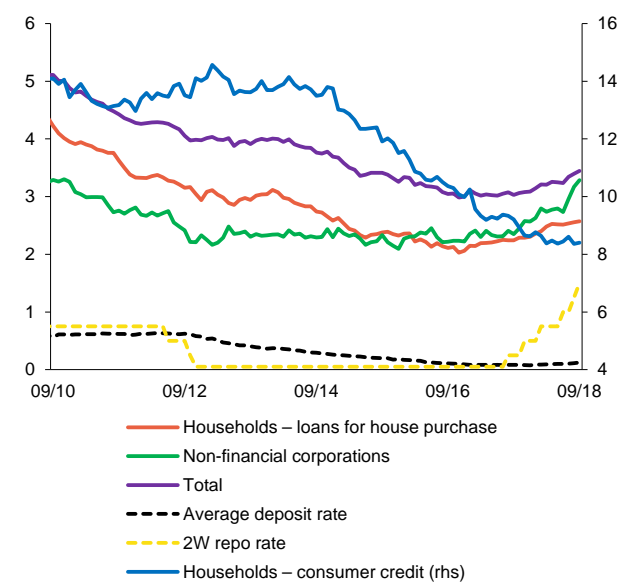


Chart III.11
Domestic banks' interest margins on new loans
 (margins in pp; average deposit rate and 2W repo rate in %)



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.

25 The growth in exposures to the central bank simultaneously led to a further improvement in the liquidity position of the domestic banking sector (see Chart III.6 CB).

26 Potential growth in monetary policy rates in the future would probably translate into a continued rise of the share of interest profit from exposures to the CNB.

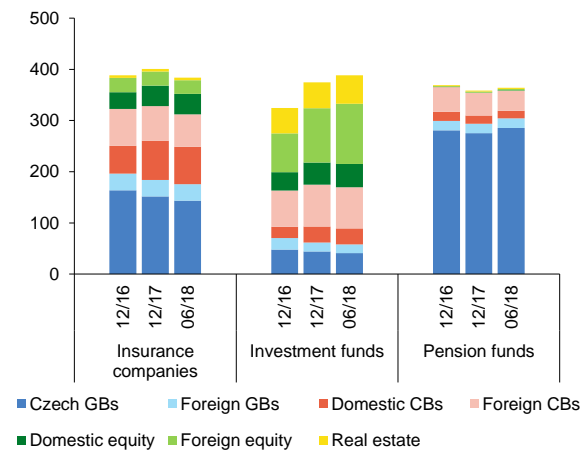
3.2 THE NON-BANKING FINANCIAL SECTOR

Institutional investors continued to search for yield...

Persisting negative real yields are motivating domestic institutional investors to reallocate their portfolios towards riskier assets (see section 2.1). The share of Czech government bonds in the balance sheets of insurance companies and investment funds continued to fall, while the importance of shares, other equity and corporate bonds increased (see Chart III.12). In the case of pension funds, Czech government bonds remained the dominant balance sheet component. However, their average residual maturity grew. The interest in risky assets caused their risk premia to fall to very low levels. Any sudden repricing of risk premia could thus have an adverse effect on the balance sheets of domestic institutional investors and lead to a multiplication of sell-offs and price drops.

Chart III.12

Investment assets of domestic institutional investors (CZK billions)



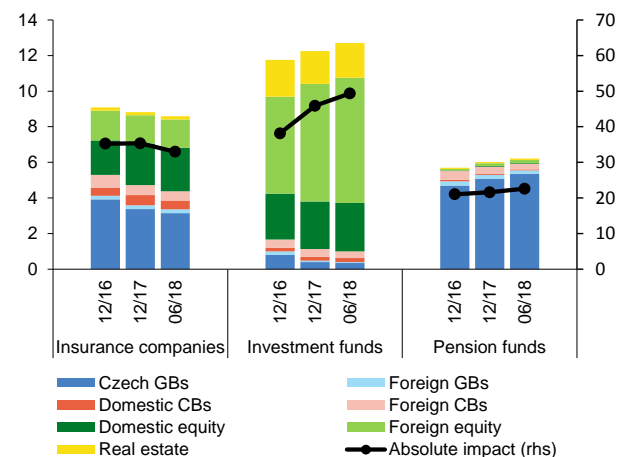
Source: CNB

Note: GBs = government bonds. CBs = corporate bonds including mortgage bonds. The look-through approach was applied directly or by means of approximation in the case of shares in investment funds. This means that these shares were assigned to financial asset categories (bonds, shares and other equity, real estate) depending on the asset composition or investment orientation of the investment fund concerned.

Chart III.13

Impacts of potential repricing

(% of total investment assets; right-hand scale: CZK billions)



Source: CNB

Note: GBs = government bonds. CBs = corporate bonds including mortgage bonds. The look-through approach was applied directly or by means of approximation in the case of shares in investment funds.

...potential repricing of financial assets would hit investment funds hardest

The CNB assessed the riskiness of portfolios and the extent of potential repricing using a sensitivity analysis. The analysis was aimed at identifying trends in the riskiness of institutional investors' portfolios, not at assessing the resilience of individual segments to a market shock directly.²⁷ If repricing risk materialises, even a resilient segment can contribute to asset sell-offs and hence to a multiplication of the initial shock and its spread to other financial market segments and the real economy. The asset repricing scenario assumes a decline in share prices of 23%, a drop in property prices of 14%, growth in government bond yields of 31–172 bp (depending on the issuing country and the bond maturity) and growth in the corporate bond spread of 59 bp.²⁸ The shocks considered affected the assets of investment funds most of all (see Chart III.13). This was due to a high share of equity exposures, which came under the greatest stress in the scenario of the analysis. The impact of repricing of Czech government bonds on investment funds and insurance companies was more

²⁷ The analysis did not account for hedging. In the case of insurance companies, it also covered unit-linked placements.

²⁸ The shock values were taken from the sensitivity scenario in FSR 2017/2018. The calculation of those values assumed a return of financial asset prices to their equilibrium levels determined as a combination of fundamental criteria and long-term means.

moderate than at the end of 2017 due to a drop in their relative importance in the balance sheets of these segments. By contrast, the impact of a drop in the prices of Czech government bonds on pension funds as of the end of 2018 Q2 was higher than in previous years. This mainly reflects growth in the average residual maturity of Czech government bonds in pension funds' balance sheets (see Chart III.7 CB).

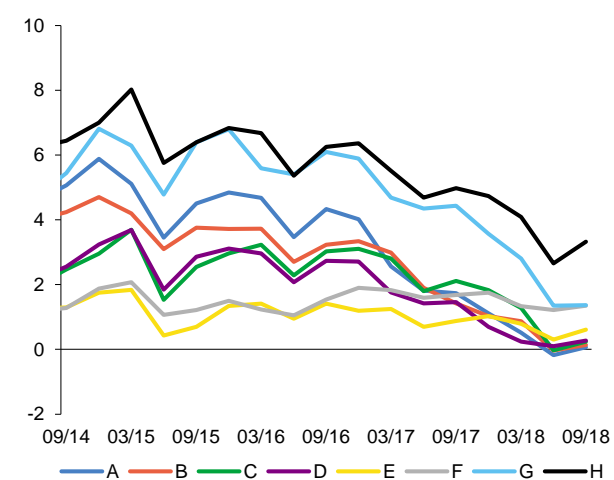
The results of this year's stress tests confirmed the resilience of the insurance sector

The supervisory stress tests of selected insurance companies in 2018 verified the resilience of the insurance sector as a whole. The shocks considered would cause the sector's aggregate solvency capital ratio to fall from an initial level of 251% (at the end of 2017) to 177%, which is still well above the 100% regulatory threshold. The sector would thus remain sufficiently capitalised even after relatively significant shocks.²⁹

Chart III.14

"Capital" of transformed funds

(excess of assets over liabilities in % of TFs' total assets)



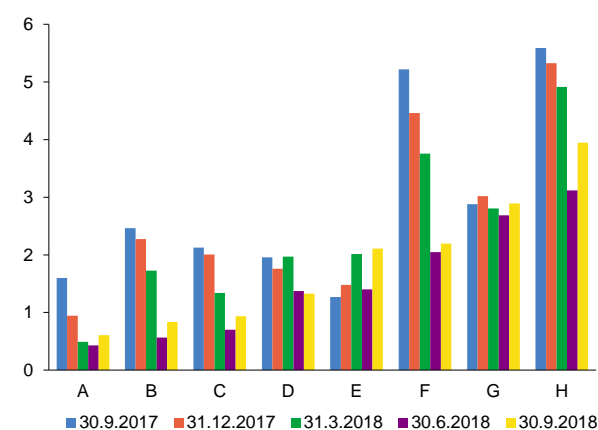
Source: CNB

Note: The letters denote individual pension management companies, sorted by the indicator value as of September 2018.

Chart III.15

Combined capital surplus of pension management companies

(% of TFs' total assets)



Source: CNB

Note: The letters denote individual pension management companies. Sum of capital surplus (i.e. difference between capital and capital requirement) of pension management company and "capital" (i.e. difference between assets and liabilities) of TF. A positive value can be interpreted as the percentage size of the shock to the assets of TF which would lead to a fall in the capital of the pension management company to the capital requirement level.

Financial market developments were unfavourable for pension management companies

The total assets administered by pension management companies grew by 3.9% year on year to CZK 467 billion as of September 2018, despite a year-on-year drop in the number of participants of 1.0% to CZK 4.4 million. However, the growth in asset value was due to higher inflows into funds than sums paid out. The evolution of prices on financial markets was unfavourable for transformed funds (TFs) and mandatory conservative funds, which hold most of their portfolios in Czech government bonds.

Several pension management companies had to top up their transformed funds

As a result of financial market developments, three transformed funds saw their assets fall below their liabilities in June 2018 (see Chart III.14). As the law forbids transformed funds from transferring market losses to clients, this difference had to be made up by pension management companies. The CNB has regularly pointed to this risk in its Financial Stability Reports. The

²⁹ Results of the stress tests of the insurance sector are published on the CNB website: http://www.cnb.cz/en/financial_stability/stress_testing/stress_testing_insurance_sector.html.

situation improved in September 2018. However, the small excess of assets over liabilities in many transformed funds means that additional top-ups may be needed if the decline in market prices of assets continues.

The size of transformed funds is a source of vulnerability for pension management companies

Given the size of transformed funds' assets, even a relatively small shock could lead to large top-ups and cause pension management companies problems in meeting the capital requirements. Top-ups of transformed funds' assets are deducted from the capital of pension companies, which may then fall below the regulatory minimum and require capital injections from the companies' owners. Owners of four companies would have to top up capital if transformed funds' assets were to fall by less than 1.5% (see Chart III.15). The CNB is monitoring the situation and is engaged in an intense dialogue with the most endangered companies about their capital planning. From the medium-term perspective, however, an exit from the environment of exceptionally low yields on safe koruna assets is good news for both pension funds and their clients.

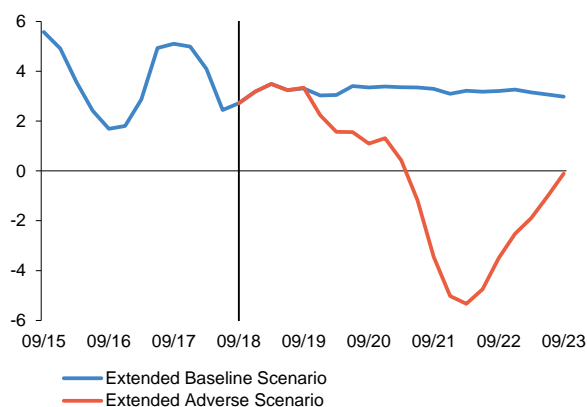
3.3 THE BANKING SECTOR MACRO STRESS TEST WITH A FIVE-YEAR HORIZON

In FSR 2016/2017, the CNB presented a macro stress test with an extended horizon of five years. The longer test horizon allows for better assessment of the impact of a build-up of risks in a growth phase of the economic and financial cycle on banks' resilience in the event of shocks. This approach was used in a stress test conducted on the data as of 30 September 2018.³⁰

The Adverse Scenario predicts a fall into a V-shaped recession in the third year

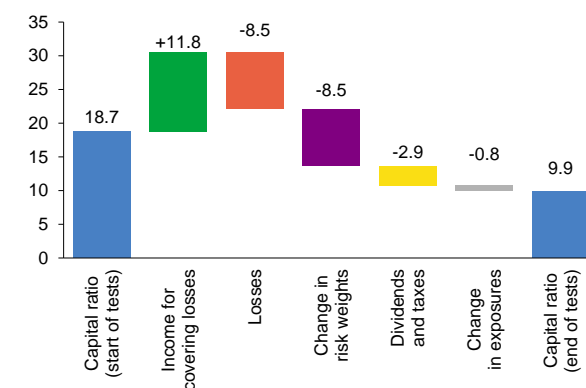
In the first year, the hypothetical five-year scenario follows the CNB's forecast. There is a further accumulation of credit risk (see Table III.2, credit growth) linked with continued economic growth accompanied by optimistic expectations of both households and non-financial corporations. In the second year, the scenario predicts a gradual economic contraction as a result of a decline in international trade and growth in related uncertainties, which escalates into a deep recession (see Chart III.16). This recession occurs due to a slump in external demand, which persists until the end of the test horizon.

Chart III.16
Alternative scenarios: real GDP growth
(year on year in %)



Source: CNB

Chart III.17
Decomposition of the change in the capital ratio of the banking sector in the Adverse Scenario
(%)



Source: CNB

The economic growth in the first two years of the test allows banks to stay profitable and pay dividends (-2.9 pp; see Chart III.17). The subsequent contraction is reflected in growth in credit losses due to the pass-through of shocks from the real economy to the quality of banks' credit portfolios. Profit (11.8 pp) covers credit losses (-8.5 pp), but is insufficient to cover the increasing capital requirement arising from growth in risk weights (-8.5 pp). The significant growth in risk weights is due to a rise in the probability of default (PD) and the loss given default (LGD) in banks' main credit portfolios (see Table III.2). At the five-year test horizon, the drop in the banking sector's capital ratio is 8.8 pp³¹ and the resulting capital ratio is 9.9% (see Chart III.17).

At the end of the test, the capital ratio is above the regulatory minimum of 8%. However, if banks had no capital surpluses at the start of the test (at the end of 2018 Q3 they had a surplus of 3.2 pp), the capital ratio would fall below the regulatory

³⁰ The new methodology takes into account the introduction of IFRS 9 on 1 January 2018.

³¹ This is about 0.4 pp higher than in the macro stress tests with a three-year horizon published in June 2018; see http://www.cnb.cz/en/financial_stability/fs_reports/fsr_2017-2018/index.html.

minimum (see Chart III.18). This shows that that a voluntary capital surplus is an important element of the banking sector's resilience and highlights the need for adequate capital buffers to cover cyclical risks (the countercyclical capital buffer and the capital conservation buffer).

Table III.2
Selected variables in the Adverse Scenario

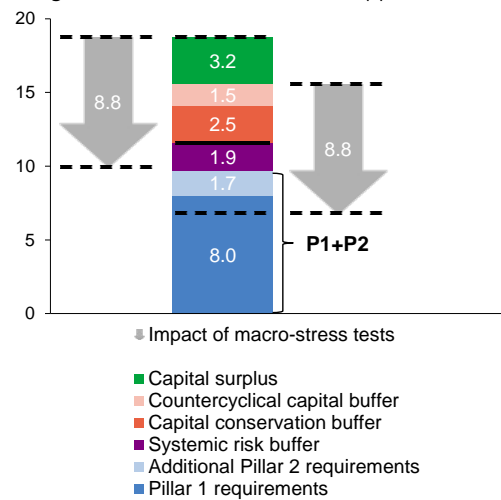
	Actual value		Adverse Scenario			
	2018	2019	2020	2021	2022	2023
Credit growth (%)						
Non-financial corporations	4.0	3.9	2.2	-0.8	-2.0	-1.5
House purchase loans	8.3	7.3	6.0	3.5	0.4	0.1
Consumer credit	6.1	7.1	6.1	4.2	-0.7	-0.4
Default rates (PD, %)						
Non-financial corporations	1.3	1.2	1.8	4.8	5.3	5.1
House purchase loans	1.4	1.7	2.7	5.3	5.7	5.6
Consumer credit	5.3	5.5	6.3	9.3	9.9	9.3
Loss given default (LGD, %)						
Non-financial corporations	32	32	36	48	58	55
House purchase loans	15	15	15	23	39	42
Consumer credit	42	42	42	53	65	67
Growth in risk-weighted assets (%)		3.3	6.0	24.4	32.9	10.8
Expected credit losses (CZK billions)		-9.8	-27.0	-105.0	-51.1	1.7
Income to cover losses (CZK billions)		70.9	67.3	62.5	50.4	29.4
Capital ratio (%)	18.7	18.6	17.7	13.5	10.4	9.9

Source: CNB

Note: Credit growth, PD and LGD are averages for the given years. The other figures are as at the year-end.

Chart III.18
Structure of bank capital requirements in the Czech Republic and impact of macro stress tests

(average for sector as of 2018 Q3 in pp)



Source: CNB

Note: The illustration assumes the currently valid full countercyclical buffer rate, even though it does not take effect until mid-2019.

4 RISKS TO FINANCIAL STABILITY AND MACROPRUDENTIAL POLICY

The CNB sets its macroprudential policy instruments (see Table IV.1) 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 reflecting the existence of several sources of systemic risk and their own transmission mechanisms.

Table IV.1

Summary of intermediate objectives and macroprudential instruments and evolution of specific risks

Intermediate objectives	Key instruments	Specific risk	Existence of specific risk in CZ	Applied in CZ	Detailed information
Mitigate excessive credit growth and leverage	Countercyclical capital buffer	Strong credit recovery accompanied by easing of lending standards	Yes	Yes, 0.5% since 2017, 1% since 2018, 1.25% and 1.5% from 2019, 1.75% from 2020	Details here
	Macroprudential leverage ratio	Rising leverage, low aggregate risk weights, rising off-balance sheet risk	Potential	No	-
	Sectoral capital requirements (in particular real estate exposure)	Elevated growth in loans and risks in specific sector	Potential	Not as yet, CNB reacts to property exposure risks with other instruments	-
	LTV caps	Risk of spiral between property prices and property financing loans	Yes	Yes, since 2015, tightened in 2016 and 2017	Details here
	LTI, DTI, DSTI caps	Risk of excessive household indebtedness and debt service	Yes	for DTI and DSTI yes, since 2018	Details here
Mitigate excessive maturity mismatch and illiquidity	Macroprudential NSFR	Long-term liquidity risk	Potential	Microprudential general requirement introduced in 2016	-
	Macroprudential LCR	Short-term liquidity risk	No	Microprudential minimum standard introduced in 2015	-
Limit exposure concentrations	Systemic risk buffer	Property exposure concentration	Potential	Not as yet, CNB reacts to property exposure risks with other instruments	-
	Public finance stress test	Sovereign exposure concentration	Yes	Yes, option of additional capital requirements in event of elevated sovereign risk, since 2015	Details here
Limit misaligned incentives	SIFI capital surcharges (G-SII and O-SII buffer)	Potential impacts of problems in SIFIs on financial market stability and real economy	Yes	No, O-SIIs identified, different instrument applied	Details here
	Systemic risk buffer		Yes	Yes, since 2014 for four banks, since 2017 for five banks	Details here
Strengthen resilience of financial infrastructures	Margin and haircut requirements on CCP clearing	Counterparty default risk, interconnectedness of financial infrastructures	No	No	-
	Increased disclosure			No	-
	Systemic risk buffer			No	-

Source: CNB

Note: 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).

4.1 COUNTERCYCLICAL CAPITAL BUFFER

This part summarises information about the position of the economy in the financial cycle, credit growth, the build-up of cyclical systemic risks and changes in the domestic financial sector's vulnerability. This information was used as a basis for the decision to set the countercyclical capital buffer rate (CCyB) at 1.75% with effect from 1 January 2020 (see Chart IV.1).

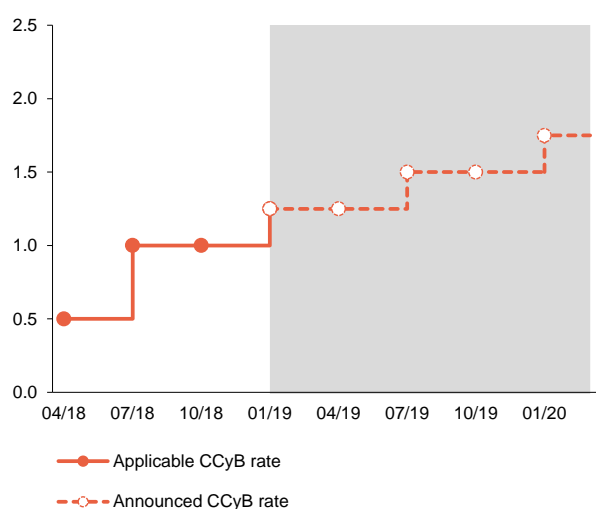
The deviations published in accordance with ESRB methodology do not indicate a sharp increase in cyclical risks

In conformity with an ESRB recommendation,³⁴ the CNB regularly publishes the credit-to-GDP ratio and its deviation from the long-term trend. In 2018 Q2, the ratio was 89.2% and the corresponding gap -0.4 pp. This approach does not provide a reliable guide for determining the position of the Czech economy in the financial cycle. The additional gap (the expansionary credit gap), which partially eliminates the problems associated with the recommended methodology and gives a better idea about the growth in the overall debt level in the economy, was 2.0 pp (see Chart IV.2).³⁵ However, even this indicator provides only a partial and tentative guide and needs to be complemented with a comprehensive evaluation of the position of the domestic economy in the financial cycle and the associated level of systemic risks.

Chart IV.1

Applicable and announced CCyB rate in the Czech Republic

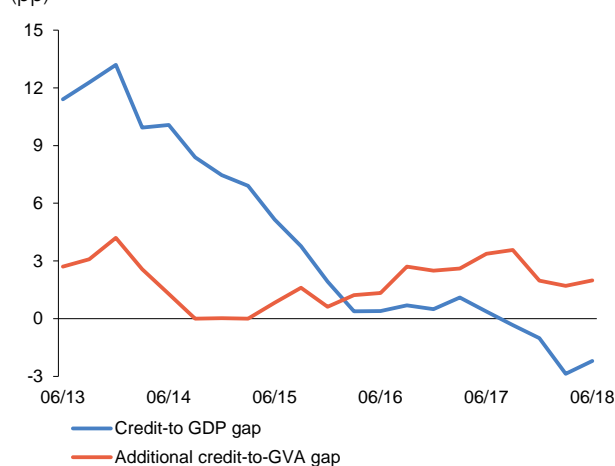
(% of total risk exposure)



Source: CNB

Chart IV.2

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 non-financial private sector and the moving minimum level of this ratio over the past eight quarters.

The aggregate financial cycle indicator increased slightly

The aggregate financial cycle indicator (FCI) increased slightly in the first half of 2018 (see Chart IV.3). This was largely due to strong credit growth in the household sector, rising property prices and also very low interest rate spreads for loans to households and non-financial corporations.

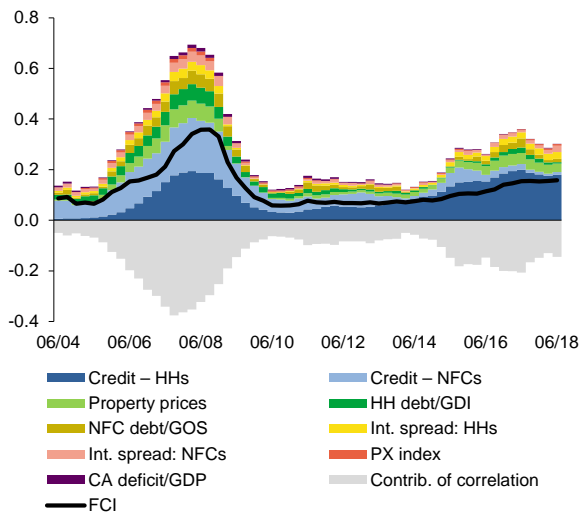
34 ESRB (2014): *Recommendation (ESRB/2014/1) on guidance to EU Member States for setting countercyclical capital buffer rates*, European Systemic Risk Board, January 2014.

35 More detailed methodological information about the additional gap can be found in: Hájek, J., Frait, J., Plašil, M. (2017): *The Countercyclical Capital Buffer in the Czech Republic*, thematic article, FSR 2016/2017, CNB.

Chart IV.3

Financial cycle indicator (FCI) and its decomposition

(0 minimum, 1 maximum)



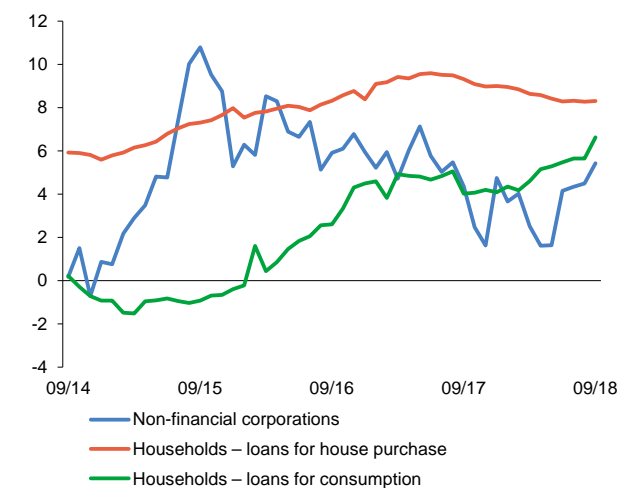
Source: CNB

Note: GDI = disposable income of households, GOS = 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.

Chart IV.4

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

(%)



Source: CNB

The rate of growth of bank loans was particularly strong in the household sector...

The total volume of bank loans to the private non-financial sector rose by 6.7% year on year in 2018 Q3. This was due mainly to the situation on the residential property market, where housing prices kept rising apace in year-on-year terms and the amount of loans used to finance them remained high (for details see sections 2.1 and 4.2 and Chart IV.3 CB). Accordingly, loans to households rose by 8.3% year on year (see Chart IV.4). An acceleration in annual growth was recorded in 2018 Q3 for bank loans to households for consumption (6.6%) and bank loans to non-financial corporations (5.4%). The growth rates of loans in the household sector were above-average with respect to their medium-term and long-term tendencies (see Chart IV.5). The growth rates of loans to non-financial corporations were above the long-term, medium-term and short-term averages, but other sources of external financing of the sector grew even more strongly.³⁶

...while genuinely new bank loans picked up significantly

The year-on-year growth rate of genuinely new³⁷ bank loans amounted to 14.9% in 2018 Q3 (in order to smooth the time series, the growth rates were calculated using three-month sums). A major recovery was recorded in both sectors under review (see Chart IV.6). The growth rate in non-financial corporations was 15.6%, with operating loans being main source of growth (50.7%). Investment loans conversely dropped by 11.6%. The amounts of genuinely new bank loans to households

³⁶ The volume of bond issuance increased by 14.9% year on year in 2018 Q2.

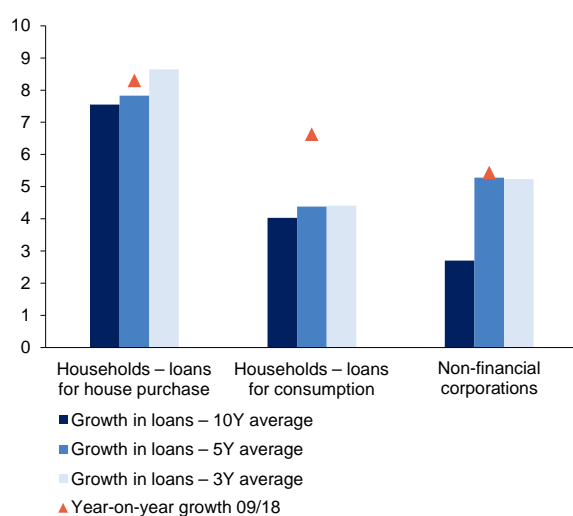
³⁷ Genuinely new loans include increases in existing loans and are adjusted for refinanced and refixed loans.

for house purchase remained elevated during 2018 and rose by a further 20.6% in Q3.³⁸ The growth rate of genuinely new bank loans to households for consumption was also positive at 3.7% year on year.

Chart IV.5

Average and current growth in bank loans to the private non-financial sector

(%)

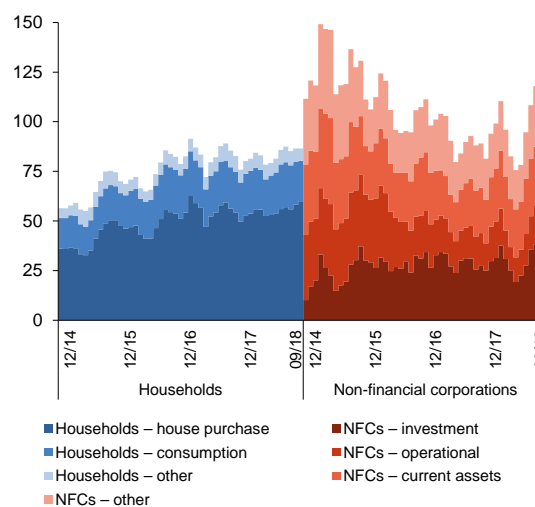


Source: CNB

Chart IV.6

Amounts of genuinely new bank loans to the private non-financial sector

(three-month totals in CZK billions)



Source: CNB

Note: Genuinely new loans include increases in existing loans and are adjusted for refinanced and refixed loans.

The Czech economy is slowly moving further into the growth phase of the financial cycle...

The FCI indicator and growth in the loan stock and new loans confirm that the domestic economy has moved further into the growth phase of the financial cycle this year, albeit more slowly than in the previous two years. Financial conditions remain very relaxed despite an increase in interest rates. Perceived real debt servicing costs³⁹ on new loans to households for house purchase have reached very negative levels (-5.4% as of 30 June 2018). Perceived real debt servicing costs on new loans to households for consumption have also fallen very low in 2018 (0.6% as of 30 June 2018). Interest rates adjusted for inflation expectations as measured by the CPI index (i.e. real interest rates) convey a similar picture (see Chart II.6). The environment of low real interest rates and optimistic expectations regarding future income may have created an illusion of easy repayment of loans in the future among some loan applicants. Continued property price growth also kept demand for loans high (see Chart II.7 in section 2.1). Persistence of these conditions could support a high degree of activity in the financial sector next year as well.

...favourable economic developments were reflected in very low impairment losses and an optimistic perception of the degree of credit risks undertaken...

Against the background of a growth phase of the financial cycle, the banking sector's vulnerability to an economic downturn is meanwhile gradually increasing. Owing to the favourable economic situation, banks' asset impairment losses decreased and even turned temporarily negative in 2018 Q2 (see Chart IV.7). This is favourably affecting banks' profitability. The risk that the reserves being created to cover future losses will not be entirely sufficient is amplified by the fact that the ratio of

³⁸ The growth rates may have been partly elevated by the frontloading effect, as a new *CNB Recommendation on the management of risks associated with the provision of retail loans secured by residential property of 12 June 2018* entered into force in October 2018.

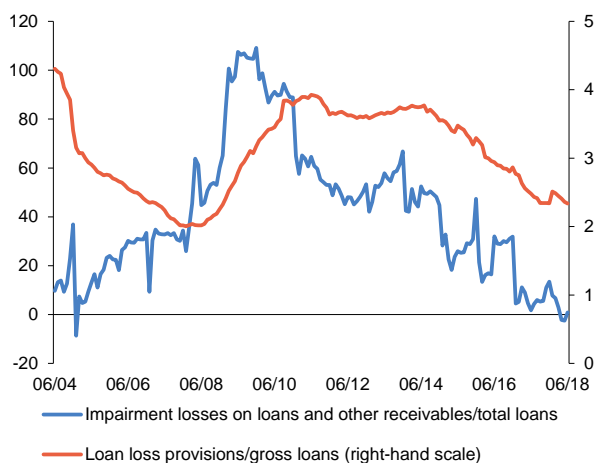
³⁹ Perceived real debt servicing costs are nominal rates adjusted for wage growth.

provisions to total loans started to return to a downward trend in the rest of 2018 following an initial increase linked with the switch to the new IFRS 9 accounting standard. This ratio is currently lower than at the end of 2017. The ratio of the margin on the stock of loans to provisions per unit of credit, which reliably captures cyclical developments in the banking sector, is also rising, copying the FCI (see Chart IV.8). The exceptionally low level of impairment losses and the steady decline in credit risk should be regarded as a cyclical phenomenon and not as a new, sustainable standard. If banks do not use part of their profits to bolster their capital, some of them could get into an adverse capital position after a downturn in the cycle. This is confirmed by the results of a macro stress test of banks with a five-year horizon (see section 3.3), according to which banks' ability to withstand stress derives from capital surpluses at the start of the test period.

Chart IV.7

Asset impairment losses and loan loss provisions

(bp; right-hand scale: %)



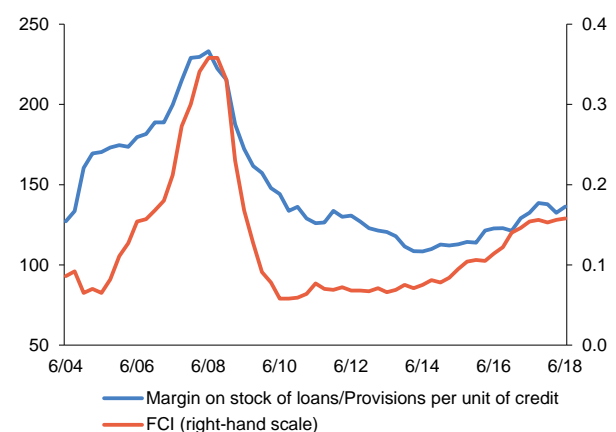
Source: CNB

Note: Impairment losses are the ratio of growth in net impaired loans to total bank loans.

Chart IV.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.

...which is affecting the outputs of banks' risk models, contributing to a decline in risk weights and increasing the banking sector's vulnerability to an economic downturn

According to the CNB's analyses, the Czech economy switched to a phase of strong cyclical recovery during 2015 and also to an expansionary phase of the financial cycle in 2015 Q4. The favourable cyclical developments are gradually being reflected in the calibrations and results of banks' risk models. The risk weights in the main IRB portfolios are therefore cyclically decreasing (see Chart IV.1 CB).⁴⁰ The falling capital requirements for individual loan categories are causing risk-weighted assets and indirectly also the absolute level of the capital requirement to decline. The capital requirement for IRB portfolios which, ceteris paribus, would imply the same level of risk weights as at the beginning of the expansionary phase of the financial cycle would be CZK 26.2 billion higher than the current capital requirement (see Chart IV.9).⁴¹ This decline in the capital requirements and the current – also cyclically conditional – low provisioning rate might mean on the aggregate level that the banking sector's assessment of risks is over-optimistic and fails to take their actual level into account.

⁴⁰ Between December 2015 and June 2018, the average risk weight on loans to corporations decreased by around 7.4 pp, that on retail loans secured by residential property by 4.5 pp and that on other retail loans by 5.4 pp. The decline in risk weights may have been due not only to the favourable phase of the cycle, but also, for example, to improved collateralisation of loans and better risk management.

⁴¹ The decline in risk weights might also have been due to non-cyclical factors (such as a change in the risk mix and higher or better-quality collateral).

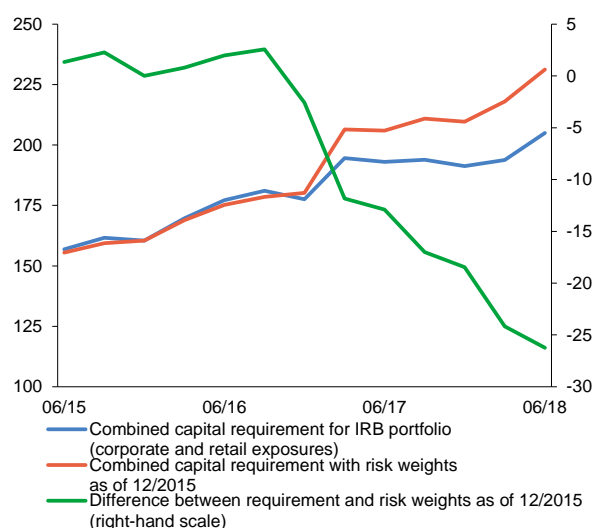
The new IFRS 9 accounting standard may lead to unintended procyclical behaviour of banks

One of the implications of the switch to the IFRS 9 accounting standard remains an additional source of banking sector vulnerability. IFRS 9 is supposed to be beneficial to financial stability from the long-term perspective, because unlike the previous IAS 39 standard it creates conditions for early and sufficient loan loss provisioning. However, the results of the macro stress tests of banks published in FSR 2017/2018 support the view that IFRS 9 may have a cliff effect in the form of a rapid and sharp pass-through of an adverse situation to capital in certain conditions. In the adverse scenario, the application of expected credit losses under IFRS 9 leads to temporarily stronger impacts on capital than under the previous IAS 39 methodology. Following a sudden change in economic conditions leading to a marked reassessment of macroeconomic fundamentals, banks need to create a large amount of new provisions. This sharp increase may in turn cause sizeable losses and a fall in capital and contribute to a credit crunch.

Chart IV.9

Comparison of actual and hypothetical capital requirements

(CZK billions)



Source: CNB

Note: This is the capital requirement for the IRB loan portfolio of the private sector. The hypothetical capital requirement is calculated on the basis of risk weights as of the beginning of the expansionary phase of the financial cycle (12/2015).

Table IV.2

The implied CCyB rate based on various approaches (% of total risk exposure)

Approach	Implied CCyB rate
Conversion based on FCI values	1.00
Conditional credit loss probability	1.50
Duration of expansionary phase of cycle	1.75

Source: CNB

Quantitative approaches to determining the rate indicate a need for a countercyclical capital buffer rate ranging between 1.75% and 1.00% for exposures in the Czech Republic

Quantitative approaches confirm a need to create a countercyclical capital buffer (CCyB). According to the simplest quantitative rule, the CCyB rate should go up by 0.50 pp. for each year of the expansionary phase of the financial cycle. The gradualist variant of this rule implies increasing the CCyB rate by 0.25 pp. in each half-year of the expansionary phase of the financial cycle. The Czech economy is currently in the seventh half-year of the expansionary phase of the financial cycle, which equates to a rate of 1.75%.⁴² The conversion of the values⁴³ of the FCI implies a CCyB rate of 1.00% (see Table IV.2). The approach based on the conditional credit loss distribution in the macro stress test of banks, which estimates the capital buffer needed to cover unexpected future losses, indicates a CCyB rate of 1.50%.

⁴² The economy entered an expansionary phase of the financial cycle in 2015 Q4.

⁴³ The conversion is described in detail in Hájek et al. (2017).

The CNB has decided to increase the countercyclical capital buffer rate to 1.75% with effect from January 2020

On the basis of an overall assessment of all the manifestations of the business and financial cycle, the CNB considers it desirable to strengthen the resilience of the banking sector by increasing the countercyclical capital buffer. The Bank Board therefore decided at its meeting on 29 November 2018 to increase the CCyB rate to 1.75% with effect from 1 January 2020. Taking account of the total indebtedness in the economy, this decision was based on an assessment of indicators of activity and conditions in the financial sector and of the vulnerability of the banking sector to an economic downturn (such as exceptionally low loan impairment losses, falling coverage of loans by provisions, gradually decreasing risk weights and the potential cliff effect linked with IFRS 9). The CNB stands ready to increase the CCyB rate further in the event of continued rapid credit growth, increasing risks connected with residential property purchase financing, a build-up of cyclical risks in the banking sector and a rise in the vulnerability of the banking sector.

Materialisation of cyclical risks and growing tensions in financial markets may be grounds for lowering the CCyB rate

The CNB stands ready to lower or completely zero the CCyB rate in the event of a sudden turnaround in the financial cycle. However, a decrease in lending activity or more prudential lending will not alone constitute the main reason for lowering the rate, as the cyclical risk assumed at times of above-average credit growth and relaxed credit standards stays in banks' balance sheets. Clear signals of risk materialisation, reflected in rising risk weights, increased provisioning and a growing volume of non-performing loans, would be grounds for reducing the CCyB rate. The process of lowering the CCyB rate must be optimally timed, as a very early reduction would increase the banking sector's voluntary capital surplus, which in certain situations might not be maintained prudently to cover future losses and higher Pillar 1 capital requirements and the draining of which might increase the sector's vulnerability. Conversely, releasing the buffer too late, when materialised losses are being fully reflected in losses and growth in capital requirements, could result in a credit crunch and would render it impossible to smooth the downward phase of the financial cycle.

4.2 RISKS ASSOCIATED WITH RESIDENTIAL AND COMMERCIAL PROPERTY MARKETS

4.2.1 Risks associated with residential property markets

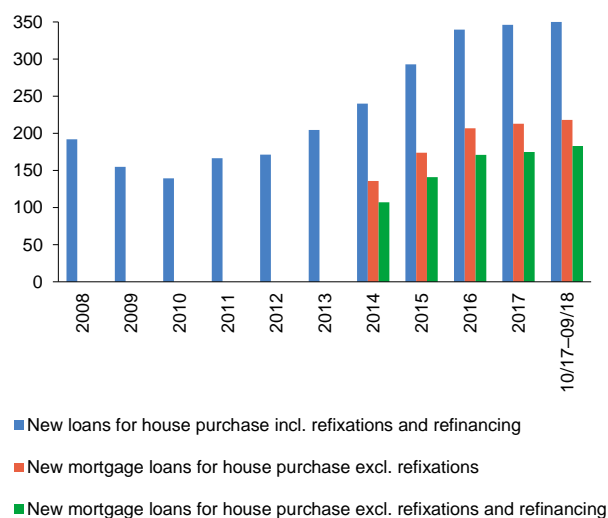
The CNB is monitoring risks and compliance with the recommended limits on an ongoing basis

The CNB responds to risks associated with the residential property market by applying instruments of both macroprudential policy and microprudential supervision. This 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 the aggregate analyses is the *Survey of loans secured by residential property* (the "Survey"). It is conducted semi-annually and contains detailed information about individual loans.

Chart IV.10

New housing loans and new mortgage loans

(annual totals in CZK billions)

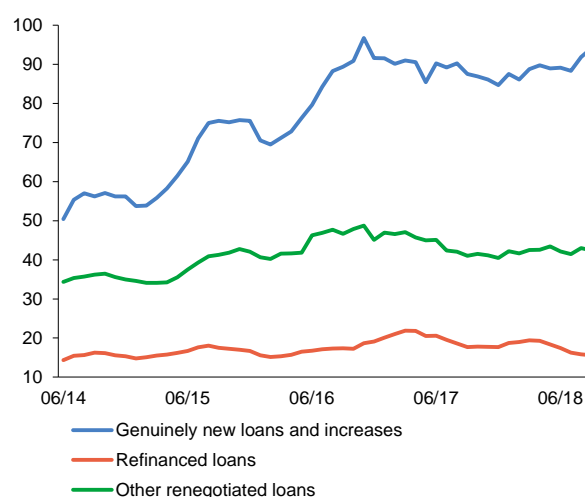


Source: CNB

Chart IV.11

Six-month totals of components of new mortgage loans

(CZK billions; moving six-month totals)



Source: CNB

The tighter LTV limits had no negative effect on lending and volumes of new loans remain elevated

Despite a gradual tightening of the LTV limits and increases in interest rates, the volume of new housing loans and new mortgage loans grew last year and this year (see Chart IV.10). The earlier statements made by lenders, intermediaries and the media, according to which the market would contract by one-fifth or even one-third after the LTV limit was tightened in April 2017, were thus not confirmed. Banks provided a record amount of new housing loans in 2017. Genuinely new mortgage loans excluding refinancing and refixations amounted to CZK 175 billion last year, exceeding the 2016 level by several billions. This amount increased further during the 12 months from October 2017 to September 2018, reaching CZK 183 billion. The strong growth in 2018 might have been due in part to the media campaign preceding the introduction of DTI and DSTI limits in October 2018. It resulted in high volumes of mortgage loans being provided in the months immediately before these limits started to apply. There were also occasional media reports of a contraction in the mortgage market, reports which did not distinguish between genuinely new and refinanced loans. However, Chart IV.11, illustrating the six-month totals of new loans in individual categories, reveals that refinanced loans were the only category to record a decline. This, however, was not related to the CNB's macroprudential policy.

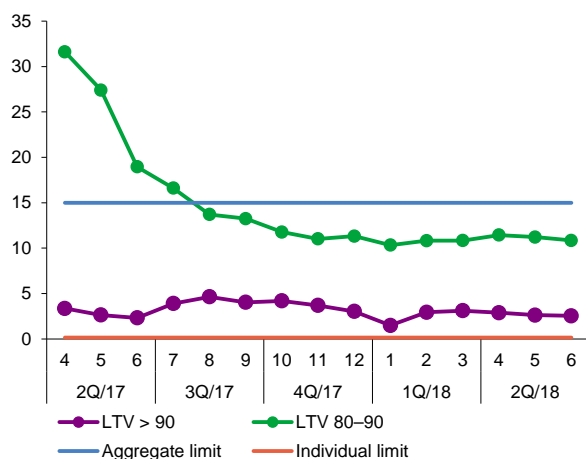
The spiral between property prices and property purchase loans has halted, but conditions remain relaxed

In FSR 2016/2017, published in June 2017, the CNB identified a continued spiral between property prices and property purchase loans as the most significant domestic risk. The spiral halted in 2017 H2 and can be assessed as still stationary in 2018 H1 (see Chart IV.3 CB). Nevertheless, this is due primarily to a slowdown in housing price growth (see Chart II.7 in section 2.1) to a level close to household income growth (see Chart II.11). In terms of apartment price growth, the economy is thus currently not as far into the spiral as it was before the crisis. In terms of the volume of new housing loans in relation to wages, however, it is still much higher (see section 2.2). The conditions for financing house purchases on credit remain attractive. Interest rates on loans for house purchase remain well below the long-term average and, accounting for wage inflation, the perceived real costs of debt⁴⁴ are still negative (see Chart II.6). The tightening of monetary policy through seven increases in the monetary policy rate and the communications hinting at a further increase have so far resulted in only a slight increase in rates on client loans.⁴⁵ Given the observed growth in household income, the incentive for credit financing may remain strong for some households. At the same time, households remain optimistic about how easy loans will be to repay and about property purchase prices continuing to rise in the long term.

Chart IV.12

Fulfilment of the recommended LTV limits

(share of loans in volume in %)

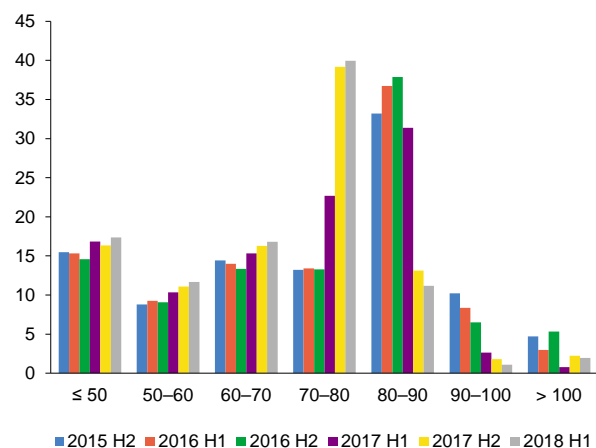


Source: CNB

Chart IV.13

LTV distribution of new loans

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



Source: CNB

Note: Interval closed from the right.

Compliance with the recommended LTV limits has improved slightly overall...

Data from the Survey for 2018 H1 confirmed that banks were broadly compliant with the Recommendation in force as regards LTV limits. Loans with LTVs of 80%–90% fell to less than 11% of new lending in June 2018, so the recommended limit of 15% was complied with at the aggregate level (see Chart IV.12). The share of loans with LTVs of over 90% was below 3% in 2018 H1 and dropped to 2.5% in June. Under the Recommendation such loans should not be provided at all, but institutions' approach can be viewed as a slight improvement as regards compliance with the individual limit. From the medium-term perspective, the LTV distribution of loans shows a gradual shift of high-LTV loans into the 70%–80% category, or 80%–90% category until 2017 H1 (see Chart IV.13).

44 The perceived real costs of debt are nominal rates adjusted for wage growth.

45 The slower pass-through of monetary policy rates to client rates might have been caused partly by frontloading before the tighter recommended LTV, DTI and DSTI limits started to apply.

...and lenders reflected the riskiness of loans in an increase in interest rates in the most risky categories

Interest rates on new mortgage loans recorded year-on-year growth across all risk categories. The strongest growth in interest rates was recorded for loans with an LTV of over 100% where the LTI simultaneously exceeded 8 or the LSTI exceeded 40% (see Chart IV.14). When setting rates, lenders thus took account of the level of credit risk mainly in cases where all the ratios under review (LTV, LTI and LSTI) were simultaneously high. However, some differentiation in the interest rate level based on the LTV ratio is apparent even when one abstracts from clients' income characteristics. The higher average rate on loans with LTVs of 80%–90% may also reflect increased client demand for this type of loans amid limited supply by lenders.

The CNB regards the current LTV limits as sufficient but still as upper bounds...

Given the slowdown in residential property price inflation (see Chart II.7 in section 2.1), the rapid growth in household income (see Chart II.11 in section 2.2) and the halt in the increasing overvaluation of apartment prices (see Chart II.8 in section 2.1), the CNB considers the current recommended LTV limits to be sufficient. The CNB assesses the effect of the current LTV limits as positive and does not deem it necessary to tighten the limits further at the moment. Taking into account the persisting overvaluation of housing prices and the fact that the lower LTV levels are due to favourable collateral valuation (see below), the CNB continues to regard the current LTV limits as upper bounds. The conditions for a spiral between property prices and property purchase loans meanwhile persist (see Chart IV.3 CB). The CNB therefore stands ready to respond to any renewed increase in overvaluation and build-up of relevant systemic risks by changing the recommended levels.

...and compliance with the limits requires increased attention in an upward phase of the cycle

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 be overvalued in an upward phase of the cycle (see section 2.1). The Survey revealed that almost 20% of loans had an LTV ratio of exactly 80% (see Chart IV.15).⁴⁶ This pattern of behaviour may reflect optimisation of loan size (adjustment of the numerator of the LTV ratio) or of collateral value (adjustment of the denominator of the LTV ratio). 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. The CNB will therefore continue to perform detailed checks of the prudential collateral valuation process and require institutions to follow that process in order to prevent any circumvention of the limits using approaches that do not conform to the Recommendation. It will also require institutions to report purchase price and collateral value data in a methodologically correct manner.

The share of loans with risky characteristics in terms of debt servicing capacity was almost unchanged

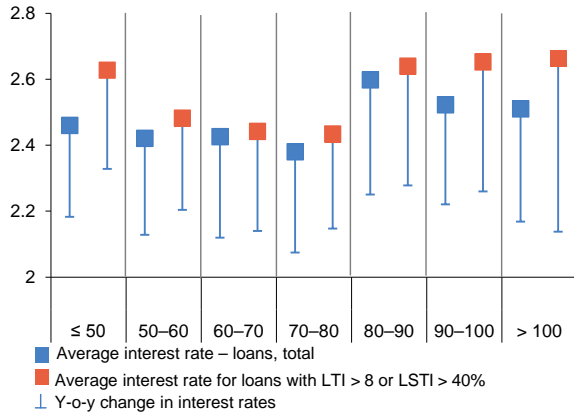
In 2017, the CNB identified loans with a DTI ratio of over 8 and a DSTI ratio of over 40% as highly risky and recommended that lenders should treat loans with these characteristics with increased prudence. The CNB does not yet have access to data on DTI and DSTI ratios for individual loans,⁴⁷ so it assesses the risks on the basis of LTI and LSTI ratios. The LTI and LSTI distributions of loans remained stable. The share of new loans with LTIs of 8–9 stayed the same as in the previous half-year, while that of loans with LTIs of over 9 decreased from 7.9% to 6.5% (see Chart IV.16). The shares of loans with LSTIs of 40%–50% and 50%–60% rose modestly (from 8.5% to 9.2% and from 1.9% to 2.3% respectively), while the share of loans with LSTIs of over 60% fell slightly (see Chart IV.17). The shares of new loans provided with LTI and LSTI ratios in higher categories may not seem high at first glance. However, even lenders themselves are saying that many applicants have additional financial obligations. This was the main reason for setting DTI and DSTI limits with effect from 1 October 2018. The CNB took account of the existence of specific cases by allowing lenders to apply a 5% exception.

⁴⁶ The chart of the empirical cumulative distribution function shows the per cent of loans (y-axis) for which the reported LTV is at most equal to the value on the x-axis (the LTV may thus be equal to or lower than this value). Jumps are visible in the chart for loans with LTVs of 80% and 90%. This proves that many loans are concentrated at the upper bound of the recommended limits.

⁴⁷ The CNB will require banks to provide DTI and DSTI data as from 2019.

Chart IV.14
Average interest rates by loan characteristics

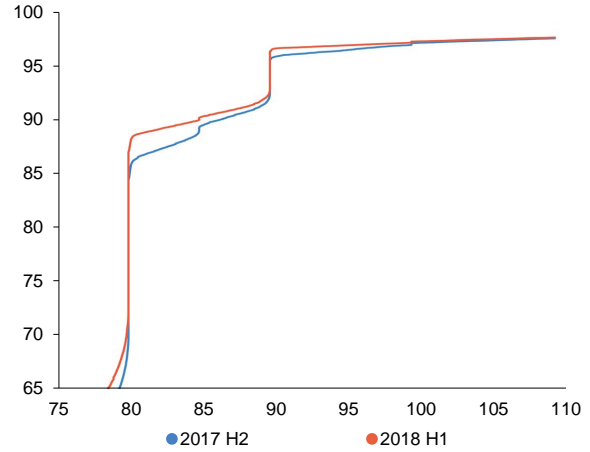
(x-axis: LTV in %; y-axis: interest rate in %)



Source: CNB
Note: Weighted average interest rates, with the sizes of individual loans as weights. Interval closed from the right.

Chart IV.15
Empirical cumulative distribution function of LTVs

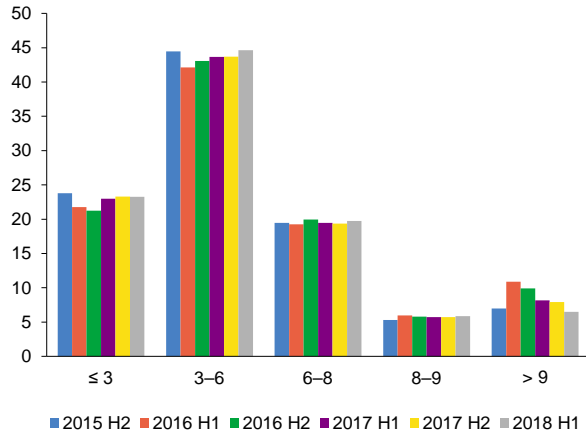
(x-axis: LTV in %; y-axis: cumulative percentage of loans)



Source: CNB
Note: The curves plot the percentage share of loans with the given or lower LTVs.

Chart IV.16
LTI distribution of new loans

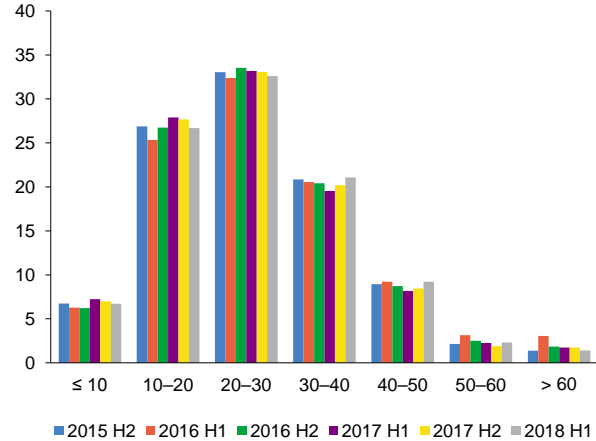
(x-axis: LTI in years; y-axis: share of loans in volume in %)



Source: CNB
Note: Relative to the volume of loans for which LTI information is available. Interval closed from the right.

Chart IV.17
LSTI distribution of new loans

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



Source: CNB
Note: Relative to the volume of loans for which LSTI information is available. Interval closed from the right.

The new upper DTI and DSTI limits should not significantly affect the availability of mortgage loans

After the upper DTI and DSTI limits were set, many predictions that they would have a big negative impact on the availability of mortgage loans appeared in the media and in statements issued by lenders, intermediaries and developers. Such statements are usually based on Czech Banking Association information that one-fifth of the applicants who were successful last year would not have met the new DTI and DSTI limits. The CNB does not have access to DTI and DSTI data for individual loans. Nevertheless, the Survey reveals that in 2018 H1, mortgage loans with LTIs of over 9 made up a mere 6.5% of loans (8% in 2017 H2; see Chart IV.18) and loans with LSTIs of over 45% accounted for only 5.8% of loans (6.2% in 2017 H2; see Chart IV.19).⁴⁸ Since the loans in the two categories partly overlap, less than 9% of loans provided would have had LTIs of over 9 or LSTIs of over 45% in 2018 H1 (10% in 2017 H2; see Chart IV.4 CB). It is highly likely that a higher proportion of loans would have exceeded the limits if the additional debt of clients had been taken into account using DTI and DSTI data. However, for the warnings of 20% still to have materialised, a large number of mortgage loans would have had to be provided to applicants with already high levels of debt. This would have indicated a significantly increased level of risk.

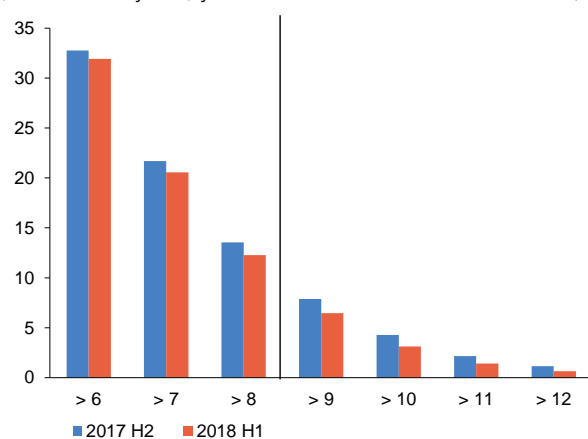
The CNB is seeking the statutory power to set upper limits on the LTV, DTI and DSTI ratios for mortgage loans

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. These three ratios have been chosen because the CNB cannot carry out its statutory duties using LTV alone. The income-oriented DTI and DSTI ratios are of critical importance, as they limit the risks associated with excessively large and long-maturity household debt. Setting a debt ceiling is key to keeping systemic risks at an acceptable level in sustained good times. The limits must be legally binding in order to ensure a level playing field on the market and prevent unfair competition between lenders.

Chart IV.18

LTI distribution of new loans

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



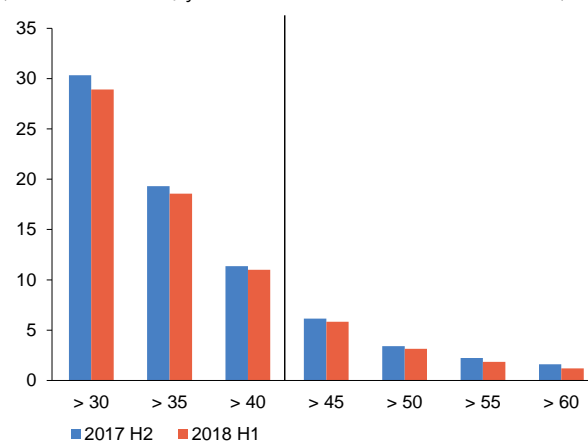
Source: CNB

Note: The vertical line indicates the recommendation applicable from 1 October 2018 for DTI > 9. The values in the individual columns illustrate the share of all loans over the given LTI in the volume of loans, including the following column.

Chart IV.19

LSTI distribution of new loans

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



Source: CNB

Note: The vertical line indicates the recommendation applicable from 1 October 2018 for DSTI > 45. The values in the individual columns illustrate the share of all loans over the given LSTI in the volume of loans, including the following column.

⁴⁸ The actual proportion of loans with LSTIs of over 45% may have been even lower, as such loans include short-maturity pre-mortgage loans. The calculated LSTIs for these loans are much higher than the actual values. This is because the LSTI calculation is based on the assumption of regular equal payments, an assumption which is not satisfied for pre-mortgage loans.

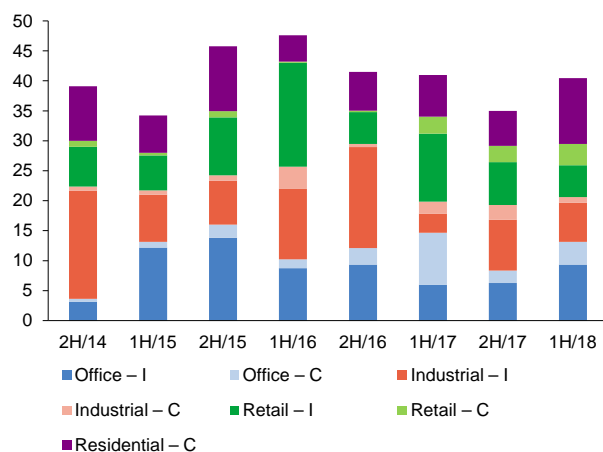
4.2.2 Risks associated with commercial property markets

The total amount of new loans secured by commercial property remains relatively low

New loans secured by commercial property amounted to almost CZK 40.5 billion in 2018 H1.⁴⁹ Borrowing for residential construction increased particularly significantly compared with the previous half-year (see Chart IV.20). Despite having recorded a slight increase, the total size of exposures secured by commercial property remains relatively low at around one-third of the level of loans associated with residential property purchase financing. Most construction of, and investment in, Czech commercial property is financed by foreign financial institutions, so any materialisation of risks associated with this market does not primarily affect the domestic banking sector. The amounts of new loans provided by banks in the Czech Republic have long been fluctuating around CZK 40 billion and, unlike loans connected with residential property financing, are not subject to major cyclical effects.

Chart IV.20

Amount of new loans secured by commercial property
(CZK billions)



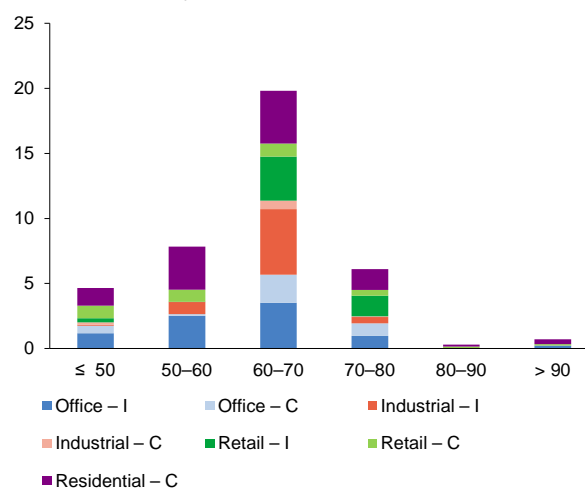
Source: CNB

Note: I: investment in existing property, C: construction.

Chart IV.21

LTV distribution of new loans secured by commercial property in 2018 H1

(x-axis: LTV in %; y-axis: CZK billions)



Source: CNB

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

The loans provided in 2018 H1 show rather more favourable risk characteristics, but the results of the Survey should be assessed with caution

Most of the new loans provided in 2018 H1 had LTVs of 60%–70% (see Chart IV.21). Compared to 2017 H2, there was a shift to less risky LTV levels. However, taking into account the slight increase in the estimated overvaluation of commercial property prices (see Chart II.10), the overall riskiness of loans remained broadly unchanged. As regards DSCR, loans in the 1.2–1.4 range – considered by the industry to be the norm for most types of commercial property – remain the most frequently provided ones (see Chart IV.22). Unlike in 2017 H2, the representation of loans with DSCRs of over 1.4 was also relatively high. This may indicate a decline in loan riskiness, but the figures should be assessed with caution. The estimate of future income on commercial property, which enters the DSCR calculation, depends largely on the lender's subjective assessment. Rather than lower riskiness, higher DSCR values may thus reflect over-optimistic estimates of future income accompanying the current phase of the business and financial cycle. Some increase in loan riskiness is suggested by an

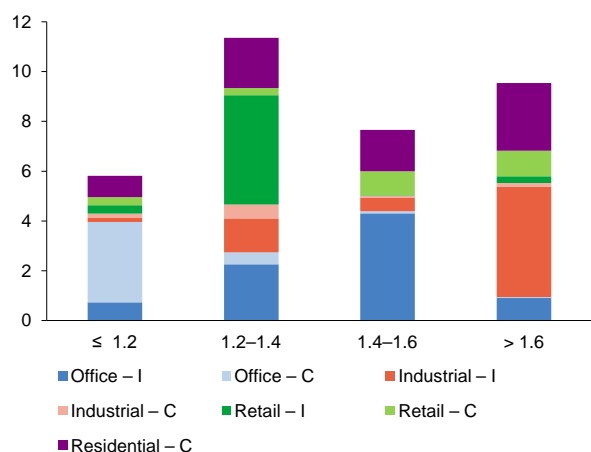
⁴⁹ Eight banks, covering around 70% of the market, take part in the regular survey on loans secured by commercial property.

increase in the share of loans with simultaneously risky characteristics as regards collateral sufficiency (an LTV of over 70%) and the ability to generate income to cover debt (a DSCR of below 1.2). Their share of more than 4% is the highest level ever recorded in the Survey for the first half of the year (see Chart IV.23).

Chart IV.22

DSCR distribution of new loans secured by commercial property in 2018 H1

(x-axis: DSCR; y-axis: CZK billions)

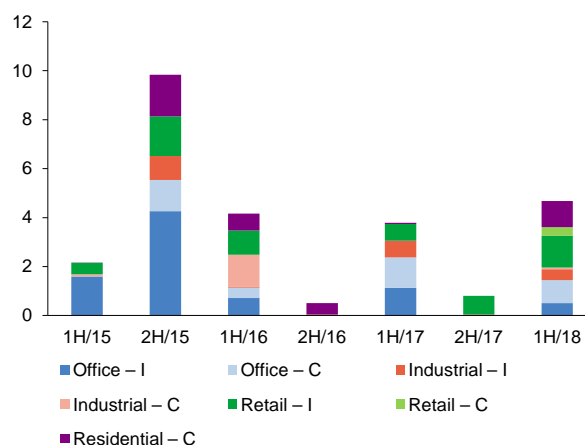


Source: CNB
 Note: I: investment in existing property, C: construction. Interval closed from the right.

Chart IV.23

Amount of new loans with an LTV of more than 70% and a DSCR of less than 1.2

(CZK billions)



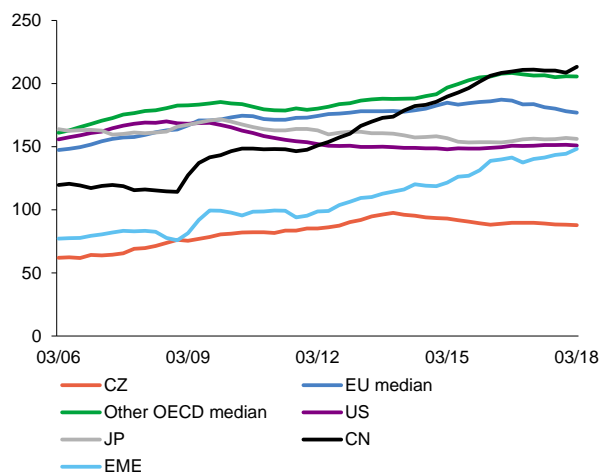
Source: CNB
 Note: I: investment in existing property, C: construction.

CHARTBOOK – SECTION 2

Chart II.1 CB

Private non-financial sector debt

(% of GDP)



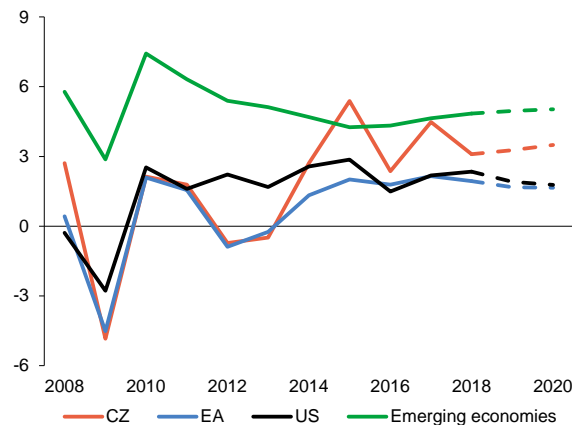
Source: BIS

Note: The EU median includes AT, BE, CZ, FI, FR, DE, GR, HU, IE, IT, LU, NL, NO, PL, PT, ES, SE and UK. The other OECD median includes AU, CA, KR and CH. Debt is the sum of all credit provided by domestic banks, non-banks and non-residents. The private sector comprises non-financial corporations, households and NPISHs.

Chart II.2 CB

Economic growth in selected countries

(annual real growth in %)



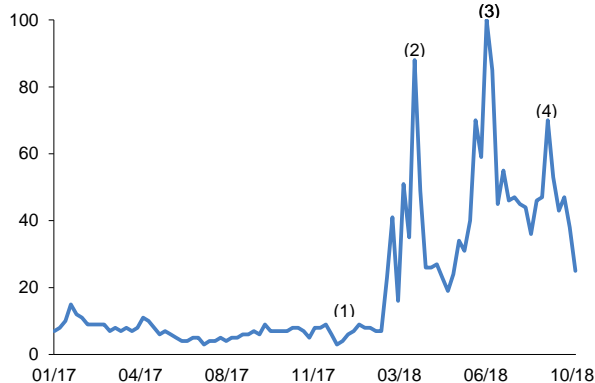
Source: IMF (World Economic Outlook, October 2018), CNB

Note: The dashed line indicates the projection for 2018–2020. The projection for the Czech Republic is based on the CNB forecast published in *Inflation Report IV/2018*.

Chart II.3 CB

Political uncertainty in international trade

(relative interest in internet search queries for “trade war” between 1 January 2017 and 21 October 2018)



Source: Google Trends

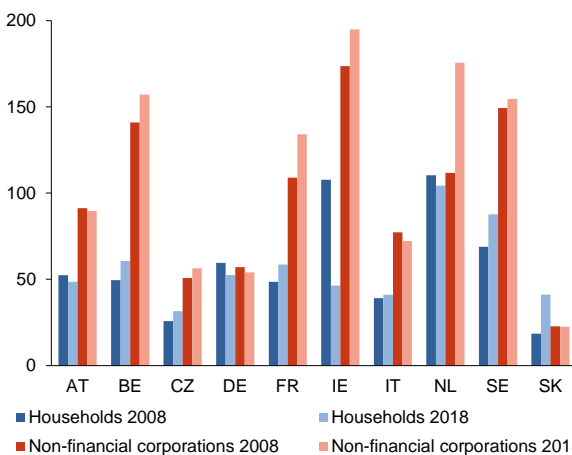
Note: The numbers represent interest relative to the highest point in the chart in the given period all over the world. 100 represents the highest popularity of the expression in the given period. Downloaded as of 24 October 2018. Searches for the expression “trade war” were most frequent in China, Singapore, Hong Kong, Canada and Malaysia. Meanings of the indicated points:

- (1) 1 January 2018, USA imposes tariffs on washing machines and solar panels,
- (2) 23 March 2018, USA imposes tariffs on steel and aluminium,
- (3) 1 July 2018, USA imposes tariffs on Chinese goods totalling USD 34 billion a year and China responds with retaliatory tariffs on US goods totalling USD 50 billion,
- (4) 24 September 2018, USA imposes tariffs on Chinese goods totalling USD 200 billion a year and China responds with retaliatory tariffs on US goods totalling USD 60 billion a year.

Chart II.4 CB

Debt of households and non-financial corporations in selected countries

(% of GDP)

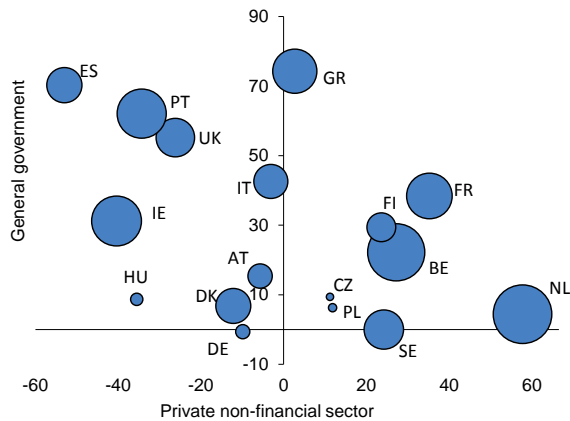


Source: BIS, ECB

Note: Debt is the sum of all credit provided by domestic banks, non-banks and non-residents. The BIS debt calculation methodology may differ from the methodologies used by national authorities. For this reason, the data in the chart may differ from those reported by other institutions. The 2018 debt figure is as of 31 March 2018.

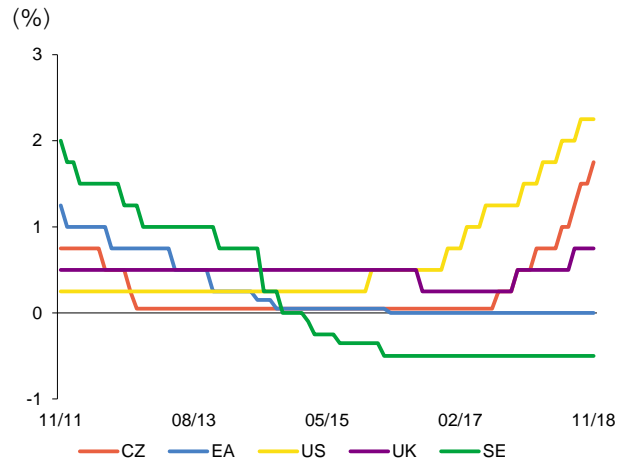
Chart II.5 CB
Private non-financial sector and government debt in selected EU countries in 2018

(change in sector's debt between 2008 and 2018; size of bubble: total debt in % of GDP)



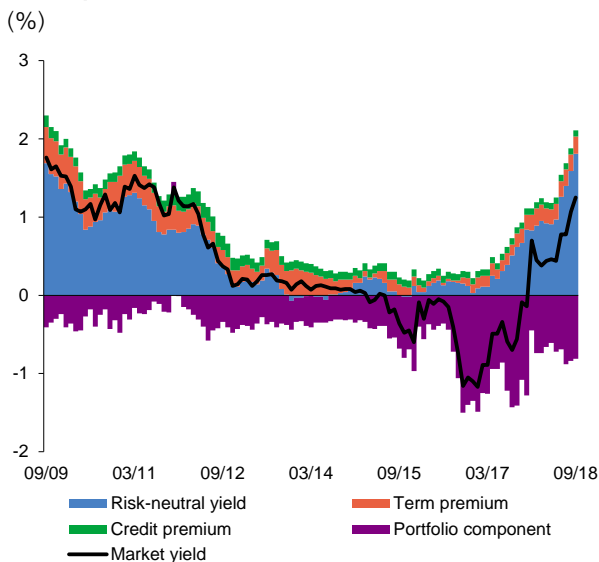
Source: BIS
 Note: Debt is the sum of all credit provided by domestic banks, non-banks and non-residents. The private sector comprises non-financial corporations, households and NPISHs. The BIS debt calculation methodology may differ from the methodologies used by national authorities. For this reason, the data in the chart may differ from those reported by other institutions. The 2018 debt figure is as of 31 March 2018.

Chart II.6 CB
Main monetary policy rates of selected central banks



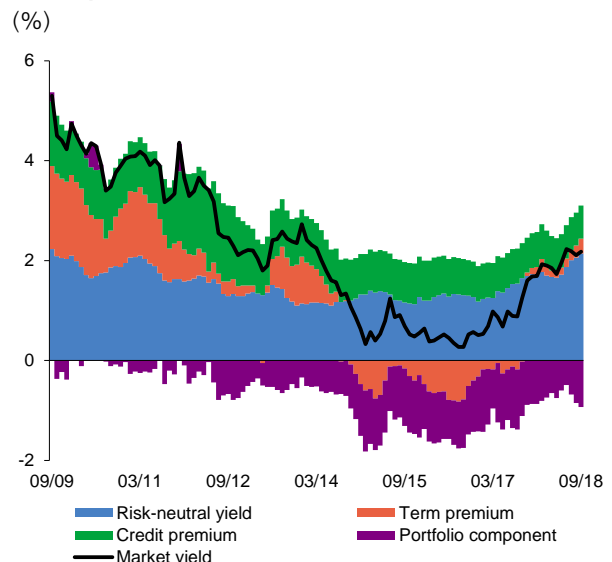
Source: Thomson Reuters

Chart II.7 CB
One-year Czech government bond yield decomposition



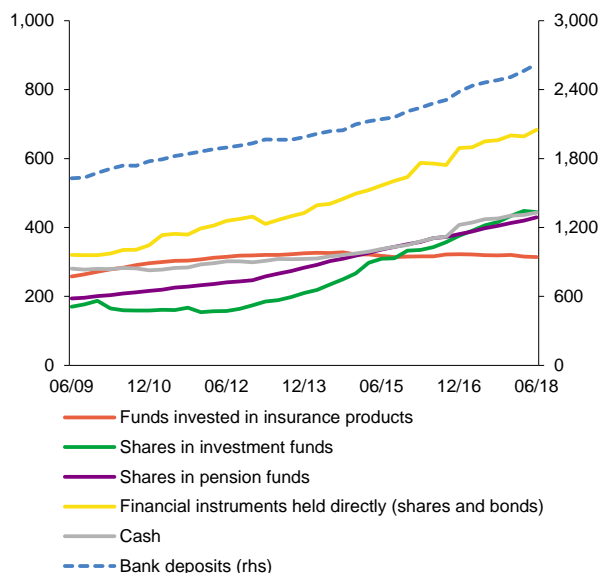
Source: CNB
 Note: The decomposition is based on the affine model of Bauer, M. D. a Rudebusch, G. D. (2017): *Interest Rates Under Falling Stars*. CESifo Working Paper, No. 6571, which was applied on the Czech government bonds according to Kučera, A., Dvořák, M., Komárek, L. a Komárková, Z. (2017): *Longer-term Yield Decomposition: An Analysis of the Czech Government Yield Curve*. CNB WP No. 12/2017.

Chart II.8 CB
Ten-year Czech government bond yield decomposition



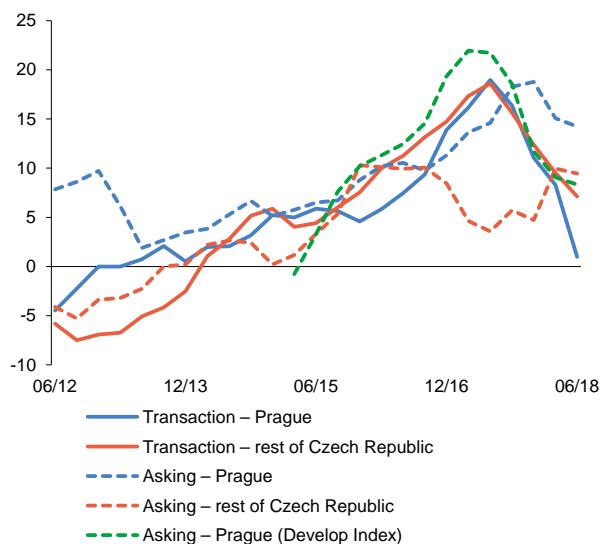
Source: CNB
 Note: The decomposition is based on the affine model of Bauer, M. D. a Rudebusch, G. D. (2017): *Interest Rates Under Falling Stars*. CESifo Working Paper, No. 6571, which was applied on the Czech government bonds according to Kučera, A., Dvořák, M., Komárek, L. a Komárková, Z. (2017): *Longer-term Yield Decomposition: An Analysis of the Czech Government Yield Curve*. CNB WP No. 12/2017.

Chart II.9 CB
Financial assets of households
 (CZK billions)



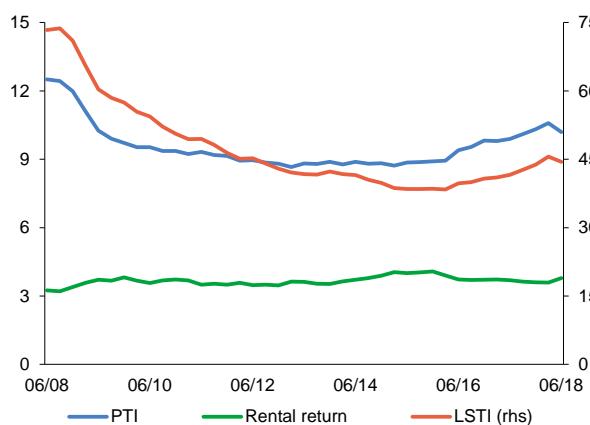
Source: CNB
 Note: The figures comprise exposures to domestic and foreign entities.

Chart II.10 CB
Growth in apartment transaction and asking prices
 (year-on-year growth in %)



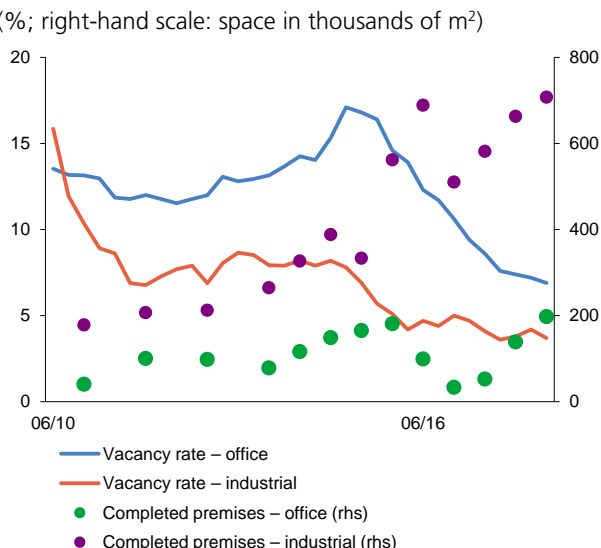
Source: CZSO, Price Map/Deloitte
 Note: Transaction prices of older apartments from a CZSO survey. As the Develop Index is published every two months, the figures for March and September were obtained as the average of the year-on-year growth rates in February and April and in August and October respectively.

Chart II.11 CB
Selected apartment affordability indicators
 (PTI in years; yields in %; right-hand scale: %)



Source: CZSO, CNB, Price Map/Deloitte
 Note: The price is defined as the average price of a 68 m² apartment. Income is defined as the annual moving total of the gross monthly wage. A loan with an LTV of 80% and a repayment period of 25 years was considered for the LSTI calculation.

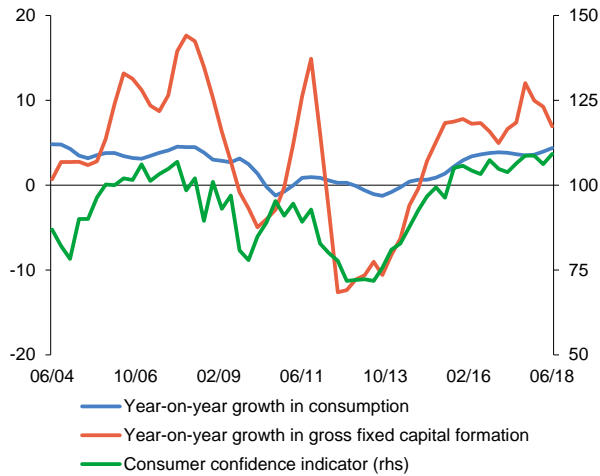
Chart II.12 CB
Vacancy rates and completed premises for commercial property
 (%; right-hand scale: space in thousands of m²)



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.13 CB

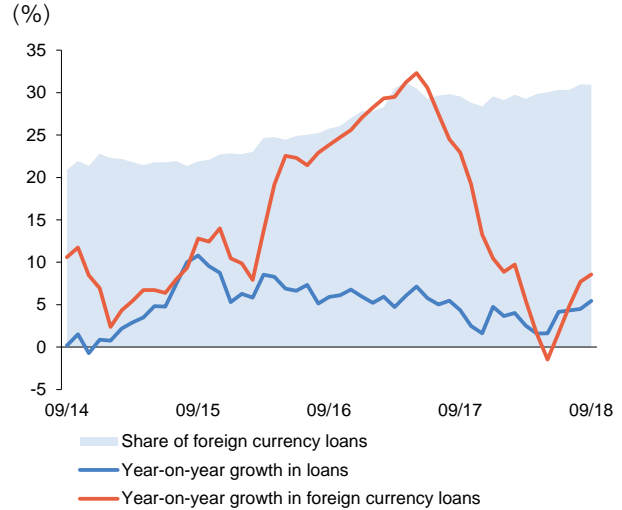
Household consumption, investment and confidence
(%; right-hand scale: base index relative to 2005 average)



Source: CZSO
Note: Growth rates are smoothed by the three-period average.

Chart II.14 CB

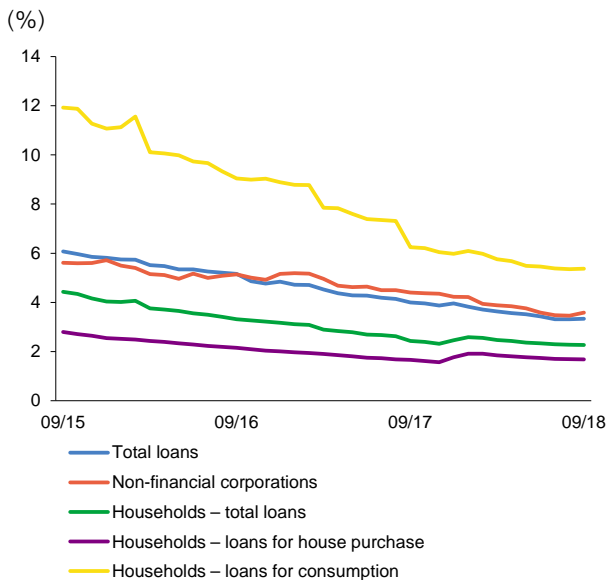
Selected characteristics of foreign currency loans in the non-financial corporations sector
(%)



Source: CNB
Note: Foreign currency loans are smoothed by the three-month moving average.

Chart II.15 CB

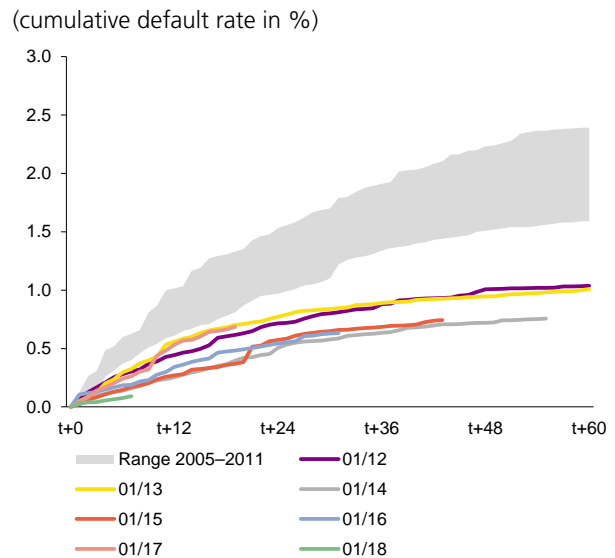
NPL ratio for bank loans to the private non-financial sector
(%)



Source: CNB

Chart II.16 CB

Riskiness of loans to non-financial corporations by date of provision
(cumulative default rate in %)



Source: CNB
Note: The initial slope of the curve provides a relatively good signal about the subsequent evolution of the riskiness of loans provided in the given period.

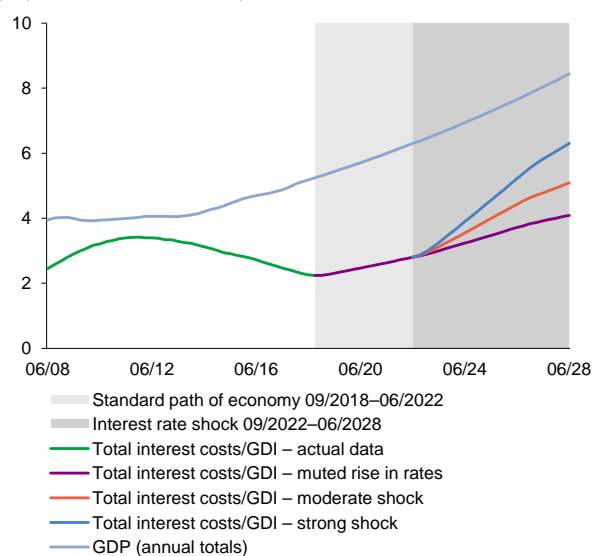
Table II.1 CB**Median values of loans to households for house purchase by region in the first half of 2018**

Region	Weight in survey (%)	Median loan size (CZK millions)	Median purchase price (CZK millions)	Median monthly income (CZK)	Median LTV (%)	Median DSTI (%)	Median LTI
Prague	13	2.62	4.40	51,599	64	24	4.2
South Bohemian Region	5	1.40	1.82	36,251	70	19	3.4
South Moravian Region	12	1.73	2.65	38,000	67	22	3.9
Karlovy Vary region	2	1.09	1.25	34,661	76	17	2.8
Vysočina Region	4	1.32	1.75	34,241	70	19	3.4
Hradec Králové Region	5	1.50	1.91	35,627	71	19	3.5
Liberec Region	4	1.43	1.82	37,308	73	19	3.3
Moravian-Silesian Region	10	1.32	1.58	36,061	74	19	3.2
Olomouc Region	6	1.35	1.72	35,335	70	19	3.3
Pardubice Region	5	1.49	1.85	35,188	70	20	3.7
Plzeň Region	6	1.52	2.07	36,933	70	20	3.5
Central Bohemian Region	17	1.92	2.60	41,562	69	22	3.9
Ústí nad Labem Region	5	1.14	1.27	36,378	77	16	2.7
Zlín Region	5	1.35	1.75	34,035	69	19	3.5

Source: CNB

Chart II.17 CB**Model example of household debt: total interest costs/GDI and GDP**

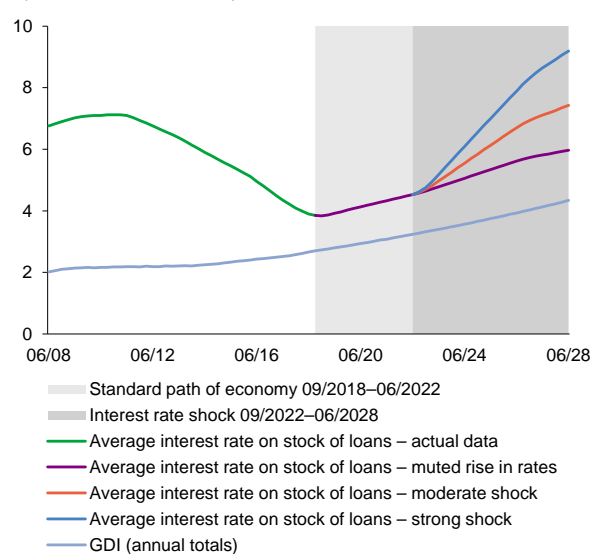
(%; GDP in CZK trillions)



Source: CNB, CZSO

Chart II.18 CB**Model example of household debt: average interest rate on stock of loans and GDI**

(%; GDI in CZK trillions)



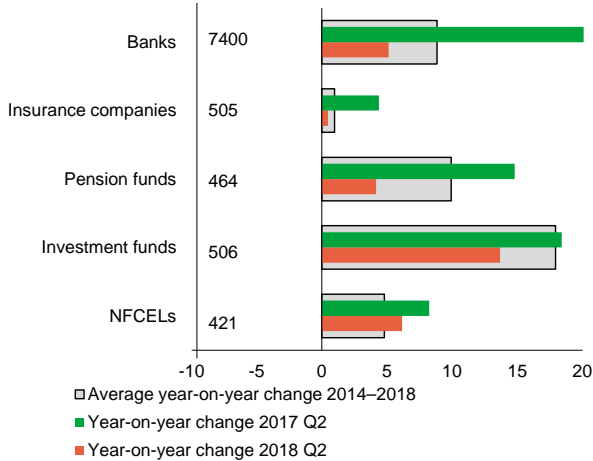
Source: CZSO

Note: The average interest rate on the stock of loans is calculated as a weighted average of the individual loan types for the past year.

CHARTBOOK – SECTION 3

Chart III.1 CB

Rates of growth of segments of the financial sector (%; as of 2018 Q2)

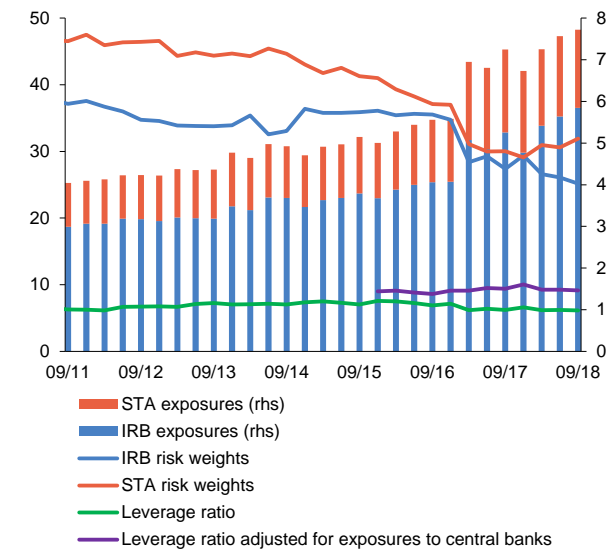


Source: CNB
 Note: NFCLEs = non-bank financial corporations engaged in lending. The figure next to the vertical base denotes total assets as of mid-2018 in CZK billions.

Chart III.2 CB

Aggregate risk weights, the leverage ratio and the size of credit exposures

(%; right-hand scale: CZK trillions)

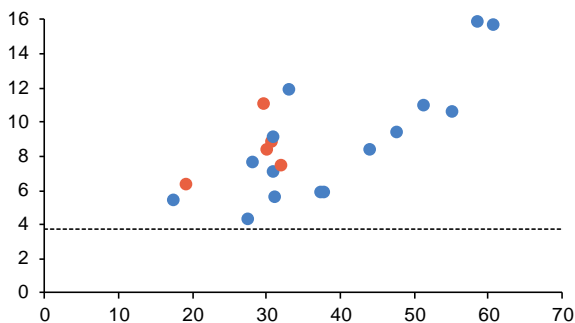


Source: CNB
 Note: Data are not available for the Basel III leverage ratio until the start of 2014. Until 2013 (inclusive), the leverage ratio is proxied by a simplified leverage ratio calculated as Tier 1 capital / total assets. In contrast to the Basel III leverage ratio, the simplified leverage ratio does not take into account off-balance-sheet items.

Chart III.3 CB

Leverage ratios adjusted for exposures to the CNB and risk weights for domestic banks as of 2018 Q3

(x-axis: risk weight in %; y-axis: leverage ratio in %)

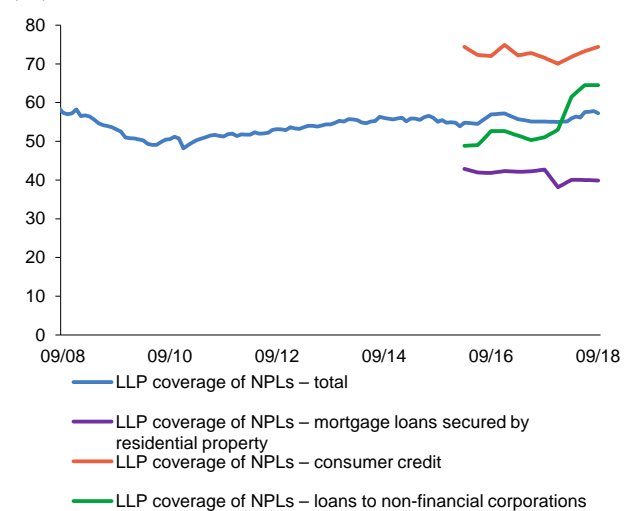


Source: CNB
 Note: The black horizontal line depicts the minimum adjusted leverage ratio of 3.75%. Red dots indicate domestic systemically important banks. Implicit risk weights are shown on the x-axis. These are calculated as the weighted value of the exposure divided by the original value of the exposure under the European COREP reporting framework.

Chart III.4 CB

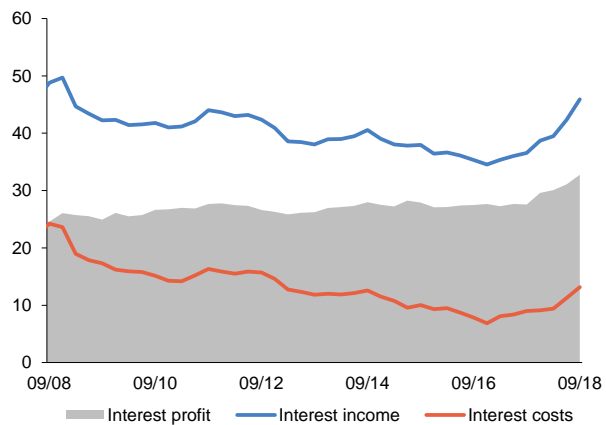
Coverage of NPLs by provisions

(%)



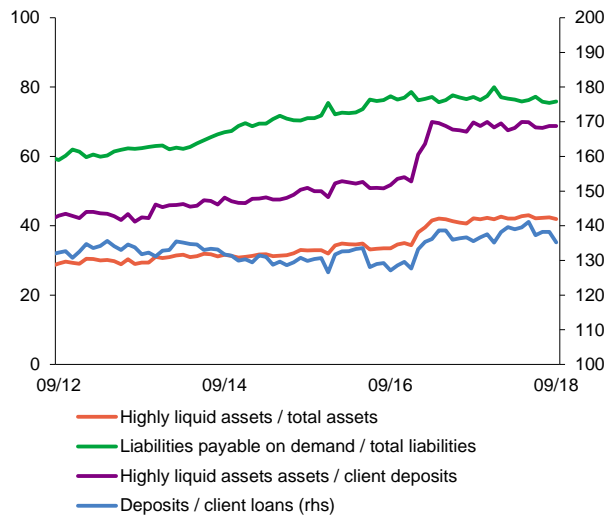
Source: CNB
 Note: LLP = loan loss provision. Data for the sectoral breakdown of the coverage of NPLs by provisions are available only from 2016 Q1.

Chart III.5 CB
Decomposition of interest profit
 (quarterly contributions in CZK billions)



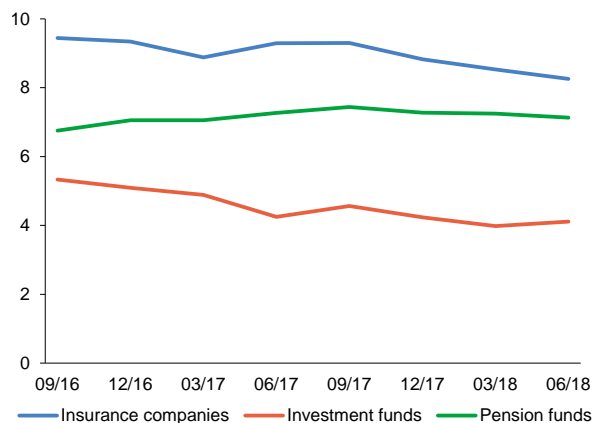
Source: CNB

Chart III.6 CB
Liquidity ratios in the banking sector
 (%)



Source: CNB

Chart III.7 CB
Average maturity of Czech government bonds in the balance sheets of institutional investors
 (years)



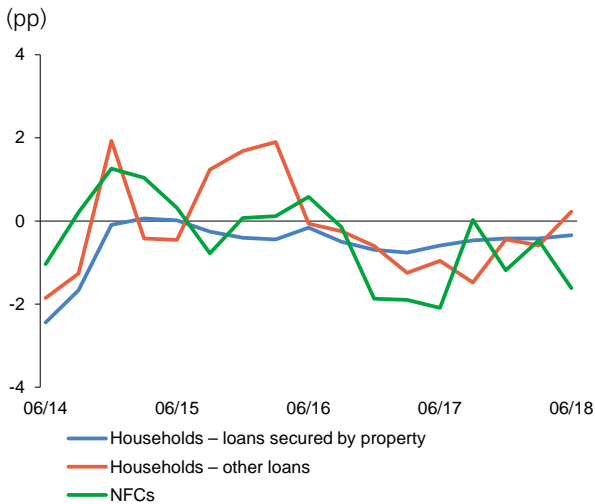
Source: CNB

Note: Average maturity is calculated as the average weighted by the volume of bond holdings.

CHARTBOOK – SECTION 4

Chart IV.1 CB

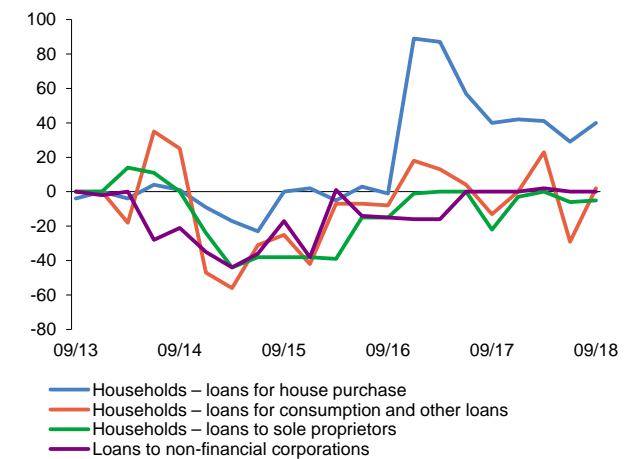
Quarterly change in IRB risk weights in the main loan categories (pp)



Source: CNB
Note: Change in risk weights smoothed by the three-period centred average.

Chart IV.2 CB

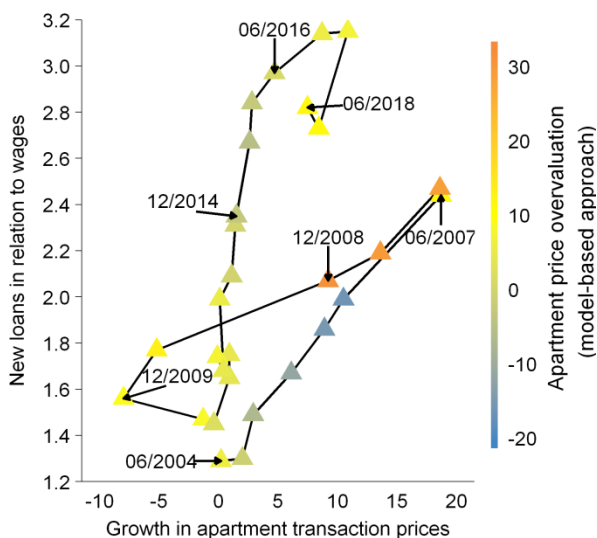
Credit standards in the Czech Republic (differences in banks' market shares in pp)



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 IV.3 CB

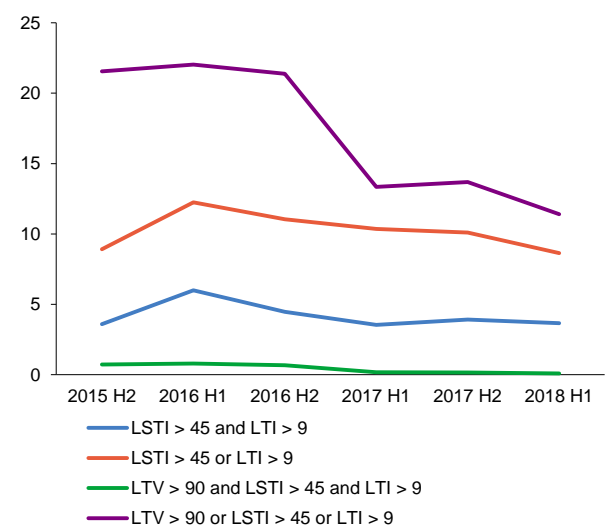
Growth in apartment prices, new loans for house purchase in relation to wages and apartment price overvaluation



Source: CNB
Note: The spiral is derived on the basis of apartment price growth and the amount of new housing loans in relation to the level of wages. Model-based valuation approach – see section 2.1.

Chart IV.4 CB

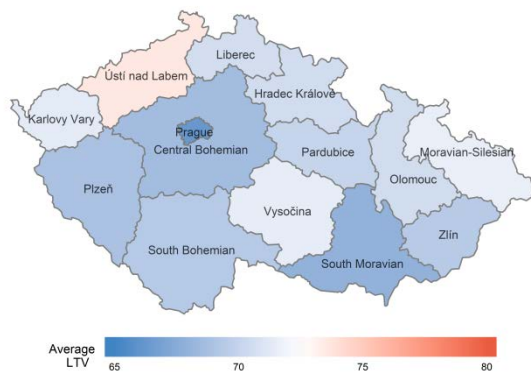
Share of loans with monitored characteristics over time (%)



Source: CNB

Chart IV.5 CB**LTV by region**

(averages weighted by loan amount)

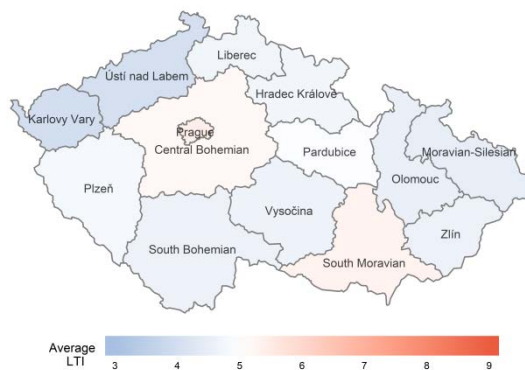


Source: CNB

Note: Averages weighted by the loan amount.

Chart IV.6 CB**LTI by region**

(averages weighted by loan amount)

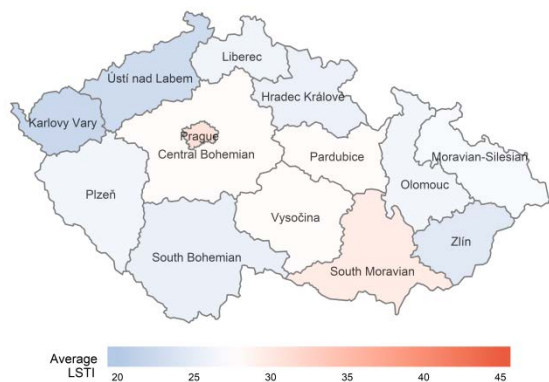


Source: CNB

Note: Averages weighted by the loan amount.

Chart IV.7 CB**LSTI by region**

(averages weighted by loan amount)



Source: CNB

Note: Averages weighted by the loan amount.

FINANCIAL STABILITY INDICATORS – PART 1

	2012	2013	2014	2015	2016	2017	2018		
							Q1	Q2	Q3
Macroeconomic environment									
ME.1 Real GDP growth (year on year, %)	-0.7	-0.5	2.7	5.4	2.4	4.5	4.1	2.4	2.4
ME.2 Consumer price inflation (average annual index growth, %)	3.3	1.4	0.4	0.3	0.7	2.5	1.7	2.6	2.3
ME.3 Public finance deficit / surplus / GDP (%)	-3.9	-1.2	-1.9	-0.6	0.7	1.5			
ME.4 Public debt / GDP (%)	44.5	44.9	42.2	40.0	36.8	34.7			
ME.5 Trade balance / GDP (%)	3.0	4.1	5.1	4.1	5.2	4.8	6.8	5.4	2.5
ME.6 External debt in % of banking sector external assets	162.6	149.4	152.7	133.7	120.2	114.1			
ME.7 Balance of payments current account / GDP (%)	-1.6	-0.5	0.2	0.2	1.6	1.1	4.5	0.6	-2.2
ME.8 Monetary policy 2W repo rate (end of period, %)	0.05	0.05	0.05	0.05	0.05	0.50	0.75	1.00	1.50
Non-financial corporations*									
NC.1 Return on equity (%)	8.7	9.5	10.1	11.1	10.8	11.1			
NC.2 Debt (% of total liabilities)	55.3	56.9	57.2	56.3	57.1	56.4	55.6	56.0	
NC.3 Credit indebtedness (% of GDP)	51.7	56.7	53.8	51.1	51.5	49.6	49.7	50.1	
NC.4 – loans from Czech banks (% of GDP)	20.6	21.2	20.3	20.0	20.4	20.2	20.1	20.6	
NC.5 – loans from Czech non-bank financial corporations (% of GDP)	4.2	4.0	4.0	4.1	4.4	4.6	4.6	4.6	
NC.6 – other (including financing from abroad, % of GDP)	26.8	31.6	29.6	27.0	26.7	24.8	25.0	24.9	
NC.7 Interest coverage (pre-tax profit + interest paid / interest paid, %)	11.6	11.4	11.5	14.2	14.0	15.1			
NC.8 12M default rate (%)	1.7	1.4	1.5	1.4	1.1	1.4	1.3	1.1	
Households (including sole traders)									
H.1 Debt / gross disposable income (%)	54.3	56.2	56.5	57.3	59.5	61.0	60.8	61.0	
H.2 Debt / financial assets (%)	29.7	29.5	28.8	28.4	26.4	26.2	26.2	26.4	
H.3 Net financial assets (total financial assets – total liabilities, % of GDP)	78.8	81.4	83.3	83.7	84.3	84.1	84.2	84.2	
H.4 Debt / GDP (%)	29.9	30.7	30.3	30.1	31.2	31.7	31.6	31.9	
H.5 – loans from Czech banks to households (% of GDP)	25.7	26.7	26.5	26.9	27.9	28.5	28.5	28.8	
H.6 – loans from Czech non-bank fin. corporations to households (% of GDP)	1.9	1.8	1.8	1.3	1.3	1.2	1.2	1.2	
H.7 – loans from Czech banks to sole traders (% of GDP)	0.9	0.9	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)	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
H.9 – other (including financing from abroad, % of GDP)	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.8	
H.10 Net interest expenses / gross disposable income (%)	3.3	3.2	3.0	2.8	2.6	2.4	2.3	2.3	
H.11 12M default rate (% , excluding sole traders)	4.5	4.3	4.0	3.1	2.4	1.9	2.0	2.1	
Financial markets									
FM.1 3M PRIBOR (average for period, %)	1.0	0.5	0.4	0.3	0.3	0.4	0.9	0.9	1.4
FM.2 1Y PRIBOR (average for period, %)	1.5	0.7	0.5	0.5	0.5	0.6	1.1	1.1	1.6
FM.3 10Y government bond yield (average for period, %)	2.8	2.1	1.6	0.6	0.4	1.0	1.8	1.9	2.1
FM.4 CZK / EUR exchange rate (average for period, %)	25.1	26.0	27.5	27.3	27.0	26.3	25.4	25.6	25.7
FM.5 Change in PX stock index (% year on year, end of period)	14.0	-4.8	-4.3	1.0	-3.6	17.0	14.5	8.5	5.4
Property market									
PM.1 Total change in residential property prices (transaction prices, % year on year)	-0.7	0.1	3.7	4.5	10.9	8.4	7.6	7.5	
PM.2 Change in apartment prices (asking prices according to CZSO, % year on year)	-1.4	0.8	2.1	5.8	15.1	11.5	16.1	11.1	
PM.3 Apartment price / average annual wage	8.8	8.9	8.8	8.9	9.8	10.3	10.6	10.2	
PM.4 Apartment price / annual rent (according to IRI)	28.8	28.3	25.7	24.5	26.9	27.8	27.8	26.4	

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FINANCIAL STABILITY INDICATORS – PART 2

	2012	2013	2014	2015	2016	2017	2018		
							Q1	Q2	Q3
Financial sector									
FS.1	Financial sector assets / GDP (%)	148.0	160.5	160.0	158.0	163.3	176.2	178.3	179.6
FS.2	Shares of individual segments in financial sector assets (%)								
FS.3	banks	77.2	78.1	77.8	77.4	77.4	78.7	79.2	79.2
FS.4	credit unions	0.7	0.5	0.5	0.5	0.4	0.3	0.2	0.2
FS.5	insurance companies	7.8	7.3	7.1	6.8	6.4	5.7	5.5	5.4
FS.6	pension management companies and funds	4.6	4.7	4.9	5.3	5.2	5.0	5.0	5.0
FS.7	investment funds*	3.6	3.8	4.3	4.8	5.2	5.4	5.3	5.4
FS.8	non-bank financial corporations engaged in lending	5.8	5.3	5.2	5.0	5.0	4.6	4.5	4.5
FS.9	investment firms	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Banking sector									
BS.1	Bank assets / GDP (%)	114.6	126.1	124.6	122.3	126.4	138.8	142.9	142.7
BS.2	Assets structure (% , end of period)								
BS.3	loans to central bank	8.3	12.9	12.9	15.7	21.5	32.8	32.6	32.4
BS.4	interbank loans	9.6	9.1	6.3	4.4	3.6	0.4	0.7	0.5
BS.5	client loans	50.5	50.0	50.8	52.1	50.9	45.3	44.5	45.1
BS.6	bond holdings	24.1	21.7	22.6	20.9	18.1	13.5	13.5	13.9
BS.7	– government bonds	18.3	15.8	16.4	14.2	11.4	7.9	8.0	8.4
BS.8	– Czech government bonds	16.9	14.6	14.9	12.6	10.0	7.0	7.2	7.6
BS.9	other	7.5	6.3	7.3	6.9	5.9	8.1	8.6	8.1
BS.10	Liabilities structure (% , end of period)								
BS.11	liabilities to central bank	0.2	0.0	0.1	0.2	0.2	0.3	0.2	0.2
BS.12	interbank deposits	8.9	11.3	10.4	7.4	10.2	16.2	17.0	17.5
BS.13	client deposits	69.1	67.8	66.9	66.5	65.3	61.2	61.7	61.0
BS.14	bonds issued	8.1	8.3	8.7	12.0	11.5	11.1	10.1	10.2
BS.15	other	13.7	12.5	14.0	13.9	12.8	11.2	11.0	10.5
BS.16	Client loans / client deposits (%)	73.1	73.8	75.8	78.0	77.8	74.0	72.2	73.1
BS.17	Sectoral breakdown of total loans (%)								
BS.18	non-financial corporations	35.4	34.5	33.2	33.1	33.1	33.1	33.4	34.5
BS.19	households	44.3	43.4	43.3	44.4	45.1	46.6	47.3	48.3
BS.20	sole traders	1.5	1.5	1.3	1.3	1.2	1.3	1.3	1.4
BS.21	others (including non-residents)	18.8	20.6	22.1	21.2	20.6	19.0	18.0	15.8
BS.22	Growth in loans (% , end of period, year on year):								
BS.23	total	2.4	6.5	4.8	5.6	6.0	4.6	4.1	4.9
BS.24	non-financial corporations	0.9	3.8	0.9	5.3	6.0	4.7	2.5	4.2
BS.25	– real estate activity (NACE L)	0.7	6.3	3.6	5.6	12.1	-1.7	-3.0	1.3
BS.26	households	3.6	4.5	4.5	8.2	7.7	8.0	7.9	7.7
BS.27	– loans for house purchase	4.8	5.2	5.6	8.0	8.4	9.0	8.6	8.3
BS.28	– consumer credit	-0.7	0.4	-0.6	8.9	4.5	4.1	4.6	5.5
BS.29	sole traders	-5.0	1.0	-4.0	0.0	4.4	10.1	10.8	9.6
BS.30	Non-performing loans / total loans (%):								
BS.31	total	6.0	5.9	6.1	5.8	4.8	4.0	3.6	3.4
BS.32	non-financial corporations	7.4	7.2	6.7	5.7	5.2	4.2	3.9	3.6
BS.33	households	5.1	5.0	4.7	4.0	3.2	2.5	2.5	2.3
BS.34	– loans for house purchase	3.4	3.3	3.1	2.6	2.0	1.8	1.9	1.7
BS.35	– consumer credit	12.3	12.2	12.0	11.1	8.9	6.0	5.8	5.5
BS.36	sole traders	13.7	13.0	12.6	11.0	8.6	6.7	6.3	6.0
BS.37	Coverage of non-performing loans by provisions (%)	53.8	55.0	55.6	54.6	56.3	55.0	55.9	57.6
BS.38	Capital ratio (%)	16.4	17.1	18.0	18.4	18.4	19.3	18.7	18.8
BS.39	Tier 1 capital ratio (%)	15.7	16.5	17.5	17.9	17.9	18.7	18.1	18.3
BS.40	Leverage (assets as a multiple of Tier 1)	15.0	14.3	13.6	13.2	13.9	15.3	16.0	15.8
BS.41	Leverage ratio (approximation of Basel III definition, Tier 1 / exposures)	n.a.	n.a.	7.2	7.6	7.2	6.3	6.2	6.3
BS.42	Return on assets (%)	1.4	1.3	1.2	1.2	1.3	1.1	0.9	1.0
BS.43	Return on Tier 1 (%)	21.8	18.6	16.8	16.7	17.7	16.9	15.9	19.1
BS.44	Quick assets / total assets (%)	29.1	30.6	31.0	32.0	34.4	41.9	42.0	42.1
BS.45	Quick assets / client deposits (%)	42.5	45.6	46.4	48.3	52.8	68.4	68.2	68.8
BS.46	Net external position of banking sector (% of GDP)	5.6	2.5	0.6	-2.2	-7.8	-21.4	-21.7	-23.4
BS.47	Banking sector external debt / banking sector total assets (%)	10.5	12.6	14.5	16.0	18.8	25.8	24.8	26.2

* Act No. 240/2013 Coll., on management companies and investment firms, which introduced the term investment funds, was passed in 2013. Investment funds comprise collective investment funds and funds for qualified investors.

** The calculation does not include CEB and CMGDB loans.

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FINANCIAL STABILITY INDICATORS – PART 3

	2012	2013	2014	2015	2016	2017	2018		
							Q1	Q2	Q3
Non-bank financial corporations									
Nl.1	Share in financial sector assets (%)	21.7	21.0	21.5	21.9	21.8	21.0	20.5	20.6
Insurance companies*									
Nl.2	Premiums written / GDP (%)	3.7	3.8	3.6	3.3	3.1	3.0	3.0	3.0
Nl.3	Ratio of eligible own funds to the solvency capital requirement (in %)	n.a.	n.a.	n.a.	n.a.	238.1	230.0	229.4	225.7
Nl.4	Change in financial investment of insurance companies (% , year on year)	7.4	1.3	2.2	-1.6	0.9	4.2	-0.5	-0.8
Nl.5	Return on equity of insurance companies (%)	17.3	16.7	16.4	17.0	15.7	14.7	15.9	18.4
Nl.6	Claim settlement costs / net technical provisions (life, %)	16.4	17.7	20.0	17.8	15.1	14.4	14.3	14.1
Nl.7	Claim settlement costs / net technical provisions (non-life, %)	51.4	54.6	51.5	55.6	58.1	59.4	59.5	57.7
Pension management companies (PMCs) and PMC funds									
Nl.8	Change in assets of funds managed by PMCs (%)	10.4	8.4	14.1	10.0	7.8	10.8	2.9	1.2
Nl.9	Nominal change in value of assets of PMC funds**	7.0	-0.1	3.3	1.0	0.3	3.6	1.2	-0.5
Investment funds									
Nl.10	Growth in net assets (= equity; year on year, %)	25.3	20.5	19.6	18.5	17.7	20.9	17.9	16.6
Non-bank financial corporations engaged in lending									
Nl.11	Growth in loans from non-bank financial corporations engaged in lending (%):***								
Nl.12	total	-3.6	-4.1	3.3	0.8	8.9	8.2	6.8	6.0
Nl.13	households	-2.5	-2.3	5.0	-26.4	7.0	0.7	2.8	3.3
Nl.14	non-financial corporations	-3.1	-4.4	3.7	11.4	10.1	10.0	7.9	6.5

* The indicators cover domestic insurance companies (excluding EGAP) and branches of foreign insurance companies.

** Change in the assets of pension funds adjusted for contributions and benefits. The figure for 2017 is distorted by an increase in the balance sheet caused by the use of cross-currency repos to manage foreign exchange risk.

*** 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.

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