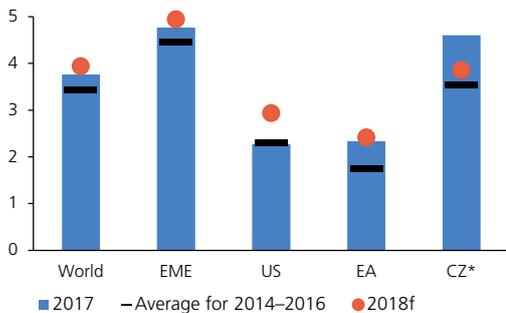


CHART II.1

**Economic growth in selected countries**

(annual real GDP growth in %)



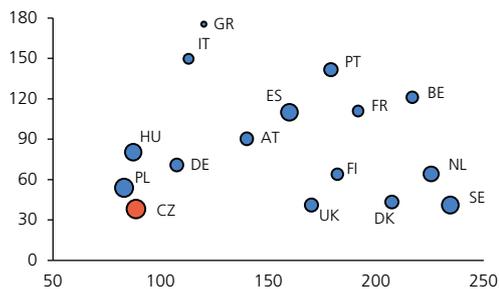
Source: IMF (World Economic Outlook, April 2018), CNB

Note: f = forecast; \* The forecast for the Czech Republic is based on the CNB forecast published in Inflation Report II/2018.

CHART II.2

**Private and government debt in selected EU countries in 2017**

(% of GDP; x-axis: private debt; y-axis: government debt; size of bubble: average real GDP growth in 2015–2017)



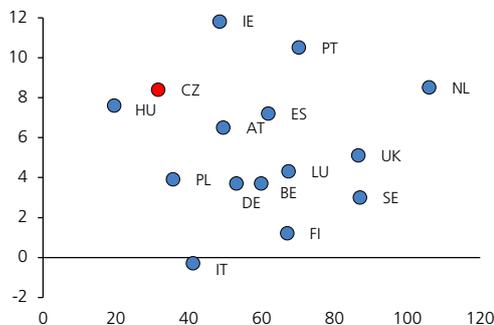
Source: BIS, CNB

Note: Debt is the sum of all credit provided by domestic banks, nonbanks 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 graph may differ from those reported by other institutions. The 2017 debt figure is as of 2017 Q3.

CHART II.3

**Property price growth and household debt in selected EU countries in 2017**

(x-axis: household debt in % of GDP; y-axis: year-on-year property price growth in %)



Source: Eurostat, BIS

Note: Property price growth as of 2017 Q4; household debt as of 2017 Q3.

## 2 THE REAL ECONOMY AND FINANCIAL MARKETS

## 2.1 THE MACROECONOMIC AND FINANCIAL ENVIRONMENT

The world economy is continuing to grow and the growth outlooks are also optimistic. Globally increasing optimism and ongoing loose financial conditions are encouraging increased risk-taking with regard to investment in financial assets and property, prices of which are still rising. In many countries, these prices have exceeded levels consistent with the ongoing improvement in macroeconomic conditions. For these and other reasons, the risk of a sudden repricing across financial assets remains high. The euro area economy also grew at a solid pace, with persisting differences across the euro area countries. The very relaxed financial conditions are pushing some euro area countries further into a growth phase of the financial cycle, while in other countries they are still postponing the impacts of high indebtedness and possibly also poor quality of banks' loan portfolios. Partly for this reason, the ECB's monetary policy remains highly accommodative.

The real growth of the Czech economy rose to 4.6% in 2017 and is above its potential. Since August 2017, the CNB has increased its key monetary policy rate in three steps to 0.75%. However, client interest rates have followed it only partially some time later. The financial conditions in the Czech economy remain relaxed, private sector debt has increased and prices of koruna financial assets have risen further. However, the results of a sensitivity analysis focused on the risk of asset repricing so far do not indicate a systemic dimension.

## 2.1.1 The External Environment

**The world economy is developing favourably...**

The world economy recorded robust economic growth in 2017 (see Chart II.1). The outlooks also remain optimistic. According to available forecasts, the annual growth rate of real GDP will accelerate to 4% globally and remain above 2% in advanced economies. GDP growth in the euro area reached 2.3% in 2017, up by 0.5 pp on a year earlier. A similar rate of growth is expected in 2018.

**...but this holds truly only for part of the EU countries**

Economic growth remains mixed across the EU countries.<sup>1</sup> The economic recovery is particularly weak in countries with high government and private debt levels (see Chart II.2). The different economic dynamics are reflected in different risks to financial stability in individual countries

<sup>1</sup> Germany – the biggest euro area economy – grew by 2.2% in real terms in 2017. The three fastest-growing euro area economies were Ireland (7.8%), Malta (6.6%) and Slovenia (5.0%). By contrast, the three slowest-growing ones were Greece (1.4%), Italy (1.5%) and Belgium (1.7%). Eurostat: *Euro-indicators. News Release, 7 March 2018.* <http://ec.europa.eu/eurostat/documents/2995521/8718257/2-07032018-AP-EN.pdf/99862cd5-dba6-49fa-bb2a-aa5395fa8b1b>.

TABLE II.1

Table 1: Potential sources of risks to financial stability in selected countries from the perspective of national authorities

	BE	UK	DE	AT	DK	FI	SE	SK	NO	NL	CZ	HU	PL	ES	FR	IT
Bank profitability	High	Moderate	Moderate	Moderate	Low	Low	Low	Moderate	Low	Low	Low	Low	Moderate	Moderate	Moderate	High
Sovereign risk	Moderate	Moderate	Low	Moderate	Moderate	Moderate	High									
Bank loan portfolio quality	Low	Moderate	Low	Low	Moderate	Low	Low	Low	Moderate							
Pension fund sector stability	Low	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low							
Insurance company sector stability	Low	Moderate	Moderate	Low	Low	Low	Low	Moderate	Moderate	Moderate	Low	Low	Low	Moderate	Moderate	Low
Macroeconomic environment	Low	Moderate	Low	Low	Low	Low	Moderate	Moderate	Moderate	Moderate	Low	Low	Low	Low	Moderate	Moderate
NFC debt sustainability	Low	Low	Low	Low	Low	Moderate	Moderate	Moderate	Moderate	Low	Low	Low	Low	Low	Moderate	Moderate
Excessive credit growth	Moderate	Moderate	Low	Low	Moderate	Moderate	Moderate	High	Moderate	Low	Moderate	Low	Low	Low	Low	Low
Residential property prices	High	Moderate	Moderate	Moderate	Moderate	Moderate	High	High	High	Moderate	Moderate	Low	Low	Low	Low	Low
Household debt sustainability	Moderate	Moderate	Low	Low	Low	Moderate	High	High	High	High	Low	Low	Low	Low	Low	Low

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 indicators used in the ESRB Risk Dashboard. Information on the configuration of macroprudential instruments in European countries is presented in Table V.4 in this FSR. The ordering of countries and risks in the table is obtained using a visual contrast-optimising algorithm.

(see Table II.1). In some countries, still relaxed financial conditions are postponing the impacts of high indebtedness and possibly also poor quality of banks' loan portfolios. In other countries, they are contributing to a shift into the growth phase of the financial cycle, characterised by increased credit growth and rapid growth in property prices (see Chart II.3). In the first group of countries, a potential negative macrofinancial shock could interrupt the ongoing recovery process, while in the second group of countries it could cause the materialisation of risks that built up in the growth phase of the financial cycle.

### The monetary conditions remain very easy...

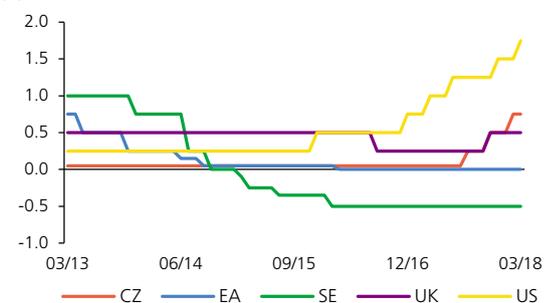
Monetary policy rates in Europe are still very low, even negative in some countries, including the euro area (deposit facility). With reference to the inflation outlook being markedly below the inflation target, the ECB announced in October 2017 that its asset purchase programme would continue at a monthly pace of EUR 30 billion until the end of September 2018. As a result of this programme, 24% of the euro-denominated government bonds of the euro area countries were held on ESCB balance sheets by March 2018. Eurosystem demand for government bonds is keeping yields low. This is reflected in a low level of interest rates on loans. Even in countries where monetary policy normalisation has already started (see Chart II.4), the increase in short-term money market rates has not been fully reflected in a corresponding increase in long-term yields and interest rates (see Chart II.5).

### ...and are contributing to global growth in asset prices...

The low interest rates are reducing issuers' debt service costs. However, they are also prompting non-financial corporations and households to take on greater risks. In an environment of investment optimism, risk premia have declined for some asset classes, leading to a rise in their

CHART II.4

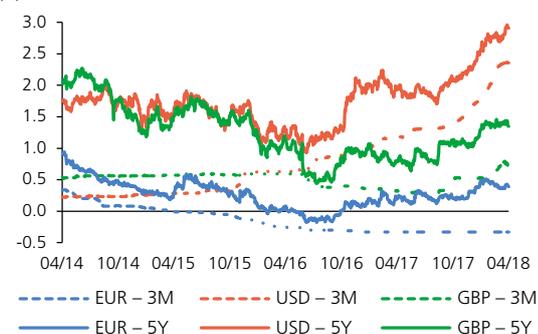
Main monetary policy rates of selected central banks (%)



Source: Thomson Reuters

CHART II.5

Long-term and short-term interest rates for selected currencies (%)



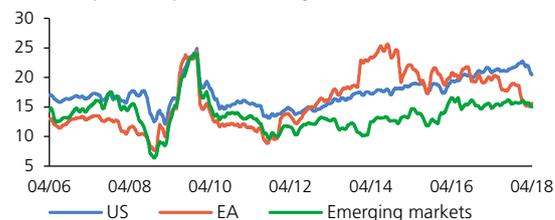
Source: Bloomberg, CNB

Note: The three-month maturity is based on the money market rate. The five-year rate is based on interest rate swaps.

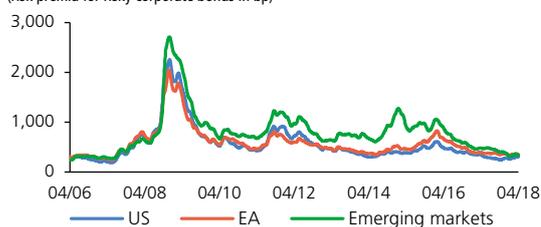
CHART II.6

### Indicators of stock and bond price adequacy and market volatility

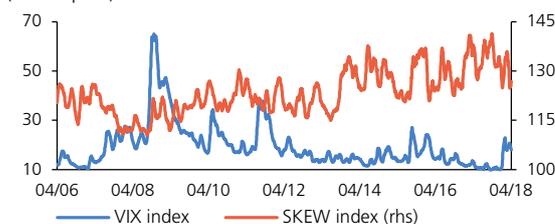
(market stock price in multiples of annual earnings)



(risk premia for risky corporate bonds in bp)



(indices in points)

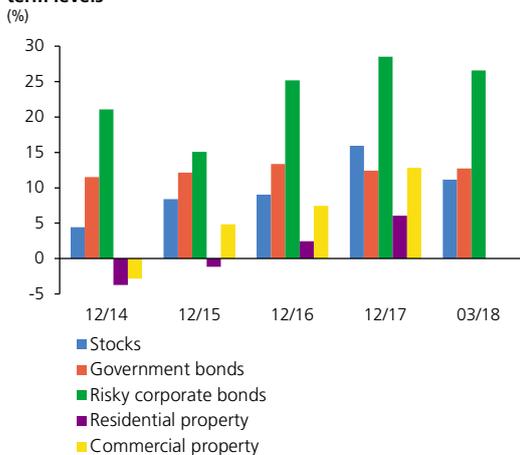


Source: Bloomberg, CNB

Note: Stocks – SP500 for US, Euro Stoxx 50 for EA and MSCI Emerging for EM. 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.

CHART II.7

### Overvaluation of selected assets in the EU relative to long-term levels



Source: Bloomberg, ECB, Eurostat, CNB

Note: Risky corporate bonds are speculative-grade bonds (BB+ or lower). Overvaluation of bond prices is obtained by comparing yields with the long-term average since 2000 for a bond with five-year duration. Overvaluation of other types of assets is obtained from their prices using an HP filter with  $\lambda = 10^7$ . The latest data available for residential and commercial property are for 12/17.

prices. In many countries, these prices have already exceeded levels consistent with fundamentals. Risky corporate bonds have recorded a further decline in risk premia to the levels observed in the years before the financial crisis (see Chart II.6). Stock prices are high not only in historical comparison, but also relative to expected corporate earnings.

#### ...so the risk of a sudden drop in asset prices remains high

A sudden and disorderly repricing of risk premia on financial markets has been one of the biggest risks to financial stability in the EU in the last few years.<sup>2</sup> A short-lived but relatively significant drop occurred in early February 2018, with stock markets falling by 10.2% in the USA and 7.4% in the euro area between 26 January and 8 February. The drop was due to concerns about a faster and more forceful monetary policy tightening by the Federal Reserve and the Bank of England.<sup>3</sup> The value of the VIX index tripled in this period. Growing market concerns about a further sharp adjustment of market prices are indicated by the SKEW index. This index reflects investors' activity in hedging their portfolios against exceptionally adverse events (*tail risk*) and is now at high levels. In addition to expectations regarding monetary policy normalisation, a sudden and disorderly adjustment of market prices could be triggered by a number of other stimuli, such as adverse geopolitical events or changes in US trade policy.<sup>4</sup> If the value of global assets were to fall further, for example to their long-term average, the impact could be significant and probably also global (see Chart II.7). It could also adversely affect the Czech financial system (see Chart II.19) and domestic economic activity.

## 2.1.2 The Domestic Environment

### The Czech economy is above its potential output level

Annual GDP growth in the Czech economy reached 4.6% in 2017 (see Chart II.1). This was mainly due to robust household consumption and fixed investment. According to available estimates, the Czech economy grew at a pace around 0.5–1.5 pp faster than that consistent with its potential growth. This was reflected above all on the labour market, where excess labour demand exerted upward pressure on wages and squeezed corporate profitability (see section 2.3 for details). Households' disposable income increased accordingly. The improvement in their financial situation was reflected most strongly in a rise in property prices (see sections 2.2 and 2.4).

### The optimism of domestic economic agents is rising

The overheating Czech economy is boosting overall confidence in the sustainability of the current situation (see Chart II.8). However, the optimistic expectations could foster riskier behaviour by economic agents,

2 ESRB Risk Dashboard. <https://www.esrb.europa.eu/pub/rd/html/index.en.html>.

3 The US Fed increased its monetary policy rate three times during 2017 and then made an additional hike in March 2018. Markets expect two further increases to come before the end of the year, taking the rate to 2.1%. In 2017, the Bank of England raised its key policy rate to 0.50% and kept the stock of government and corporate bonds purchase unchanged.

4 ECB: Financial Stability Review, November 2017.

and prompt them to accept a higher level of debt or carry out riskier projects. The CNB's macroeconomic forecast<sup>5</sup> of May 2018 expects the growth of the Czech economy to moderate. However, it should continue to exceed 3% this year and the next.

### The real convergence of the Czech economy is accelerating and the rising debt remains low relative to GDP...

Following quite a sharp drop in 2009–2012, the Czech economy returned to convergence towards the economic level of Germany in terms of GDP per capita at purchasing power parity (see Chart II.9). The real convergence of the Czech economy was accompanied by convergence towards the “European” level of private non-financial sector debt (see Charts II.10 and II.2). In 2017, the debt of the private non-financial sector in the Czech Republic reached almost 90% of GDP, up by 20 pp compared to 2007. This debt ratio is still very low relative to the euro area average (160%). The same goes when one compares the level of private non-financial sector debt in selected euro area countries when they were at a similar level of economic development as the Czech Republic is now (see Chart II.11).

### ...but is higher relative to national income

Compared to many other developed countries, the Czech economy has long had a primary income deficit vis-à-vis non-residents. In other words, part of the income generated in the Czech economy does not remain there. The ratio of gross national income to GDP is among the lowest in the EU (see Chart II.12). The debt-to-GNI ratio is thus higher than the debt-to-GDP ratio, although the gap has not been widening in recent years. If growth in debt in the Czech Republic is not accompanied in the future by commensurate growth in national income, the economy could become more vulnerable to price, income or interest rate shocks.

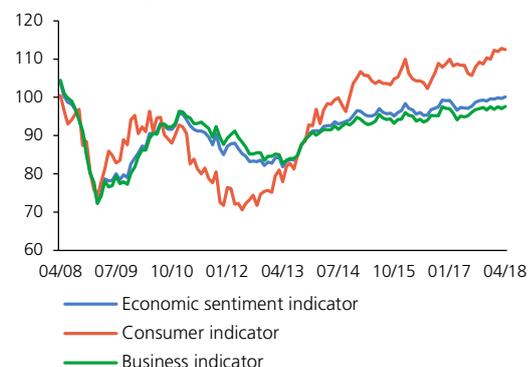
### The monetary policy tightening by the CNB was only partly reflected in client rates

The CNB increased its key monetary policy rate twice in 2017. It continued to normalise monetary policy in early 2018, raising its key rate to 0.75% on 2 February 2018 (see Chart II.4). The CNB forecast published in Inflation Report II/2018 assumes that the monetary policy rate will rise further from late 2018/early 2019 onwards, although its growth may be slowed by continued very accommodative ECB policy. However, client interest rates and yields on securities remain low in the Czech economy (see Chart II.13) and have followed the growth in the key policy rate only partially some time later (see Chart II.14). The biggest reaction to the changes in monetary policy rates (growth of 70 bp) between 30 June 2017 and 31 March 2018 was recorded for government bonds (the five-year government bond yield rose by 90 bp). By contrast, the change in rates on loans to households for house purchase and loans to non-financial corporations was only modest in this period (growth of 26 bp and 30 bp respectively).

CHART II.8

#### Confidence indicators for consumers and non-financial corporations

(basic index to the average of 2005)

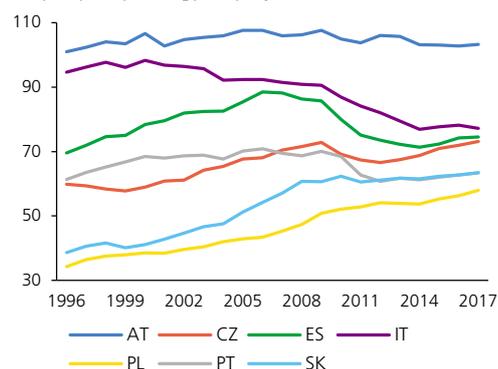


Source: CZSO

CHART II.9

#### Real convergence of selected countries towards Germany

(GDP per capita at purchasing power parity; DE = 100)



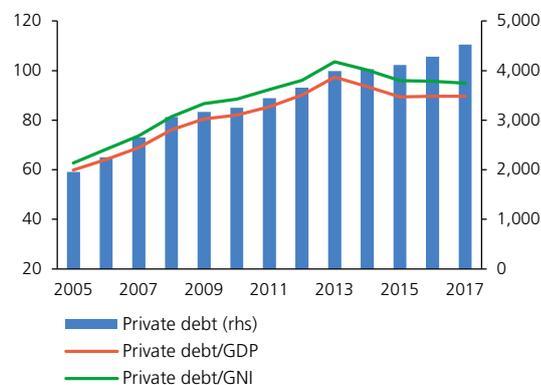
Source: Eurostat, CNB

Note: The figure for 2017 is estimated using the unit of purchasing power parity for 2016.

CHART II.10

#### Private non-financial sector debt in the Czech Republic

(%; right-hand scale: CZK billions)



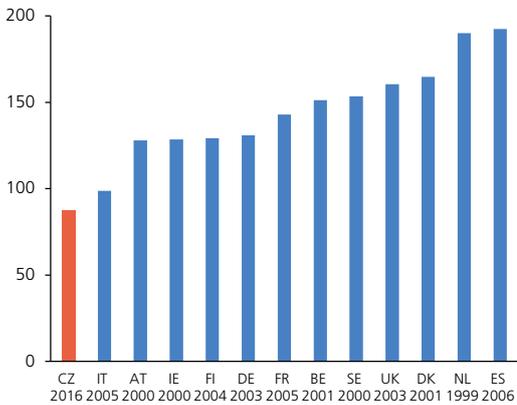
Source: CNB, CZSO, CNB

Note: The private sector comprises households, non-financial corporations and NPISHs.

<sup>5</sup> CNB: Inflation Report II/2018, May 2018.

CHART II.11

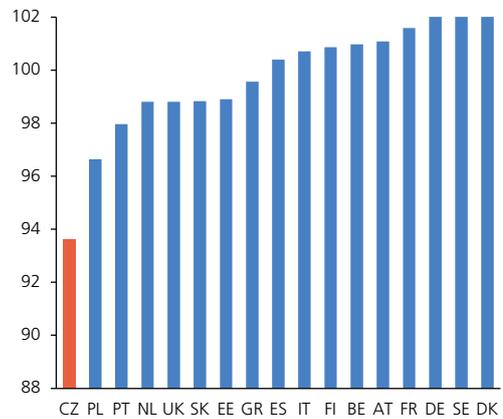
**Private non-financial sector debt-to-GDP ratios for similar levels of economic development**  
(%)



Source: Eurostat, BIS, CNB  
 Note: The chart shows the private non-financial sector debt ratio in the year when the given country first attained the same GDP per capita level as the Czech Republic in 2016 (USD 25,600 in PPS). The year in which that level was reached is given below countries' names.

CHART II.12

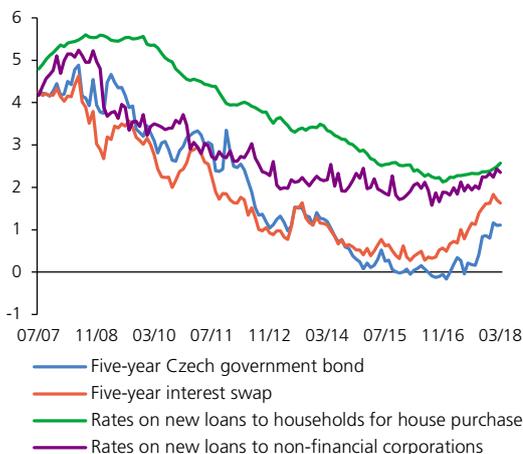
**GNI-to-GDP ratios in selected European countries in 2016**  
(%)



Source: Eurostat, CNB

CHART II.13

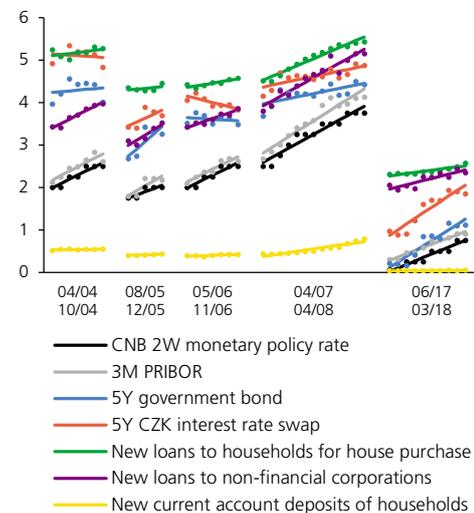
**Interest rates in the Czech Republic**  
(monthly averages in %)



Source: Bloomberg, CNB

CHART II.14

**Selected interest rates and yields during periods of growth in the CNB's policy rate**  
(%)



Source: CNB  
 Note: The x-axis shows the periods in which the CNB changed its monetary policy rate. In addition to the month in which the rate was changed, the two months before and after the rate change are presented in order to take expectations and the gradual pass-through of the rate change into account. The lines show the trend fits of the yields and rates (the dots). Month-end values are used except for client rates, where monthly averages are used instead.

### Yields on Czech government bonds of all maturities have turned positive again

In 2017, yields on Czech government securities were affected, in addition to the change in the CNB's policy rates, mainly by expectations regarding the exit from the exchange rate commitment. The government bond yield curve moved upwards by 97–180 bp during 2017. In the first few months of 2018, however, the increase halted and at the end of March yields ranged between 0.44% (1Y) and 2.33% (15Y). The onset of monetary policy normalisation led to a rise in the risk-neutral yield and the term premium<sup>6</sup> for yields of all maturities. The portfolio component reflected a shift in foreign investors' interest from short-term to medium-term bonds. For this reason, the one-year government bond yield rose the fastest of all maturities (see Charts II.15 and II.16).

### The CNB assesses the potential impacts of a change in yields using stress tests

According to the CNB's *Baseline Scenario* (see section 2.1.3), the monetary policy rate and market rates should continue to go up over the next three years in line with the macroeconomic forecast published in Inflation Report I/2018 (see Chart IV.23). Five-year interest rate swaps and Czech government bond yields are expected to rise accordingly (see Chart II.17). The *Adverse Scenario* for the Czech economy assumes a return to recession and a decline in monetary policy rates accompanied by a drop in interest rate swaps. As regards Czech government bonds, however, growth in their yields is consistent with the *Adverse Scenario*, as an outflow of foreign holders of Czech government bonds and a related marked repricing of risk premia is assumed. The assumed decrease in the risk-neutral yield reflecting the decline in monetary policy rates would be outweighed by growth in the other components of the overall yield.

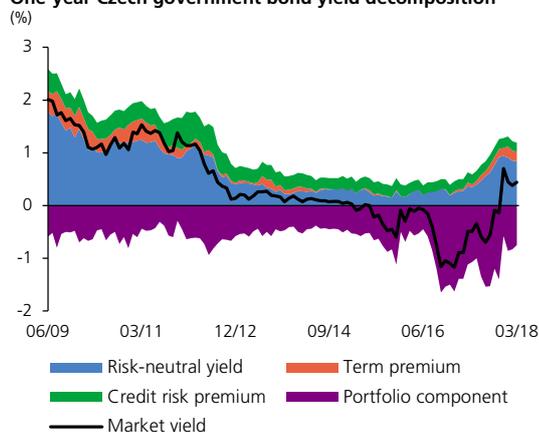
### Domestic financial institutions are exposed to a risk of a price correction on financial markets...

In line with global developments, the relaxed domestic financial conditions and financial market optimism led to further growth in asset prices in 2017 (see also section 2.1.1). The low interest rate environment meanwhile prompted financial institutions to reallocate part of their funds from government bonds to riskier assets such as corporate bonds, shares and property (see Chart II.18). The combination of these two effects thus gives rise to a risk of a correction of financial asset prices stemming from repricing of risk premia, even in the Czech environment.

6 The methodology used to decompose the Czech government bond yield is described in detail in the article *Decomposition of the Czech government bond yield curve* in Financial Stability Report 2016/2017. The yield is decomposed into four components. (1) The risk-neutral yield reflects expectations about future monetary policy and economic developments. (2) The term premium relates to the maturity of the bond and is compensation for interest rate risk. (3) The credit risk premium reflects the risk that bond coupons and principal will not be paid on time and/or in full. (4) The portfolio component is the residual (the yield minus the previous three components) and mainly reflects demand for bonds as an investment asset.

CHART II.15

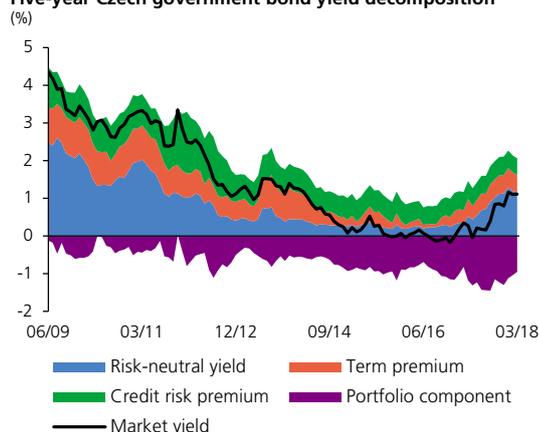
#### One-year Czech government bond yield decomposition



Source: CNB

CHART II.16

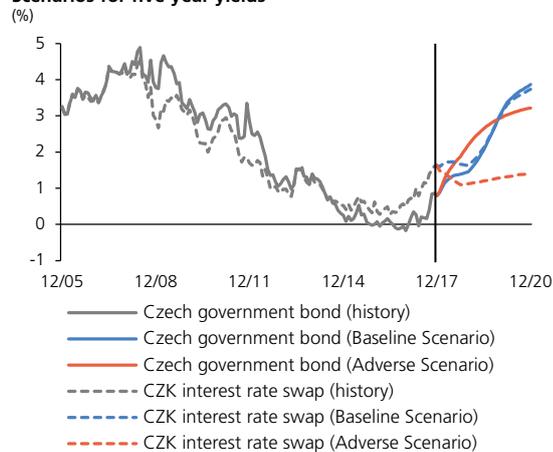
#### Five-year Czech government bond yield decomposition



Source: CNB

CHART II.17

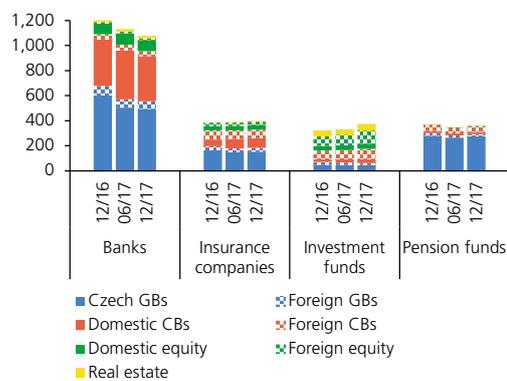
#### Scenarios for five-year yields



Source: CNB

CHART II.18

### Investment assets of domestic financial institutions (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.

### ...pertaining to all segments and investment asset classes

Banks are the biggest domestic institutional investors. However, the share of security and share holdings in the banking sector's total assets stands at 15%. In the case of other institutional investors, securities and other investment assets account for the bulk of their balance sheets (around 80%). The investment assets of banks, insurance companies and pension funds consist mainly of government and corporate bonds. In the case of investment funds, equity and real estate exposures also play an important role (see Chart II.18). Marketable share portfolios are made up mainly of foreign instruments, which are regarded as overvalued (see Chart II.7). As for government bonds, domestic securities dominate balance sheets. Although yields on Czech government securities increased in 2017 (see Charts II.15 and II.16), the risk of a repricing of their risk premia and a related drop in prices remains significant. The main reason is still non-residents' relatively high share in Czech government bond holdings (which stood at 35% as of 31 March 2018 according to Ministry of Finance statistics). The risk premia repricing risk also pertains to corporate bonds, whose importance in investment portfolios rose further during 2017 (see Chart II.18).

TABLE II.2

### Parameters of the sensitivity analysis

	CNB sensitivity analysis		ECB analysis (2017)	
	CZ	Other countries	DE/EU	US
Equities (fall in prices in %)	23	23	30	23
1Y GB yield (rise in bp)	85	31	68	22
10Y GB yield (rise in bp)	159	113	89	162
CB credit premium (rise in bp)	59	59	80	-
Real estate (fall in prices in %)	14	14	12	-

Source: CNB, ECB

Note: GB = government bond, CB = corporate bond. The parameter values used in the ECB (Financial Stability Review, November 2017) sensitivity analysis are given for comparison.

### The CNB assessed the impacts of a sudden repricing using a sensitivity analysis

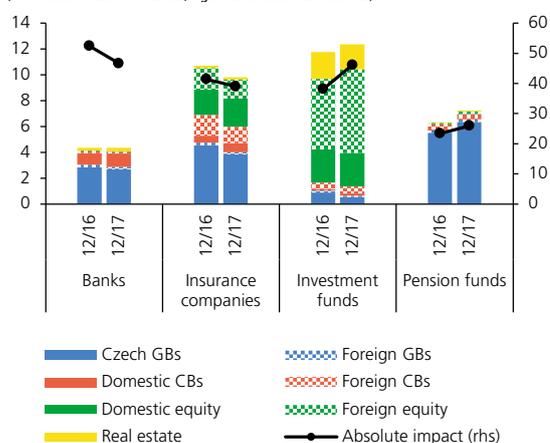
A sensitivity analysis was carried out to quantify the potential impact of a price correction on financial markets. The analysis goes beyond the traditional stress tests of selected financial institutions (see section 4) and focuses on prices of bonds, equities, investments in investment funds and property held by all domestic institutional investors (see Table II.2).<sup>7</sup> The decrease in equity prices considered in the analysis corresponded to 1.5 times the estimated global overvaluation (see Chart II.7). A return of prices to their equilibrium levels followed by a further drop owing to high risk aversion on markets is therefore assumed. For bond yields, the sensitivity analysis assumes a modest rise in average expected monetary policy rates, a return of the term premium to average levels and a rise in the credit premium. For Czech government bonds, an increase in the portfolio component of yields due to a partial outflow of foreign investors was additionally assumed. For real estate, the sensitivity analysis assumed a drop in prices corresponding to the estimated overvaluation (see section 2.2).

### The price correction would not cause systemic risks to emerge

According to the sensitivity analysis, the impact of repricing on the balance sheets of the sub-sectors of the domestic financial market as of

CHART II.19

### 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.

<sup>7</sup> In the case of banks, the analysis only covered assets marked to market, with the exception of property exposures, which were included regardless of their marketability. For other segments, all investment assets were included. As for investment fund shares, the look-through approach was applied directly or indirectly to the calculation of investment assets through approximation. This means that shares were assigned to financial asset classes (bonds, shares and other equity, property) depending on the asset structure or investment orientation of each investment fund. The analysis did not account for exchange rate movements, the effect of hedging and changes to insurance company technical provisions. The sensitivity analysis aimed to identify the most vulnerable segments and asset classes, not to quantify exactly the impacts of potential shocks.

the end of 2017 would be between CZK 26 billion (pension funds) and CZK 47 billion (banks). That would mean a relative decrease in the value of investment assets of 4.3% for banks, 7.2% for pension funds, 9.8% for insurance companies and 12.3% for investment funds (see Chart II.19). In terms of the impact on individual institutions, the decline in the prices of the assets tested would not alone represent a major disruption to financial stability. In the event of considerable market uncertainty and limited market liquidity, however, such a decline could contribute to the creation or multiplication of systemic risk in the form of mass sales of assets (see section 3.4).

### The repricing would have the largest effect on the value of share portfolios and Czech government bond portfolios

The stock market slump would have the biggest effect on the assets of investment funds (a drop of CZK 34 billion), which are the biggest domestic investors in shares (see Chart II.18). The equity repricing would also hit domestic insurance companies hard. The rise in Czech government bond yields would have the largest impact on insurance companies and pension funds, partly due to the longer average residual maturity of their Czech government bond portfolios (more than seven years; see Chart II.20) compared to investment funds and banks (four to five years).<sup>8</sup> The repricing of domestic corporate bonds would hit banks the hardest given their large holdings and relatively long residual maturity. The repricing of foreign corporate bonds would have a similar effect on insurance companies and pension funds. The repricing of property would have a material impact on investment funds, which would lose CZK 7.1 billion on their real estate investments as a result of the shock. In year-on-year comparison, the relative impact increased for investment and pension funds. In the case of investment funds, the stronger impact was due to a further rise in the importance of shares in their portfolios. For pension funds, the larger effect of the repricing in year-on-year terms was linked with greater sensitivity of the Czech government bond portfolio due to a rise in its average residual maturity.

### 2.1.3 Alternative Economic Scenarios

#### In the *Baseline Scenario* the growth in economic activity continues...

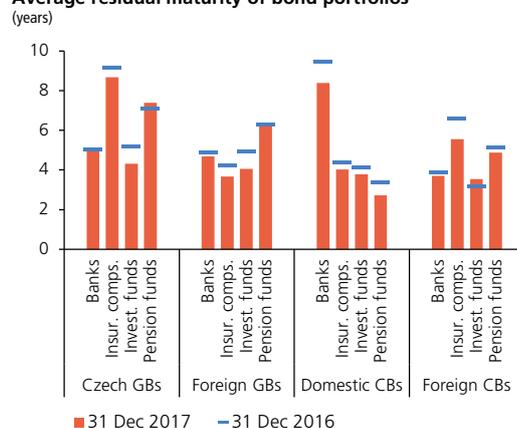
A *Baseline Scenario* based on the CNB's macroeconomic forecast published in Inflation Report I/2018<sup>9</sup> was prepared for the stress tests contained in this Report. This forecast expects economic growth of 3.6% this year. Annual GDP growth will continue to exceed 3% in the next two

<sup>8</sup> The distribution of average residual maturity in the financial sector is consistent with the distribution of the duration used in the calculation of the impacts of bond portfolio repricing.

<sup>9</sup> In its first two years, the *Baseline Scenario* of the stress tests of banks is based on the CNB's official macroeconomic forecast published in Inflation Report I/2018, which was approved by the CNB Bank Board on 8 February 2018. The *Baseline Scenario* for the third year and the *Adverse Scenario* were created solely for the purposes of stress testing the banking sector. Therefore, neither the *Baseline Scenario* beyond the horizon of the forecast published in Inflation Report I/2018, nor the *Adverse Scenario* is an official forecast of the CNB.

CHART II.20

#### Average residual maturity of bond portfolios (years)

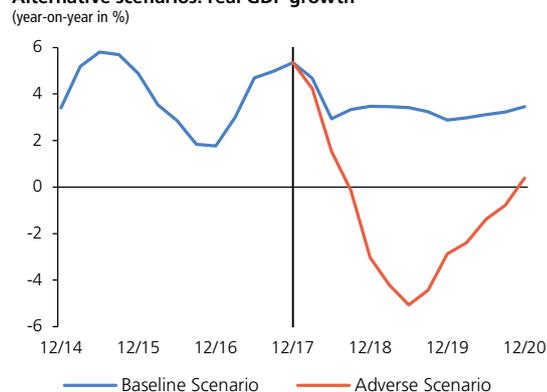


Source: CNB

Note: Note: GBs = government bonds, CBs = corporate bonds including mortgage bonds (MBs). The high average residual maturity of Czech CBs held by banks is due to the high volume of long-maturity MBs held by banks in domestic financial groups.

CHART II.21

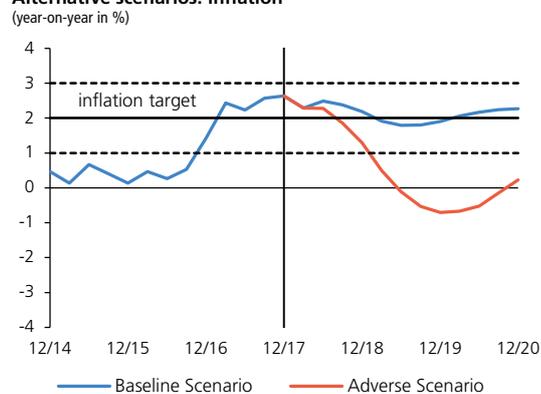
#### Alternative scenarios: real GDP growth (year-on-year in %)



Source: CNB

CHART II.22

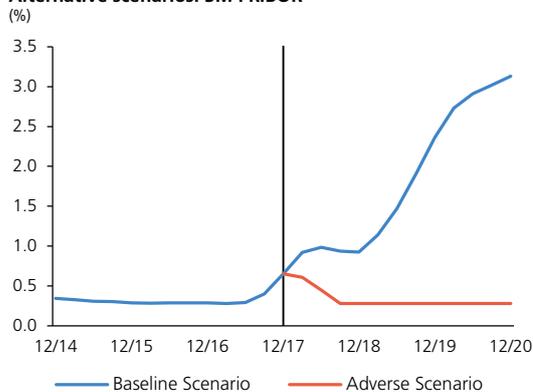
#### Alternative scenarios: inflation (year-on-year in %)



Source: CNB

CHART II.23

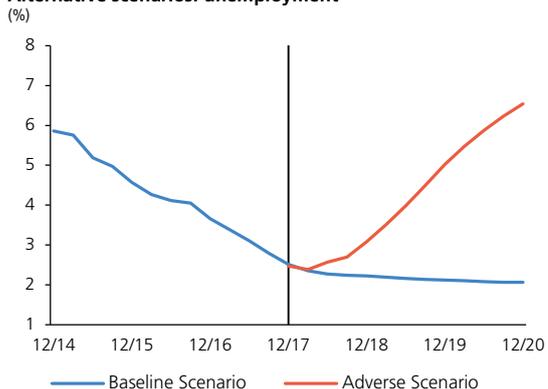
## Alternative scenarios: 3M PRIBOR



Source: CNB

CHART II.24

## Alternative scenarios: unemployment



Source: CNB

years. Increasing investment and continued economic growth will be accompanied by rising wages, and the general unemployment rate will remain at the current low levels over the entire the scenario horizon. Inflation will be around the 2% inflation target. Consistent with the forecast is a rise in market interest rates.

### ...while in the *Adverse Scenario* the Czech economy gets into a V-shaped recession

The *Adverse Scenario* assumes a marked drop in economic activity in Europe. The export-oriented Czech economy falls into a recession owing to a decrease in external demand. This causes pessimistic expectations about future economic developments, a downturn in household consumption and deferral of investment by non-financial corporations. The combination of a downturn in external demand and then also in domestic demand causes a sizeable and long-lasting decline in economic activity in the Czech Republic and results in a V-shaped recession. The recession – lasting nine quarters – leads to a drop in annual real GDP growth from the current 5% to -5%. A debt deflation scenario simultaneously materialises, with deflation leading to real growth in private sector debt as a result of declining economic activity, rising unemployment and falling wages. In this adverse economic situation, the funds of households and non-financial corporations are gradually exhausted. Coupled with a rise in real debt, this causes their debt servicing ability to worsen significantly. The problems in the real economy also affect the financial sector, which records considerable credit losses and a marked drop in profits. Monetary policy remains easy, the three-month PRIBOR stays very low over the entire test horizon and the exchange rate weakens sharply. However, long-term bond yields surge as global risk aversion increases and the quality of some assets is re-assessed. At the same time, banks tighten their view of credit risk and increase their risk mark-ups on interest rates on new loans, which rise to a much higher level also due to an increase in long-term interest rates. The rise in debt service together with the other impacts of the recession increase the default rate on loans to both households and non-financial corporations.

Charts IV.21–24 show the evolution of the main macroeconomic indicators of the *Baseline Scenario* and the *Adverse Scenario*. The stress scenario represents very tough but still plausible adverse developments. Box 4.1 focuses on the approach of the CNB and some other central banks to setting the main parameters of the adverse scenario and the degree of stress.

## 2.2 THE PROPERTY MARKET

Growth in residential property prices slowed slightly at the end of 2017. However, apartment prices outpaced wages throughout the year, so the affordability of housing deteriorated further. In line with this, the estimated overvaluation of apartment prices went up as well. The future evolution of prices will depend mainly on household expectations regarding further growth in the value of property, changes in credit terms and conditions, and the pace of new construction. Commercial property saw a slight fall in prime yields expected by investors. The volume of transactions remained at the elevated levels recorded the previous year.

### Growth in residential property prices slowed slightly at the year-end but remains high

Transaction prices of housing grew by 8.4% year on year in 2017 Q4, moving significantly further above the pre-crisis level of 2008 (see Chart II.25). The pace of growth of these prices, which had been the highest in the EU in the first three quarters of 2017, slowed slightly. Apartment prices, which have long displayed the strongest response to cyclical developments, showed the fastest growth. The slowdown of these prices recorded at the end of 2017 was accompanied by flat or falling growth in transaction prices of building plots and family houses. The dynamics of apartment transaction prices were roughly the same in Prague and the rest of the Czech Republic (see Chart II.26). Apartment asking prices, which may foreshadow the evolution of transaction prices, grew more moderately in Prague in 2018 Q1. In the rest of the Czech Republic, by contrast, these prices recorded faster growth after previous slowdowns.

### According to CNB estimates, the overvaluation of apartment prices is rising...

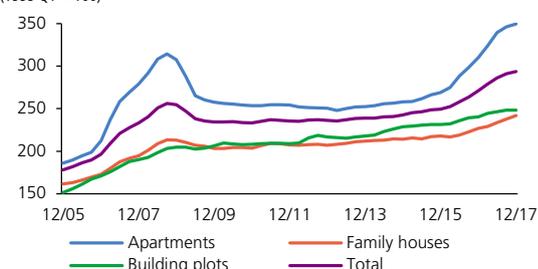
Despite the observed robust growth in household income and persisting low interest rates on housing loans, the CNB model indicates growing divergence of apartment transaction prices from macroeconomic fundamentals. The model-based estimate of the equilibrium level of apartment prices taking into account the CNB's macroeconomic forecast indicates that apartment prices in the Czech Republic were overvalued by around 14% at the end of 2017 Q4 (see Chart II.27). Apartment prices in the capital were overvalued to about the same extent. Current apartment asking prices are significantly above economic fundamentals. If transaction prices were to start converging quickly towards the current level of asking prices, the degree of overvaluation would increase significantly further.

### ...and reducing the affordability of buying apartments on credit

The observed evolution of apartment price overvaluation is reflected in the housing affordability indicators. At the end of 2017 Q4, the affordability of apartments was down by 5% year on year from the point of view of the price-to-income (PTI) ratio and by 7% in terms of the loan service-to-income (LSTI) ratio (see Chart II.28). The deterioration in the affordability of apartments may deter some households from debt

CHART II.25

Transaction prices of residential property  
(1999 Q1 = 100)

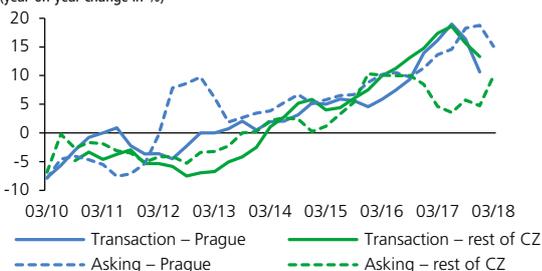


Source: CZSO, HB index, CNB

Note: The data for 2017 are calculated from alternative sources of data on transaction prices (transaction prices of older apartments from a CZSO survey, the HB index and the CZSO House Price Index).

CHART II.26

Growth in apartment transaction and asking prices  
(year-on-year change in %)

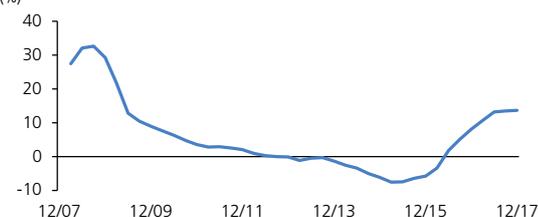


Source: CZSO, CNB

Note: Transaction prices from CZSO survey.

CHART II.27

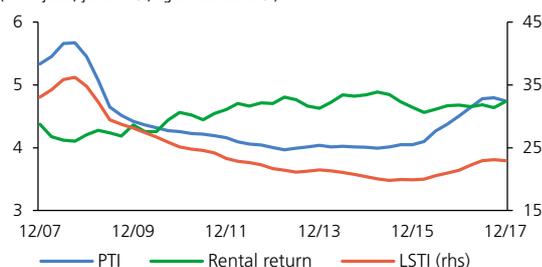
Estimated overvaluation of apartment prices  
(%)



Source: CNB

CHART II.28

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



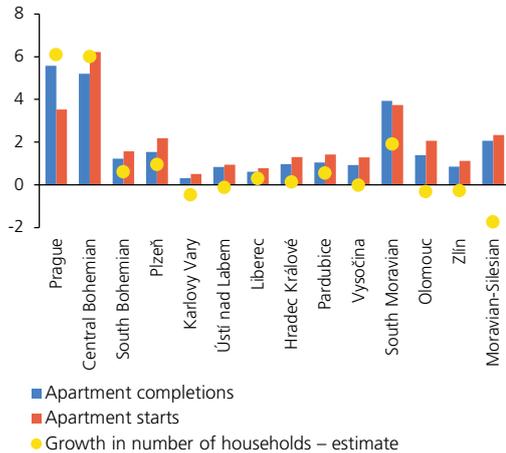
Source: CZSO, CNB

Note: PTI and LSTI are obtained as the ratio of, respectively, the price of and monthly instalment on a 68 m<sup>2</sup> apartment to the moving average of the annual and monthly wage. A loan with an LTV of 77% and a repayment period of 20 years was considered for the LSTI calculation.

CHART II.29

**Apartment construction and population growth in regions in 2017**

(x-axis: regions; y-axis: thousands)



Source: CZSO, Eurostat, CNB

Note: Growth in the number of households estimated as population growth divided by the average household size in the Czech Republic in the relevant year according to Eurostat.

financing property purchases and indirectly foster a slowdown in apartment price growth. Banks refusing clients with excessively risky values of the above affordability ratios may have a similar effect. However, the overall price dynamics will depend on other factors as well.

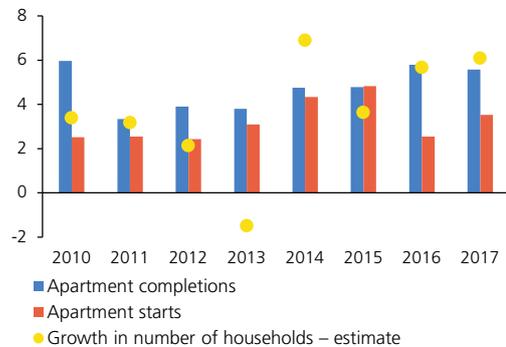
**New apartment construction remains a significant factor for prices going forward...**

Given the longevity of real estate, new construction should depend primarily on demographics and other stable demand-side factors (such as temporary migration for work or study). To some extent, however, it is also determined by the cyclical nature of apartment prices, with growth in prices providing an incentive for developers to construct apartments (see Charts II.29 and II.30). In comparison with other regions, apartment construction in Prague did not increase in line with growth in the number of households<sup>10</sup> in 2016 and 2017 (see Chart II.29). This suggests constraints on construction work in the capital caused by current regulations and practices as regards issuing building permits. The last two years have also seen a decrease in the number of apartment starts relative to apartment completions in Prague (see Chart II.30). This signals continued apartment supply constraints in the next few years, exerting further upward pressure on apartment prices.

CHART II.30

**Apartment construction and population growth in Prague**

(thousands)



Source: CZSO, Eurostat, CNB

Note: Growth in the number of households estimated as population growth divided by the average household size in the Czech Republic in the relevant year according to Eurostat.

**...but the pace of growth of property prices is expected to slow in the coming years**

In addition to the factors described above, the future evolution of property prices will depend on households' expectations regarding future growth in those prices and on foreign demand. In the *Baseline Scenario* of the stress test, the rate of property price growth slows gradually and drops below 5% at the test horizon (see Chart II.31). This reflects, among other things, the impact of macroprudential measures. If macroeconomic conditions were to follow the *Adverse Scenario*, property prices would record a sharp correction and their year-on-year dynamics would turn significantly negative and stay there until the end of the three-year test horizon (risks associated with loans secured by residential property are described in more detail in section 5.3.1).

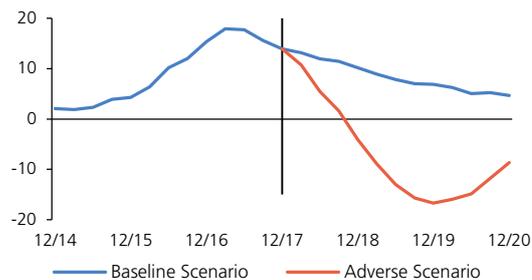
**Optimistic expectations prevail in the commercial property market...**

Prime yields on office and retail property declined further in 2017 H2 and, like those on industrial property, were below their pre-crisis levels (see Chart II.32).<sup>11</sup> Given also the current growth in rents,<sup>12</sup> all types of prime commercial properties recorded growth in prices. The observed price growth was accompanied by high volume of transactions in 2017,

CHART II.31

**Year-on-year property price growth**

(%)



Source: CNB

10 Growth in the number of households is estimated as population growth divided by the average household size in the Czech Republic in the relevant year according to Eurostat. The average household size in regions is not available. However, if the average number of persons per household were lower in Prague than in the Czech Republic as a whole, the real growth in the number of households in Prague in 2010–2017 would be higher.

11 Prime commercial property prices are obtained as "capital values" from Jones Lang LaSalle. The prices are calculated using the rents and yields demanded by investors.

12 Office rents went up by 5% and industrial and retail rents by more than 10% year on year in 2017 Q4.

which almost equalled the previous year's record level (see Chart II.32). At the end of 2017, the CNB model was indicating slight overvaluation of prime commercial property (see Chart II.33). Compared with a year earlier, the overvaluation of industrial property increased, that of retail property was unchanged and that of office property decreased.

### ...but those expectations may be partially dampened by a lower pace of construction

Compared with the previous year, when only a very low level of construction had been recorded, 2017 saw a significant increase in the stock of completed premises. The figure for office property was close to the pre-crisis high (80% of the 2008 level). The office vacancy rate dropped further in second half of the year, as did the industrial vacancy rate, which was very low (see Chart II.34; see section 5.3.2 for risks associated with loans secured by commercial property).

CHART II.32

#### Yields and volumes of commercial property transactions

(%; right-hand scale: 2007 = 100)



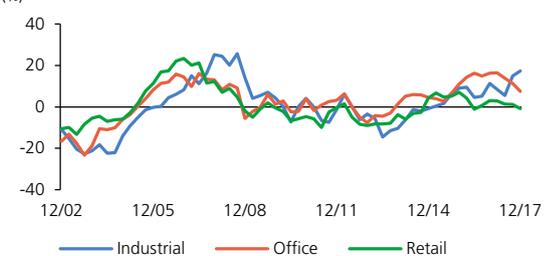
Source: Jones Lang LaSalle

Note: Prime yields. Transaction volumes in annual frequency.

CHART II.33

#### Estimated overvaluation of commercial property prices

(%)



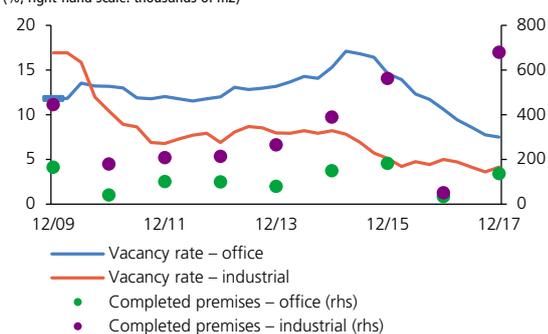
Source: Jones Lang LaSalle, Datastream, Eurostat, Bureau of Economic Research (US), CNB

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.

CHART II.34

#### Stock of completed premises and vacancy rates for commercial property

(%; right-hand scale: thousands of m2)



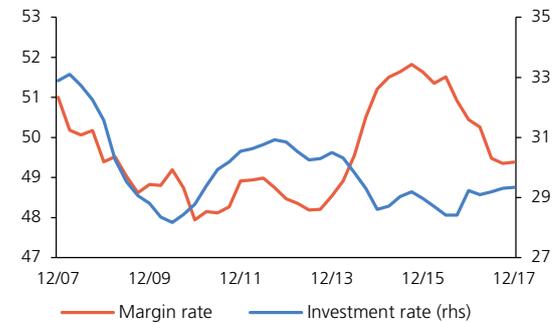
Source: Jones Lang LaSalle

Note: Stocks of completed premises in annual frequency.

CHART II.35

**Margin rate and investment rate**

(% of gross value added of sector; annual moving totals)



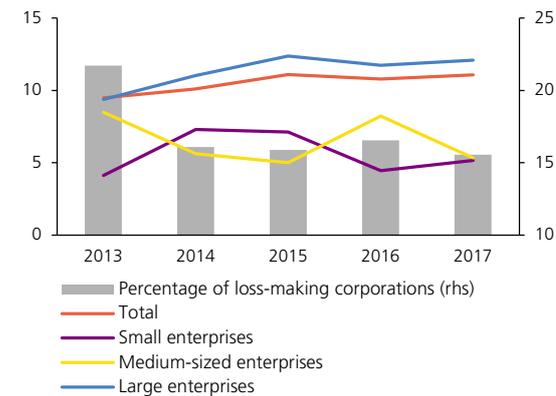
Source: CZSO

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.

CHART II.36

**After-tax RoE by enterprise size and percentage of loss-making corporations**

(%)



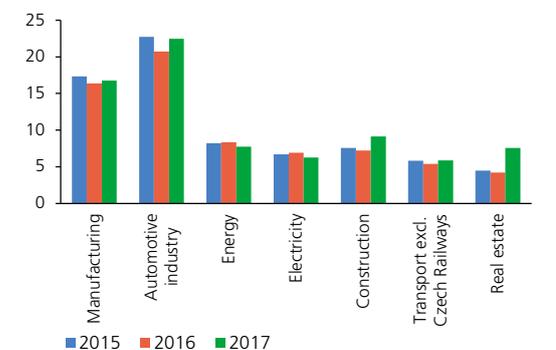
Source: CZSO, CNB

Note: The results are based on a sample of non-financial corporations. The sample contains around 1,500 corporations together accounting for more than 40% of the sector's gross value added.

CHART II.37

**After-tax RoE in selected branches of activity**

(%)



Source: CZSO, CNB

Note: Energy comprises electricity, gas, heat and air-conditioned air. The results are based on a sample of non-financial corporations. The property development sector is included under construction.

**2.3 NON-FINANCIAL CORPORATIONS**

Despite the favourable economic developments in 2017, there was continued downward pressure on profits in the non-financial corporations sector due to rapid growth in personnel costs. A situation of wage growth combined with an appreciating koruna not accompanied in the long term by corresponding labour productivity growth would constitute a major threat to the sector's financial condition. The riskiness of loans provided to non-financial corporations, as measured by the default rate, decreased but has probably now bottomed out. The materialisation of credit risk, as measured by the share of non-performing loans in total loans, decreased in line with credit risk developments. The rate of growth of bank loans to non-financial corporations slowed slightly, while foreign currency loans recorded higher growth rate than total bank loans. This trend is linked mainly with natural hedging of firms against exchange rate risk and is therefore not a source of systemic risk. Following the exit from the exchange rate commitment, the level of hedging generally increased. This was supported by hedging through derivatives.

**Rapid wage growth caused the sector's profitability to fall**

The overall production of the non-financial corporations sector increased by 7.5% year on year in 2017 Q4. However, the growth in production was not reflected in the sector's profitability, which, depending on the measurement method used, declined further or remained flat (see Charts II.35 and II.36). Firms are finding it increasingly difficult to fill vacancies despite persisting solid growth in the number of employees, which, combined with further growth in the minimum wage, is being reflected in accelerating wage growth. For this reason, growth in overall compensation of employees also accelerated (to 8.5% year on year). In line with the tight labour market, the CNB's macroeconomic forecast expects wage growth to remain strong in 2018.<sup>13</sup> This may increase the pressure for a further drop in the sector's profitability. Return on equity (RoE) recorded mixed trends as regards firm size in 2017: large and small enterprises recorded moderate growth, while medium-sized enterprises saw quite a significant decrease (see Chart II.36). From the branches of activity perspective, RoE mostly followed favourable trends, with financial condition improving most significantly in construction and real estate, where profitability was supported by a steep rise in transaction prices (see Chart II.37). As usual, however, RoE is highest in manufacturing and, within it, the automotive industry.

**Investment in the sector should continue to rise**

The investment rate has started to rise slowly again over the past two years, suggesting growing optimism among non-financial corporations. According to the results of a statistical survey of non-financial corporations conducted by the CNB and the Confederation of Industry of the Czech Republic for 2018 Q1, around a third of firms expect a net

13 CNB: Inflation Report II/2018.

rise in investment expenditure in the next 12 months. Similarly, the Bank Lending Survey indicates a further rise in demand for investment loans, partly due to the need to boost productivity given the limited resources in the labour market.

### Lower competitiveness and external demand developments may worsen the sector's financial condition

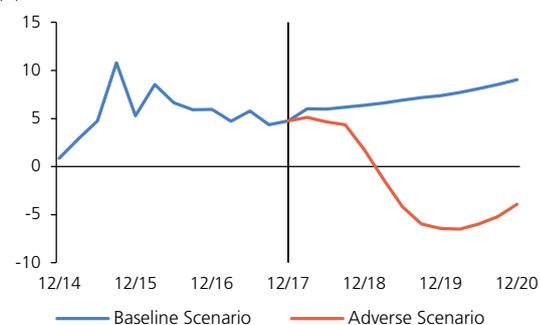
Given the sector's strong dependence on the performance of export-oriented industries, favourable developments in the external environment remain a key factor for keeping non-financial corporations in good financial condition. The rapid economic growth recorded by the Czech Republic's biggest trading partners in 2017 should continue into 2018 according to the CNB forecast.<sup>14</sup> The positive trend in the external environment is confirmed by overall export growth of 5.9%. Nonetheless, exports slowed in late 2017 and the first few months of 2018 (recording a year-on-year decline of 1.0% in February). The main risk scenario for the non-financial corporations sector is a combination of continued rapid wage growth and exchange rate appreciation not accompanied by corresponding labour productivity growth. In such case, exporters will gradually lose their competitiveness. If the worsening competitiveness were to be joined by a slump in external demand, there would be a strong negative shock to profitability and the overall risk profile of non-financial corporations, which would gradually spread to the whole economy. However, given the favourable outlooks for major trading partner countries, the probability of a strongly negative scenario remains low.

### Growth in bank loans weakened slightly, but the *Baseline Scenario* expects it to pick up again

The year-on-year rate of growth in bank loans to non-financial corporations was volatile in 2017 and slowed slightly overall. In December 2017, credit growth stood at 4.8% (see Chart II.38). Despite slowing somewhat, the growth in lending remained relatively high in the context of the medium-term tendencies and by international comparison (see section 5.2 for more details). Loans to non-financial corporations grew fastest in the hotels and restaurants and transport segments. The strong growth in the real estate industry slowed slightly, but the amounts of loans granted remained high. The sector's total debt was also influenced by growth in debt securities issuance. Their amount increased by 7.1% year on year in 2017 after two years of negative growth. With debt securities outpacing bank loans, the share of bonds in total funding sources increased slightly (by 0.2 pp). According to the *Baseline Scenario* of the current round of stress tests, the growth rate of bank loans to non-financial corporations will increase in the quarters ahead and year-on-year credit growth should reach around 9% at the three-year test horizon. If the *Adverse Scenario* were to materialise, the credit growth rate would be positive only in the first year and there would be a sizeable credit contraction in the following years.

CHART II.38

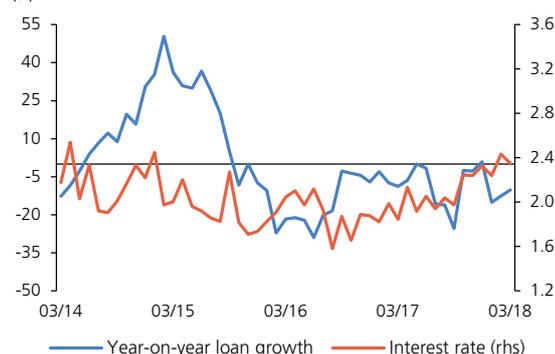
#### Year-on-year growth in bank loans to non-financial corporations (%)



Source: CNB

CHART II.39

#### Growth of new koruna loans and the average interest rate (%)



Source: CNB

Note: The year-on-year growth is smoothed by the 3-month moving average.

CHART II.40

#### Selected characteristics of foreign currency loans and currency hedging of exports (%)

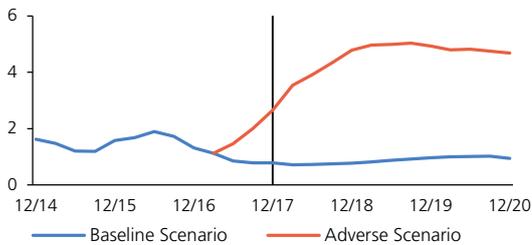


Source: CNB

Note: Foreign currency loans are smoothed by the 3-month moving average. The monthly figures for hedging of exports using fixed-term operations are obtained by linear interpolation of quarterly data.

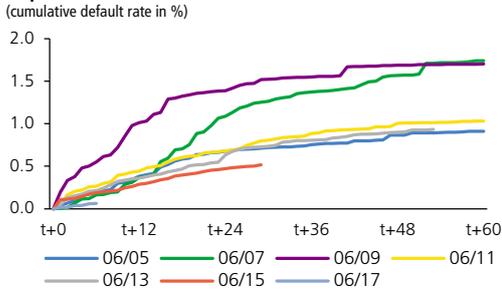
14 See section II.1 of Inflation Report II/2018 for more details.

CHART II.41

**12-month default rate on bank loans to non-financial corporations (%)**


Source: CNB

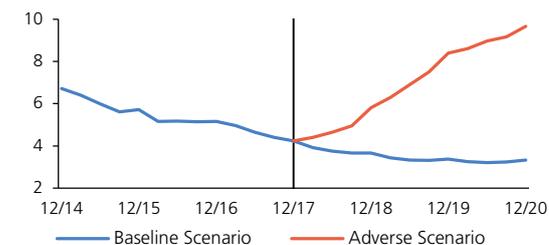
CHART II.42

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


Source: CNB

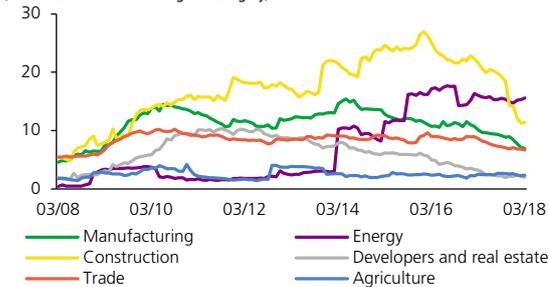
Note: The initial slope of the curve provides a relatively reliable signal about the subsequent evolution of the riskiness of loans provided in the given period.

CHART II.43

**NPL ratio for bank loans to non-financial corporations (%)**


Source: CNB

CHART II.44

**NPL ratios for bank loans in selected branches of activity (% of total stock of loans in given category)**


Source: CNB

Note: The developers category comprises NACE 411 (Development of building projects) and NACE 68 (Real estate activities).

**New bank loans decreased, but the interest rate on new loans rose steadily**

The amount of new koruna bank loans fell by 7.5% year on year in 2017. The decline started to accelerate at the start of 2018 (the year-on-year change in March 2018 was -10.1%; see Chart II.39). The average interest rate on new loans rose steadily in 2017, reaching 2.3% in March 2018. Despite that, the sector's debt service developed positively, as net interest payments on bank loans decreased in total by around CZK 400 million (-1.59% in relative terms).

**Foreign currency bank loans are maintaining their share in total loans, while the share of hedging is rising**

Growth in foreign currency loans fell significantly year on year, but is still slightly higher than growth in domestic currency loans (5.4% in March 2018; see Chart II.40). The share of foreign currency loans in the sector's total bank loans stabilised at around 30%. As usual, the share of the foreign currency loans of the 1,000 largest exporters was higher, accounting for more than half of their loan portfolio. Exporters use foreign currency loans as a natural hedge against exchange rate risk. As well as natural hedging, non-financial corporations increasingly used derivatives to hedge exchange rate risks. According to a CNB statistical survey, the level of hedging at the one-year horizon reached 46% of the export volume, the highest figure since records began. A rise in the coverage of exports by imports of around 2 pp also helped reduce exchange rate risk.

**Credit risk decreased and is close to bottoming out according to the Baseline Scenario**

Credit risk as measured by the forward-looking 12-month default rate decreased to a new historical low in 2017 (see Chart II.41). The favourable credit risk trend is also evidenced by low riskiness of loans provided in the recent period – the default rate of loans provided in June 2017 was around half of that of loans provided in June 2015 (see Chart II.42). The backward-looking indicator of the ratio of non-performing loans (NPLs) to the sector's total loans, which reflects the materialisation of credit risk accepted in the past, also decreased (see Chart II.43). The *Baseline Scenario* expects the default rate to be flat in 2018 and rise very slowly in the following years. This is consistent with a further drop in the NPL ratio in the first two years and a bottoming out in 2020. If the *Adverse Scenario* were to materialise and a return to recession were to happen, the default rate would rise sharply to 5% in the first two years and then fall very slowly. The NPL ratio would also rise significantly (see Charts II.41 and II.43).

**Turning to non-financial corporations, credit risk decreased in most industries but remains elevated in construction and energy**

The materialisation of credit risk decreased in most industries (see Chart II.44). The energy sector recorded the highest NPL ratio in 2017. The construction industry saw a positive NPL trend: its NPL ratio fell by 11.5 pp compared to January 2017, although it remains high. The NPL ratio for the 1,000 largest exporters increased due to the collapse of several engineering firms in 2016 and stood at 5.1% at the beginning of 2017. The NPL ratio of the largest exporters declined to 2.6% during 2017, returning to its long-term trend.

## 2.4 HOUSEHOLDS

The income situation of households continued to improve on the back of continued economic expansion and a record low unemployment rate. The income growth coupled with low loan interest rates was reflected in robust consumption growth and high investment in property. This is creating conditions for strongly optimistic expectations of households and is increasing their willingness to finance their expenditure through debt. The main risk in the household sector is therefore a scenario in which some households start to consider the current income growth and interest rate level to be sustainable and succumb to the illusion that it will be easy to service an ever-increasing volume of loans. Credit risk as measured by the default rate remained low, in line with the observed economic situation, but a shift to even lower levels is unlikely. Credit risk materialisation, as measured by the share of non-performing loans in total loans, also recorded a favourable trend in the period under review.

### The economic growth helped improve the income situation of households

From the perspective of households, the labour market situation improved further in 2017 and early 2018. In February, the general unemployment rate stood at 2.4%, a historical low. In line with this trend, total employment was also favourable, the number of employed people rising by 73,000 year on year in February. The excess labour demand is being reflected in rising wage growth (see Chart II.45), which is accounting for the lion's share of the growth in households' total income (see Chart II.46). Year-on-year growth in gross nominal wages is currently running at 8%. According to the CNB's official macroeconomic forecast,<sup>15</sup> wages should maintain brisk, albeit gradually slowing growth in 2018. Like in the previous year, wages of lower-income households went up faster, as the median wage outpaced the mean wage.

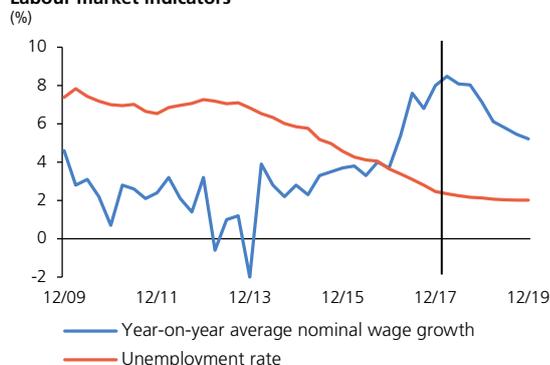
### The rising incomes and favourable economic situation are giving rise to optimistic expectations

The favourable financial situation of households is being reflected in optimistic perceptions of the state of economy (see Chart II.8 in section 2.1.2) and rising expenditure. Household consumption showed robust growth in real terms (a year-on-year growth rate of over 4%). Investment in property was also high in the period under review (see Chart II.47). This was accompanied by an increasing willingness to finance expenditure through debt. Thanks to the accelerating income growth, however, the total debt ratio increased only slightly (see Chart II.46). A risk scenario going forward is a situation in which some households start to consider the current income growth to be permanent and, due to over-optimistic expectations, succumb to the illusion that it will be easy to service ever-increasing debt levels.

15 See Inflation Report II/2018.

CHART II.45

#### Labour market indicators



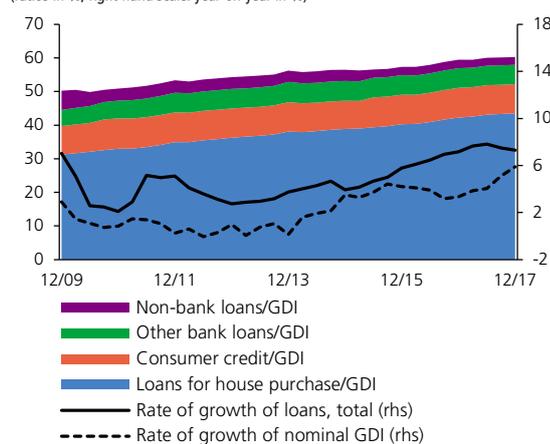
Source: CNB, CZSO

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

CHART II.46

#### Household indebtedness and income indicators

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



Source: CNB, CZSO

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

CHART II.47

#### Gross capital formation – household sector

(CZK billions)

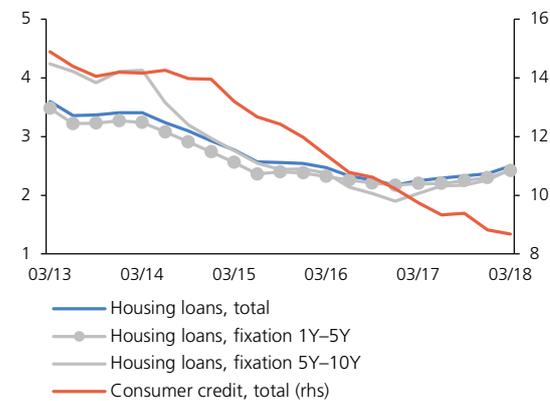


Source: CZSO

Note: Gross capital formation consists almost solely of investment by households in housing.

CHART II.48

## Interest rates on new bank loans to households (%)



Source: CNB

CHART II.49

## Difference between the current rate on a new (refixed) housing loan and the same rate five years ago (pp)



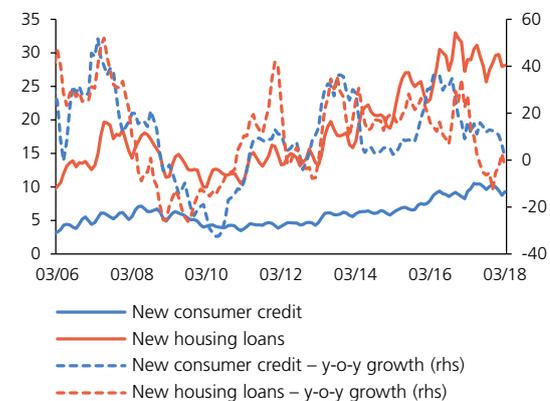
Source: CNB

Note: The rate is that for the purchase of residential property with a fixation period of 5–10 years. The vertical line separates the observed values from the values based on the official macroeconomic forecast published in Inflation Report I/2018.

CHART II.50

## New koruna bank loans to households

(CZK billions per month; right-hand scale: year-on-year %)



Source: CNB

Note: The data are smoothed using 3-month moving averages. New loans also include refinanced and refixed loans.

### Apart from the income trend, the low interest rate level is supporting the impression of easy debt servicing

Despite gradual increases in monetary policy rates, interest rates on new loans rose only moderately, or – in the case of consumer loans – fell even further, due to fiercer competition (see Chart II.48). Taking into account wage inflation, real rates are significantly negative. This may further boost the optimistic expectations of some households regarding easy long-term debt servicing. Under these conditions, a major risk is the use of loans that would be difficult to service if interest rates and income growth returned to their usual long-term levels (see also section 4.3). Materialisation of these risks does not pose an immediate risk to the economy, since households when refixing are currently able to get interest rates that are 2 pp lower on average than the fixed rates offered five years ago.<sup>16</sup> If the CNB's macroeconomic forecast materialises, a return to higher rates compared with past refixation can be expected in the second half of 2019 (see Chart II.49).

### In an environment of low interest rates and rising income growth, credit growth remains strong...

Despite having slowed somewhat in recent months, credit growth remains strong, thanks mainly to persisting interest in mortgages. The volume of new bank loans for house purchase has remained close to historical highs over the past year. New bank consumer credit recorded a similar trend in 2017 (see Chart II.50).<sup>17</sup> Easier availability of bank consumer credit may have been the cause of lower interest in non-bank loans, which, by contrast, stagnated last year and did not contribute to the rising pace of borrowing.

### ...and robust growth is expected over the next few years as well

According to the *Baseline Scenario*, bank loans to households should continue to show robust growth in the coming years (see Chart II.51). Credit growth will fluctuate just below 7% over the three-year stress test horizon. Its gradual weakening is due to base effects. If the conditions of the *Adverse Scenario* were to materialise, the economic downturn would lead to a significant reduction in credit financing and to a decline in credit growth to negative figures.

### An increasing proportion of assets in households' balance sheets are subject to the risk of a downward price correction

Households' interest in buying property is giving rise to a high share of real estate in the sector's total assets (around 40%). At the same time, households are investing increasingly in collective investment funds and favouring investment products with non-guaranteed returns (see section 3.3 for details). In the case of both property (see section 2.2) and the above-mentioned financial assets, the CNB considers current prices to be overvalued from the long-term perspective. This is generating

<sup>16</sup> A fixation period of around 5 years is the most common for house purchase loans.

<sup>17</sup> New loans also include refixed and refinanced loans. In the case of consumer credit, refinancing involves, for example, consolidation of previous loans. New loans net of refixation and refinancing are at lower levels, but are showing broadly similar trends.

risks linked with a potential price correction back to equilibrium levels (see section 2.1). A reduction in wealth caused by a sharp drop in the market value of asset holdings amid an unchanged level of nominal debt could force some households to reduce their consumption. The risk of a *balance-sheet recession* scenario, with economic agents responding to the wealth shock by trying to repay their debts rather than consume, is therefore rising and could foster a future slowdown in economic performance.

#### The credit risk of households remains low at present...

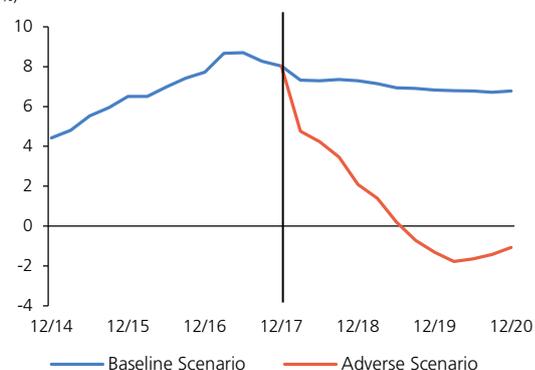
The level of credit risk, as measured by the forward-looking 12-month default rate on bank loans to households, was virtually unchanged in year-on-year comparison (see Chart II.52). At the end of 2017, the default rate was 2.2%, reflecting a slight fall in the riskiness of housing loans and a simultaneous modest increase in the rate of default on consumer credit. The continued favourable trend in credit risk was again due to the improving income situation of households and the currently low debt servicing costs. In line with the observed economic situation and robust credit growth, the ratio of non-performing loans (NPLs) to total loans, which measures the materialisation of credit risk assumed in the past, declined as well. At the end of 2017, the NPL ratio was down by 2.5 pp for consumer credit and by 0.25 pp for housing loans.

#### ...but is not likely to fall any further

Consistent with the *Baseline Scenario* of the stress test is a further stagnation of households' credit risk amid similar risk trends for housing loans and consumer credit. If, on the other hand, the assumptions of the *Adverse Scenario* materialise, credit risk will start to rise sharply and the 12-month default rate will be around three times the current level at the scenario horizon.

CHART II.51

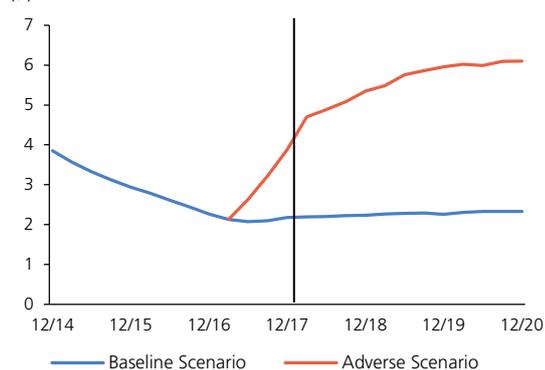
Year-on-year growth in bank loans to households (%)



Source: CNB

CHART II.52

12-month default rate on bank loans to households (%)



Source: CNB