



# FINANCIAL STABILITY REPORT



2018  
MAY

*‘...a nation is strong where property and independence are guarded by free hands.’*

*Ferenc Deák*



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Financial stability is a state in which the financial system, including key financial markets and financial institutions, is capable of withstanding economic shocks and can fulfil its key functions smoothly, i.e. intermediating financial resources, managing financial risks and processing payment transactions.

The Magyar Nemzeti Bank's fundamental interest and joint responsibility with other government institutions is to maintain and promote the stability of the domestic financial system. The role of the Magyar Nemzeti Bank in the maintenance of financial stability is defined by the Central Bank Act.

Without prejudice to its primary objective - to achieve and maintain price stability -, the MNB shall support the maintenance of the stability of the financial intermediary system, the enhancement of its resilience, its sustainable contribution to economic growth; furthermore, the MNB shall support the economic policy of the government using the instruments at its disposal.

The MNB shall establish the macro-prudential policy for the stability of the entire system of financial intermediation, with the objective to enhance the resilience of the system of financial intermediation and to ensure its sustainable contribution to economic growth. To that end and within the limits specified in the Central Bank Act, the MNB shall explore the business and economic risks threatening the system of financial intermediation as a whole, promote the prevention of the development of systemic risks and the reduction or elimination of the evolved systemic risks; furthermore, in the event of disturbances to the credit market it shall contribute to the balanced implementation of the function of the system of intermediation in financing the economy through stimulating lending and by restraining lending it in the event of excessive credit outflow.

The primary objective of the Financial Stability Report is to inform stakeholders about the topical issues related to financial stability, and thereby raise the risk awareness of those concerned as well as maintain and strengthen confidence in the financial system. Accordingly, it is the Magyar Nemzeti Bank's intention to ensure the availability of the information needed for financial decisions, and thereby make a contribution to increasing the stability of the financial system as a whole.

The analyses in this Report were prepared by the Financial System Analysis, the Macroprudential directorates, and the Financial Institutions Supervision Executive Directorate, under the general direction of Gergely FÁBIÁN, Executive Director for Financial System Analysis and Lending Incentives.

The Report was approved for publication by Márton NAGY, Deputy Governor.

The Report incorporates the Financial Stability Council's valuable comments and suggestions following its meetings on 24<sup>th</sup> April and 22<sup>nd</sup> May 2018, and those of the Monetary Council following its meeting on 8<sup>th</sup> May 2018.

*This Report is based on information in the period to 18<sup>th</sup> May 2018. Since data frequency is divergent through the analyses, the analysis horizons may also alter.*



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## Executive Summary

*The overall shock absorbing capacity of the Hungarian banking sector can be considered strong, both in terms of liquidity and capital adequacy. The indebtedness of both the corporate sector and the household sector can be deemed cyclically low in the current favourable environment, and the domestic banking sector has significant capacity to increase its lending activity. The continuous improvement in banks' profitability enhances their resilience, but – over the longer term – this profitability needs to be underpinned with increased business activity and cost efficiency. The MNB is continuously monitoring domestic and international financial developments and uses its toolkit to identify and manage any emerging risks. The financial system is characterised by the following current developments and challenges.*

*The economic outlook has continued to improve since the publication of the November Financial Stability Report. The improving global macro environment is coupled with a gradual increase in inflation expectations, which is also reflected in the recent changes in yield curves. The repricing of yield expectations reflects different monetary policy challenges in the United States and Europe. The rise in US yields in early 2018 resulted in sharp declines on money and capital markets, while forward-looking indicators point to mounting uncertainty on the markets. In 2017, the risks in the European banking sector eased considerably, but did not disappear completely. One favourable development is that the ratio non-performing loans at European banks declined significantly in the recent period, although the market is still pricing in an adverse business outlook for many institutions. Nevertheless, it can be established that **the domestic banking sector's resilience to external shocks remained robust.***

*Special attention is devoted in the Report to **developments in the sustainability of corporate and household lending.** We found that the extent of indebtedness in both sectors as a proportion of GDP is much lower than the average of the regional peers from a cyclical point of view, **and significant capacity is available for an expansion of lending in the current environment.** This could occur via two channels: firstly, by the credit cycle catching up, i.e. closure of the credit gap, and secondly, through the trend of financial deepening.*

*Corporate lending started to increase several years ago. In 2017, SME lending expanded at a rate of 12 per cent, and **lending to the corporate sector as a whole also reached double-digit growth** in annual terms. In the Report, developments in lending are assessed in terms of various corporate features (sector, ownership, access to cross-border financing). Based on our findings, we expect further, balanced growth in lending to occur in several key sectors. In addition, the Report focuses on **the quality features of post-FGS SME lending**, which has been characterised by **a decline in investment loans with long interest rate fixation and their replacement with shorter-term loans.***

***Broad-based growth was once again recorded in household lending in 2017**, which was reflected in the segments of both housing and consumer loans. The expansion was **primarily attributable to stronger demand**, but banks also eased their credit conditions. Within new housing loans, the ratio of loans with longer-term rate fixation is increasing, and within that the **share of certified consumer-friendly housing loans is also expanding. Stronger competition** is also reflected by the growing ratio of institutions applying lower spreads and the widening range of customers involved in lending. In the Report, developments in interest rates on housing loans and in risk-taking are discussed in detail, with particular attention to the **short-term results of certified consumer-friendly housing loans.***

*The Hungarian housing market is a special topic in the Report. **The upturn on the housing market***

*continued in 2017, basically due to stronger demand. Nevertheless, **the market cannot be considered overheated**, and according to our condition indicators, housing prices are at the level justified by the fundamentals. The supply side is also assessed **with the help of a survey conducted with real estate developers active in the residential property development market**; according to the respondents, **frictions due to capacity constraints are apparent in this area.***

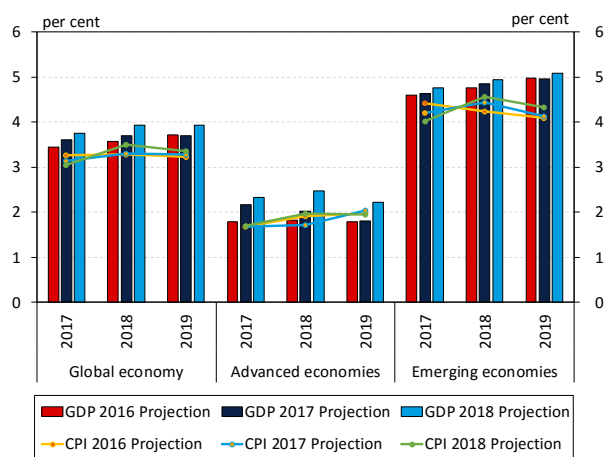
***Continued improvement in banks' portfolio quality is one of the key pillars** of the improving resilience of the Hungarian banking sector. 2017 was characterised by **consolidation and cleaning of the non-performing portfolio**, with the NPL ratio falling to almost 7 per cent and 10 per cent in the corporate and household segments, respectively. Nevertheless, in the case of households, banks' portfolio cleaning still does not represent a complete solution to the problem, and thus we pay special attention to the features of the debt management sector. At the same time, both **the liquidity and capital positions of the domestic banking sector are strong**, and banks preserve their shock absorbing capacity even in the presumed stress scenarios.*

*Over the short run, institutions can ensure a **sustainable level of bank profitability** by expanding lending activity, improving operational efficiency and implementing digitalisation solutions. In this context, the Report also focuses on the presentation of the **current challenges of cyber security and bank digitalisation** as well as on the MNB's active role in incentivising innovation through the operation of the Innovation Hub.*

# 1 International macroeconomic environment. Mounting uncertainty in a changing interest rate environment

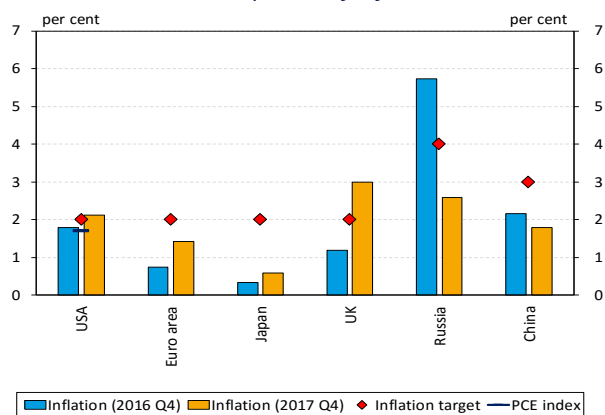
Global growth prospects may improve further in 2018, which may prospectively cause the strengthening of upside risks to inflation as well as faster normalisation of monetary conditions, and thus may result in repricing on the money and capital markets. One preliminary indication of this was that in early 2018 the more favourable-than-expected macro data resulted in a sharp capital market correction in the USA, leading to the return of market volatility, which had been trending downward for a long time. Extremely high debt levels in the private sector and the general government pose a risk in many European countries. Overall, the European banking sector has showed various positive signs recently. Firstly, the decline in the ratio of non-performing loans is now also supported by the expansion in lending, and secondly, banks' profitability has also improved to some extent. However, an unfavourable outlook is already priced in for many European banks, which may make raising capital more difficult and result in further adjustments of business models. At the European level, conditions on the real estate market continue to pick up, while significant investment activity is observed in the commercial real estate market of the Central East European region.

Chart 1: The development of the global economic environment



Source: IMF WEO

Chart 2: Inflation targets of major central banks and the development of inflation



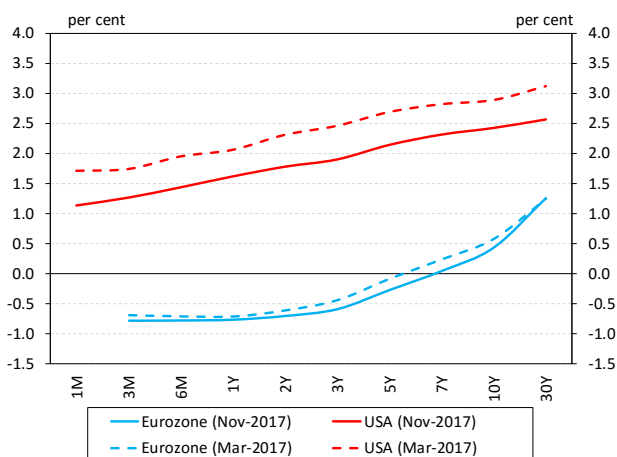
Note: The PCE index is the primarily monitored inflation indicator of the U.S. Federal Open Market Committee. Source: OECD, FRED

## 1.1 Global macroeconomic developments

**Economic prospects continue to improve at the global level.** Following the favourable global macroeconomic developments seen in 2017, the latest early-2018 forecasts point to stronger growth in both advanced and emerging economies. According to the January preliminary estimate, global economic output expanded 3.7 per cent last year, exceeding all previous forecasts (Chart 1). The improvement in global growth prospects is coupled with a gradual rise in inflation. In 2017, inflation was above the target in the United Kingdom and close to the target in the United States, while it remained persistently below the 2 per cent target level in the euro area.

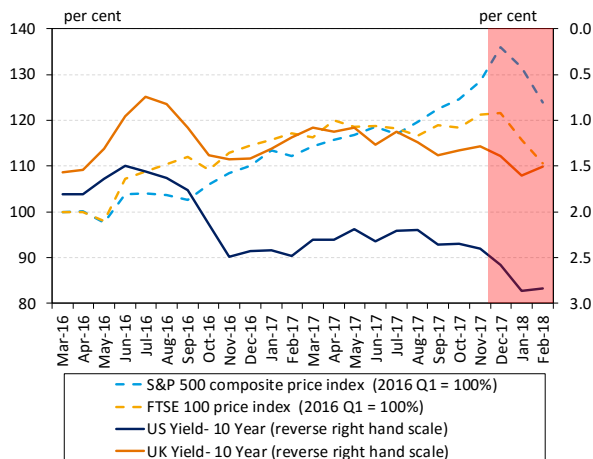
**Relative divergence is observed in the monetary conditions of developed countries.** Although inflation developments in major advanced economies are converging, and foreshadow an end to the accommodative monetary policy stance over the long run, there is still divergence between the monetary policy decisions of the major central banks (Chart 2). In addition to the gradually reducing pace of the asset purchase programme, the US Fed also once again tightened interest rate conditions in March: in line with market expectations, it increased the base rate by twenty-five basis points to a target range of 1.5–1.75 per cent. The market expects the new Fed leadership to raise interest rates two more times in 2018. At the same time, monetary conditions are being continually eased in the euro area, although the QE programme was wound down after the European Central Bank reduced the monthly volume of bond purchases (from EUR 60 billion) to EUR 30 billion starting from January 2018, and – in

Chart 3: Half-yearly changes in European and US yield curves



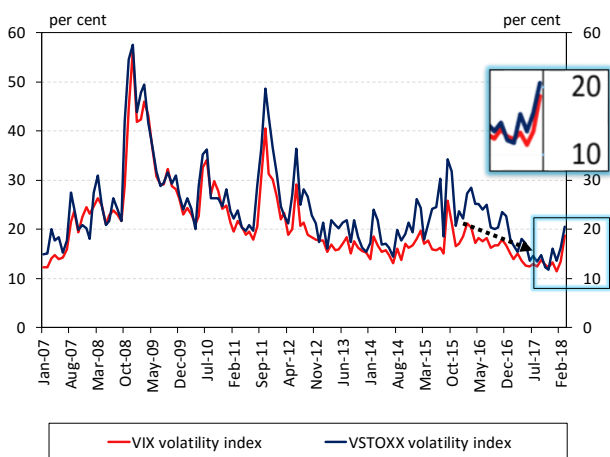
Source: Bloomberg

Chart 4: The development of US and British stock market composite indices and 10-year bond yields



Source: Reuters Datastream

Chart 5: The development of European and US stock market volatility indices



Note: The value of the VIX (VSTOXX) index is calculated at the Chicago Board of Options Exchange (European Options Exchange), and shows the market's expectation of the development of volatility for the next thirty days. Source: Reuters Datastream

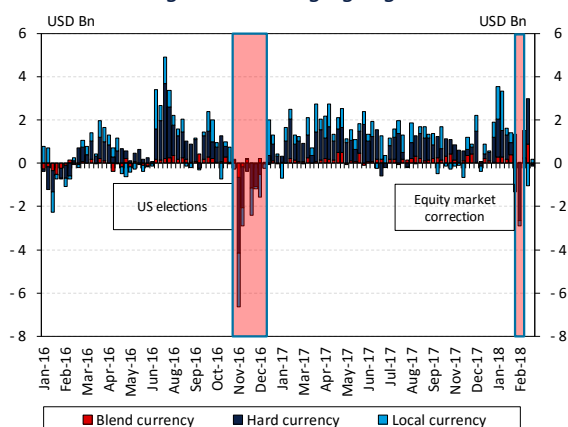
consideration of the developments in inflation – also raised the prospect of further reducing the programme, which runs until September 2018 under the current conditions. Earlier or faster-than-expected tightening of monetary conditions may lead to an increase in the yield curves and/or their higher volatility (Chart 3), which may result in major turbulence in a number of global markets through asset repricing.

**In a rising yield environment, asset repricing and changes in capital flows are being observed in the global bond and equity markets.** In early February 2018, the increase in long-term yields following the release of better-than-expected US wage inflation data triggered a strong stock market correction, which eventually also spread to the European and Asian markets (Chart 4). The stock market correction resulted in higher market volatility. Prices on the leading equity markets fell by 9–10 per cent in February, which was later followed by a slight upward adjustment, and in parallel with that the US VIX index, which reflects market volatility and had previously been at a historically low level, also rose sharply (Chart 5). Looking ahead, the rise in long-term yields in parallel with the normalisation of the interest rate environment may result in more volatile asset price movements than in the previous period.

**The effects of the capital market turbulence may also spread to the emerging markets.** Prior to the stock exchange events, capital inflows to emerging markets were significant and stable. The yield environment, which was more favourable than in the developed economies, and the strong macroeconomic expansion facilitated the upswing in emerging markets. Nevertheless, investors still seem to react sensitively to repricing shocks, and thus the financial vulnerability of the emerging countries may be significantly impacted by sudden capital withdrawals and increases in yields (Chart 6). In addition to the changes caused by monetary conditions, the possibility of stronger protectionist economic policy at the global level may reduce emerging market asset prices (through a decline in risk appetite), whereas specific trade barriers may have an indirect negative impact on small, open economies embedded in the global supply chains (through the real economy channel).

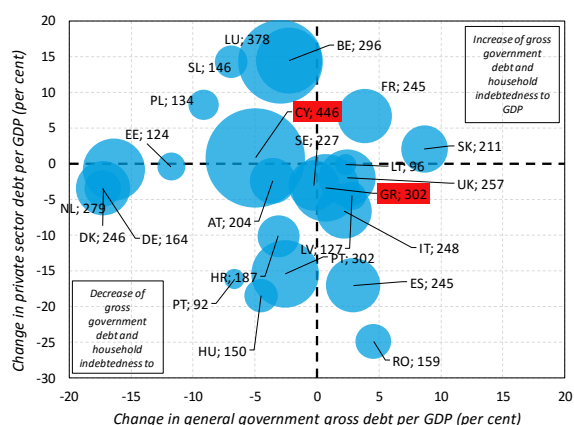
**The level of outstanding debt continues to pose a risk in the case of a possible increase in the interest rate environment.** Although the debt-to-GDP ratio declined in several European countries, there continues to be strong heterogeneity across various regions. The debt level is

Chart 6: Capital flows by currency of bond funds investing in the emerging region



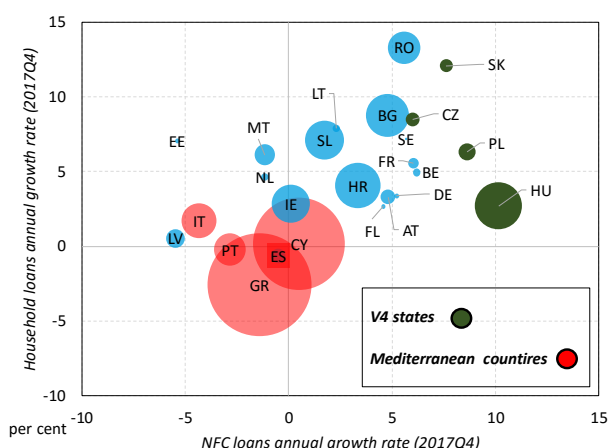
Note: Hard currency: stable and liquid currency of countries with strong political and economic background (e.g. US dollar, euro, Japanese yen, etc.). Source: EPFR

Chart 7: Changes in the government debt-to-GDP ratio and private sector debt in Europe (2013–2017)



Note: The diameter of the bubbles is the sum of government debt as a proportion of GDP and private sector debt. Source: Eurostat

Chart 8: The development of problem loans of European countries compared to gross loans outstanding



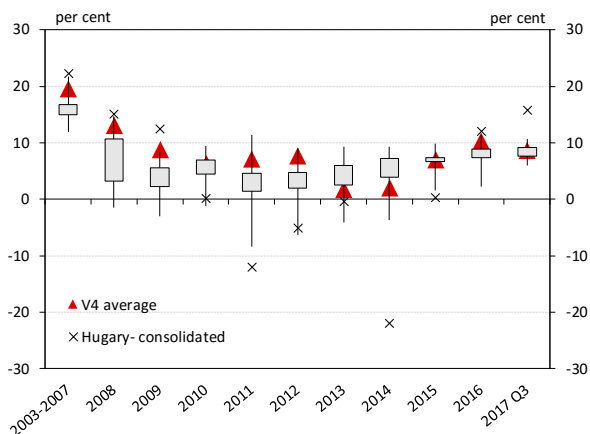
Note: The diameter of the bubbles shows the ratio of non-performing loans in 2017. Source: SNL, ECB

still the highest in the Mediterranean and Western European countries, and a rise in outstanding debt has been observed in several of these countries (Chart 7). A rising interest rate environment may result in significant market repricing, thereby increasing government bond yields and thus debt and future deficit financing costs. The rising debt burden jeopardises the sustainability of outstanding debt accumulated by both the state and the private sector, which may even lead to adjustments entailing growth sacrifices or difficulties in debt repayment. All of this may be mitigated to some extent by the fact that political uncertainty, which had postponed fiscal and structural reforms, declined in Europe following parliamentary elections in Western states.

**The stock of non-performing loans continued to decrease in Europe, although strong heterogeneity across regions still exists.** Overall, the ratio of non-performing loans declined to below 5 per cent in the EU countries by end-2017. In addition to the decline in the stock of non-performing loans, at the end of the year moderate growth in the volume of lending also contributed to the improvement (Chart 8). At the end of the year, at the EU level the total volume of non-performing loans still exceeded EUR 800 billion, with Mediterranean countries accounting for some EUR 465 billion of this. Although 2017 was characterised by moderate expansion in lending in the EU countries, despite the loose monetary conditions and thus favourably low financing costs, a complete turnaround has not occurred yet due to the differences across the economies and banking sectors of the region. Last year, all of the countries in the Central and East European region were in the leading group of the EU in terms of lending growth, while lending has still not expanded significantly in the Mediterranean countries.

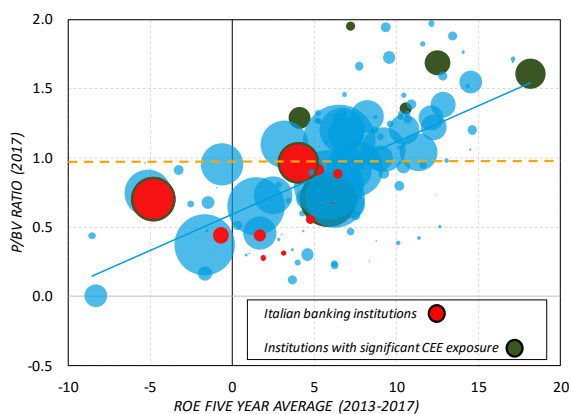
**Banks' profitability also improved at the EU level, but structural problems remain.** Improving macroeconomic prospects and significant balance sheet consolidation contributed to a gradual improvement in the profitability of the European banking sector (Chart 9). At the same time, due to the legacy of structural problems from the crisis, the European banking system is still vulnerable, and its performance lags behind both its developed and emerging market competitors and the pre-crisis level. In many cases, results have only improved due to one-off items, while improvement in the long-term earning capacity remains under pressure, as it was also supported

Chart 9: After-tax ROE of the EU banking sector



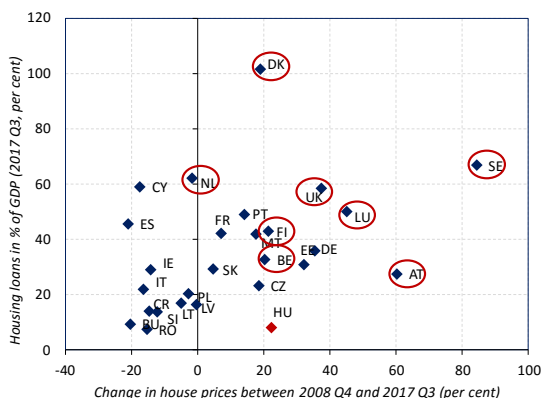
Note: The distribution shows the 40–60 and 20–80 percentiles of the EU banking sectors. Source: ECB

Chart 10: Long-term average of return on equity and the relative size of market value



Note: The diameter of the bubbles expresses the balance sheet total of banks. Banks with significant CEE exposure are marked in green, while Italian banks are marked in red. Source: SNL

Chart 11: Changes in house prices and the ratio of housing loans to GDP in a European comparison



Note: Circled in red are the countries warned by the ESRB. Source: Eurostat, ECB, BIS

by the findings of the bank survey conducted by the EBA.<sup>1</sup>

**Many European banks have priced in an unfavourable outlook.** In the case of listed European banks, strong profitability is typically coupled with a favourable price-to-book value ratio (P/BV) of more than one. In the case of several Italian and German large banks, the persistently low market value is the combined result of investors' uncertainty related to growth prospects and profitability issues. Banks with significant CEE exposure and high return on equity (ROE) typically have higher market capitalisation compared to their book value. In the case of Italian institutions and ones without significant CEE exposure, the level of market value compared to bank profitability is low, i.e. they are undervalued by investors. At the same time, compared to ROE, banks with high book value and significant CEE exposure are overvalued by investors (Chart 10). The persistently low market value of banks has continued to decline due to the recent stock exchange turbulence. Simultaneously with the decrease in the banking sector's P/BV ratio, its cost of equity (COE)<sup>2</sup> is increasing. Due to the current low interest rate environment and tighter regulatory requirements, some institutions have to offset difficulties in raising capital by downsizing or selling their business branches and reducing their risk exposure, which may have a further negative feedback on economic growth.

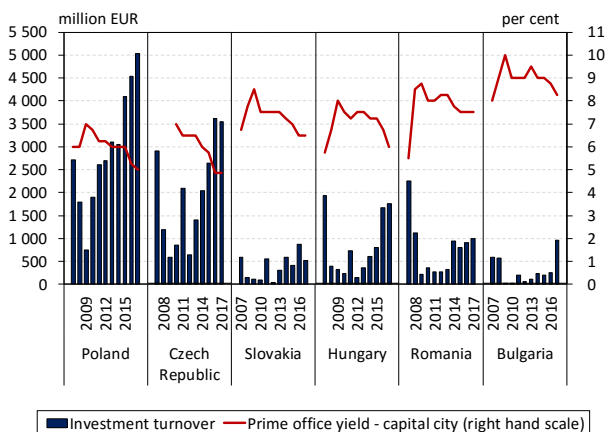
**Significant house price appreciation was coupled with high-volume mortgage lending in many countries.** The pick-up in housing markets has been significant in Europe, and house prices have risen by 20–50 per cent in most European countries since the 2008 crisis. In Europe, the strongest house price appreciation was seen in Austria and Sweden (Chart 11). The European Systemic Risk Board (ESRB) issued warnings in the case of eight member countries at the end of 2016, after analysing the rising indebtedness and debt servicing of households as well as increasing housing prices, which occasionally depart from the fundamentals.

**The volume of investments continued to expand in the commercial real estate market in the region.** Despite declining returns on investment, significant increases in

<sup>1</sup> European Banking Authority, 2017, <https://www.eba.europa.eu/documents/10180/2085616/EBA+Dashboard+-+Q3+2017.pdf>

<sup>2</sup> The cost of equity (COE) indicator can be approximated as the quotient of the return on equity (ROE) and the price to book value (P/BV).

Chart 12: Commercial real estate investment in a regional comparison



Source: MNB

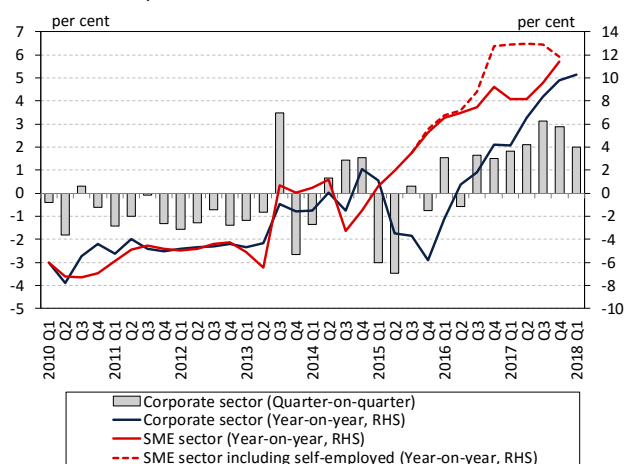
investment volumes have been observed in the commercial real estate markets of the region’s capitals since 2012. Compared to the previous years, 2017 saw record turnover in almost all of the countries, while Poland, the Czech Republic and Hungary were the three most popular investment targets (Chart 12). Due to persistently low yields on traditional instruments, investors are seeking to improve the yields of their portfolios using the region’s real estate markets. Looking ahead, however, the rise in yield curves may be coupled with a decline in investors’ demand as borrowing costs rise, eventually resulting in a decrease in real estate prices. The ESRB is closely monitoring developments in the commercial real estate market, and in the case of several West and North European countries it has already warned about the build-up of risks (financing, collateral and profitability).

## 2 Trends in lending. Household lending picks up, as corporate lending steadily expands

Corporate lending grew at a rate of 10 per cent in annual terms in 2017, owing to the continued, significant (12 per cent) growth in SME lending and expansion in the large companies' segment. In addition to stronger demand, lending growth was also facilitated by the central bank's Market-based Lending Scheme, within the framework of which each bank met its lending commitment for 2017. Mounting competition in the banking sector was coupled with the steady easing of credit conditions, while corporates' credit demand also increased. In this favourable market environment, lending is expected to continue to expand over the forecast horizon. Corporate indebtedness cannot be considered high in an international comparison; therefore, further growth in lending may be in line with the equilibrium path. After the major decline following closure of the FGS, the proportion of longer-term, fixed-rate loans within SME loans increased only slightly and temporarily in H2.

In 2017, considerable growth was registered in household loans outstanding compared to the previous year, amounting to a total of 2 per cent in annual terms. This was mainly attributable to the growth in housing loans, although a pick-up in consumer lending was also seen during the year. The volume of new contracts reached the level observed before the crisis, but – as a result of the debt cap rules effective since 2015 – new lending is occurring in a sound structure, with lower risks. Within new housing loans, the proportion of loans with longer-term interest rate fixation increased and already amounted to more than 70 per cent in early 2018, and within these longer-fixed-rate loans more than 40 per cent were Certified Consumer-Friendly Housing Loans in December 2017. According to the responses to the Lending Survey, banks expect rising demand for both housing loans and consumer loans, and further growth in household lending is projected over the forecast horizon. Accordingly, household indebtedness may approach its equilibrium level in the coming years, while the negative credit gap may gradually close.

Chart 13: Growth rate of outstanding loans of the overall corporate sector and the SME sector

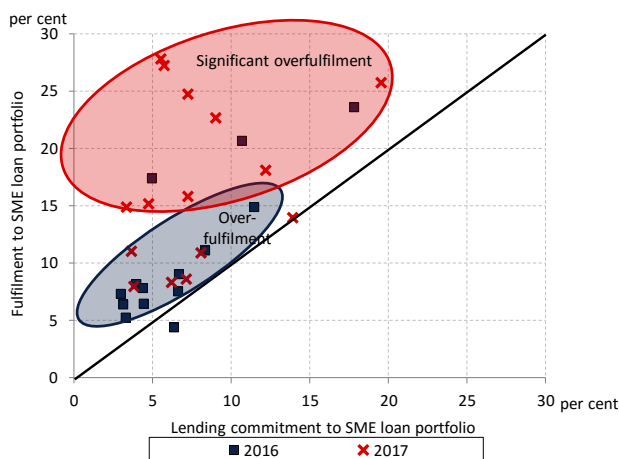


Note: Transaction based, prior to 2015 Q4 data for SMEs are estimated based on banking system data. Source: MNB

### 2.1 Corporate lending continued to expand in 2017

Corporate lending continued to grow dynamically in 2017. During the year, non-financial corporations' loans outstanding at credit institutions and financial enterprises increased by a total HUF 680 billion on a transaction basis. Accordingly, an annual transaction expansion of 9.8 per cent was observed (Chart 13), which is the highest rate in the region. Based on the actually available data, which only contain the credit institution sector, expansion continued in 2018 Q1, at a rate of 10.3 per cent. The annual growth rate of the SME sector's outstanding loans including the self-employed was 11.8 per cent in 2017, while the outstanding loans of the sector of micro, small and medium-sized enterprises in a narrow sense increased by 11.4 per cent. In 2017 Q1, SME lending was still strongly supported by the Funding for Growth Scheme, but even after its phasing out there was no decline in this segment. With the end of the temporary effects of land purchase loans, the volume of transactions of the self-employed returned to near the underlying trend. Certain major, one-off corporate loans also played a key role in the acceleration in overall corporate

Chart 14: Fulfilment of the lending commitments under the Market-based Lending Scheme



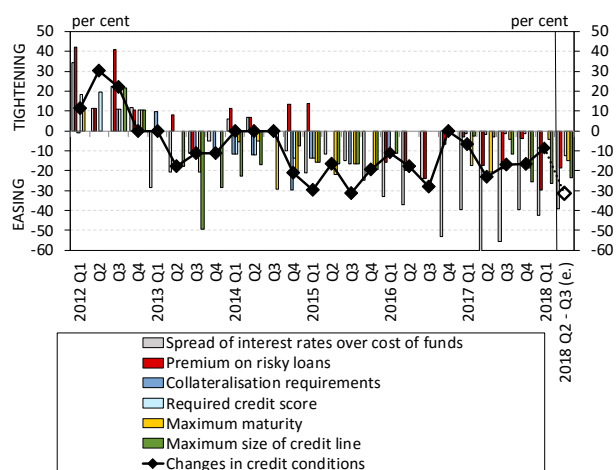
Note: Two small banks with extremely high commitment and performance are not shown in the chart.

Source: MNB

growth. A change was seen in the currency composition of the loans disbursed: while FX loans outstanding had been steadily declining since 2009, FX loan disbursements already accounted for more than 50 per cent of the increase in loans outstanding in 2017. The dynamic growth in corporate FX lending was attributable to large one-off items as well as an increase in activity in the commercial real estate market.

**Banks significantly overfulfilled their commitments under the Market-based Lending Scheme (MLS).** In 2017, the central bank facilitated lending with positive incentives through the MLS in an indirect manner. Participating banks increased their SME lending commitment of HUF 170 billion originally planned for 2017 to some HUF 230 billion in the second phase of the scheme launched in the middle of the year. By the end of the year, all 16 participating banks had fulfilled their respective commitments (Chart 14). As a result, at sector level the banks achieved performance of 250 per cent, exceeding that of the previous year. In relation to increasing their commitments, banks proved to be conservative, as their performance typically exceeded the commitments to a much greater degree in 2017 than in 2016. None of the credit institutions wanted to reduce their respective commitments for 2018; as a result, the scheme continues to contribute to the expansion in outstanding loans.

Chart 15: Changes in credit conditions in the corporate segment



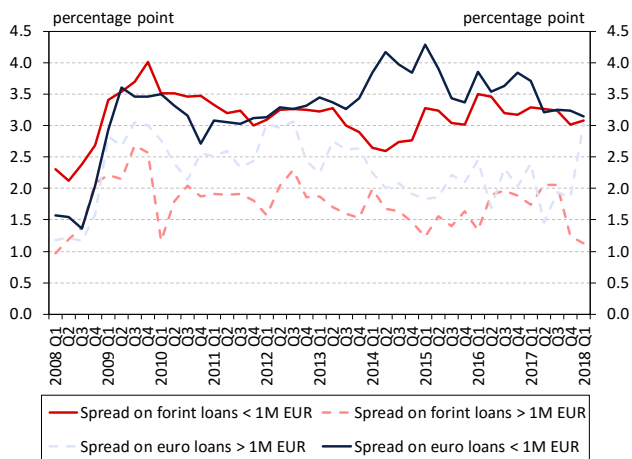
Note: Net percentage balance of respondents reporting tightening/easing credit conditions weighted by market share.

Source: MNB, based on banks' responses

**Corporate credit conditions eased further in 2017 and 2018 Q1.** In the latest lending surveys, banks reported easing in credit conditions in all corporate size categories. This easing was primarily justified by the competition and favourable economic prospects and was mainly reflected in a decline in interest rate spreads (Chart 15). In personal interviews, several banks' representatives mentioned increasing risk competition in addition to price competition. According to forward-looking responses, against the background of intense competition, credit conditions may continue to ease in 2018, which may entail a further decline in interest rates.

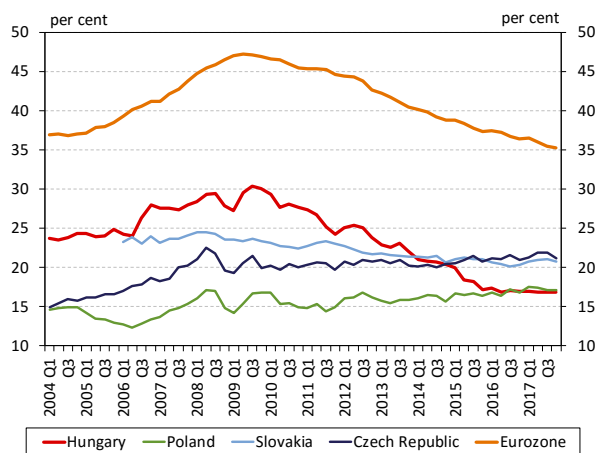
**Corporate credit demand strengthened.** In 2017 and 2018 Q1, banks reported in the surveys that they perceived an increase in the demand for both short- and long-term loans on the part of SMEs as well as large companies. There seems to be increasing demand for both HUF and FX loans, although demand for HUF loans is stronger. The strengthening in credit demand is primarily attributable to the low interest rate level, although in the surveys some 20 per cent of banks reported that companies' own funds have a negative impact on demand.

Chart 16: Interest rate spreads on new corporate loans



Note: Spreads on the 3-month BUBOR and EURIBOR. Loans with variable interest rates or with up to 1-year initial rate fixation. From 2015, based on data net of money market loans exceeding EUR 1 million. Source: MNB

Chart 17: Corporate credit-to-GDP in an international comparison



Source: ECB, MNB

Banks expect these developments to remain, i.e. the low interest rate environment will continue to support the satisfaction of emerging financing needs through the use of bank loans in all segments.

**Corporate lending rates and interest rate spreads declined at end-2017.** The decline in spreads indicated by banks in the surveys was reflected in the data in the case of HUF loans (Chart 16). In the past 2 quarters, in the case of new corporate forint loan contracts below EUR 1 million, which are typical of the SME sector, a nearly 0.2 percentage point decline was observed, while in the case of high-amount forint loans a 0.9 percentage point decline in spreads was seen. The average interest rate on low-amount euro loans also fell slightly, while spreads on high-amount EUR loans increased, which was attributable to one-off items. The decline in spreads was typical in all of the countries in the region, but the largest change was observed in Hungary.

**Based on an international comparison, corporate lending is expected to continue deepening.** At end-2017, credit institutions’ corporate loans outstanding reached 17 per cent of GDP in Hungary, which cannot be considered a high ratio by international standards. In the Visegrád countries, indebtedness as a proportion of GDP of more than 20 per cent is observed in Slovakia and the Czech Republic, while this ratio is much higher in the euro area, at more than 35 per cent (Chart 17). As a result of the corporate and banking sector balance sheet adjustment following the crisis, the degree of credit penetration essentially continuously declined, with the credit-to-GDP ratio falling by nearly 14 percentage points compared to its peak of over 30 per cent in 2009.

**Credit penetration is much higher in every industry in the euro area than in Hungary.** Looking at the individual sectors’ outstanding loans-to-value added ratio, it can be established that in the euro area credit penetration is many times higher than the Hungarian figure in every sector. At the same time, the overall picture is refined by the sectoral estimate of the structural credit gap, which also captures the peculiarities of the Hungarian economy and uses domestic macroeconomic variables,<sup>3</sup> as well as by borrowing abroad, which is an alternative to borrowing in Hungary. According to our estimate, the largest negative credit gap evolved in real estate transactions,

<sup>3</sup> Hosszú, Zs. – Körmendi, Gy. – Mérő, B. (2015): Univariate and multivariate filters to measure the credit gap. MNB Occasional Papers 118. Magyar Nemzeti Bank.

Table 1: Corporate credit-to-GDP in a sectoral comparison

	Trend	Cycle	Proportion of foreign funds
Agriculture	Sector adapting with trend	No credit-gap	Low
Manufacturing	Upturn	Negative credit-gap	Before the crisis high, significant decline
Trade and hospitality	Upturn	Negative credit-gap	Low
Transportation and storage	Sector adapting with trend	No credit-gap	High
Building industry	No upturn	Negative credit-gap	Before the crisis high, significant decline
Real estate	No upturn	Negative credit-gap	Before the crisis high, significant decline

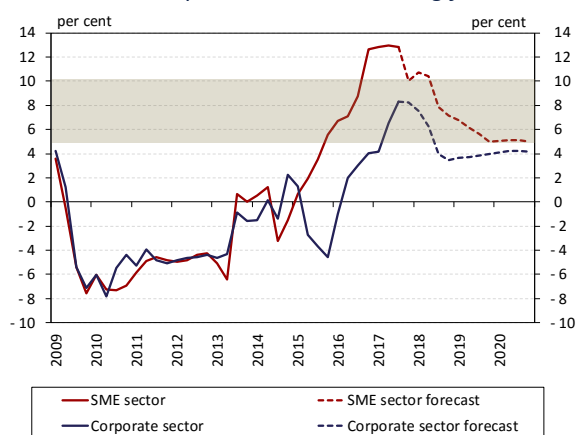
Note: Trend and cycle on the basis of the structural credit gap estimate. Source: MNB

construction and the trade and catering sectors as a result of banks' balance sheet adjustment following the crisis (Table 1). In this context, in several cases significant declines in financing by foreign banks were also observed, amounting to 5 per cent of current GDP in total. At the same time, in the manufacturing and trade sectors there was already a turnaround in 2017: in parallel with the closing of the credit gap, the trend of indebtedness also started to rise.

**Corporate lending may continue to expand over the forecast horizon.** In an environment of buoyant economic growth and persistently negative real interest rates, lending is expected to expand further, still supported in 2018 by the lending commitments that banks made in the Market-based Lending Scheme as well. The dynamics may decline to some extent with the fading out of the effect of the high-volume, one-off borrowings related to certain large companies. The annual expansion in total corporate lending may continue over the forecast horizon (Chart 18).

**Both cyclical and trend developments may contribute to growth in loans outstanding.** According to the MNB's estimate, at end-2017 the level of the corporate credit-to-GDP ratio was well below its long-term trend; the balance sheet adjustment resulted in a negative credit-to-GDP gap<sup>4</sup> (Chart 19). At end-2017, the financial intermediary system's corporate credit-to-GDP ratio fell short of the trend by 6 percentage points. Accordingly, a future increase in the level of outstanding loans as a proportion of GDP may take place through two channels: firstly, through a trend of deepening entailed by international convergence; and secondly, through short-term cyclical catching up with the domestic equilibrium level. The latter development, i.e. the closing of the credit-to-GDP gap, will probably take place beyond the forecast period. Accordingly, the quantitative expansion in lending may be supported by cyclical developments as well as trends, but in addition, the qualitative composition of the growing loan portfolio is also a determinant.

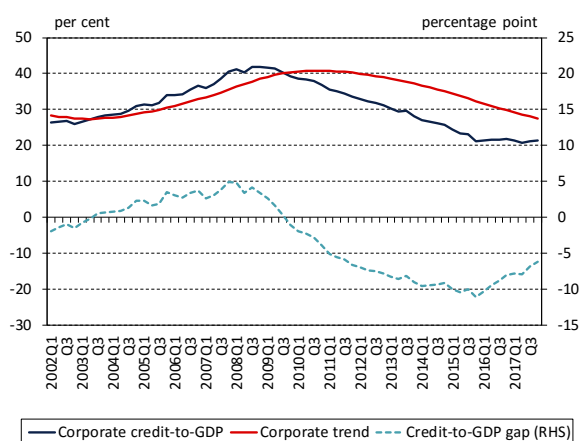
Chart 18: Corporate and SME lending forecast



Note: Transaction-based, annual change.

Source: MNB

Chart 19: Corporate sector indebtedness as a proportion of GDP and changes in the additional credit-to-GDP gap



Note: Based on exchange rate adjusted loans outstanding received from the whole financial intermediary system. Source: MNB

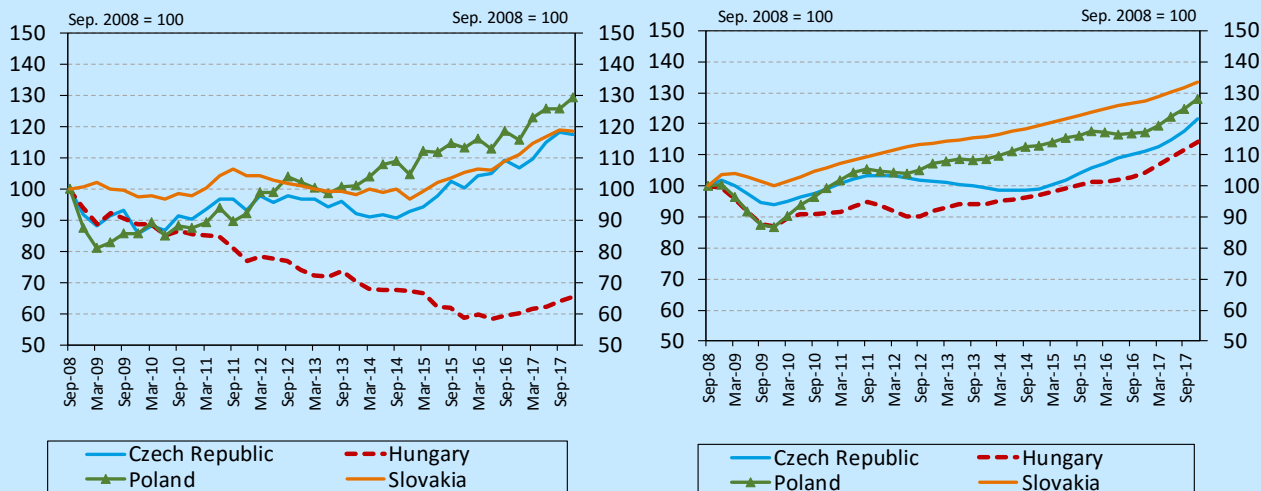
<sup>4</sup> For more information on the methodology of the additional credit gap, see <http://www.mnb.hu/letoltes/ccyb-methodology-new-en-1.pdf>

BOX 1: CORPORATE CREDIT PENETRATION IN THE CEE COUNTRIES

Prior to the 2008 crisis, corporate loans issued by credit institutions expanded dynamically in the European Union. Corporate indebtedness was extremely widespread, found in practically all Member States. Today, it is clear that from the supply side, credit institutions lent excessively to some submarkets, while underestimating the risks – especially in the case of commercial real estate loans –, which resulted in a lasting confidence and deleveraging crisis once the risky loans defaulted, undermining the banking system’s stability. Therefore, after the recession corporate credit declined steadily in several European countries. This exceeded the natural adjustment of the excessive lending cycle, especially in the countries where banks’ risk appetite decreased substantially.

After the crisis, developments varied in the CEE region. While in Hungary, Bulgaria, Romania and Slovenia the pre-crisis borrowing cycle was followed by protracted deleveraging and a significant decline in the corporate credit-to-GDP ratio, no major decrease was registered in the Czech Republic, Poland and Slovakia (see Chart 17). However, the two factors in the ratio should be examined separately. Hungary experienced a creditless recovery after the crisis. By the end of 2017, GDP had exceeded its 2008 level by 14 per cent, while corporate credit shrank to two-thirds of its previous volume, and thus overall the ratio fell from 30 to 17 per cent. By contrast, for example in post-crisis Poland, the debt-to-GDP ratio increased almost continuously, while both total credit and GDP have grown by around 30 per cent as compared to the levels seen at the onset of the crisis. The difference can be attributed partly to the excessive lending observed in certain countries before the crisis. This is because in the countries where the credit-to-GDP ratio dropped significantly, bank loans’ quality nosedived after the outbreak of the crisis. While in Hungary, Bulgaria and Romania the share of risky or non-performing loans relative to all credit claims was over 15 per cent, this figure was typically approximately 5 per cent in other Visegrád countries. The accumulated stock of non-performing loans drove banks to restrict lending.

Corporate loans outstanding (left) and GDP (right) in the V4 countries



Source: ECB, Eurostat

With respect to the availability of funds for non-financial corporations, a more accurate picture can be obtained if alternative sources of finance are also taken into account, in addition to loans extended by credit institutions. Since the crisis, the balance sheet total of firms in the region relative to GDP dropped substantially only in Romania and Slovenia, whereas it increased in the other countries despite the financial turmoil. Comparing all of the long-term loans on companies’ liabilities side, not only those extended by domestic credit institutions, to the size of the economy yields a similar picture of credit penetration as presented above: in contrast to Hungary, in the Czech Republic, Poland and Slovakia outstanding borrowing has increased as compared to pre-crisis levels. In the latter group of countries, this may have been also influenced by the fact that firms were less indebted prior to the crisis. In the use of commercial loans there has been no substantial difference in the region, their ratio to total loans outstanding has been stable after the crisis. Based on our observations, loans from owners behave as an equity-like financing source. Their use in large quantities is only typical of large enterprises, moreover, they mostly appear as capital in transit in

the statistics of certain countries, thus they should not be considered as sources of credit. In the absence of an upturn in borrowing, Hungarian businesses could only obtain the funds necessary for boosting their balance sheet total by raising equity. Besides, European Union grants may also have played a substantial role in fundraising. In the crisis years, of the Visegrád countries, access to bank financing posed the greatest problem for SMEs in Hungary, while in the absence of alternative options, Hungarian firms were the most in need of funding from banks.<sup>5</sup>

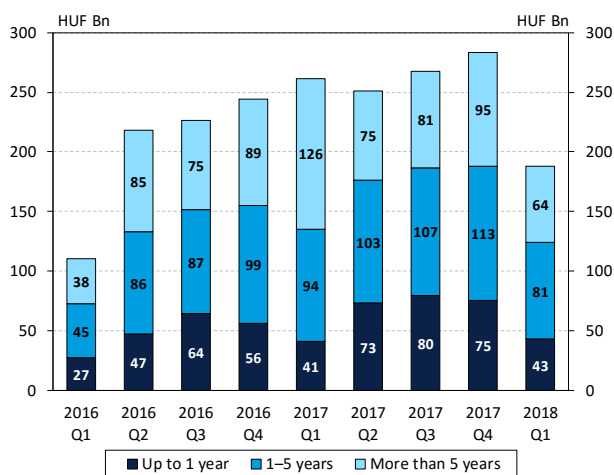
*Corporate liabilities to GDP in an international comparison*

Outstanding amount/GDP	Long-term loans				Shares and other equities				Bonds			
	2008	2013	2017	Change	2008	2013	2017	Change	2008	2013	2017	Change
Hungary	53	56	42	↓	109	127	141	↑	1.3	2.2	1.5	↓
Poland	29	30	31	↑	73	77	77	↑	2.7	5.2	6.3	↑
Czech Republic	31	36	32	↑	100	93	115	↑	4.0	9.3	7.0	↓
Slovakia	29	31	29	↑	68	65	63	↓	2.8	3.9	6.7	↑
Romania	38	33	25	↓	60	58	48	↓	0.1	0.1	0.1	↑
Bulgaria	98	92	71	↓	110	132	136	↑	1.9	3.8	3.9	↑
Slovenia	53	63	45	↓	96	102	98	↑	1.3	2.3	2.5	↑
Latvia	59	60	54	↓	55	72	80	↑	0.4	0.6	0.7	↑
Lithuania	41	30	31	↓	105	91	100	↑	0.9	0.2	1.4	↑
Estonia	70	62	55	↓	157	176	189	↑	4.7	6.9	6.3	↓

Note: Higher values with red colours in the table; in the case of changes, decrease compared to 2008 marked with red, increase marked with green. Source: Eurostat

Another notable aspect is that the corporate bond market is deeper in the countries where neither corporations' loans from credit institutions nor their total credit contracted: in Poland, the Czech Republic and Slovakia. Moreover, the debt securities market in these countries was able to expand considerably after the crisis, growing to four times the size of the Hungarian market relative to the respective economies by the end of 2017. The mature corporate bond market was able to reduce the negative real economy effects from commercial banks' deleveraging in Western European economies as well, which suggests that a deeper corporate bond market may also be favourable from a stability perspective.

Chart 20: New SME loans by maturity



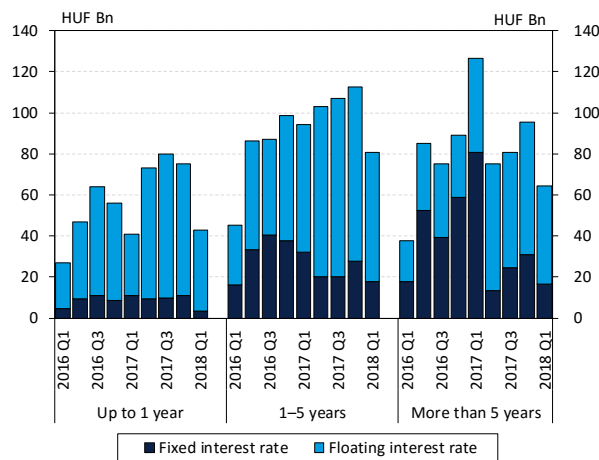
Note: In charts 20–22, loans with a maturity up to 1.2 years were classified as 'up to 1-year' loans, while those with a maturity between 5.0–5.2 years were considered 1–5-year loans. Source: MNB

## 2.2 The ratio of fixed-rate loans is still low among long-term SME loans

The ratio of longer-term SME loans increased in the last two quarters. Following closure of the Funding for Growth Scheme at the end of the first quarter of 2017, there was no major decline in the volume of SME loans, although the distribution of the maturities of the loans shifted towards shorter maturities. This is probably attributable to the fact that SMEs tried to materialise a significant proportion of their investments requiring long-term loans in the period of the FGS. Following closure of the scheme, the ratio of loans with maturity of over 5 years fell to below 30 per cent, but then increased to around 34 per cent by the end of 2018 Q1. This is already close to the ratios observed in the individual quarters of the FGS, although the volume of contracts in Q1 fell short of the previous quarters significantly, on account of sea-

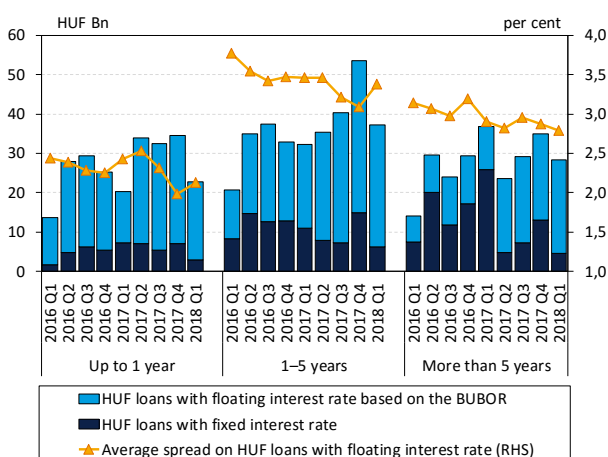
<sup>5</sup> This was confirmed by the Survey on the Access to Finance of Enterprises (SAFE) conducted regularly across Europe. [https://ec.europa.eu/growth/access-to-finance/data-surveys\\_en](https://ec.europa.eu/growth/access-to-finance/data-surveys_en)

Chart 21: Volume of new SME loans with fixed and variable rates by maturity



Source: MNB

Chart 22: Average interest rate spread on low-amount, variable-rate SME loans



Source: MNB

sonal factors (Chart 20).

**The ratio of fixed-rate loans was significantly lower in the year following the end of the FGS.** Following closure of the scheme, the ratio of fixed-rate SME loans dropped, especially at longer maturities. Following the end of the FGS, banks were presumably less willing to provide fixed-rate financing with conditions similar to those of the FGS, or only at an interest rate level that was considered too high by corporations. 20–30 per cent of the new SME loans with a maturity of over 5 years granted in the last four quarters were fixed-rate loans, which is still below the approximately two-third ratio observed during the period of phasing out the FGS (Chart 21).

**The expansion in the volume of low-amount, variable-rate SME loans was accompanied by a decline in interest rates in 2017.** The interest rate on forint SME loans repricing within a year with an amount below HUF 300 million declined in 2017. In addition to a decline in the BUBOR, which serves as a reference rate, this was also attributable to the sharp decrease in interest rate spreads, which indicates increasing price competition. Spreads tended to decline mainly in the case of short-term (up to 1 year) and medium-term (up to 5 years) loans, where until the end of 2017 the average spread weighted by the contract amount changed to 2.0 and 3.1 percentage points, respectively, while there was only a slight change in the spread on loans with a maturity of over 5 years (Chart 22). Interest rates increased slightly in 2018 Q1, which was characterised by seasonally lower activity. In the case of fixed-rate loans, the rise in the cost of funds that necessarily took place in the medium- and long-term segments following the end of the FGS was partly offset by the decline in the spreads applied by banks. As a result, the average level of transaction interest rates of 2.0–2.5 per cent that had been typical until then only increased by roughly one half a percentage point in 2017 H2.

**BOX 2: EFFECT OF THE FGS ON GDP GROWTH**

Nearly 40,000 SMEs received financing in the amount of more than HUF 2,800 billion during the three phases of the Funding for Growth Scheme. The magnitude of the scheme is shown by the fact that during the four years of the contracting period the total amount of loans disbursed equalled 8 per cent of the average annual gross domestic product. Of this, investment loans (including leasing) accounted for roughly HUF 1,800 billion. The assessment of the effects of a programme of this magnitude is highly relevant; one of its important implications is the

quantification of the impact on economic growth. In view of the time horizon of the data available at company level, at present it is mainly possible to estimate the short-term, so-called first-round effects.<sup>6</sup>

The impact on growth of the Funding for Growth Scheme (FGS) depends significantly on the borrowing characteristics of the companies participating in the scheme. Taking into account the effect mechanisms of the FGS, the following main corporate types are distinguished:

- Loan refinancing companies (forint or foreign exchange): **in these cases there is no direct impact on investment**, but as a result of more stable and cheaper funding **their real economy added value may improve over the long term (second-round effect)**. In economic term, they also include creditworthy companies which would have borrowed for the same purpose under market conditions as well even if the FGS had not existed.
- Companies with recourse to new current assets financing: these firms also do not generate new investment directly, but they can also increase their efficiency with their more efficient and cheaper operations. Accordingly, **they may have new investment as second-round effect over the long term**.
- Companies using new investment loans: These companies take FGS loans in order to implement new investment directly; their **impact on growth and employment can be measured over the short run as well (first-round effects)**. Their following two groups are distinguished:
  - 1) **credit-constrained companies**, which would not have had access to financing at all without the FGS, and
  - 2) **creditworthy companies** that – without the FGS – would not have implemented their investment under pure market conditions due to the higher cost of capital.

The aforementioned first-round effects of the FGS on growth are identified using model estimations. Accordingly, the FGS has an effect on both credit supply and credit demand. **On the demand side**, the predictable and favourable funding allows more investment than lending under market conditions. **On the credit supply side**, in turn, a wider range of companies can access loans, and thus the more companies with limited access to credit are reached by the FGS, the greater its impact is. **Based on our estimates** also applied before and capturing the credit supply side, the total contribution of the FGS to growth during the estimation period extended until end-2017 may have amounted to a total **2–2.5 per cent**. This means that the annual additional SME lending of 2–5 per cent resulted in an additional GDP growth of 0.3–0.8 per cent each year.

It is also worth noting that these estimates attempt to quantify only the effects appearing in the short run; **further indirect effects may have also been felt over the longer term** (e.g. more efficient operations, higher value added), and thus **second-round effects**, which will be quantifiable from the data of many years, may develop even after the closing of the FGS. In addition, the contribution to growth also depends on what alternative path the achievements of the FGS are compared to. If a **risk path** where lending is characterised by continued decline (credit crunch) is considered an alternative, a much greater impact on growth can be attributed to the FGS, amounting to as much as an annual 0.9–1.9 per cent.

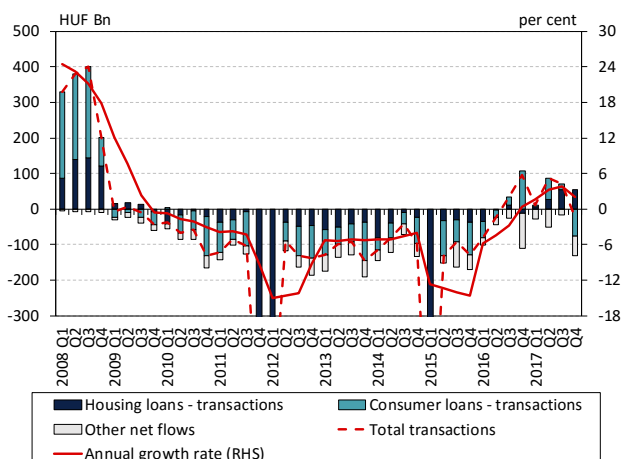
**Based on the above, it can be concluded that, as a first-round effect, the FGS resulted in a total GDP growth of at least 2–2.5 per cent between 2013 and 2017, but through the increase in corporate efficiency, as a result of second-round effects, even stronger, long-term impacts may emerge.**

<sup>6</sup> This analysis is based on previous estimation methodologies, in particular the following: Endrész, M. – Harasztosi, P. – Lieli, P.R. (2015): The Impact of the Magyar Nemzeti Bank's Funding for Growth Scheme on Firm Level Investment. MNB Working Paper 2015/2; MNB (2016): Experience with the Magyar Nemzeti Bank's instrument to incentivise bank lending 2013–2015. MNB volume of essays and studies 2016.

### 2.3 Broad-based expansion in household lending

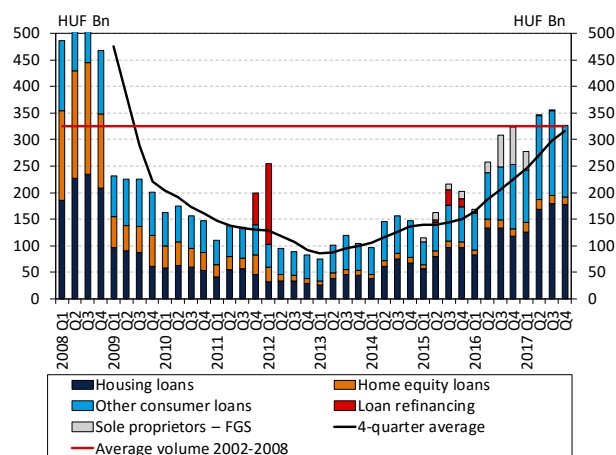
**Household lending shifted to a rising path in 2017.** In 2017, as a result of disbursements and repayments, the household sector’s loans outstanding vis-à-vis the financial intermediary system as a whole expanded by a total HUF 144 billion, exceeding the previous year’s transaction-based growth by nearly HUF 120 billion. Accordingly, in 2017 as a whole, household lending expanded by 2 per cent in annual terms (Chart 23). Housing loans contributed to the expansion by some HUF 140 billion, while repayments in the case of consumer loans were close to the volume of new loans. As a result, the amount of consumer loans outstanding remained almost unchanged compared to end-2016. Some one-off items further contributed to the decline that took place in other loans outstanding. In 2018 Q1, the household loans outstanding of the credit institution sector expanded by HUF 10 billion. Thus, annual growth stood at 2.7 per cent in March.

Chart 23: Quarterly changes in household loans of the financial intermediary system



Source: MNB

Chart 24: New household loans in the credit institution sector

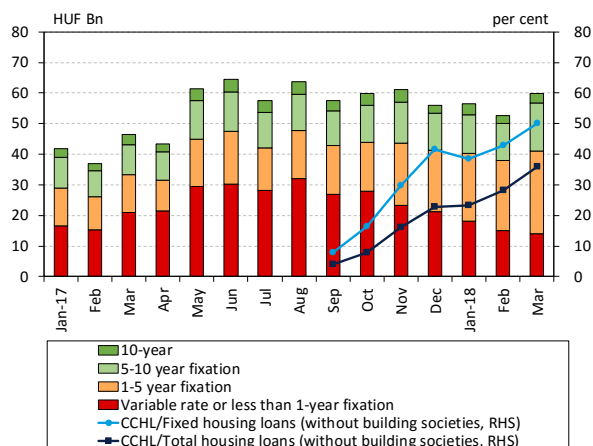


Note: Loan refinancing indicates only the refinancing related to the early repayment scheme and the FX conversion. Source: MNB

**2017 was characterised by dynamic expansion in housing and unsecured consumer loans.** During the year, the value of new loans amounted to HUF 1,236 billion, corresponding to annual growth of 37 per cent (Chart 24). The average issue of new loans in 2017 was close to the average of the rising phase of the previous credit cycle, which was mainly attributable to new housing loans. The annual average increase in housing loans and home equity loans amounted to 39 per cent and 21 per cent, respectively, although the latter’s issued volume and share within total lending is still low. Higher increases of 47 per cent and 59 per cent were recorded in the case of personal loans and vehicle loans, respectively, while the issue of hire purchase and other loans was 8 per cent below the contracts concluded in the same period of the previous year.

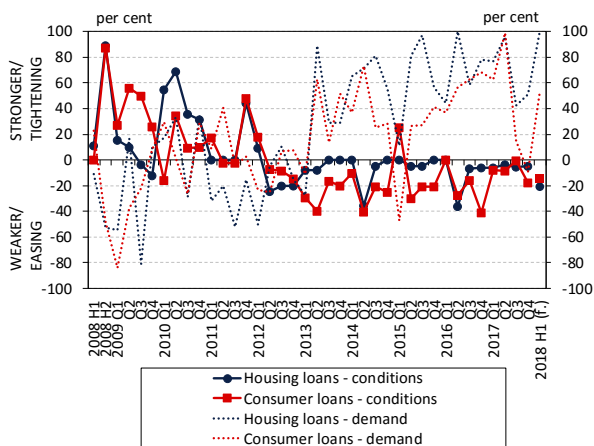
**Within new housing loans, the proportion of loans with longer interest rate fixation is increasing.** While a gradual rise in variable-rate housing loans was observed in 2017 H1, reaching a proportion of nearly 50 per cent, a major decline was seen as of September in favour of loans fixed for over one year. This may be partly attributable to the launch of Certified Consumer-Friendly Housing Loans in September. Housing loans with over 1-year fixation already accounted for more than 76 per cent in 2018 Q1. Within fixed loans, the strongest rise was observed in the case of loans with 1–5 year interest rate

Chart 25: New housing loans by interest rate fixation and the proportion of Certified Consumer-Friendly Housing Loans (CCHL)



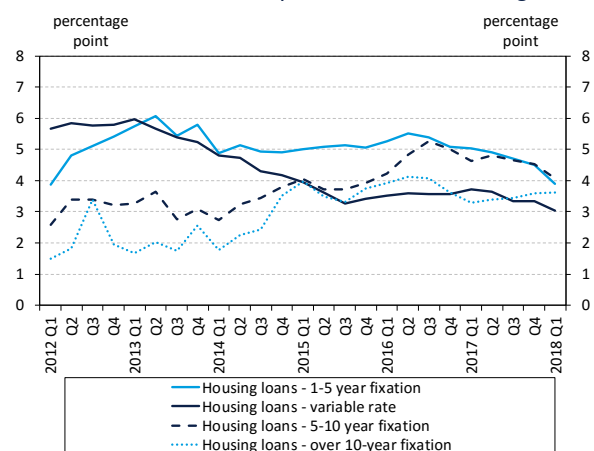
Source: MNB

Chart 26: Changes in credit conditions and credit demand in the household segment



Note: The net ratio is the difference between tightening and easing banks, weighted by the market share. Source: MNB, based on banks' responses

Chart 27: Interest rate spreads on new housing loans



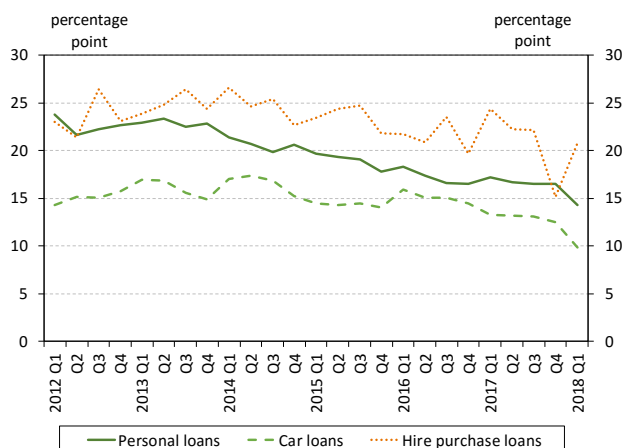
Note: APR-based smoothed spread over the 3-month BUBOR in the case of variable-rate or for up to 1-year fixed-rate housing loans, while in the case of housing loans fixed for a period longer than 1 year, the smoothed spread over the relevant IRS. Source: MNB

fixation, but the share of interest rate fixation of over 5 years was also 30 per cent. Between September 2017 and March 2018, banks issued Certified Consumer-Friendly Housing Loans with a total value of HUF 66 billion, which reached a 50 per cent share within fixed-rate loans – excluding loans from home savings and loan associations – in March (Chart 25). At end-2017, 71 per cent of the new housing loan contracts were for used homes, while 19 per cent were used for the construction or purchase of new homes. In 2017, households concluded housing loan contracts with a total value of HUF 650 billion, which is around three quarters of the issue observed in 2008. Nevertheless, the debt cap rules in force in the current credit cycle efficiently prevent households' excessive indebtedness. Of the housing loans issued in H2, 18 per cent, i.e. some HUF 62 billion was related to the Home Purchase Subsidy Scheme for Families (HPS).

**The rising demand related to housing market developments contributes to the upswing in domestic housing loans.** According to banks' responses to the Lending Survey, although to a small extent, banks continued to ease the conditions of both housing and consumer loans in 2017 H2. Looking at the partial conditions, more than half of the banks reported declines in the spreads on housing loans, while the prescribed payment-to-income ratio (which is stricter at the majority of banks than the MNB's debt cap rules) was eased in the case of consumer loans. Looking ahead, credit institutions held out the prospect of further easing in the case of both product groups (Chart 26). Half of the responding banks experienced a pick-up in demand for housing loans, while demand for consumer loans remained unchanged. For 2018 H1, the majority of banks expect an upturn in demand for both consumer and housing loans.

**Interest rate spreads on housing loans declined further in H2.** The average APR on newly issued housing loans declined by 50 basis points in H2, to reach 4.5 per cent in December. A similar trend was observed in the average level of spreads, which decreased by nearly 40 basis points to 3.9 percentage points by the end of the year. A significant fall in spreads was seen in the case of housing loans fixed for 1–5 years, i.e. a 60 basis point year-on-year decline to 3.9 percentage points by the end of 2018 Q1. The average spread on loans fixed for over 10 years increased by 40 basis points to 3.6 percentage points by March, while the spreads on variable rate loans decreased to 3 percentage points (Chart 27). In the case of

Chart 28: Interest rate spreads on new consumer loans



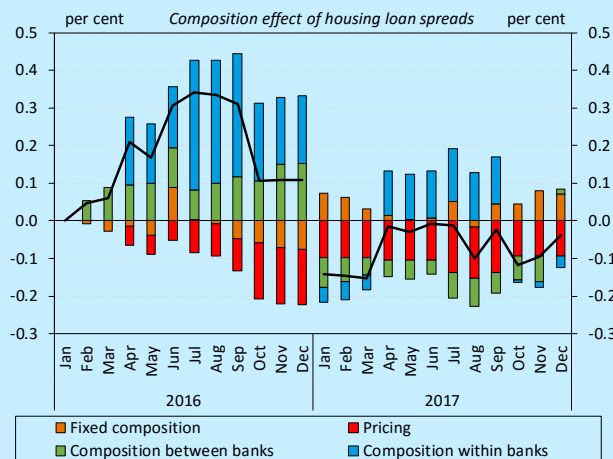
Note: APR-based smoothed spread over the 3-month BUBOR.  
Source: MNB

unsecured consumer loans, spreads on both personal loans and vehicle loans fell in the previous 12 months, amounting to 14.3 and 9.9 percentage points at the end of 2018 Q1, respectively (Chart 28). The spread on hire purchase loans was more than 22 percentage points in the period under review.

BOX 3: COMPOSITION EFFECTS IN THE DEVELOPMENTS OF INTEREST RATES AND SPREADS OF HOUSING LOANS

The interpretation of aggregate interest rate statistics is hindered by various, even opposite-signed factors. This occurs because the direction and level of ‘pure’ price change may be concealed by composition effects that come into play among banks or in banks’ portfolios, or originate from a shift in emphasis between fixed-rate and variable-rate transactions. The purpose of this analysis is to identify these composition effects, based on individual loan transactions, that affect the changes in interest rates on housing loans, and to separate these effects from the purely price change developments.

To this end, we used a so-called pooled OLS (ordinary least squares) model framework to estimate the effect of the factors that affect the interest rates and spreads on housing loans issued between January 2016 and December 2017. During the decomposition, explanatory variables controlling for the size of the loan, the length of interest rate fixation, the cost of funds approximated by the IRS corresponding to the fixation as well as the intrabank and interbank price differences (bank and time fixed effects and the interactions among them) were included in the weighted regression estimate. In this statistical model, the aggregation of the estimated parameters of the (weighted) individual effects allows an overview of the entire composition effect of the interest rate effects.



Source: MNB

Using the statistical model, we identified to what extent the contrasting effects influence the changes in interest rates and spreads on housing loans and then decomposed the composition of the change between individual periods accordingly. The positive value of the *interbank* effect means that the weight of banks that issue more expensive loans increased compared to the previous period, while a positive *intrabank* effect reflects the change in behaviour of the given bank, e.g. an increase in the ratio of riskier clients. The composition according to interest rate fixation describes the effect stemming from the ratio of longer-term fixed-rate to variable-rate transactions.

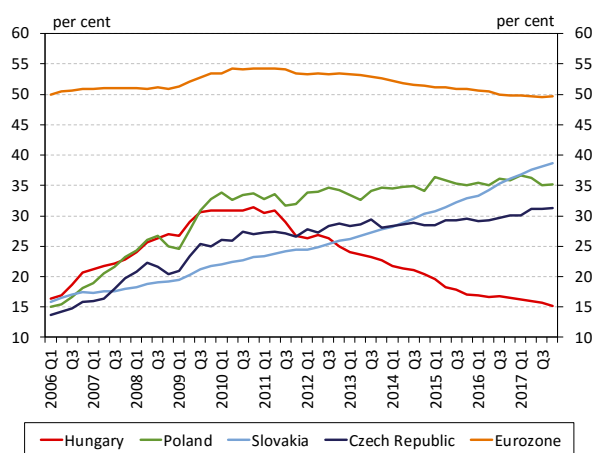
The steadily declining costs of funds reduced the interest rates for almost the entire period. However, the developments in spreads on housing loans observed in 2016 were attributable to multiple additional simultaneous effects. Although the weight of presumably riskier clients and more expensive banks increased, on the whole, the

reducing effect of other factors resulted in a decline in the average interest rate level.

**In 2017, the weight of loans with fixed interest rates increased within all housing loans issued, but on the whole, spreads declined further as a result of contrasting effects. The decline was attributable to the increase in the weight of banks issuing cheaper loans, and the pricing net of composition effects also decreased steadily.** The rise in the proportion of fixation as well as the price-reducing effect of cheaper banks was more typical in H2.

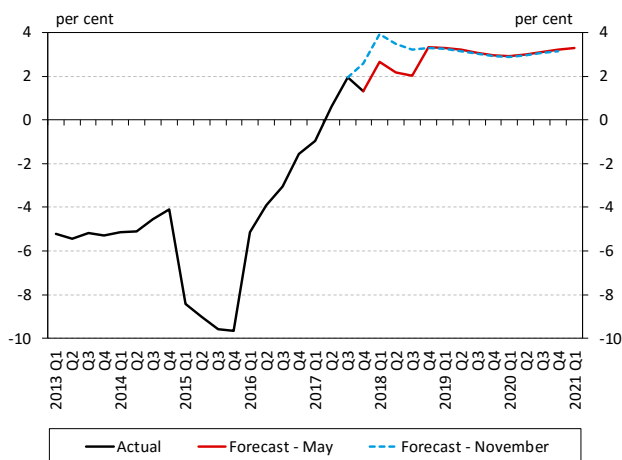
**On the whole, it can be established that examining the pure price effect, a sector-level gradual decline in interest rate spreads of housing loans can be observed, while there is also a price-reducing effect among banks, which might be connected to the introduction and rise of the CCHL. All of this can be observed despite the fact that banks are gradually easing their previously strict lending standards.**

Chart 29: Household credit-to-GDP in the region



Source: ECB, MNB

Chart 30: Household lending forecast

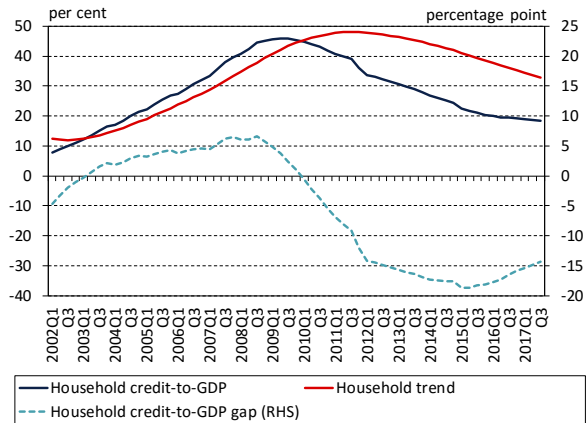


Note: Transaction-based annual growth rate. Source: MNB

**Household lending in Hungary falls short of the trends in the region.** In terms of household loans outstanding as a proportion of GDP, Hungary lags considerably behind the levels typical in the region, as all countries exceeded the 30 per cent ratio by the end of the year (Chart 29). By contrast, as a result of the decline observed since 2011, household loans outstanding in the Hungarian banking sector fell to 15 per cent of GDP. The credit-to-GDP ratio in the Slovak banking sector rose considerably even during the crisis, and indebtedness as a proportion of GDP expanded to some extent in the case of Poland and the Czech Republic as well. In Hungary, a significant negative credit gap evolved cyclically as a result of the household sector's balance sheet adjustment; therefore, looking ahead, the rate of credit expansion taking place may be even higher. By this, the relative lag behind the region may lessen, and household indebtedness may simultaneously return to the equilibrium level.

**Further expansion in household lending is expected over the forecast horizon.** By end-2016, household lending reached a turning point in the financial intermediary system as a whole, and according to our forecast, household loans are expected to expand steadily as of 2017 as well (Chart 30). The growth is primarily attributable to the low interest rate environment and the rise in real wages, which – together with the family support programmes – result in rising credit demand. Considering the low credit penetration, even significantly higher credit dynamics than currently being seen may materialise in household lending beyond the forecast horizon, if convergence takes place in the trend of the indebtedness-to-GDP ratio as well. Its realisation in a sound structure is conditional upon the expansion in loans outstanding taking place with wider credit penetration, accompanied by a sustainable increase in incomes.

Chart 31: Household sector indebtedness as a proportion of GDP and the additional credit-to-GDP gap



Note: Based on exchange rate adjusted loans outstanding extended by the whole financial intermediary system. Source: MNB

**The increase in loans outstanding is sustainable in the long run as well.** The newly disbursed household loan volume has been increasing since 2013, and household loans outstanding shifted to a stable growth path in 2017. Their structure is also healthier compared to the stock built up prior to the crisis. With an increase in wage dynamics, by applying the effective debt cap rules as well as through the reduction of the interest rate risk, lending may continue to grow in a sustainable manner. The room available for dynamic expansion is also indicated by the fact that considering the developments in the household credit-to-GDP ratio, according to our estimate, the additional credit-to-GDP gap<sup>7</sup> would not close in the forecast horizon even if credit expansion was faster than the baseline scenario (Chart 31). Therefore, lending is not expected to be overheated in the short run, and stronger wage dynamics may facilitate the building up of dynamic and prudent lending in the longer run as well.

<sup>7</sup> For more information on the methodology of the additional credit gap, see <http://www.mnb.hu/letoltes/ccyb-methodology-new-en-1.pdf>

## 3 Portfolio quality. Significant improvement in 2017 and further cleaning expected in 2018

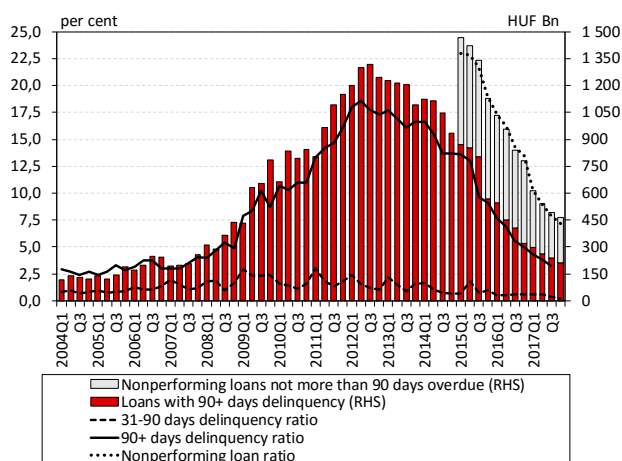
Following a significant decline in previous years, the stock of non-performing loans shrank considerably in 2017, although further steps still need to be taken to reach the 5 per cent level of non-performing loans. The decline in the corporate segment is primarily attributable to the improvement of the portfolio and reclassifications, while in the household segment it is mostly the result of banks' active portfolio cleaning. Overall, the ratio of non-performing corporate loans declined by 6.3 percentage points in 2017, to reach 7.2 per cent at the end of the year. Within that, however, the 14.7 per cent ratio of non-performing project loans still significantly exceeds the 5.1 per cent ratio in the portfolio of other corporate loans. Following a decline of HUF 319 billion, non-performing household loans in the credit institutions sector amounted to HUF 628 billion at the end of December 2017, corresponding to an NPL ratio of 10.9 per cent of total household loans outstanding. The active portfolio cleaning of non-performing mortgage loans may continue in 2018 as well, and thus further portfolio sales to asset management companies are expected. The acquisition of non-performing mortgage loans by asset management companies may, in addition to financial stability aspects, also facilitate a more efficient search for a solution if debtors cooperate. The MNB pays special attention to compliance with the MNB recommendation that also concerns the activity of asset management companies and requires them to facilitate the debtor's performance before launching a legal procedure to enforce the claim.

### 3.1 The ratio of non-performing corporate loans is at its pre-crisis level

Both non-performing corporate loans outstanding and their ratio declined further in 2017. Similarly to previous years, the portfolio of non-performing corporate loan in the credit institutions sector declined in 2017 as well. At end-2017, non-performing corporate loans outstanding amounted to a total HUF 462 billion, of which some HUF 210 billion was over 90 days past due (Chart 32). At the end of the year, the ratio of non-performing loans amounted to 7.2 per cent, while that of loans over 90 days past due was 3.3 per cent. In annual terms, non-performing loans outstanding declined by HUF 318 billion, while on the whole the ratio of non-performing loans decreased by 6.3 percentage points.

The decline in the ratio of non-performing corporate loans was primarily the result of the improvement of the portfolio and reclassifications. Decomposing the change into factors suggests that the decline in the NPL ratio in 2017 was mainly attributable to the so-called portfolio improvement and reclassification component<sup>9</sup> (Chart 33). In addition to capital depreciation, if any, this category contains all events that result in the reclassification by credit institutions of non-performing loans

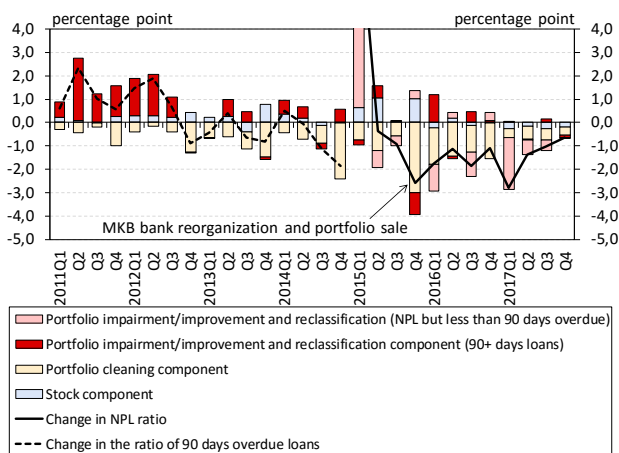
Chart 32: Ratio of non-performing corporate loans in the credit institutions



Note: Calculated by clients until 2010 and by contracts from 2010. Source: MNB

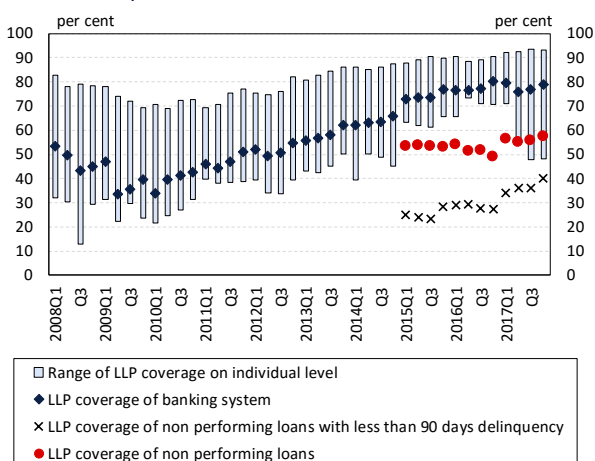
<sup>9</sup> We talk about a portfolio deterioration component if the factor calculated on the basis of the residual principle causes an increase in the ratio of non-performing loans, whereas in the case of the opposite effect we can talk about the improvement of the portfolio.

Chart 33: Factors affecting changes in the ratio of non-performing corporate loans in the credit institutions



Source: MNB

Chart 34: Loan loss coverage ratio for non-performing corporate loans in the credit institutions



Note: The range of LLP coverage on individual level refers to the larger banks. Source: MNB

into performing ones. Most often, the reason for reclassification may be a permanent improvement in debt servicing capacity or a decline in the debt servicing burden evolving as a result of reclassification, but reclassification of a technical nature may also take place.<sup>10</sup> In addition to portfolio improvement, decelerating but continued portfolio cleaning as well as the expansion in loans outstanding as a result of lending activity also led to a decline in the ratio of non-performing loans. In 2017, the volume and ratio of non-performing corporate loans decreased by HUF 318 billion and some 6.3 percentage points, respectively, but further active portfolio cleaning is also needed in 2018 to ensure the timely achievement of the expected 5 per cent ratio.<sup>11</sup>

**The loan loss coverage of the non-performing corporate loan portfolio is at a high level.** The loan loss coverage of the non-performing corporate loan portfolio was at 57.3 per cent at end-2017, which is historically the highest value (Chart 34). The increase in the coverage of non-performing loans is attributable to the rise in the coverage of exposures that are non-performing but are less than 90 days past due. Meanwhile, the coverage of the portfolio over 90 days past due was also close to its maximum at the end of December 2017; the decline in this indicator in early 2017 may have been attributable to the selling of lower-quality claims with higher coverage. In parallel with the decline at the beginning of the year, the range of the LLP coverage of major banks also increased by the end of the year: while the value of the indicator was 93.2 per cent for the bank with the highest coverage, the lowest value was 48.1 per cent.

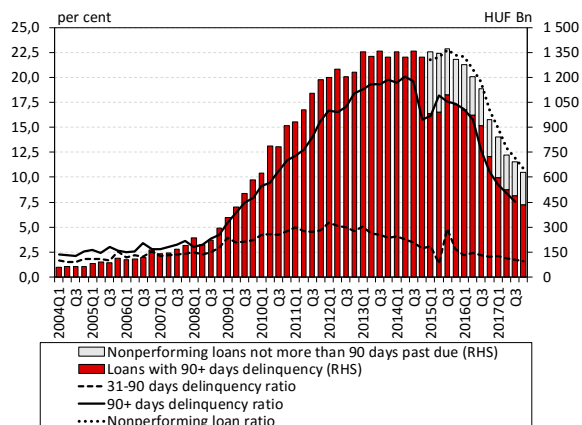
### 3.2 Further cleaning is to be expected in the household portfolio

**Non-performing household loans outstanding and the ratio of such loans decreased considerably in 2017.** The ratio of non-performing loans declined from 16.6 per cent at end-2016 to 10.9 per cent by end-2017 (Chart 35). In terms of the non-performing portfolio, the annual decline amounted to HUF 319 billion, and thus its size was HUF 628 billion at the end of December 2017. Of the non-performing portfolio, loans over 90 days past due account for some HUF 435 billion, while their ratio

<sup>10</sup> Technical type reclassifications originating from the revision of credit ratings within the framework of the prevailing regulations.

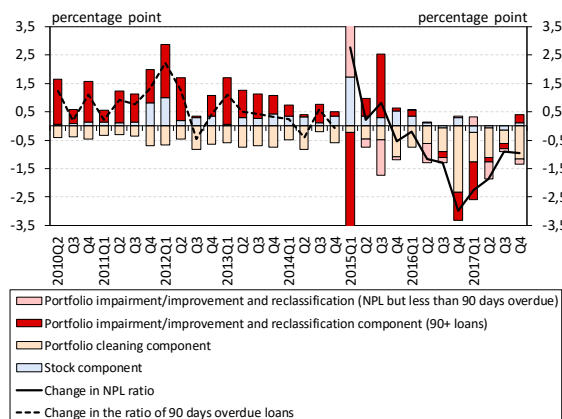
<sup>11</sup> A 5 per cent NPL level was determined among the 10 criteria of a well-functioning banking sector – <https://www.mnb.hu/letoltes/egy-iol-mukodo-magyar-bankrendszer-10-ismerve.pdf> –, but at EU level as well, a not more than 5 per cent level is desirable for each Member State.

Chart 35: Ratio of non-performing household loans of credit institutions by contracts



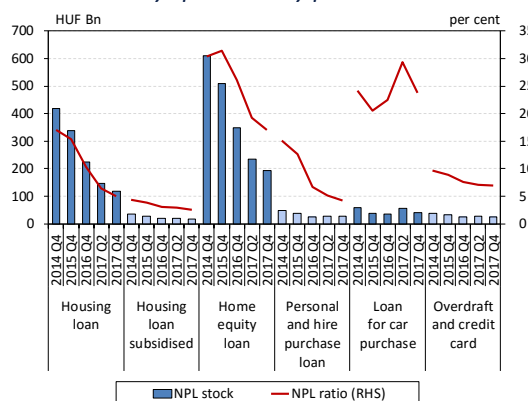
Source: MNB

Chart 36: Factors affecting changes in the ratio of non-performing household loans in the credit institutions<sup>8</sup>



Source: MNB

Chart 37: Ratio and stock of household loans over 90 days past due by products



Note: Banking sector and branch office data. Source: MNB

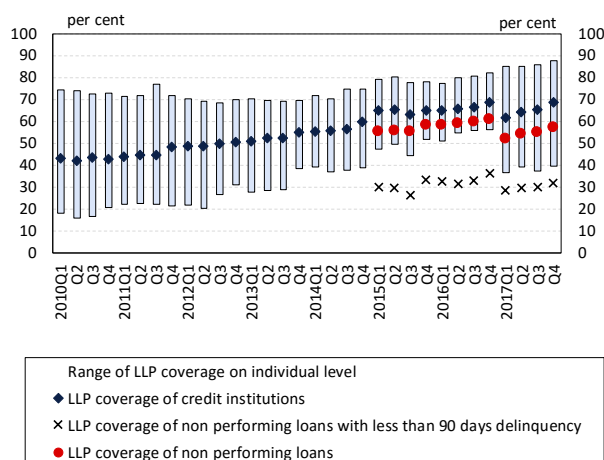
is 7.6 per cent within the household loan portfolio as a whole. Non-performing household loans and their ratio have declined to less than one half since early 2015, but their level is still considered high. The MNB continuously monitors the changes in non-performing household claims and the situation of the households concerned, but due to its social aspect the problem can primarily be treated with legislative and fiscal means.

It was mainly the sales of credit institutions' non-performing mortgage loan portfolios that reduced the ratio of non-performing household loans. The decline in the ratio of non-performing household loans was primarily the result of the significant portfolio cleaning, which led to a 3.7 percentage point fall in the ratio of non-performing loans in 2017 (Chart 36). During the year, the sales and write-offs of non-performing claims considered as portfolio cleaning amounted to some HUF 186 billion at the sector level. In addition to portfolio cleaning, it was mainly the improvement component that improved the quality of the portfolio, with the IFRS changeover playing a prominent role in early 2017. In the case of institutions switching over to the IFRS, a significant reducing effect on household loans converted into forints was exerted by the fact that – following conversion – the loans concerned had to be stated as new loans, at their fair value, without initial loan loss, and thus the gross book value of these claims declined considerably. In the last quarter of 2017, a deterioration in the portfolio was experienced, which increased the ratio of non-performing loans at the sector level by some 10 basis points. However, the rise in the ratio in the last quarter was typical for only less than one fifth of credit institutions, which, in our case, indicates a protracted cleaning of the problematic claims.

In the credit institutions sector, mortgage loans account for nearly three quarters of non-performing household loans. In 2017 H2, the ratio of loans over 90 days past due declined in the case of all products in the credit institutions sector (Chart 37). The ratio of loans over 90 days past due among general purpose mortgage loans, which represent the largest non-performing portfolio, was 17.1 per cent, and their value amounted to

<sup>8</sup> Note: In 2015 Q1, the change in the ratio of non-performing loans was substantially influenced by three one-off items. Firstly, the settlement primarily reduced the arrears, and secondly, it also reduced the total loan portfolio, and finally, the ratio of non-performing loans became higher as a result of the new definition. In 2015 Q3, the fact that the formerly overdue contracts affected by the settlement once again became overdue by more than 90 days, represented a single effect.

Chart 38: Loan loss coverage ratio for non-performing household loans in the credit institutions



Note: The range of LLP coverage on individual level refers to the larger banks. Source: MNB

Table 2: Distribution of credit institutions' delinquent mortgage loans by the status of the solution seeking process

Status of solution process	Contracts
Has not started	39.4%
First contact attempt took place	14.7%
Second contact attempt took place	3.7%
Third contact attempt took place	10.6%
Contact succeeded	7.4%
Information collection took place	1.7%
Situation assessment took place	1.0%
Solution proposal took place	11.4%
Arrangement took place	10.1%
<b>Total</b>	<b>100.0%</b>

Source: MNB

Table 3: Restructuring solutions of contracts falling under the scope of the MNB's recommendation

	Contracts - credit institutions	Contracts - financial enterprises
Prolongation	1.2%	0.5%
Unconditional debt relief	0.8%	0.1%
Conditional debt relief	1.4%	2.4%
Temporary reduction of the interest rate	0.0%	0.0%
Permanent reduction of the interest rate	0.2%	79.8%
Temporary and partial refinancing of the instalment through accrual accounting	76.5%	0.0%
Principal payment moratorium	0.0%	0.0%
Combination of the above	19.8%	17.1%

Note: Based on the data of contracts and institutions at least 60 days past due in 2017 Q4, falling under the scope of the MNB's recommendation. Only in the case of contracts where the agreement has already been reached and it contains restructuring. Source: MNB

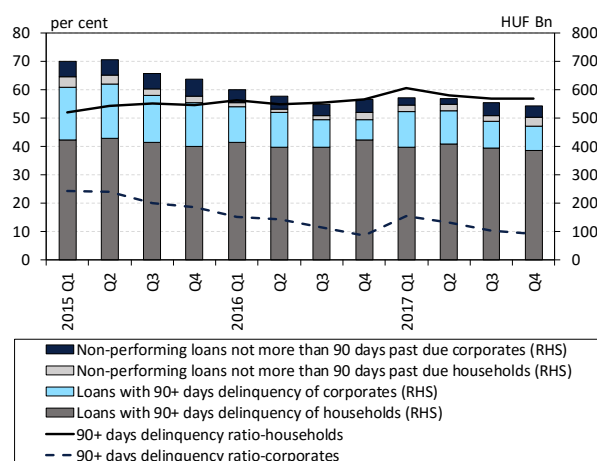
HUF 193 billion at end of December. In the case of car purchase loans, compared to the end of June 2017, the ratio of non-performing loans at end-December was down by 5.5 percentage points (23.8 per cent), although it is still the highest among retail products. In terms of volume, general purpose mortgage loans and housing loans with market interest rates (including the portfolio converted into forints) represent the biggest problem; their total amount over 90 days past due account for some 74 per cent of all delinquent loans.

**The loan loss coverage of non-performing household loans moved on a rising trend in 2017.** The loan loss coverage of household loans over 90 days past due was 68.7 per cent at end-2017, marking the highest value since the crisis (Chart 38). The coverage ratio of the entire non-performing portfolio, including non-performing loans less than 90 days past due, was 57.3 per cent, which represents a slight decline compared to end-2016. The variance of the coverage ratio across institutions increased: the highest and the lowest coverage ratio was 87.8 and 39.5 per cent, respectively, at end-2017. Similarly to corporate loans, this was attributable to the exclusion of lower-quality claims with higher coverage from the balance sheet, although it was typical of only some of the major banks. The coverage with prudent loan loss of non-performing household loans was supported by last year's portfolio sales as well; at the sector level, the impact of portfolio sales on profits was nearly neutral.

**Pursuant to the MNB's recommendation, the solution seeking process has started at the majority of the customers of credit institutions.** The solution seeking process concerning some 30 thousand contracts at least 60 days past due in 2017 Q4 falling under the scope of the MNB's recommendation started in the case of 61 per cent of the contracts of credit institutions before the end of the year. Following the launching of the process, half of the customers were successfully contacted, and 10 per cent of all delinquent debtors were able to come to an agreement (Table 2). In 59 per cent of the agreements no participant (guarantor or mortgagor) other than the debtor and joint debtor was involved. Credit institutions most often (46 per cent) help customers in the restoration of solvency by restructuring, and within that typically – in three quarters of the restructured contracts – by temporary and partial refinancing of the instalment with a collecting account. (Since mid-2016) 6

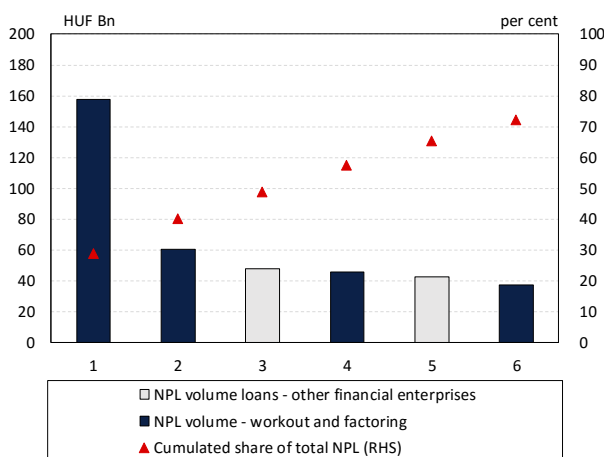
per cent of the delinquent customers of credit institutions became involved in the NET (National Asset Management Company) programme, while voluntary sales of collateral took place in a mere 2.5 per cent of contracts. Of the more than 71 thousand contracts of financial enterprises, 5 thousand fall under the scope of the recommendation, but the solution seeking process started in the case of 99 per cent of these contracts before end-2017, and agreements were made with 19 per cent of all debtors. Compared to credit institutions, in the case of financial enterprises the ratio of restructuring or rescheduling (81 per cent) within the agreements concluded is higher, which means a permanent reduction of the interest rate in four fifth of the cases (Table 3).

Chart 39: Ratio and volume of financial enterprises' non-performing loans



Note: Data of financial enterprises with a balance sheet total of at least HUF 5 billion in June 2016, past due status according to contracts. Source: MNB

Chart 40: Financial enterprises with the highest non-performing loan portfolio and their share within total non-performing loans



Note: Based on the data of financial enterprises with a balance sheet total of at least HUF 5 billion in June 2016. Source: MNB

### 3.3 Non-performing loans of financial enterprises

**The non-performing portfolio in financial enterprises' balance sheets is shrinking, despite the purchasing activity.** In the past years, most of the non-performing claims concerned in the credit institutions sector's portfolio sales were transferred to the balance sheets of financial enterprises dealing with asset management. In spite of the continuous buying up of non-performing claims since early 2015, the non-performing portfolio in financial enterprises' balance sheets declined from HUF 705 billion at the end of June 2015 to HUF 542 billion by the end of December 2017 (Chart 39). The decline is most prominent in the case of corporate non-performing loans, where the assumption of claims started at end-2014 and has mostly been closed by now. Household mortgage loan sales transactions picked up later, starting from 2016, and according to market information this process will continue in 2018.

**The non-performing portfolio held by financial enterprises is concentrated, with most of it found in the balance sheets of asset management companies.** The non-performing portfolio of HUF 542 billion in the balance sheets of financial enterprises is concentrated, as HUF 392 billion is concentrated in the balance sheets of six institutions (Chart 40). Based on their activities, financial enterprises can be classified into two main categories: ones dealing with the purchasing and management of overdue claims and ones basically focusing on the issuing of new loans. The first category comprises factoring and workout companies while the second

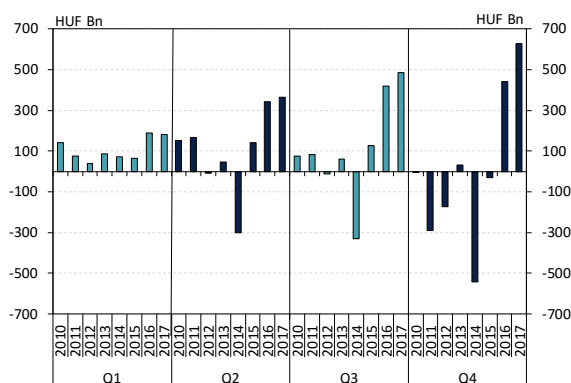
group comprises of institutions that provide financial leasing and other new loans. Four of the financial enterprises holding the largest non-performing portfolio specialise in asset management, which is a risk reducing factor when examining financial enterprises' non-performing portfolio and its ratio. This is because debt management companies are more suitable for managing the claims of non-performing debtors, as this is their specialisation in terms of organisation and knowledge.

## 4 Income and capital position. Profitability may be improved by increasing efficiency over the long run

In 2017, with a total after-tax profit of nearly HUF 629 billion, the profitability of the credit institution sector exceeded even the record profit of the previous year. In line with that, at the end of the year, return on equity rose to a historically high level of 17.5 per cent from previous year's 14.4 per cent. Although the profit is still related to one-off items and ones that cannot be sustained over the long term (return on equity net of volatile items is estimated to be 5–7 per cent), also as a result of the stability of core items, the return on equity considerably exceeds the risk-free yield. Based on profits, the number and market share of loss-making banks based on their balance sheet total declined to a level close to 3 per cent, and mainly the sector's smaller institutions belong here. In addition, significant potential is also seen in the cost-efficiency of the Hungarian banking sector in an international comparison. In terms of staff expenses as a ratio of total assets, the Hungarian banking sector can be considered a laggard, and therefore, over the longer term, there is room for an increase in efficiency in parallel with a pick-up in lending.

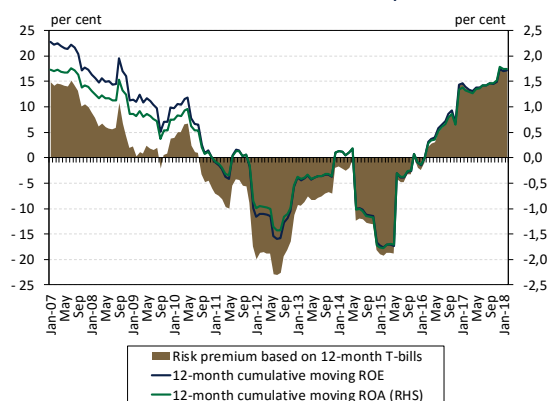
The capital adequacy of the credit institutions sector is still high, as the total consolidated capital adequacy ratio amounted to 16.8 per cent at end-2017. All credit institutions meet the minimum requirement of 9.25 per cent valid for 2017 together with the capital conservation buffer. The sector's free capital buffer is high, although a considerable portion of it is concentrated at the ten largest consolidated banking groups. The CARs of these banking groups ranged between 13.6 per cent and 24.2 per cent.

Chart 41: Cumulative after-tax profit of the credit institutions by quarter



Source: MNB

Chart 42: 12-month rolling after-tax income ratios of the credit institutions and the risk premium



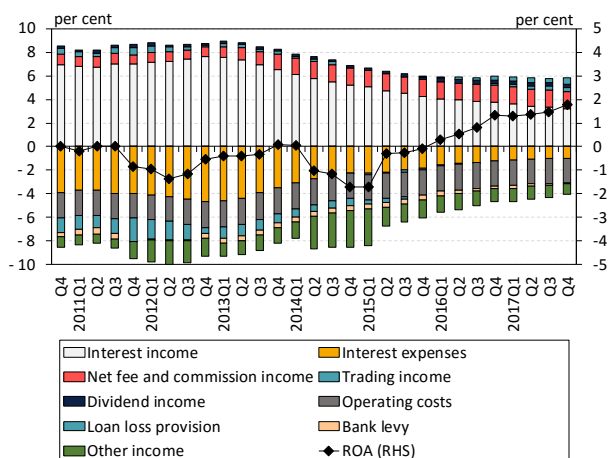
Source: MNB

### 4.1 Record profitability is still made possible by volatile items

**The credit institution sector once again achieved historically high profitability.** Credit institutions closed 2017 with a non-consolidated after-tax profit of HUF 629 billion. This exceeded the profit of the previous year by more than HUF 187 billion, even though the 2016 result was already at an unprecedentedly high level since the outbreak of the crisis. Annual pre-tax profit amounted to HUF 696 billion at end-December. Apart from Q1, during the whole year, the cumulative profit was higher than in the same period of the previous year, and significantly exceeded the incomes of previous years (Chart 41).

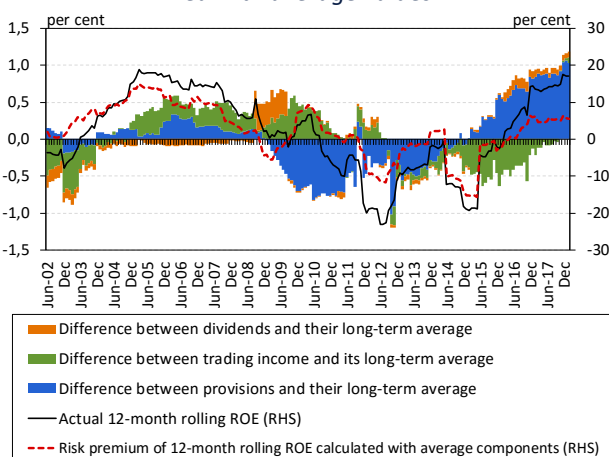
**Profitability indicators also rose to exceptionally high levels.** Historically high profits resulted in profitability indicators unseen since 2007: the 12-month rolling return on equity was 17.5 per cent, while return on assets amounted to almost 1.8 per cent at end-2017. With a long-term, through-the-cycle comparison, it is worthwhile examining the return compared to the current risk-free yield as well. As a result of the current close-to-zero yield of the 12-month discount treasury bills, the risk premium significantly exceeds even its level observed prior to the crisis (Chart 42). In addition, the positive change took place in parallel with relative growth in the equity and the balance sheet total, while the leverage

Chart 43: Main aggregate income components of the credit institutions sector as a proportion of the 12-month average balance sheet total



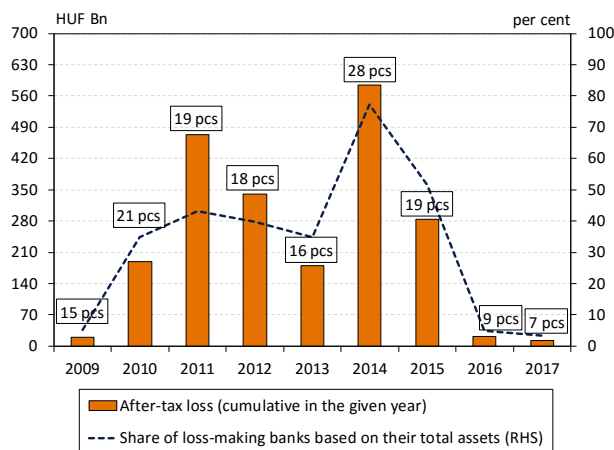
Source: MNB

Chart 44: Deviation of volatile income components from the long-term average and risk premium of ROE calculated with average values



Note: The long-term average of income components was calculated as of June 2002, while the risk premium was calculated on the 12-month discount treasury bill. Source: MNB

Chart 45: After-tax loss of banks and branches with negative after-tax income



Source: MNB

remained unchanged.

In 2017 as well, the outstanding profit of the credit institution sector was partly attributable to items that cannot be sustained in the long run. Of the components of the return on assets, the change in net interest income had the most important negative impact in 2017, mainly as a result of the transition to IFRS (Chart 43). The decline in interest expenditures slowed down compared to the earlier trend, while interest incomes were significantly reduced by the low-yield environment as well. Although they rose in absolute terms, a slight improvement in operating costs as a ratio of total assets was observed as a result of the increase in the balance sheet total. As a ratio of total assets, a minor positive shift was experienced in profits from fees and commissions, and as a result of the amendments in force since January 2017, the bank levy also reduced banks' profits to a lesser extent than in the previous year. Changes in profits from trading income had the strongest profit increasing effect as a result of one-off items, and reversals of provisions continued to have a positive impact that cannot be sustained over the long term.

Bank profitability would be much lower without the unsustainable P&L items. Calculating with the long-term average of volatile items, the December 2017 return on equity of 17.5 per cent would decline to around 5–7 per cent (Chart 44). Regarding the main profit and loss components, significant and unforeseeable fluctuations are observed mainly in the case of dividend income, trading income as well as loan loss provisions. Although reversals of provisions – at a gradually increasing rate starting from 2015 – had the largest profit improving effect, by end-2017 the other two volatile items also exceeded their respective long-term averages calculated from June 2002. While in the case of dividends any major decline is less probable in the near future, profits from trading income and reversals of provisions are expected to show relative deterioration in the period to come, due to a base effect and the running out of portfolios for reversal respectively.

All large banks became profitable in 2017. Although the credit institution sector's 2017 cumulative profit can also be regarded as concentrated, the improving trend had an impact on those institutions as well that had typically been making losses since the crisis. At the end of December 2017, only seven institutions of all banks and branches posted after-tax losses, which is an improvement compared to the nine institutions at end-2016 (Chart 45).

The share of loss-making institutions weighted by balance sheet total declined from 5 per cent to 3.3 per cent in annual terms. In addition, at a consolidated level no large bank closed the year with a loss. Nevertheless, calculating with the long-term average of volatile items (not excluding the effect of the final repayment), 22 institutions would have made losses in the same period, while their market share would have amounted to 21.2 per cent.

### 4.2 Personnel expenses might hold cost reducing potential over the long term

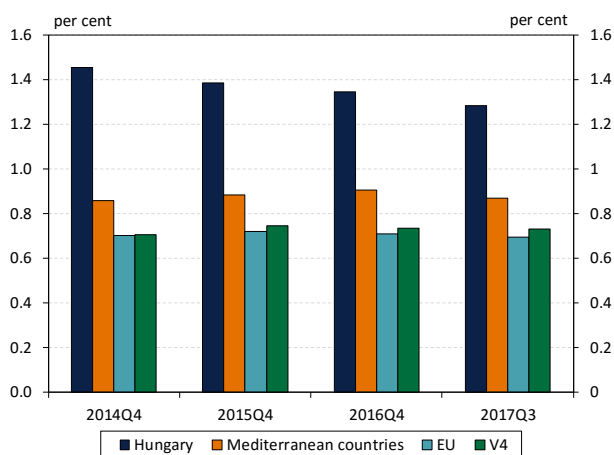
**The magnitude of the Hungarian banking sector’s staff expenses is outstanding in an international comparison.**

An improvement in cost efficiency is essential in order to increase the Hungarian credit institution sector’s profits from its core activity. Staff expenses have a high weight within operating costs, so they also deserve special attention. Looking at consolidated staff expenses as a ratio of total assets, the Hungarian banking sector can be considered a laggard in an international comparison (Chart 46). Although a decline in this indicator was observed in the past years, the annualised September 2017 value (1.3 per cent) still significantly exceeded both the V4 average (0.7 per cent) and the level of the other member countries. Accordingly, the reduction of staff expenses as a ratio of total assets may offer an important opportunity to increase efficiency over the long term. In addition to the expansion of loans outstanding, a more efficient use of digital channels may also greatly contribute to the decline in the ratio in the coming years.

**The relative decline observed is primarily attributable to the reduction in the number of employees.**

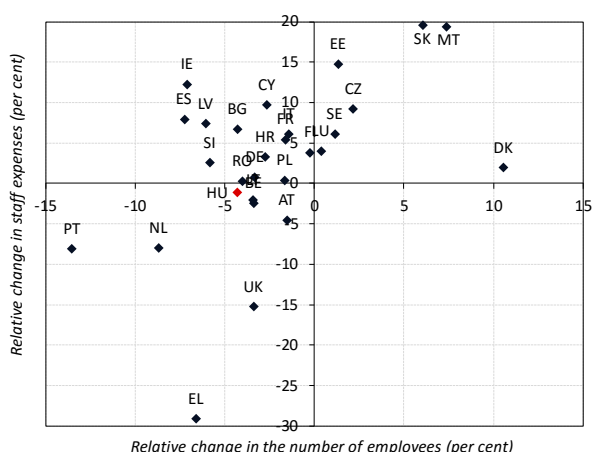
The decline in consolidated staff expenses as a ratio of total assets raises the question as to whether – in parallel with the growing assets – the improvement is a result of a wage decrease or a headcount reduction. A comparison of the changes in these two dimensions between end-2014 and end-2016 reveals that while the number of employees was down by 4.3 per cent, staff expenses declined by a mere 1.2 per cent. Accordingly, the decline of the ratio was primarily attributable to the downsizing of the headcount, while an increase in average wages lessened this impact. In the EU, an increase in staff expenses was typical in parallel with a decline in the number of employees, although there are countries where the fall in both values was larger than in the Hungarian banking sector (Chart 47).

Chart 46: Staff expenses as a percentage of total assets in EU banking sectors



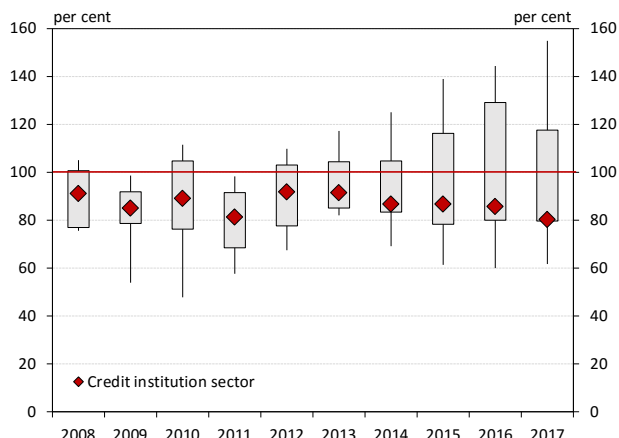
Note: Mediterranean countries include Cyprus, Greece, Italy, Malta, Portugal and Spain. Source: ECB CBD

Chart 47: Change in the number of employees and staff expenses between 2014 and 2016 in an international comparison



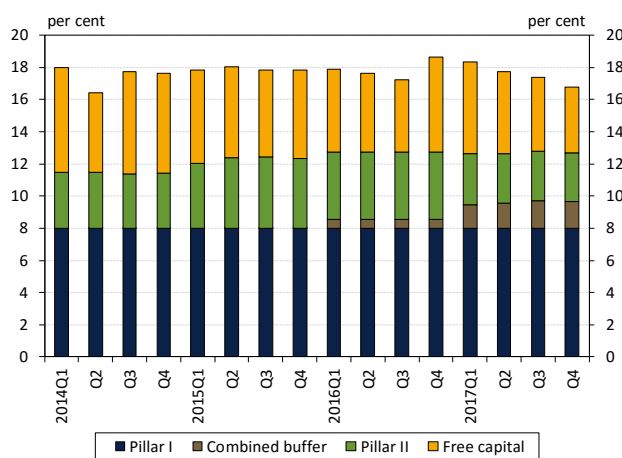
Note: The data source contains data in accordance with IFRS. Source: ECB CBD

Chart 48: Staff expenses of the ten largest banking groups and the credit institution sector as a percentage of total assets



Note: In addition to the minimum and maximum values and the 25–75 percentile of staff expenses of the ten largest banking groups as a ratio of their total assets (2007 = 100), the chart depicts the value for the credit institutions sector as a whole. Source: MNB

Chart 49: Consolidated CAR of the banking system



Note: The combined capital buffer contains the capital conservation buffer (CCB), the countercyclical capital buffer (CCyB), the systemic risk buffer (SRB) and the buffer of other systemically important institutions (O-SII).

Source: MNB

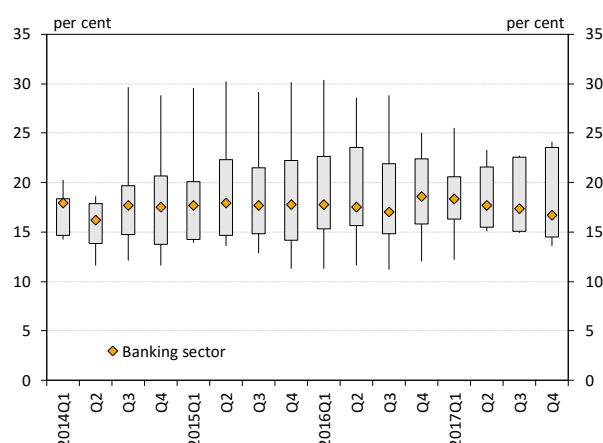
**The distribution of significant Hungarian institutions does not show a clear improvement.** The decline in staff expenses observed in Hungary can be established on the basis of the credit institution sector's aggregate, non-consolidated data as well, although the picture is more nuanced in terms of the distribution among institutions. While significant improvement was identified in the case of certain institutions between end-2007 and end-2017, relative stagnation or even deterioration can be discovered in other cases (Chart 48). Nevertheless, improvement is seen at the aggregate level. Overall, domestic data also confirm that staff expenses provide further room for the long-term improvement of cost-efficiency.

### 4.3 Consolidated banking sector data show an adequate capital position

**Based on consolidated data, the banking sector's capital adequacy is satisfactory.** Despite the gradual decline in 2017, the banking sector's consolidated capital adequacy of 16.8 per cent in December can still be considered high (Chart 49). The year-on-year decline mainly took place due to an increase in the balance sheet total, but the slight increase in the average riskiness of assets contributed to this trend. Considering the low cyclical risks caused by the benign economic environment and the strong cleaning of bank portfolios, the quantity of the SREP capital requirement determined within Pillar II declined in 2017. For the same reason, the 0 per cent level of the countercyclical capital buffer rate remained unchanged. Finally, until 2019, with a further 1.25 percentage point rise, the capital conservation buffer will reach its previously designated 2.5 per cent level, which is already satisfied by credit institutions.

**At the individual level, the picture is positive in spite of the relatively heterogeneous distribution of the capital adequacy ratio.** In an institutional breakdown, a slight decrease in the standard deviation is observed regarding the distribution of the CARs of major banking groups in the mid-year comparison – at end-2017 they ranged between 13.6 per cent and 24.2 per cent (Chart 50). Looking at the banking sector as a whole, the free capital buffer and the level of the total regulatory capital reached HUF 784 billion and nearly HUF 3,207 billion, respectively. Around 66 per cent of the former is concentrated at three banking groups. As a result of the past two years' outstanding profits, dividend disbursements can also be taken into account, which may reduce the level of the accumulated free buffer to some extent. In

Chart 50: CAR of the ten largest banking groups and the whole banking sector



Note: In addition to the minimum and maximum values and the 25–75 percentile of the CARs of the ten largest consolidated banking groups, the chart depicts the CAR for the banking sector as a whole. Source: MNB

addition, important institutions must also meet the capital buffer requirement which was imposed by the MNB in 2017 at the final level of 0.5–2 per cent and will gradually increase in line with the individual requirements tailored to each bank.<sup>12</sup>

#### BOX 4: BUSINESS EXPECTATIONS OF HUNGARIAN BANKS FOR 2018 AND THE KEY RISKS THEY PERCEIVE

This year, within the framework of its 11<sup>th</sup> ‘Market Intelligence’ survey, the MNB contacted nine large domestic commercial banks and one branch office to learn – through a questionnaire survey and personal meetings – about these credit institutions’ business plans for 2018, their view on the sector, the macroeconomic environment and the financial market, as well as on the risks they consider the most important. We present below the most important judgements and expectations of these banks, based on the interviews.

It was the banks' common opinion that the growth prospects of the Hungarian economy are favourable, and economic activity is essentially fuelled by domestic demand. Key factors driving domestic economic growth and lending include the expansion of corporate investments and household consumption. According to the expectations, economic growth this year may be accompanied by a broad-based, dynamic increase in lending, as a result of which the total assets of the banking sector may rise further and financial intermediation may continue to deepen. Due to continuous market pressure, the acceleration of digitalisation and the application of FinTech solutions gains increasing weight in the strategy of banks. It was a recurring answer that in the future it may generate growing competition in certain segments if in the sector several banks of almost identical size have very similar business models. As regards the risk developments characterising the household segment, credit institutions found the central bank's debt cap regulation adequate.

In 2017, most domestic banks successfully overcame the legacy of the crisis, and finally, as they stated, after ten years they can focus on their core business processes and critical developments. According to participants' expectations, the outstanding borrowing of corporations may increase by more than 10 per cent in 2018 as well, while growth in retail lending will fall short of this, but may still rise at an accelerating rate. As they noted, due to the low interest environment for several years now and the intensifying bank competition, the phase-out of FGS had no material effect on the total volume of lending to SMEs. There is strong demand from SMEs both for overdraft facilities and investment loans.

The respondents are satisfied with the cooperation with institutional guarantors. They stated that the approval

<sup>12</sup> The MNB is strengthening the stability of systemically important financial institutions with a gradually increasing capital buffer: <http://www.mnb.hu/sajtozoba/sajtokozlemenyek/2017-evi-sajtokozlemenyek/az-mnb-a-rendszerzinten-jelentos-intezmenyek-stabilitasat-fokozatosan-felepulo-tokepufferrel-erositi>.

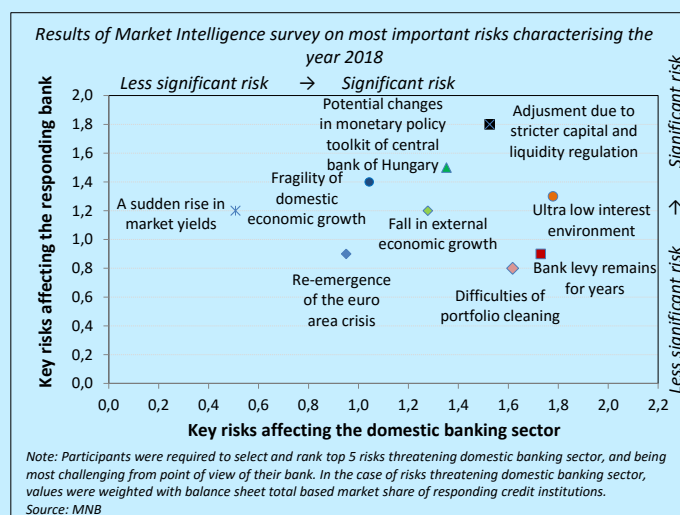
process was sufficiently fast, the automated acceptance systems function properly and the current price policy applied by the guarantee organisations and their risk tolerance are supportive. According to the feedback, the majority of credit institutions use institutional guarantees for the standard financing of their smaller clients and enterprises unable to offer sufficient collateral, while they usually do not rely on this possibility when it would result in the financing of riskier clients, which are otherwise not eligible for lending.

As stated by the credit institutions, an upturn in the disbursement of loans and combined products available through the MFB Points can be expected from the third quarter of 2018. Credit institutions anticipate that more significant additional credit demand related to the non-refundable EU subsidies will appear from 2019.

The low interest environment and favourable macroeconomic situation changed households' previous extremely risk averse attitude, and several banks are ready to capitalise on this opportunity, even those that formerly decided to reduce this segment. The housing loan market continues to expand and real estate prices are also persistently rising, entailing an increase in the loan amounts requested. The Certified Consumer Friendly Housing Loan, initiated by the MNB in 2017, is becoming increasingly popular in the household segment. Besides the already introduced certified instruments banks plan to obtain certification for additional fixed-rate loan products. The banking sector's liquidity is outstanding, and thus there still may be room for further growth in lending activity. However, banks that disburse large volumes of mortgage loans will need to obtain financing from the market by issuing forint mortgage bonds to ensure MFAR compliance.

In the area of portfolio cleaning, most of the banks achieved a breakthrough in 2017, and in view of the outstanding quality of the loan portfolio built up after the crisis, the growth in lending further improves the credit institutions' NPL ratio. The vast majority of the banks outperformed the preliminary profit expectations in 2017, and they also anticipate profitable operation for 2018, albeit the degree thereof will somewhat fall short of the historically high profitability of 2017, resulting from one-off items (mostly reversals of impairments). Based on responses given within the 'Market Intelligence' survey, the 2018 pre-tax profit of the banking sector is expected to amount to HUF 333–370 billion, corresponding to a 10–12 per cent return on equity. The majority of the respondent banks also agreed that outstanding growth in productivity and efficiency may be achieved through the accomplishment of digitalisation and the application of FinTech solutions; however, some of the banks doubted that as a result of digitalisation costs would indeed decrease. The application of innovation-based banking solutions is also promoted by the fact that labour shortage reached the banking sector as well, and it is particularly critical in the case of IT developers and operators.

Several banks are paying dividends this year for the first time since the escalation of the crisis. The capital injections performed in the past years and the profit of the previous year(s) had a favourable effect on the banks' capital position, and thus there are hardly any institutions that need to raise capital in 2018. At the same time, banks noted that the changes in the regulatory environment significantly influenced their capital position and profitability.



According to the experiences of the surveyed institutions, the changeover to IFRS took place at a favourable time, and the institutions successfully implemented the new accounting standards, while the financial effects caused by the changeover became more positive on the whole than previously calculated.

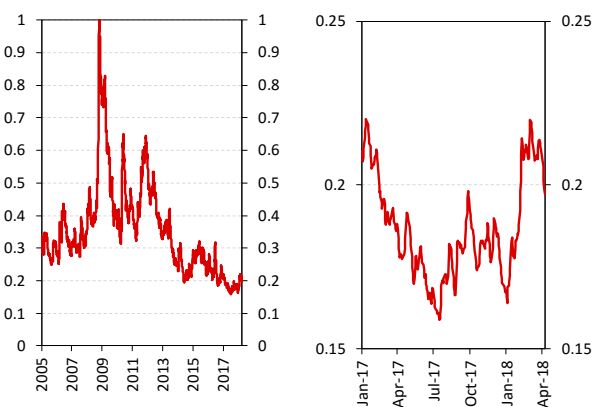
Based on the responses of the credit institutions, we summarised the risks that represent the biggest threat to the functioning of the banking sector; the resulting risk map differed from last year's risk map in several respects. One striking difference is that last year's largest risk at the

sector level, i.e. the 'difficulties of portfolio cleaning', fell to third place. According to the banks, in 2018 the sequence of risks that jeopardise the sector the most, is as follows: the 'ultra low interest environment', 'bank levy remains for years', the 'difficulties of portfolio cleaning', the 'adjustment due to stricter capital and liquidity regulation', 'potential changes in monetary policy toolkit of central bank of Hungary', the 'fall in external economic growth', the 'fragility of domestic economic growth', the 're-emergence of the euro area crisis' and the 'sudden rise in market yields'. In terms of their own operation, banks defined a different sequence of the most important risks. In this case, the 'adjustment due to stricter capital and liquidity regulation' was ranked first, followed by the 'potential changes in monetary policy toolkit of central bank of Hungary', the 'fragility of domestic economic growth', the 'ultra low interest environment', the 'fall in external economic growth', the 'sudden rise in market yields' and 'the bank levy remains for years'. It is obvious that banks perceive the bank levy and the difficulties related to portfolio cleaning as considerably stronger risks at the sector level than at the institutional level. On the other hand, they assess the 'fragility of domestic economic growth' and the 'sudden rise in market yields' as risks that threaten their own institutions more than the sector as a whole.

## 5 Market and bank liquidity. Ample liquidity fed by rising deposits

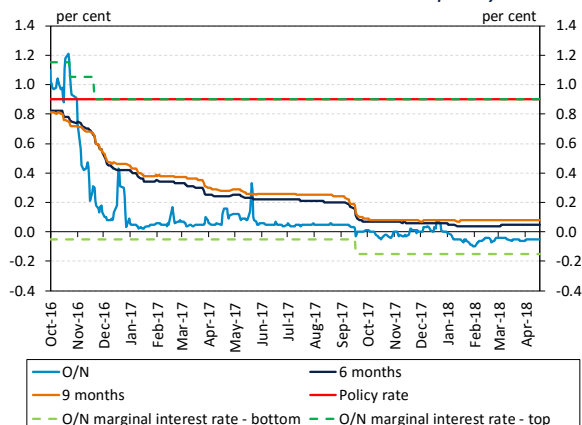
In early 2018, the Hungarian yield curve also became steeper in line with international developments. Firstly, short-term yields declined due to the quantitative limit on the main policy instrument and the reduction of the central bank overnight deposit rates, and secondly, long-term yields rose slightly, as a result of the improving economic activity and inflation expectations. However, the increase in the yield curve was attenuated on the whole by the new central bank monetary policy interest rate swap (MIRS) facility, and thus the degree of the rise fell short of what was observed in the other countries in the region. Nevertheless, the increase in the steepness of the yield curve still does not represent a major financial market risk. Credit institutions' liquid assets increased, primarily due to corporate and household deposit inflows, and this was only partly offset by the dynamic expansion in corporate loans. In parallel with the increase, a rearrangement also took place in liquid assets, and thus the assets crowded out due to the quantitative limit on the main policy instrument were rechannelled into overnight deposits. A slight rise was observed both in the case of HUF swap positions and external liabilities compared to the previous period, but the level of current holdings still cannot be considered risky.

Chart 51: Factor based Index of Systemic Stress (FISS)



Source: MNB

Chart 52: BUBOR and the central bank policy rate



Source: MNB

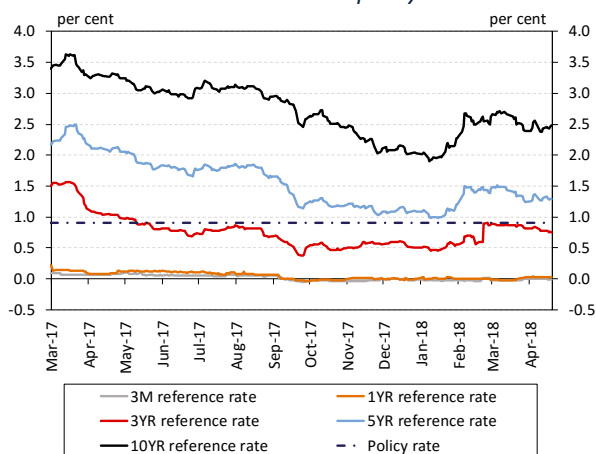
### 5.1 The increase in long-term yields was dampened by the new monetary policy tool

The Factor based Index of Systemic Stress<sup>13</sup> still does not show any significant money market risk. The long-term trend of the index remains in a low range, and up until the end of 2017, a decline was observed in the value of the index (Chart 51). In early 2018, due to the capital market turbulences that evolved as a result of increasing yield, the indicator rose slightly. However, the stress effect on the financial markets of the rise observed on the long side of the yield curve can be considered low, and the value of the indicator is still far from the critical level.

Short-term yields declined further in the past period. Following the autumn 2017 monetary policy measures, additional room opened for the reduction of short-term yields, facilitated by the quantitative limit on the main policy instrument as well as the –15 basis point central bank overnight deposit rate. At the same time, the decline in short-term yields took place at a more moderate pace than before (Chart 52). Following a slight rise observed at end-2017, overnight market rates started to sink again, and continuously stayed in negative territory as of 2018, which was also followed by the one-week deposit with a delay of a few days. The 9-month deposit fell to below 0.1 per cent, whereas the 6-month deposit

<sup>13</sup> The index measures the stress level of the financial system. Its purpose is to capture the common components of the data describing the financial system. <https://www.mnb.hu/letoltes/mnb-wp-2017-9-final-1.pdf>

Chart 53: Benchmark yields of government securities and the central bank policy rate



Source: Government Debt Management Agency, MNB

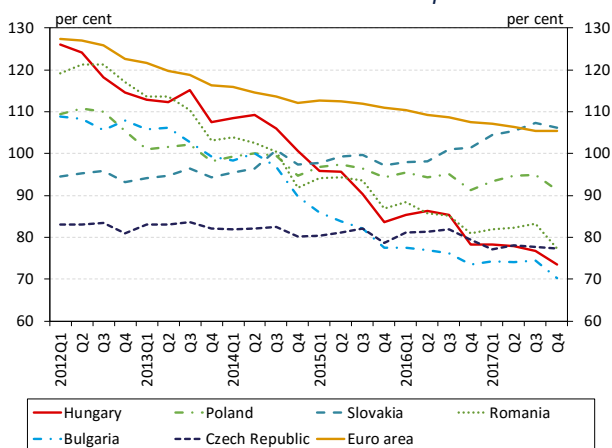
stood at 0.5 per cent in mid-April.

**A rise in long-term yields was observed at the beginning of the year.** This rise was observed in the region as well. The steepening of the regional and domestic yield curves is the consequence of improving economic activity and inflation expectations, the effect of which only appeared in the Hungarian yield curve in a delayed manner and partially: the rise in the Hungarian yield curve was smaller than seen elsewhere in the region. This smaller rise was a result of the central bank's unconventional easing, which, attaining its target, prevented the yield curve from quickly becoming steeper. In 2018, the first interest rate swap auction serving monetary policy objectives had unexpected effects as well. In spite of the central bank's communication, the market expected a higher quantity than the amount announced at the first auction. Prior to the auction, speculative positions conforming to the quantitative expectations had built up, and the immediate closure of these positions following the tender entailed a rapid rise in long-term yields. The central bank carried out a quick correction in the technical conditions of the interest rate swap facility, confirmed its earlier communication as well, and thus long-term yields also readjusted following the next auction (Chart 53).

## 5.2 Increasing lending capacity on the liquidity side

**The changes in the loan-to-deposit ratio of the domestic credit institutions sector were in line with last year's regional developments.** In 2017 Q4, the loan-to-deposit ratios of the banking sectors of the region changed in the same direction, i.e. a decline took place everywhere (Chart 54). The degree of the decline varies; it is more moderate in countries with a higher loan-to-deposit ratio, and higher in the ones with a low loan-to-deposit ratio. In the case of the Polish and Slovak indicators, a slight decline was observed at high values. In both cases, the significant, mostly corporate lending was strongly offset by the continuous inflow of corporate deposits. In the Czech Republic, Poland and Slovakia the increase in deposits offset the high growth in loans outstanding, while high deposit inflows were accompanied by a smaller increase in loans outstanding in the other countries of the region.

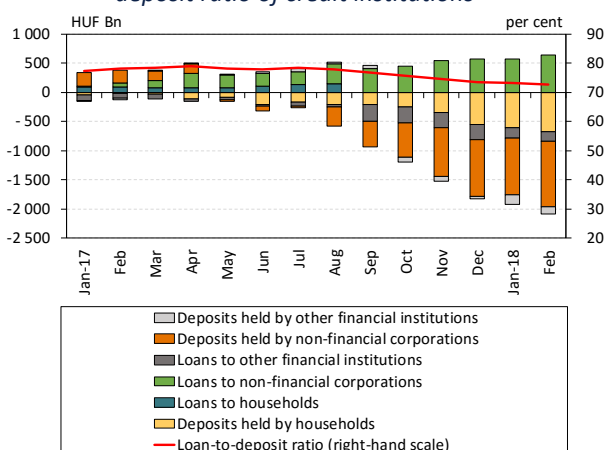
Chart 54: Loan-to-deposit ratio of the credit institutions sector in international comparison



Source: ECB, MNB

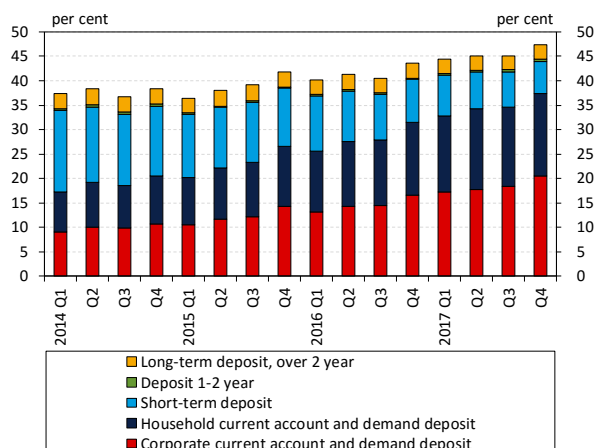
**Despite the increase in loans outstanding, the Hungarian loan-to-deposit ratio continued to decline and stands at 73 per cent.** The continued expansion in corporate lending resulted in a HUF 308 billion increase in loans outstanding in banks' balance sheets, which thus

Chart 55: Decomposition of changes in the loan-to-deposit ratio of credit institutions



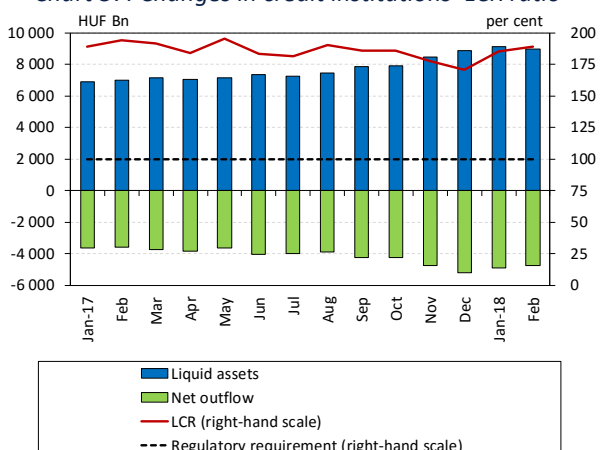
Source: MNB

Chart 56: Maturity structure of credit institutions' corporate and household deposits as a proportion of the balance sheet total



Source: MNB

Chart 57: Changes in credit institutions' LCR ratio



Source: MNB

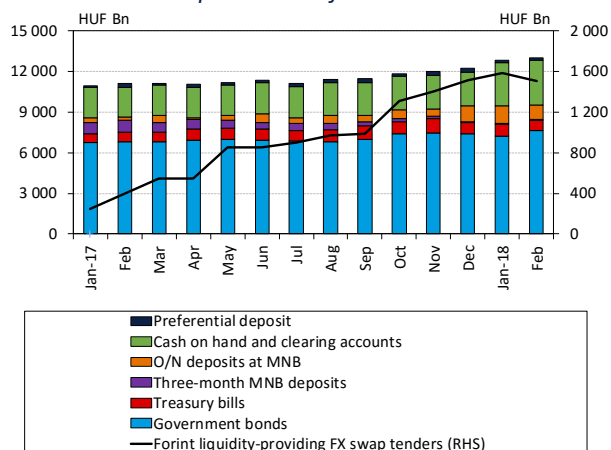
amounted to HUF 6,643 billion in February. However, in parallel with the increase in lending, deposit inflows are still high, and thus the loan-to-deposit ratio decreased further (Chart 55). At the end of the previous year, the growth in corporate and household deposits was extremely high: between August and February, a total increase in excess of HUF 800 billion was observed for the former and nearly HUF 350 billion for the latter. Deposit inflows were primarily seen in the increase in demand deposits.

**A significant majority of credit institutions' deposits are already in the form of current account and demand deposits.** Between 2014 and 2017, the ratio of deposits to balance sheet total increased significantly (from 37 per cent to 47 per cent). In this period, the amount of corporate and household current account and demand deposits grew by more than HUF 3,100 billion and by HUF 1,865 billion, respectively, while the amount of term deposits remained practically unchanged. Accordingly, in addition to the expansion in the volume of deposits, their structure has also changed considerably: the ratio of current account and demand deposits rose significantly, while the ratio of term deposits declined within the stock (Chart 56).

**The LCR ratio remains well above the regulatory requirement, at 189 per cent in February.** Starting from September 2017, the LCR fell until the end of the year, before returning close to the September value in January (Chart 57). The steady increase in liquid assets was offset by outflows; in the last four months of last year, liquid assets and outflows were up by more than HUF 1,400 billion and by HUF 1,300 billion, respectively. The LCR adjustment in early 2018 was caused by a decline in outflows and a further increase in liquid assets.

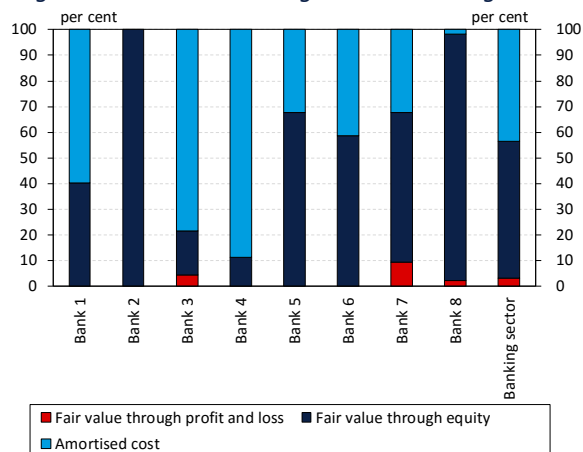
**The liquidity position of the credit institutions sector is still extremely stable.** The stock of liquid assets increased further during the past half year, which was primarily attributable to the expansion in cash and clearing accounts as well as in overnight deposits (Chart 58). In 2017 H2, an increase of nearly HUF 800 billion was observed in the case of cash and clearing accounts and nearly HUF 700 billion in the case of overnight deposits. The rise in overnight assets was mainly attributable to the quantitative restriction of HUF 75 billion on the three-month central bank deposit, while the increase in cash account resulted from the general liability-side expansion. Growth in government securities holdings occurred with some minor restructuring, as the average

Chart 58: Liquid assets of credit institutions



Source: MNB

Chart 59: Classification of the securities of the eight large banks and the banking sector according to IFRS



Source: MNB

maturity of banks' exposure to the state increased. Government securities holdings amounted to HUF 8,400 billion, i.e. some 56 per cent of liquid assets, in February. The central bank's forint liquidity providing swap tender supplied the banking sector with excess liquidity of HUF 1,511 billion in February.

**When the interest rate environment changes, 40 per cent of securities do not undergo immediate revaluation.** Since the change-over to the International Financial Reporting Standards (IFRS), credit institutions have kept records of their securities portfolios at fair value or amortised cost. 8 per cent of the securities of the Hungarian banking sector are evaluated at fair value through P&L, while 51 per cent are evaluated at fair value relative to equity, although strong heterogeneity across banks is observed in terms of portfolio classification (Chart 59). The book value of assets evaluated at fair value reflects the actual market value. These securities are especially sensitive to changes in the yield curve; in their case the interest rate risk appears immediately in the books as well. Firstly, there are trading motives behind the classification into the categories evaluated at fair value, and secondly, the portfolio can also be changed more freely (Box 5). The remaining 41 per cent of securities are shown in the books at amortised cost, and, with the exception of the case of impairment, they do not undergo revaluation at the accounting date, and thus they are protected from the immediate effects of any shift in the yield curve.

#### BOX 5: SHIFT IN THE YIELD CURVE – SHOULD WE BE AFRAID OF AN INTEREST RATE RISK?

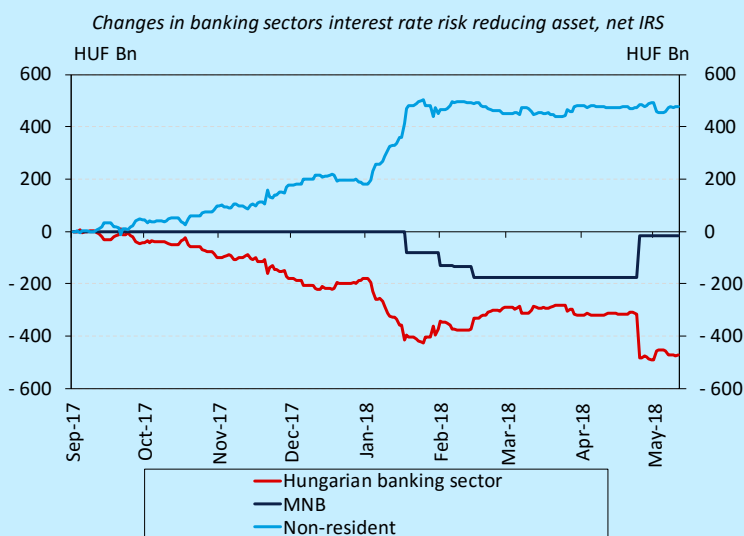
The international yield environment, which is rising to various degrees, is the result of mounting inflation expectations. Although its effect was perceptible on the long side of the yield curve in Hungary as well in January 2018, this increase can primarily be interpreted as an adjustment of expectations that had built up previously. The rapid increase in January was followed by a slight correction in the months thereafter.

Starting from autumn 2017, actors in the domestic banking sector started to lower the interest rate swap (IRS) stock, which reduces the interest rate risk. This decision may be attributable to the possibility of a change in the quantity of liquid assets and to the anchoring role of central bank decisions. Following the central bank's decisions concerning the main policy instrument and the MIRS, the market presumably amended its yield estimates according to the changed expectations. On the basis of these expectations, the banking sector perceived the interest rate risk of liquid assets, and primarily of securities holdings, as being lower, and thus considered it possible to reduce the coverage; from September until early May, the banking sector's net IRS position, i.e. the difference between gross long-term and gross short-term stocks, declined by HUF 471 billion. This does not mean that in parallel with the interest rate risk of securities the banking sector undertook another long interest rate position with the IRS; it only reduced the previous levels of coverage. The self-financing programme, and then the interest rate swap conditional on lending activity (LIRS) tied to the central bank's Market-based Lending Scheme provided significant help to the banking sector in covering the interest rate risk of the securities holdings with the IRS instruments. Notwith-

standing the declining trends in the past period, the banking sector still has an IRS stock of nearly HUF 1,100 billion.

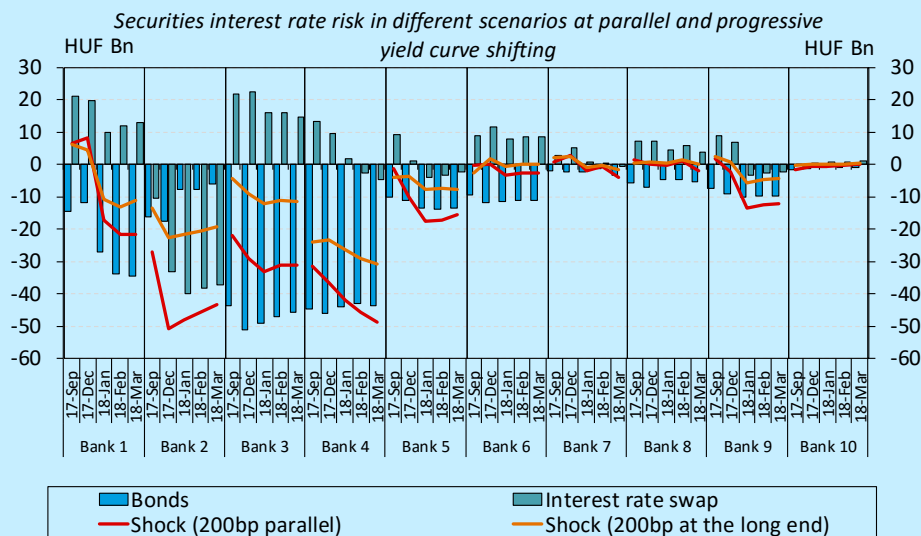
Nevertheless, the decline in IRS coverage and the rise in long-term yields result in an increase in interest rate risk. In our model, the interest rate risk is calculated on the basis of a presumed parallel shift in the yield curve of 200 basis points and a non-parallel, progressive shift in the long, over-one-year end.

In the March data from 10 large banking groups, which hold 96 per cent of the banking sector's securities, all of this would cause devaluations of HUF 181 billion and HUF 85 billion. It is important to see, however, that the decline in the IRS stock and the higher yield levels for the given point in time increased potential losses considerably.



Source: MNB

It is also important to emphasise that – based on banks' swap holdings as well as interviews with treasury and asset-liability management staff – it can be established that banks follow very different strategies in the management of interest rate risk. Irrespective of size, some banks cover the interest rate risk to a great degree, while other market participants trust in the persistently low interest rate environment and speculate on the short side of the yield curve.

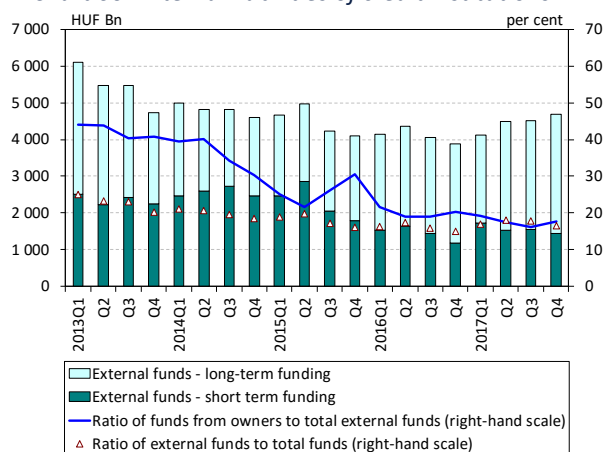


Note: TOP 10 bank group  
Source: MNB

The relatively higher interest rate risk is mostly the consequence of the fact that – as a result of the extremely low interest rate environment – the banking sector reacts in a more sensitive manner even to a slight increase in yields. Of course, such a drastic and immediate shift in the yield curve would only take place as a result of a major, extremely unlikely shock; accordingly, the devaluations presented are very strong stress scenarios.

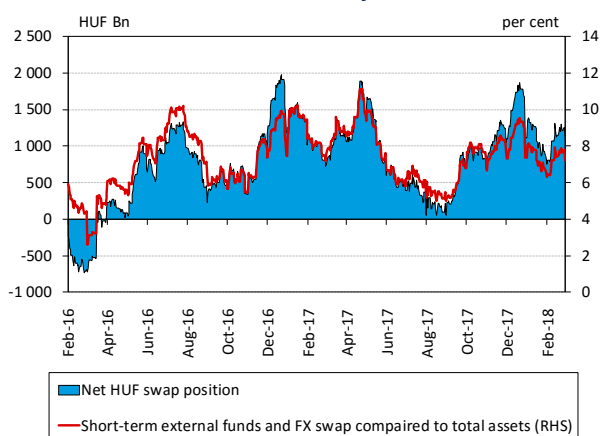
**The MNB monitors all of these possible stresses, and if necessary, it may even raise the capital requirement related to the market risk for the interest rate exposures in the banking and trading books.**

Chart 60: External liabilities of credit institutions



Source: MNB

Chart 61: Changes in the net HUF swap position and short-term external liabilities of credit institutions



Source: MNB

Along with a slight increase in external liabilities, the structure of external liabilities is still stable. In the last quarter of 2017, short-term external liabilities declined, while long-term liabilities increased (Chart 60). At end-2017, the short-term and long-term external liabilities of the credit institutions sector amounted to HUF 1,437 billion and HUF 3,246 billion, respectively. Within external liabilities, the proportion of funds from owners increased, which is mainly attributable to parent bank funds related to a large bank. However, the ratio of external liabilities within the overall structure of liabilities declined as a result of a rise in deposits.

Net HUF swap positions increased. Starting from September 2017, the net HUF swap position began to grow dynamically, reaching its peak at the end of the year, before starting to decline (Chart 61). This growth was primarily attributable to one large bank's euro and dollar fund raising transactions. The foreign exchange obtained in the swap appeared only partly on the asset side in the form of corporate loan; the larger part of the stock is related to off-balance sheet FX demand.

#### BOX 6: INTRODUCING THE INTERBANK FUNDING RATIO

The global financial crisis showed that excessive reliance on funds from financial corporations can carry significant systemic risks, and the possible materialisation of these risks can have serious consequences both for the financial system and the real economy. Under normal market conditions, the market of funds from financial corporations is liquid and efficient. However, in the event of a shock that affects several market participants or the financial system as a whole, or even as a result of the weakening of the financial position of individual financial institutions or as a consequence of a loss in confidence due to any related rumours, raising such funds may face obstacles and a shortage of liquidity may emerge. The potential drying-up of these markets is well represented by the significant shift in the 3-month interbank and overnight yield spreads seen in crisis situations.



Note: 3-month LIBOR-OIS spread.  
Source: Bloomberg

According to international experience, in the upswing phase of lending, growth in liabilities that are traditionally considered more stable (e.g. household deposits) is unable to keep up with the increase in assets, and therefore banks turn to other sources of funding primarily originating from banks and other financial corporations (e.g. financial auxiliaries, insurance companies, pension funds and investment funds), which later may result in the erosion of the risk premium.<sup>14</sup> When risks materialise, in the case of a deterioration in certain major market participants' risk assessment, the other institutions – based on risk management considerations – reduce their limits not only vis-à-vis the problematic bank, but also in respect of all other counterparties.<sup>15</sup> As a result, shocks can quickly emerge in the interbank markets, and lending between financial corporations may suddenly decline due to the fear of a contagion effect, thus reducing market liquidity as a whole.<sup>16</sup> Considering that typically there are few, but very closely related participants in this market, as a result of a sudden loss of confidence not only a price increase and withdrawal of funds may take place, but such interbank transactions may come to a halt completely.

There are international examples of handling financing risks associated with funding from financial corporations, but they only tackle the problem in a less targeted manner. The most well-known instrument based on Basel-standard instruments is the Net Stable Funding Ratio (NSFR), which is used by many countries, particularly in Asia, such as Indonesia, Hong Kong and Singapore, and Australia, from 2018, where – by way of disadvantageous treatment – the NSFR indirectly disincentives the involvement of short-term interbank funding. In the EU, the NSFR is expected to come into effect in 2020 following the revision of the single rulebook. Several EU Member States already use a variety of funding constraints indirectly reducing reliance on short-term funds from financial corporations. These include the Slovakian and Slovenian recommendations on the loan-to-deposit ratio, and the Austrian measure on the loan-to-local stable funding ratio which also considers inflows and outflows. In New Zealand, the "core funding ratio" regulation serves a similar objective. In addition, there are examples of limiting risks related to such funding with instruments that are not specifically liquidity and financing tools. In the United States, systemically important institutions with higher-than-average exposure to short-term interbank funding may expect more stringent capital requirements. In Norway, banks' reliance on interbank funds is considered in the decision on the countercyclical capital buffer rate.

<sup>14</sup> Joon-Ho Hahm, Hyun Song Shin, and Kwanho Shin (2012): Non-Core Bank Liabilities and Financial Vulnerability, NBER Working Paper No. 18428. September 2012 <http://www.nber.org/papers/w18428.pdf>

<sup>15</sup> Rocco Huang and Lev Ratnovski (2010): The dark side of bank wholesale funding, ECB Working paper series No. 1223, July 2010 <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1223.pdf?404bcedafaffac05542fb2123617d9a>

<sup>16</sup> Iyer R. – Peydró J-L. (2010): Interbank contagion at work: Evidence from a natural experiment. ECB Working Paper Series, No. 1147. January 2010. <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1147.pdf?dcdf044a3464278a0cb9e5e3969fb0c>

In Hungary, the funding practice behind the foreign currency lending highlighted the risks of vulnerability resulting from excessively short-term sources of funding in different currency denominations. Under the current market conditions, the stock of funds from financial corporations cannot be considered extremely risky. Nevertheless, in order to prevent the development of systemic risks and to increase the resilience of the financial intermediary system, as well as due to the expected dynamic pick-up in lending activity it is justified that the MNB introduce a targeted regulation that prevents the build-up of systemic risks stemming from less stable financing.

Therefore, the central bank elaborated an interbank funding ratio (IFR) effective as of 1 July 2018, and determined its conditions in a decree.<sup>17</sup> The ratio limits the amount of liabilities from financial corporations weighted according to currency and residual maturity as a proportion of all external liabilities. Exceptions and preferences ensure that the rule does not limit attracting low-risk funds from the market, allocation of funds within banking groups and sustainable lending.

On the basis of the data available, the upper limit of 30 per cent concerning the ratio does not force the overwhelming majority of banks to adapt, but it is an efficient constraint preventing the banking sector from becoming excessively exposed to systemic risks originating from liabilities from financial corporations.

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<sup>17</sup> MNB Decree 10/2018 (III. 27.) on the regulation of recourse to funds from financial corporations by credit institutions.

## 6 Stress tests of the banking system. Extremely strong shock absorbing capacity

*Based on the findings of the liquidity stress test, at end-2017 the majority of banks would have met the 100 per cent regulatory minimum of the LCR even in the case of the simultaneous occurrence of wide-ranging liquidity shocks. Although – due to a rise in risk exposures – the impact of the negative components of the stress scenario strengthened by 2017 Q4, the resilience to liquidity stress of the banks under review improved considerably. As the Liquidity Stress Index shows, sector-level liquidity risks remain low.*

*The banking sector's capital position is strong not only now, but it would remain so even in the case of a significant economic slowdown taking place as a result of unfavourable shocks. Based on our solvency stress test, none of the institutions would need capital injection even in a stress scenario. Moreover, the majority of the banking sector would remain profitable by the end of the two-year time horizon even under unfavourable conditions.*

### 6.1 The general resilience to liquidity stress of the banks under review continues to be adequate

**The complex liquidity stress test presumes the simultaneous occurrence of risks and also takes contagion among banks into account.** The liquidity stress test examines the impact of an assumed low-probability, simultaneous occurrence of financial market turmoil, exchange rate shock, deposit withdrawals, credit line drawdowns and withdrawals of owners' funds on the LCR. In addition, when determining the outcome of the stress test, banks' short-term adjustment possibilities as well as the contagion effects of these adjustment channels and of defaults on the interbank market are also taken into account (Table 4).<sup>18</sup>

**The resilience to liquidity stress of the institutions under review improved considerably by end-2017. As a result, the liquidity of the significant majority of banks exceeds the regulatory requirement even in the case of a stress.** Our stress test was conducted at a quarterly frequency, for the end-of-quarter LCR of the nine largest financial institutions, which account for 81 per cent of the banking sector (in terms of their balance sheet total). The prior-to-stress LCR distribution for 2017 Q3 basically corresponds to the one observed in H1. However, based on the distribution that is the result of the stress test and in which both shocks and adjustment possibilities are taken into account, compared to previous quarters more banks fail

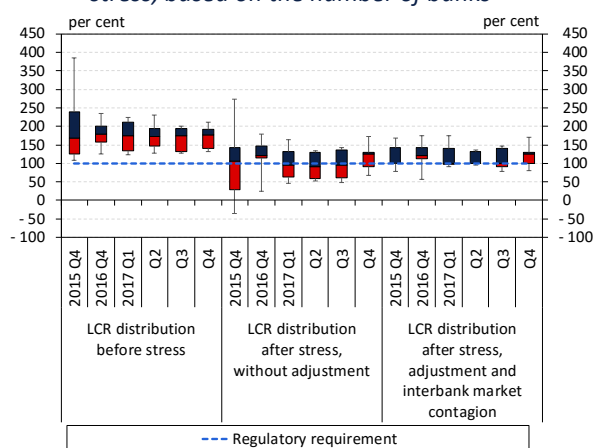
Table 4: Main parameters of the liquidity stress test

Assets			Liabilities		
Item	Degree	Currencies affected	Item	Degree	Currencies affected
Exchange rate shock on derivatives	15 per cent	FX	Withdrawals in household deposits	10 per cent	HUF/FX
Interest rate shock on interest rate sensitive items	300 basis points	HUF	Withdrawals in corporate deposits	15 per cent	HUF/FX
Calls in household lines of credit	20 per cent	HUF/FX	Withdrawals in debt from owners	30 per cent	HUF/FX
Calls in corporate lines of credit	30 per cent	HUF/FX			

Source: MNB

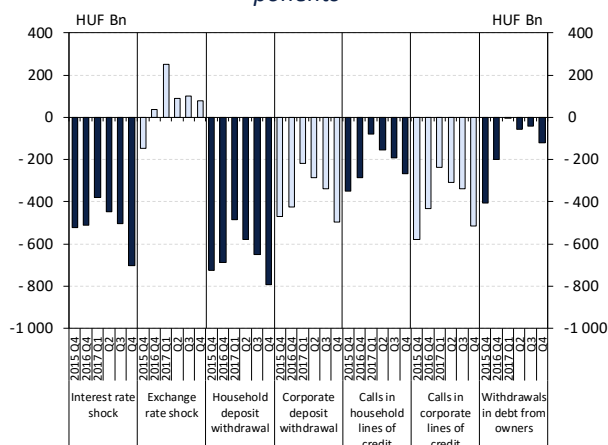
<sup>18</sup> For a detailed description of the methodology, see Box 9 of the May 2016 Financial Stability Report. In terms of its objective, logic and applied assumptions, our stress test is fundamentally different from the liquidity stress test used in the supervisory review of the Internal Liquidity Adequacy Assessment Process (ILAAP). Therefore, our findings cannot be directly compared to that.

Chart 62: Distribution of the LCR before and after stress, based on the number of banks



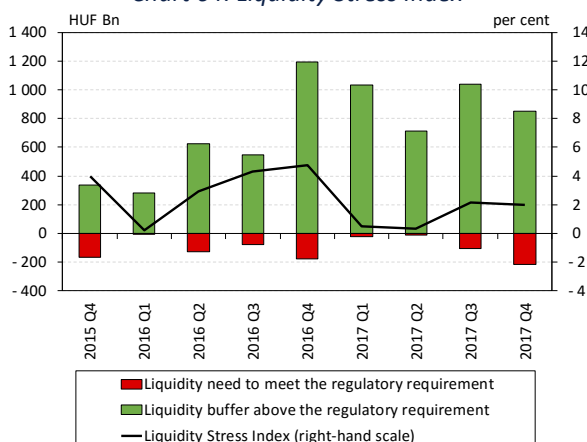
Note: The edges of the box of the box plot mean the lower and upper quartiles of the distribution; the horizontal line in it means its median. The lower whisker of the plot shows the lowest value, while the upper the second highest value. Source: MNB

Chart 63: Aggregate systemic impact of stress components



Note: For calculating the impact of individual shocks we applied the assumption that the given shock occurs solely. Therefore, the sum of the impacts of individual shocks do not necessarily reflect the impact of the shocks taken together. Source: MNB

Chart 64: Liquidity Stress Index



Note: The indicator is the sum of liquidity shortfalls in percentage points (but maximum 100 percentage points) compared to the 100 per cent regulatory limit of the LCR, weighted by the balance sheet

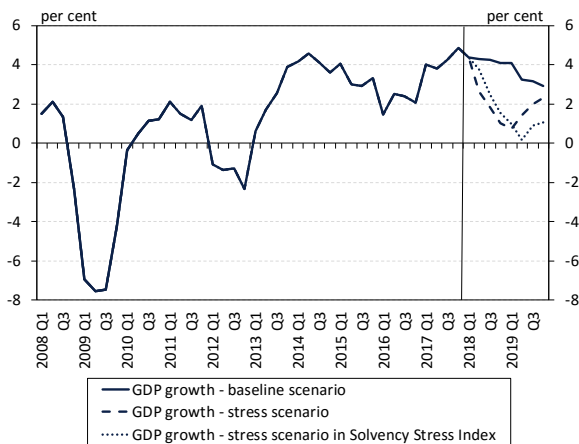
to meet the regulatory requirement (Chart 62). By Q4, however, the result of the hypothetical case of allowing for stress effects but not for adjustment opportunities improves considerably: institutions' after-shock median LCR (with a value of 126.5 per cent) significantly exceeds the regulatory requirement. Moreover, the adjustment possibilities are sufficient for the majority of institutions that fall below the regulatory minimum to attain the 100 per cent level again. Accordingly, in 2017 Q4, most of the banks would have met the minimum requirement of the LCR even in the case of the serious liquidity shocks of the stress test.

**By 2017 Q4, the effect of the negative components of the stress scenario strengthened significantly, which is a result of an increase in risk exposures.** Within the components of the stress, due to the dominance of positions against the forint, the exchange rate shock to banks' derivative holdings continues to have a liquidity-improving effect (Chart 63). In addition, by 2017 Q4, the effect of all other risk factors, which have a negative aggregate impact, strengthened. It is worth highlighting the interest rate shock and the shock of the withdrawal of household deposits as they not only have the most significant effect in absolute terms, but since 2015 Q4 they would have had the strongest effect to date in the case of a stress occurring at the end of 2017. The primary reason for this is that the exposures concerned (household deposits and the net holdings of interest sensitive items) increased significantly by 2017 Q4.

**The Liquidity Stress Index rose moderately during the half year under review, but remains at an extremely low level.** The Liquidity Stress Index designed to capture the heterogeneity across institutions aggregates the post-stress percentage-point liquidity shortfalls compared to the regulatory limit calculated at the individual bank level by considering the size of the given bank. By taking into account the size of the institution, we can also draw conclusions with respect to the extent of a potential stress situation within the banking system. Compared to 2017 H1, the shortfall of the banks not meeting the regulatory minimum increased considerably, although it mainly concerned institutions with a relatively lower market share. As a result, the value of the index rose slightly (from close to its theoretical minimum), but still stands at an extremely low level of around 2 per cent (Chart 64). In 2017 Q4, banks' liquidity surplus exceeding the regulatory limit amounted to HUF 850.5 billion, while their liquidity need necessary for meeting the regulatory

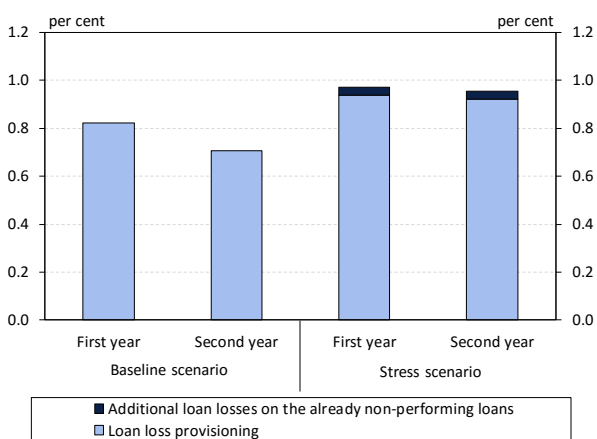
total in the stress scenario. The higher the value of the indicator, the greater the liquidity risk. Source: MNB

Chart 65: GDP growth rate in the scenarios (year-on-year)



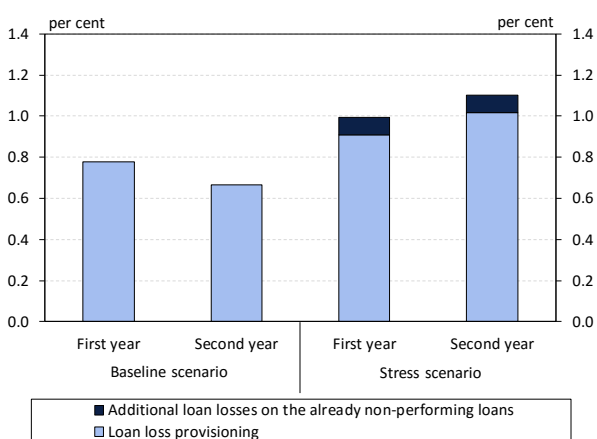
Source: MNB

Chart 66: Loan loss to the corporate portfolio



Source: MNB

Chart 67: Loan loss to the household portfolio



Source: MNB

requirement amounted to HUF 218.5 billion.

## 6.2 In terms of capital adequacy, the shock absorbing capacity of the banking sector is strong

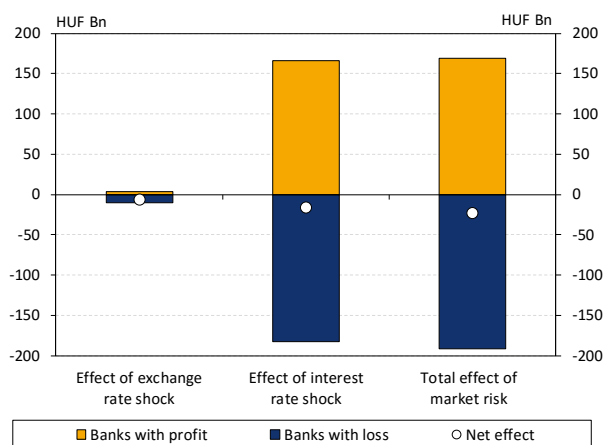
In the stress scenario, we examined the impact on capital adequacy of an economic slowdown, a rising interest rate level and a weakening exchange rate evolving as a joint result of unfavourable shocks. The forecast in the March Inflation Report<sup>19</sup> was chosen as the baseline scenario for the stress test. Compared to that, in a stress scenario we examined the impact of decelerating external economic activity, the accompanying financial turbulences and increasing labour market capacity shortage. As a result of all this, the demand for Hungarian exports would be more subdued, which, together with the insufficient labour capacity, would restrain the volume of investment and, through that, the growth of the economy. In two years, in cumulative terms, economic growth would be nearly 4 per cent lower than the assumption in the baseline scenario (Chart 65), which would be coupled with a 14.3 per cent weakening of the exchange rate and a 247 basis point increase in the interest rate.

We quantified restrained risk parameters and moderate vulnerability in the case of both the household and corporate portfolios. Deceleration in domestic growth would raise companies' risk parameters, but only to a limited extent, and thus loan loss would remain moderate (Chart 66). We presumed relatively moderate probabilities of default in the case of the household portfolio as well, but as a result of the shock, their trend, which is declining in the baseline scenario, turned upward in direction, which is also reflected in the growing ratio of loan losses (Chart 67). Although the shock absorbing capacity of the portfolio improved significantly with the end of the exchange rate risk, the interest rate risk is still present for variable-rate loans, and thus a major rise in the interest rate level would result in a large increase in the probability of default in their case. In preparing the stress test we did not yet have any actual data regarding the impact of the introduction of the IFRS9 standard at the beginning of 2018, and accordingly this impact – similarly to the practice applied half a year ago – was once again taken into account based on an estimate.

Both in the baseline and stress scenarios we presumed

<sup>19</sup> Inflation Report (March 2018): <https://www.mnb.hu/en/publications/reports/inflation-report/29-03-2018-inflation-report-march-2018>

Chart 68: Market risk stress test result



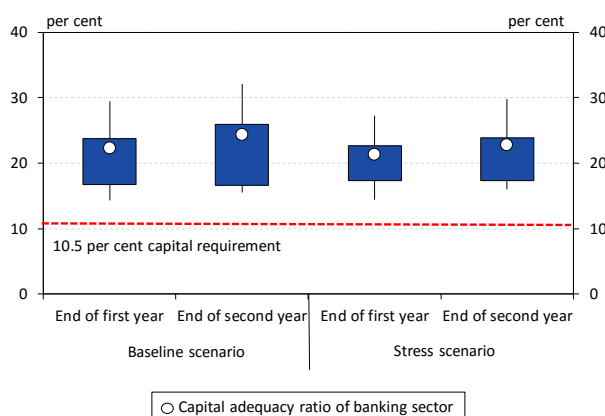
Source: MNB

Table 5: Stress test results at 8 and 10.5 per cent capital requirements

		Baseline scenario		Stress scenario	
		End of first year	End of second year	End of first year	End of second year
8% capital requirements	Capital need of banks (HUF Bn)	0	0	0	0
	Capital buffer of banks above requirement (HUF Bn)	2 116	2 416	2 032	2 249
10.5% capital requirements	Capital need of banks (HUF Bn)	0	0	0	0
	Capital buffer of banks above requirement (HUF Bn)	1 744	2 046	1 652	1 870

Source: MNB

Chart 69: Distribution of the capital adequacy ratio based on the number of banks



Note: Vertical line: range of 10–90 per cent; rectangle: range of 25–75 per cent. Source: MNB

**continued favourable developments in profitability.** In the past years, banks attained high profits from interests and commissions, which is presumed to remain unchanged in the stress test scenarios. In the stress scenario, income now is not much below that of the baseline scenario, as the profits from interests and commissions lost on the stock that becomes non-performing due to the shock are offset by the increasing interest revenue on the still performing holdings. As loan losses are relatively low on both the corporate and household portfolios even in the stress scenario, pre-tax profit also remains positive for the majority of institutions after the occurrence of the unfavourable shocks.

**Of the market risks, the impact of the interest rate shock remains significant, while that of the exchange rate risk is negligible.** The interest rate position of a number of institutions changed in 2017 H2, which, at the system level, increased the profit resulting from the sudden interest rate hike, while the potential loss changed only slightly. Accordingly, compared to the situation half a year earlier, the systemic impact of a possible interest rate shock would have been more balanced at end-2017. At the institutional level, however, significant heterogeneity would continue to prevail, including both significant positive and negative impacts on profits (Chart 68).

**The banking sector's capital adequacy calculated on the basis of consolidated data is still strong, and would remain so in the stress scenario as well.** Expressly strong capital adequacy is also typical for most of the banking sector in the starting point of our stress test which was prepared using 2017 consolidated-level bank data, and it strengthens further over the two-year horizon of the baseline scenario as a result of the favourable profitability. The majority of institutions would remain profitable in the stress scenario as well, which further strengthens their capital adequacy, as we do not presume any dividend disbursement. As a result, the institutions meet the capital conservation buffer requirement in all the scenarios (Table 5). The result is the same for the stress scenario of the stress test index as well, and thus the value of the stress test index is zero at present as well, i.e. it assumes its theoretical minimum value. Heterogeneity across institutions can be observed now as well (Chart 69). Nevertheless, the general capital adequacy of the banking sector is close to the upper quartile, as there are relatively more larger institutions among the banks with better capital adequacy.

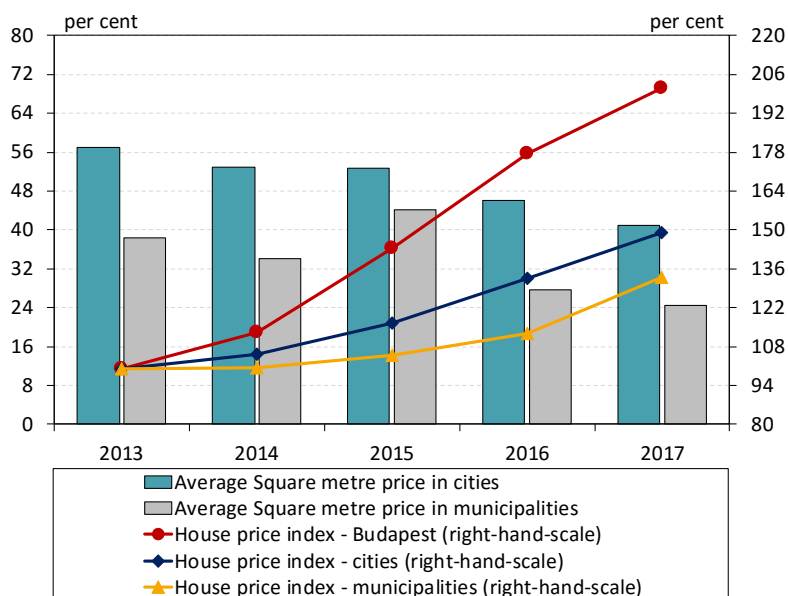
## 7 Strong demand and supply frictions in the domestic housing market

### 7.1 Rising house prices, but without overheating

**The pick-up in the Hungarian housing market continued in 2017.** House prices rose by 13.8 per cent in nominal terms compared to the previous year, while the number of market transactions expanded by nearly 2 per cent in 2017. Although this means that the annual dynamics of house prices is lower than the 15.4 per cent observed in 2016, the annual number of transactions was almost 150,000 and is thus nearing the long-term annual average of 155,000–160,000.

**Nevertheless, domestic housing market developments continue to be characterised by strong geographical heterogeneity, although the relationship between developments in the capital and the country seems to be reversing.** Since the turnaround in the housing market in 2014 there has been a major upswing in the capital, while more moderate improvement has been observed in smaller settlements. While house prices in Budapest rose by 101 per cent in nominal terms compared to end-2013, in cities and municipalities the price increase in the same period amounted to 49 per cent and 33 per cent, respectively. The growth rate of house prices already slowed down in the capital in the past two years, but the opening of the price gap between real estate in the capital and in the country remains wide. In 2017, the average square metre price in county seats, cities and municipalities stood at 49 per cent, 41 per cent and 25 per cent, respectively, of the average square metre price in the capital (Chart 70). As a result of the significant price increases observed in the capital in the past years, the number of sales and purchases already declined in 2017, and thus the role of countryside properties in transactions is increasing.

Chart 70: House price indices and average square metre prices of the average square meter price in Budapest by settlement type



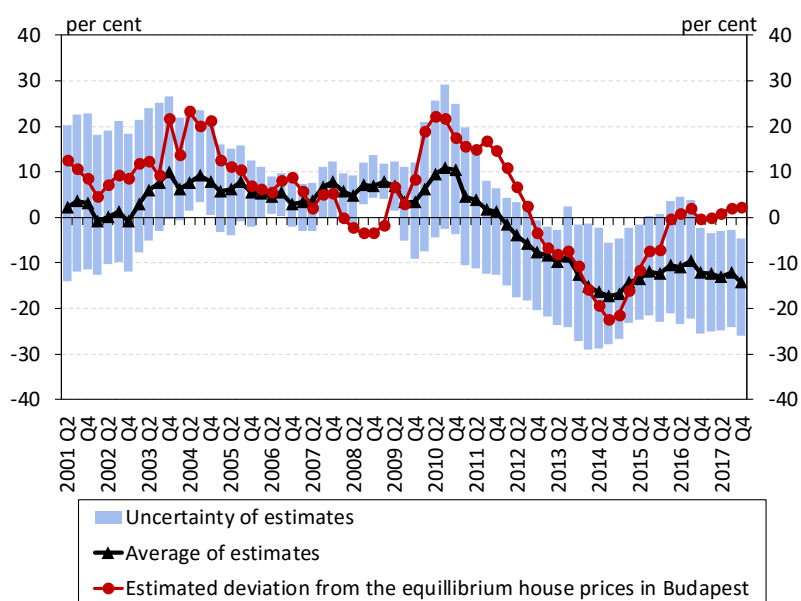
Note: Average square metre prices are expressed in the average of Budapest.

Source: HCSO, MNB

**The dynamically rising house prices are still below the level justified by the economic fundamentals nationally.** House prices rose considerably following the market turnaround in 2014, although this may also be considered as a kind of adjustment compared to the earlier trend. Following the crisis, homes in Hungary lost much of their value; between end-2008 and end-2013, the national average decline in house prices in nominal and real terms amounted to 21 per cent and 35 per cent, respectively. Following that, the national average of house prices in real terms

reached the pre-crisis level only at end-2017, although catching up with the trend has not taken place completely. Moreover, strong improvement in the economic fundamentals that determine the market were observed in the past years behind the major house price rise experienced at present in both nominal and real terms. While the long-term unemployment rate declined from 5 per cent at end-2013 to below 2 per cent, households' real income increased by a stable 3–4 per cent at annual level. As a result of all this and in spite of the major price rises, domestic real house prices on a national average are still below the level justified by the macroeconomic fundamentals (Chart 71). Nevertheless, as a result of the significant growth, house prices in the capital have already reached and slightly even exceeded the level justified by the economic fundamentals. Notwithstanding the fact that there is not yet any significant overvaluation in the Budapest, further monitoring of the market is justified due to the steady increase in housing prices and the dynamic growth in new housing loans.

Chart 71: Deviation of house prices from the estimated equilibrium level justified by fundamentals, nationally and in Budapest<sup>20</sup>



Source: HCSO, MNB

**The underlying developments point to further increases in housing market demand, and therefore a healthy upswing in the supply of new homes is of key importance.** The expansion in households' disposable income and the low level of the permanent unemployment rate, which captures longer-term income prospects, may persist, and together with the favourable financing environment they suggest a continued pick-up in housing market demand and thus a further rise in house prices. Using data from real estate agencies, we prepared a preliminary housing price index for 2018 Q1,<sup>21</sup> based on which nominal house prices are estimated to rise by 4.7 per cent and 3.4 per cent countrywide and in Budapest, respectively. In addition, taking account of the operating environment of the housing market, we forecast a continued price increase for 2018. In the current housing market environment of strong de-

<sup>20</sup> The deviation of house prices from the level justified by fundamentals is quantified based on four methodologies. In the report, we publish the minimum, maximum and average values of the results delivered by the individual methodologies. The four calculation methods are as follows: 1. Percentage deviation of the ratio of real house prices to disposable income from the average of the indicator calculated between 2001 and 2016. 2. Estimation of the long-term equilibrium of Hungarian house prices driven by macroeconomic fundamentals by means of a vector error correction model (VECM). For the detailed methodology see: [Tamás Berki - Tibor Szendrei \(2017\): The cyclical position of housing prices - a VECM approach for Hungary, Magyar Nemzeti Bank, OP 126](#). 3. Estimation of the level of Hungarian house prices driven by macroeconomic fundamentals by means of a dynamic OLS model. 4. Deviation of Hungarian house prices from the equilibrium by means of a structural model used for forecasting house prices. For more details, see: [Housing Market Report, October 2016](#), Box 1. Deviation of house prices in Budapest from the level justified by fundamentals is quantified by the dynamic OLS model framework; for more details on the methodology, see: Magyar Nemzeti Bank: [Financial Stability Report, May 2017](#), Box 2.

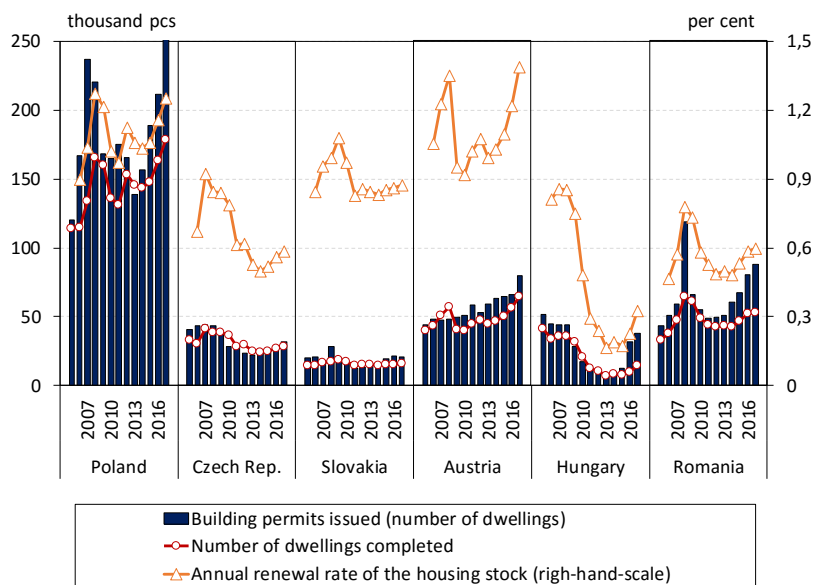
<sup>21</sup> For details see: Magyar Nemzeti Bank: [Housing Market Report, May 2018](#), Box 1.

mand, it is extremely important for the supply of homes to expand at an adequate rate. Low supply may result in an unhealthy increase in prices, which, especially in the capital – through the overvalued real estate collaterals that suddenly lose much of their value – would already increase the risks passing through from the housing market potentially to the financial system.

## 7.2 Supply side of the housing market: frictions hinder a healthy upturn in home-building

**The current level of renewal of the housing stock in Hungary is low both in historical and regional comparison.** Following the turnaround in the domestic housing market in 2014, a strong rise in demand was observed, but due to the time necessary for implementing the projects, the supply side was only able to adjust with a delay. Following a slight increase in the number of building permits issued in 2014 and 2015, 2016 saw a major breakthrough in the number of developments launched, which is attributable to the preferential 5 per cent VAT rate on new homes. In 2016, building permits were issued for 31,600 homes, representing an increase of 152 per cent compared to the previous year, and in 2017 the construction of an additional 38,000 homes was permitted, which is a further 20 per cent rise compared to the numbers of the previous year. An increase in completions started only as of end-2016, when 14,400 completion were registered, marking 44 per cent growth compared to the previous year. However, the annually built 14,000 new homes are still considered insufficient, as according to one of our earlier estimates the annual number of homes built should be nearly 40,000 in order to reach an equilibrium.<sup>22</sup> This is the level that can ensure the stabilisation of the housing stock per household with the observed depreciation of the housing stock. However, at present only some 0.3 per cent of the housing stock is renewed every year, which is a low level compared to the observation in the pre-crisis years (0.8–1.0 per cent) as well as in regional comparison (Chart 72). Of the countries under review, at present the annual renewal rate of the stock of dwellings is the highest in Austria; in 2017, 1.4 per cent of the housing stock there was renewed, and even in the past 10 years the renewal rate was around 1 per cent. Poland also recorded a renewal rate exceeding 1 per cent (1.25 per cent in 2017), while this rate is 0.9 per cent in Slovakia and around 0.6 per cent in the Czech Republic and Romania. Although the significant number of new homes to be handed over in 2018 (nearly 9,000 new homes in Budapest alone) will contribute to the improvement in the 2018 renewal figure of the housing stock, a permanent increase in the number of newly built homes would be desirable.

Chart 72: Building permits issued for dwellings, dwellings completed and the housing stock's rate of renewal within the region



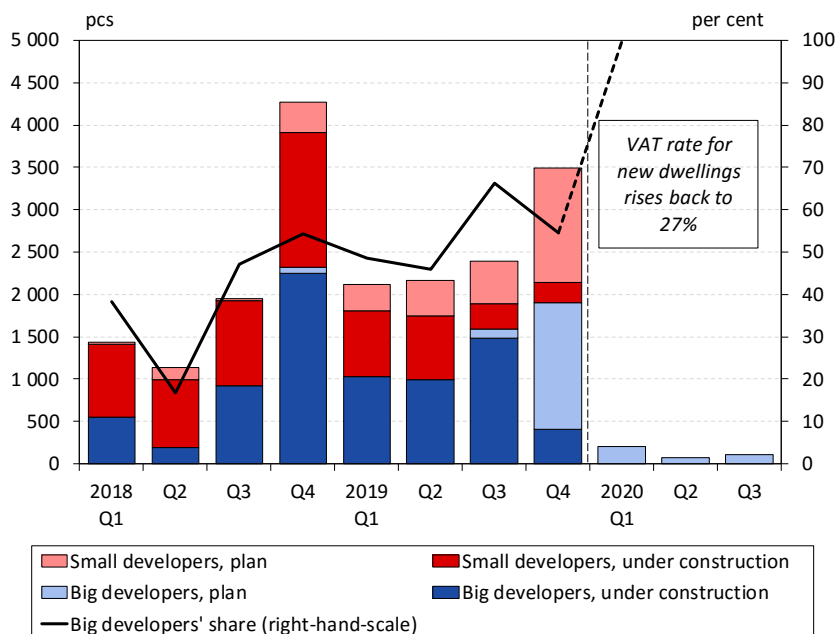
<sup>22</sup> For details see: Magyar Nemzeti Bank: [Housing Market Report, October 2016](#), Box 2.

Note: Data concerning building permits show the aggregate number of dwellings included in the issued building permits. In case of several countries, calculation of the housing stock's rate of renewal is based on estimated housing stock data.

Source: ECB, national statistics offices, MNB

An examination of the composition of homes being and planned to be built in Budapest according to completion dates reveals that during 2018 and 2019 the number of homes completed over is expected to increase considerably, but expected completions will fall to a minimum as of 2020 (Chart 73). Only the major market players plan to hand over homes in 2020, and compared to previous years the numbers of their dwellings completed will also be much lower.

Chart 73: Breakdown of new homes under construction and planned in Budapest at the end of the first quarter of 2018 by quarter of planned completion



Note: Large developers include residential developers with at least 250 dwellings under construction or planned.

Source: ELTINGA – Housing Report

**For a more detailed understanding of domestic housing market developments, in March 2018 we conducted in-depth interviews with the main market participants. Based on these interviews, the frictions and challenges presented below can be identified on the supply side of the housing market.**

**The uncertainty that emerged concerning the applicability of the preferential VAT rate is restraining residential property developers and may result in a narrowing of supply in the medium term.** The decline seen in the construction plans of new homes from 2020 is related to the expiry of the temporary effect of the preferential 5 per cent VAT rate that was introduced at the beginning of 2016 for sales of new homes.<sup>23</sup> According to the currently effective regulation, as of 1 January 2020, the general, 27 per cent VAT will apply again to sales of newly built residential properties. On the whole, the actors in the residential property development sector had a favourable opinion of the existence of the preferential VAT rate, and expectations regarding the extension of the preferential period developed among them. As a result of the ensuing uncertainty concerning the applicability of the preferential VAT rate, developers tend to refrain from launching projects whose completion would extend into 2020. Namely, in this case the final purchase price to be paid by the customer would be uncertain, which makes financing and thus the planning of the project more difficult. According to what was said in the interviews with housing market participants, developers are striving to build and sell as many homes as possible in the preferential period before end-2019, which, in

<sup>23</sup> Applicable from 1 January 2016 until 31 December 2019 in the case of selling new flats and houses not exceeding 150 and 400 square metres, respectively. Properties not meeting these criteria are subject to the standard tax rate of 27 per cent.

turn, results in an even more stretched recourse to construction capacities. The more favourable profitability created by the preferential VAT rule also contributed to the fact that as of 2016 many smaller, so-called non-professional developers appeared as well, who entered the market from other fields of activity in the hopes of rapid profits. At present, this latter group accounts for 50 per cent of the developments, and, in the opinion of the respondents, the developments by these companies involve both quality and delivery risks. It is the uniform opinion of market participants that concerning the VAT issue it would be worth taking a decision that would be valid for an extended period of time as soon as possible, as it would entail positive developments for residential property developers, the construction industry, the granting authorities as well as the buyers of new homes.

**According to housing market participants, at present there is a shortage of skilled labour of 30,000–40,000 persons in the construction sector.** According to the data of the HCSO, at end-2016, the number of people working in construction was 40,000 lower than at end-2006, while the number of construction workers that have their respective households in Hungary and work abroad is nearly 25,000. The number of the latter already declined to some extent in 2017, which also corresponds to what was said in the interviews with housing market experts, i.e. in the Hungarian construction industry the significant rise in labour cost has already stopped the increasing outflow of construction workers. During the crisis, a significant part of the labour capacity of the construction industry degraded, and according to the respondents, talented specialists who speak foreign languages went abroad to work. At present, the greatest labour shortage in Hungary is among skilled workers; respondents estimate the number of missing skilled workers to be roughly 30,000–40,000.

**Market participants experienced an increase of roughly 50–80 per cent in the costs of construction in the past two years.** Respondents said that it was generally true that the cost of construction activity is comprised roughly half-and-half of construction material and labour cost, but depending on the complexity and labour demand of the respective task, the proportion of either cost factor may increase. According to respondents, of the construction works the building of homes requires more manual work and control; therefore, in the case of residential projects the proportion of labour cost is typically higher. Labour costs doubled in the past two years, and the price of some building materials rose considerably (by up to as much as 60 per cent), while the price of some others increased more moderately (by 20–30 per cent). In addition, it is a general trend that the prices of certain building materials increased even without a rise in the cost of the direct base materials in the past years, which is primarily attributable to the price increases resulting from the demand that exceeds the production capacities of building material producers.

**In some respondents' opinion, 15–20 per cent of the existing construction capacity is used for residential projects, while public investment accounts for the major part of capacities.** In addition, respondents mentioned the labour-absorbing effect of public investment and commercial real estate developments as a challenge for the home development market. Based on the project database we examined,<sup>24</sup> home-building and the construction of commercial real estate account for 22–23 per cent of the development value of projects under construction each, while the share of public investment is 55 per cent.<sup>25</sup> The uniform opinion of respondents is that of the assignments offered to the construction market the primarily preferred works are the public investment and commercial real estate projects (office buildings, retail buildings, industrial-logistics facilities, hotels). Public investment is on the top of contractors' preference list because of the higher fees attainable as well as the possibility of a longer-term job, due to the larger size and higher value of the developments. Some market participants attributed the higher contract prices attainable in the case of public investment to the fact that building for the state means greater responsibility as well as taking higher risks due to higher penalties and tighter deadlines. Several respondents mentioned that residential construction is a process that requires much more supervision and labour compared to public investment and commercial real estate projects, which has a negative impact on the profitability of home-building. The activities of the largest

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<sup>24</sup> *ibuild.info* project database: The database contains all the construction projects currently going on in Hungary regarding the building, expansion or renovation or modernisation of real properties. In addition to the value of projects, (expected) start and (expected) completion, their location and the type of property are available in any case.

<sup>25</sup> The calculations were made on the basis of the *ibuild.info* database as at 10 March 2018.

general contractors in construction are focused on public investment in the first place and on the construction of commercial real estates in the second place. More than 60 per cent of the new homes currently being built in Budapest are affected by delays compared to the originally planned completion dates.

## 8 Results of the expansion of Certified Consumer-Friendly Housing Loans so far

### 8.1 The risks of variable-rate loans

**The stock of variable-rate loans may result in substantial vulnerability, due to consumers' limited risk perception and risk management options.** In the life of families, purchasing a home, or, if not all the funds are available, selecting the mortgage for the purchase, is one of the most important economic decisions. Since in a low interest rate environment such as today the interest rate on the loans with a rate fixed for a longer term is typically higher than that of products with rapidly changing rates, households that are in a tight income situation, i.e. "liquidity-constrained" households, may be more likely to choose the latter.<sup>26</sup> International studies have also found that household borrowers do not necessarily have the competencies necessary for making optimal decisions and assessing future risks accurately. Decisions often take into account the risks of future interest rate increases based on simple rules of thumb derived from recent experiences.<sup>27</sup> In case of high share of variable interest rate loans, the potential realisation of an interest rate shock could lead to payment difficulties through the rise in instalments and possible creditors' losses<sup>28</sup> may even hamper the proper functioning of the banking system. From a real economy perspective, another risk factor is that the consumption of debtors with variable-rate loans is more sensitive to hikes in the interest rate environment than warranted by the rise in instalments, which further amplifies the procyclical functioning of the financial system.<sup>29</sup>

**The interest rate risk of variable-rate mortgages requires close attention from a financial stability perspective.** Considering the typically long maturity of mortgages, these loans may bear the gravest interest rate risk. The risk of these loans also deserves special attention because real estate represents the largest element on households' balance sheets, and therefore if many households default, high social tensions may arise besides the stability risks when collateral is enforced.

**In many countries, the risks of variable-rate loans are managed through regulatory measures.** Several countries have considered taking into account the interest rate risk when granting new loans. Similar to the Hungarian debt cap rules, these steps mitigate the risks of over-indebtedness. Pursuant to regulations, during credit assessment, lenders must take into account the potential effects of the increases in the interest rate environment on debtors' capacity to service loans. Such rules were introduced in Cyprus, Estonia, Norway, Portugal and Slovakia, while recommendations containing similar expectations were issued by the regulatory authorities in the United Kingdom, Ireland and Romania. In addition to the indirect regulation of new contracts the lending of variable interest rate loans is explicitly limited in Israel.<sup>30</sup>

**The MNB currently supports the spread of loans with a longer interest period through several measures, but further regulatory steps are also worth considering.** In recent months, the MNB has facilitated the spread of loans with a rate fixed for a longer term by introducing and popularising Certified Consumer-Friendly Housing Loans certification and its tools fostering the deepening of the mortgage bond market. Partly on account of these measures, the share of variable-rate loans within new loans has decreased drastically since September 2017: their proportion within new housing loans dropped by 18 percentage points, from 42 per cent in August 2017 to 24 per cent by the end of March 2018. However, other regulatory tools may also have to be used in order to further reduce and prevent the build-up of risks.

<sup>26</sup> Paiella, M. and Pozzolo, A.F. (2007), "Choosing Between Fixed and Adjustable Rate Mortgages", UNIMOL Economics & Statistics DP No. 33/07.

<sup>27</sup> Badarizna, C., Campbell, J.Y. and Ramadorai, T. (2014), "What Calls to ARMs? International Evidence on Interest Rates and the Choice of Adjustable-Rate Mortgages", NBER Working Paper No. 20408.

<sup>28</sup> Brzoza-Brzezina, M. Gelain, P. and Kolasa, M. (2014), "Monetary and macroprudential policy with multi-period loans", Norges Bank WP 16/2014.

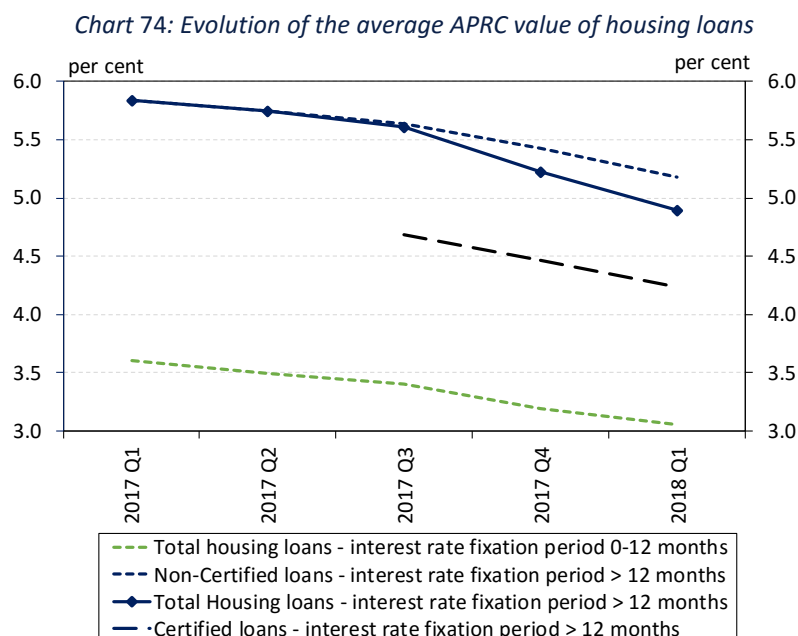
<sup>29</sup> Calza, A., Monacelli, T. and Stracca, L. (2013) "Housing finance and monetary policy", Journal of the European Economic Association Vol. 11 (1).

<sup>30</sup> <http://www.boi.org.il/en/NewsAndPublications/PressReleases/Pages/21-08-2013-loans.aspx>

## 8.2 First experiences from the introduction of Certified Consumer-Friendly Housing Loans

The spread of loans with longer interest periods may have been catalysed by the introduction of the Certified Consumer-Friendly Housing Loan (CCHL) certification framework. One of the key goals of the Certified Consumer-Friendly Housing Loan Programme launched by the MNB during the spring of 2017 is to promote loans with longer interest periods, since this product is available only with an interest period of 3, 5 or 10 years or in a fixed-rate scheme. The products offered in a standardised framework focusing on consumer aspects and with a capped interest rate spread enhance transparency and the comparability of products, thereby also spurring competition among banks. The disbursement of certified products, in parallel with the use of the online calculator<sup>31</sup> enabling the accurate comparison of different products, has increased dynamically since the programme's launch in September 2017, and CCHL products represented a share of 50 per cent within lending with longer interest periods in March 2018.

CCHL products also exert a visible impact on the Annual Percentage Rate of Charge (APRC) of loans with a longer interest period. The APRC of certified loans is 1 percentage point lower than in the case of other market loans. Therefore, in parallel with the spread of certified products, the average APRC of housing loans with an interest period of over one year fell faster than that of loans with an interest period of maximum one year, hence the spread of CCHL loans could support the mitigation of the interest rate difference of loans with interest rate fixation period up to and over one year (Chart 74).



Note: volume-weighted average APRC.

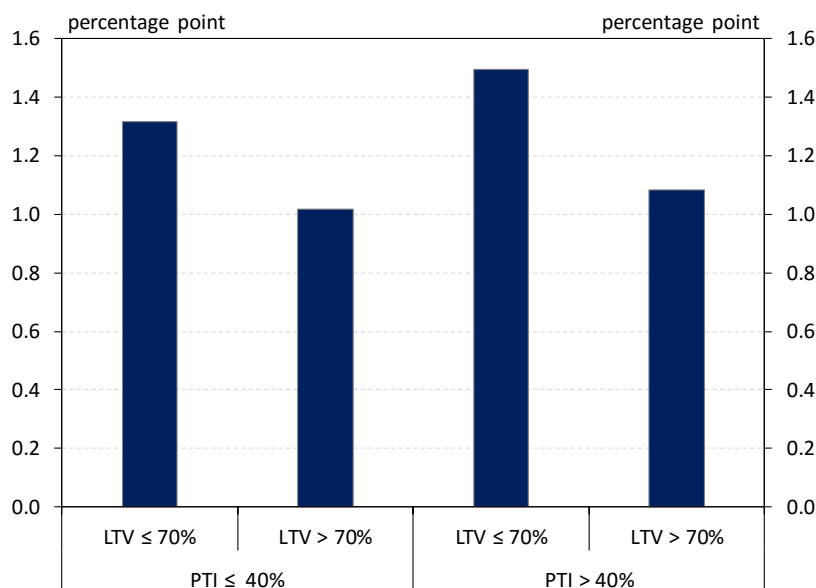
Source: MNB

**Irrespective of risk characteristics, CCHL products are disbursed with a lower spread than non-certified housing loans.** With respect to the interest rate spreads over the reference rate, the APR-based interest rate spread of housing loans with a rate fixed for a longer term dropped by 30–70 basis points on average between September 2017 and March 2018 depending on the duration of the interest period. Based on transaction-level data, in the case of the loan contracts signed between September 2017 and March 2018, the decreasing spreads and the lower spread of certified products could be observed in all risks groups and ranged between 80–130 basis points depending on risk categories. The development of interest rate spreads is influenced the most by income and the loan amount among the factors under review, but debtors' income tightness and the loan-to-value ratio may also affect spreads due to debtors' varying riskiness. Spreads declined in all the risk groups formed based on these indicators, and the interest rate spread of CCHL products dropped much more generally. Thus, the contraction in spreads could be felt both in

<sup>31</sup> [www.minositthitel.hu](http://www.minositthitel.hu)

case of higher and lower risk clients (Chart 75). Therefore, the **Certified Consumer-Friendly Housing Loans may provide an attractive alternative for a wide range of debtors.**

Chart 75: The APRC-based interest rate spread advantage of Certified Consumer Friendly Housing Loans in comparison to non-certified longer interest rate period housing loans according to various risk characteristics



Note: The interest rate spreads were calculated as the difference of the APRC and the BIRS-yields of the corresponding maturity. The different reference rate of various interest rate change indicators has been disregarded during the calculation of spreads. Sept 2017 – March 2018.

Source: MNB

**Due to the favourable pricing of CCHL products, a higher loan amount with the same debt-service burden is available to a wide range of consumers.** According to transaction-level MNB data, between September 2017 and March 2018, CCHL products were characterised by an average loan amount HUF 4 million higher, and an APRC 1.2 percentage point lower than non-certified housing loans with a longer interest period, while maturities were comparable, and borrowers' indebtedness and the loan-to-value ratios were roughly the same (Table 6).

Table 6: Main average values for new certified loans and other housing loans on the market with an interest period of at least 3 years

	Non-certified products (interest rate fixation period at least 3 years)	Certified Consumer-friendly Housing Loans
Average loan amount	HUF 7 million	HUF 11 million
Average maturity	14.8 years	16.5 years
Average APRC	5.7%	4.5%
Average PTI	26%	28%
Average LTV	55%	55%

Note: averages by number of contracts based on data from September 2017 – March 2018.

Source: MNB

**Almost one-third of CCHL products were disbursed in Budapest, typically with a higher loan amount but a similar maturity and lower APRC.** The average value of properties in Budapest is higher by HUF 6 million on average than outside the capital, while the average loan amount is larger by HUF 3 million. The examination of the loans outside of Budapest shows that in the case of the most typical maturities of 3, 5, and 10 years, they were disbursed with an average APR 5–30 basis points higher when taken out with the same loan amount and interest period, which may be attributable to the higher liquidity of the property market, the better creditworthiness of borrowers and the stronger competition of the banking sector in Budapest (Table 7).

Table 7: Main features of Certified Consumer-Friendly Housing Loans by the geographical location of the properties for which the loans were taken out

	Budapest	Outside of Budapest	Countrywide
Contract Number	33%	67%	100%
Disbursed volume	41%	59%	100%
Average maturity	16.7 years	16.4 years	16.5 years
Average APRC	4.36%	4.66%	4.56%
Average loan amount	HUF 13 million	HUF 10 million	HUF 11 million
Average property value	HUF 24 million	HUF 18 million	HUF 20 million

Note: based on data for the loans disbursed between September 2017 and March 2018.

Source: MNB

**Certified Consumer-Friendly Housing Loans are also favourable from the perspective of administrative deadlines and fees.** In 2018, 90 per cent of all Certified Consumer-Friendly Housing Loan applications were approved, in 13 working days on average. With respect to the fees related to loan contracts, the maximum set for certified products is more favourable than the limits on non-certified loans, so substantial amounts can be saved when taking out the former. In the case of certified loans, the disbursement fee capped at 0.75 per cent was not charged by credit institutions in around half of the transactions between September 2017 and March 2018. The prepayment fees were around the 1 per cent permitted, which was much lower than the maximum stipulated in the law, and when the prepayment is made from a building savings deposit, it is free.

### 8.3 Further options for promoting the long-term fixation of interest rates

**The current regulation on the APRC does not provide an adequate basis for assessing interest rate risks.** Consumers do not attach enough significance to interest rate risk, which is also attributable to the fact that— pursuant to the currently effective European Union and Hungarian legislation – before signing the loan contract, an annual percentage rate of charge (APRC) is presented that calculates future expected instalments assuming the interest rates that were applicable at the origination of the loan even in the case of variable-rate loans. The annual percentage rate of charge is calculated with the formula of the internal rate of return, however, assuming a fixed interest rate means that the cash flows used in the formula do not reflect all the information available to financial institutions that may influence the future development of instalments. Therefore, in a low interest rate environment such as today, the APRC indicated for variable-rate loans underestimates the actual cost of borrowing expected over the whole maturity of the loan, leading to excessive difference in the indicator as compared to a product with a fixed rate for a longer period. This issue could be addressed if financial institutions did not derive their cash flow estimates from the initial interest rate, but estimated future interest rates from money market interest rates, and based their APR calculations on that value. In the case of the annual percentage rate of charge adjusted for interest rate risk calculated in this manner, the difference between the APRC value of a variable-rate product and one with an interest rate fixed for a longer period would be lower, which would provide a clearer picture and better comparability for the consumers making the decision.

**The introduction of PTI rules differentiated by the duration of the interest period may have a direct effect.** Having regard to international experiences, it may arise that in case of taking out a mortgage loan with shorter interest rate fixation period and keeping income constant, customers are allowed to take out a lower amount, hence altering the consumers' decision by the regulation to choose loans with interest rates fixed for longer periods, for example at least 5 or 10 years, where limits could be left unchanged. For those customers who still decide to pick the shorter interest rate fixing, this change would provide a greater income buffer to cushion the effects of a potential rise in monthly payments. Such a regulatory measure would directly impact on contract-level and foster credit growth in a healthy structure and in a sustainable manner.

**All in all, it can be stated that Certified Consumer-Friendly Housing Loans have achieved significant results in a short time with respect to the qualitative features of mortgages, while also substantially mitigating the potential interest rate risk arising in the future among new contracts. Along with their increasing share, the certified products can be obtained with more favourable APRC levels overall, than the non-certified housing loans**

disbursed in the same period, and this can be observed both in the higher and lower risk segments. Decreasing long-term interest rate risk in mortgage lending is desirable from both a real economy and a financial stability perspective, therefore further regulatory measures with more direct impact should also be considered.

## 9 Digitalisation in the Hungarian banking sector

### 9.1 Importance of IT developments in the implementation of the business strategy

In our time, the role of IT is becoming increasingly important in the life of enterprises, including financial institutions, as they strive to automate more and more business processes in part or in full. In addition, in the banking sector the vast majority of fund transfers take place in IT systems in electronic form these days. This also means that banks increasingly depend on their IT systems in terms of availability and performance. The reliability and flexibility of its IT systems in satisfying business objectives influence the business success of any institution to an unprecedented degree. Due to this increasing supportive role of IT, **more and more market participants tend to harmonise their business and IT strategy**, and in the past few years banks started to include distinct technological elements (e.g. mobile application, digital signature) in their business strategies. In parallel with this, business managers are more and more often asked to review the traditional IT strategies focusing on systems and technological directions, instead of treating those as the private affairs of the IT department, and thus digitalisation becomes increasingly important not only in operations, but also in the business and strategic decision-making.

Sometimes it is difficult to align the goals outlined in the digital IT strategies with the business objectives (e.g. the need to consolidate technological platforms, database management systems/operating systems may require a lot of explanation and analyses), while in certain cases they can be very well substantiated by calculations and business cases. For example, among the well-founded digitalisation goals, **paperless operation through digital document management is one of the most frequent elements of modern corporate strategies**. In addition to efficiency and reliability, such developments are also supported by actual cost and benefit analyses, as the procurement of paper, printing and archiving generate substantial costs, and thus the investment related to the implementation of digital document management can be recovered in a matter of a few years.

New technological solutions also facilitate the enhancement of the traditional banking service model, i.e. there are fewer and fewer services that require the customer to visit the branch. The financial services available through electronic channels, in addition to being more convenient and faster for the customers, also generate less manual work for banks. Moreover, they make the processes more measurable and reduce the possibility of clerical errors, and also offer new fraud prevention opportunities. For example, when a customer manages his banking matters through his mobile application, through the security-focused monitoring of the mobile device we can notice if he logs in from an unusual location or device.

### 9.2 Digital developments in the Hungarian banking sector

At present, several smaller and larger actors of the Hungarian banking sector have strategic digitalisation objectives and ongoing projects for the realisation of those. In an international comparison, according to the survey performed by the EBA, Hungary is in the mid-range, i.e. it has neither a major lag, nor a significant advantage in the area of digital developments. **Budapest is becoming an increasingly important factor on the global map of financial innovation**,<sup>32</sup> but the role of FinTech companies from the technological line is more significant in this than that of banks. Traditional banks see a competitor in these firms,<sup>33</sup> but also an opportunity for partnering with them in the development of innovative services through their faster and more flexible development capabilities. Several domestic institutions have FinTech incubator programmes.<sup>34</sup> Hungarian FinTech solutions are linked to a wide range of financial services, with mobile payment and other payment services being the most widespread uses.

<sup>32</sup> Deloitte: A tale of 44 cities, Connecting Global FinTech: Interim Hub Review 2017

<sup>33</sup> PwC: Global FinTech Report, 2017

<sup>34</sup> MKB FintechLab, Raiffeisen Elevator, NN Insurance SparkLab

A smaller part of the developments aimed at digitalisation are performed by the institutions in-house, relying on their own development team or primary IT service provider. At the same time, larger international banking groups make efforts to capitalise on group synergies and develop uniform solutions, which often offer identical user experience to the customers. It is also quite common that institutions do not internalise these types of developments, but rather purchase the solutions from external developers – typically from FinTech or other technological firms – and even adjust their business processes to them, if necessary. The advantage of this approach is that in this way even larger banks with less dynamic development models and organisational structure may enjoy the benefits provided by the agile development methodology and flexible cooperation capabilities, without the need to alter their internal structure.

**Another important driver of technological innovation, in addition to the business objectives, is the regulatory environment**, for example, the eIDAS regulation, governing electronic signatures, or particularly the PSD2, which opens the market for payment providers from the FinTech sector in several areas (Account Information Service Providers - AISPs, Payment Initiation Service Providers – PISPs), and in parallel with this, it obliges banks to develop the technical conditions necessary for cooperation.

### 9.3 Challenges of digitalisation and pitfalls of cyber security

One of the typical problems of digitalisation developments can be summarised by stating that **companies face the difficulties of an unbeaten path**, i.e. they need to apply regulations and technologies where only few known and well-functioning precedents can be found in practice, and thus the perfecting of the solutions require continuous experimentation and (supervisory/regulatory) consultations. The lack of resources, particularly that of sufficiently competent IT experts (developers, system engineers, security experts) – faced not only by the banking sector – represents a major challenge. The problem can be perceived globally as well, and the situation is likely to worsen in the coming years; moreover, Hungary is among the countries that are characterised by the outflow of IT expertise.

**Increasing dependency on IT infrastructure also represents a risk in the digitalising banking sector**, as a result of which financial services rely on stable IT services and certain specific elements of those (networks, servers, applications, system administrators) to an unprecedented degree. In this environment a breakdown that affects the telecommunication core infrastructure may impact the payment system, while in an extreme situation a newly discovered security vulnerability may jeopardise financial stability. Having recognised this, **the regulatory authorities prescribe increasingly strict requirements** in respect of the elements of the critical financial infrastructure, which – albeit positive in security terms – may restrain or decelerate innovation in certain cases. Several functional areas of the MNB participate in a number of international initiatives, aimed at the development of harmonised European cyber security requirements and methodologies; in addition, the critical system components have already been identified in the Hungarian financial sector as well, and the authorities involved in the process cooperate closely.

### 9.4 FinTech initiatives of the MNB

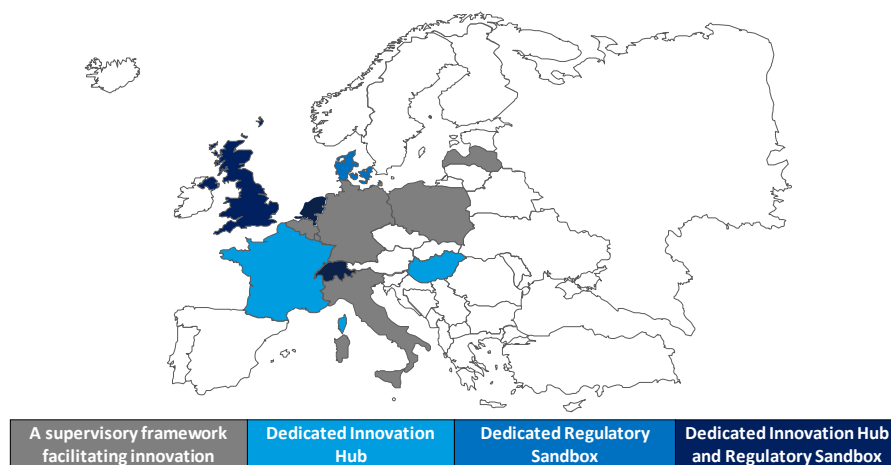
**Based on the results of the MNB's market consultation, there is strong demand for regulatory support for FinTech innovations.** Therefore, it might be useful to consider the development of new regulatory and supervisory processes for the regulation and support of these innovations in an appropriate framework. International experiences show that active cooperation between the financial supervisory authority and the market participants spearheading financial innovation and the safe spread of innovations on the market can be fostered by the establishment of an Innovation Hub and the creation of a Regulatory Sandbox. The former, as a so-called Financial Innovation Platform, offers guidance in legal and operational issues arising in connection with the innovations, while the latter acts as a testing ground for financial innovation and provides an environment for testing innovative solutions where the innovations are granted a temporary exemption from certain prudential regulations.<sup>35</sup> The solutions supporting innovation

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<sup>35</sup> For more details on regulatory solutions and an outline of international practices, see: <https://www.mnb.hu/letoltes/consultation-document.pdf>

through an open approach by the supervisory authority and the forms of cooperation presented above are increasingly widespread in Europe (Chart 76).

Chart 76: FinTech related regulatory actions in Europe



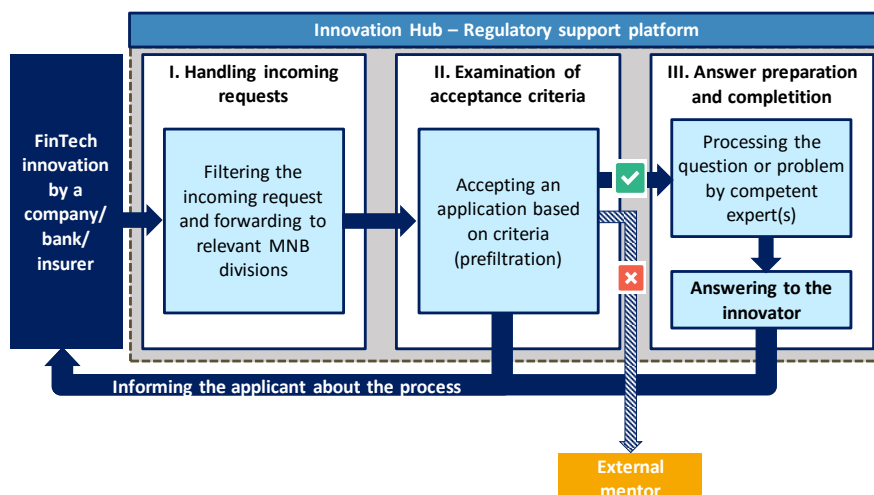
Source: authors' compilation based on BIS and the websites of national authorities

**By operating the Financial Innovation Platform (Innovation Hub), the MNB has been supporting the safe spreading of new FinTech initiatives in financial markets while preserving financial stability since March 2018.** The success of the Innovation Hub can be ensured by international experiences, the active and direct dialogue between the central bank and market participants as well as the flexible, goal-oriented approach. The Hungarian Innovation Hub<sup>36</sup> is based on an online interface or, more precisely, the communication through that, connecting the regulatory authority and market participants. It has the following major functions:

- **Information Repository:** For those with innovative ideas, especially the FinTech firms without any significant experience on the financial services market, understanding the specific legal provisions pertaining to their planned innovations is usually difficult. Therefore, collecting information on legal obligations and supervisory expectations frequently hampers swift implementation. The Information Repository offers an opportunity for market participants to familiarise themselves with the expectations identified in connection with the provision of financial services in a clear and structured form, focusing on the type of activity planned to be undertaken.
- **Communication Hub:** Establishing and maintaining communication links among the players in the FinTech ecosystem (e.g. FinTech firms, banks, insurers, law firms, venture capital funds) is crucial. The Communication Hub serves as an information-sharing and networking platform for all stakeholders, which may help bring them closer in different topics and foster potential cooperation.
- **Regulatory support platform:** The market implementation of certain innovative ideas is often frustrated by complicated legal interpretation issues that cannot be settled in a straightforward manner simply on the basis of the current legislation due to the novelty of the idea or the different mentality of the regulation. The MNB provides help to FinTech innovators through the Regulatory support platform in a one-stop-shop, flexible and goal-oriented approach, in the form of guidelines, with respect to the clarification of the finance-related legal problems arising in connection with their innovations and requiring a case-by-case assessment. Responses are provided in a predetermined process (Chart 77), in which all the relevant business areas of the MNB are involved, thereby fostering the provision of accurate information.
- **International cooperation platform:** Digital solutions are especially likely to spread very fast across the globe, which often takes the form of cross-border services. The aim of the international cooperation between the authorities is to forge cooperation ties to foreign authorities active in the FinTech arena and possessing relevant experience. This facilitates the efficient identification of potential risks and the exploration of the relevant best practices and may even contribute to the swifter spread of successful ideas.

<sup>36</sup> <https://www.mnb.hu/en/innovation-hub>

Chart 77: Operation of the regulatory support platform



Source: MNB

**The establishment of the Regulatory Sandbox would also efficiently support innovation efforts and could foster the spread of FinTech innovations in Hungary while also reducing risks.** This is supported by both international experiences and Hungarian actors' need for testing: according to the MNB's survey, around 40 per cent of the actors have a product or service ready for testing. While the Innovation Hub encourages innovation by answering specific questions related to legal interpretation and law enforcement, a test run in the Regulatory Sandbox with exemptions from certain expectations on given conditions may prove efficient in assessing the viability of concrete business solutions.

**The development of the instant payment system, being the MNB's key innovation initiative, has commenced.** With a view to enhancing the efficiency of payments in Hungary and improving the competitiveness of the payment market and the Hungarian economy, the MNB has initiated the development of the instant payment service. The purpose of the development of the new payment system is to ensure that payments between domestic payment accounts can be completed in a matter of seconds, 24 hours a day. The instant payment system will permit the utilisation of the state-of-the-art communication and information technologies, which have become available in recent years, also in the payment traffic in Hungary. The MNB expects the institutions to develop new, innovative services relying either on their own labour force or on start-up companies. The MNB regards it as a key objective to achieve that banks treat the development as a business project rather than an IT one, and it also supports the players of the sector with active dialogue.

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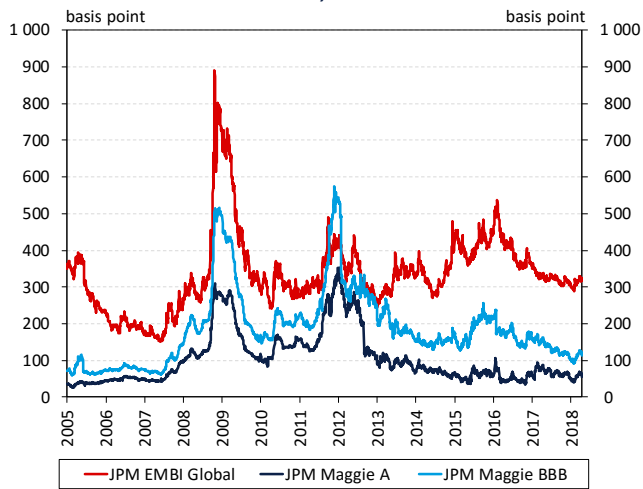
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## Appendix: Macroprudential indicators

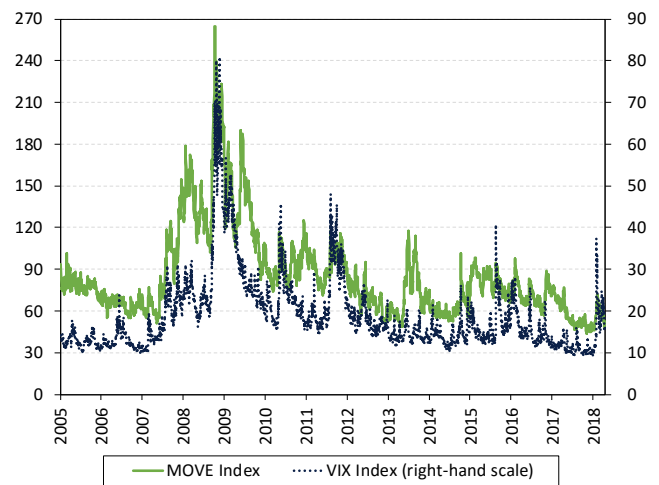
### 1 Risk appetite

Chart 1: Primary risk indicators



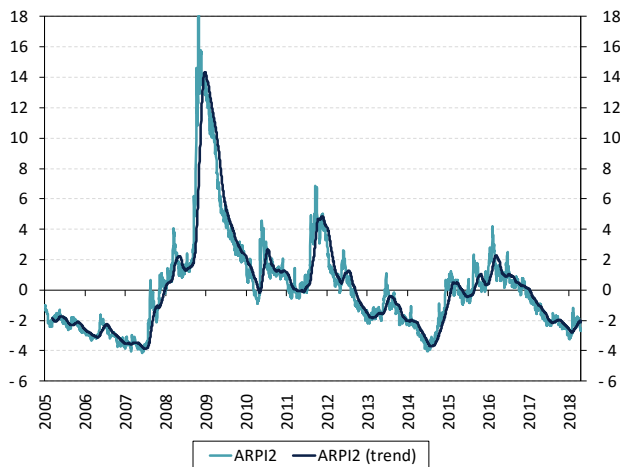
Source: Datastream, JP Morgan

Chart 2: Implied volatility of the primary markets



Source: Datastream, Bloomberg

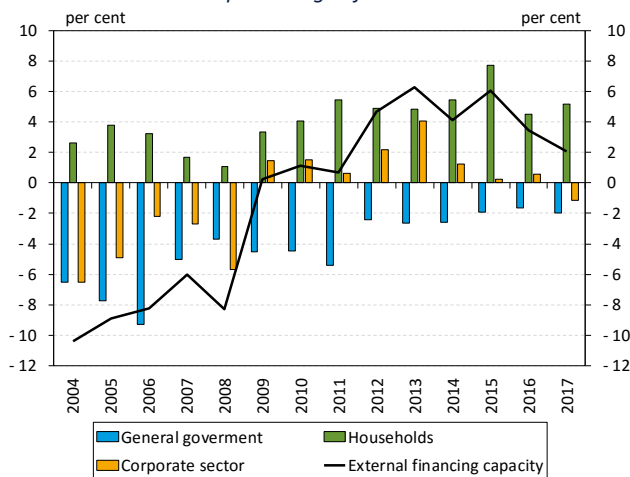
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Source: DrKW

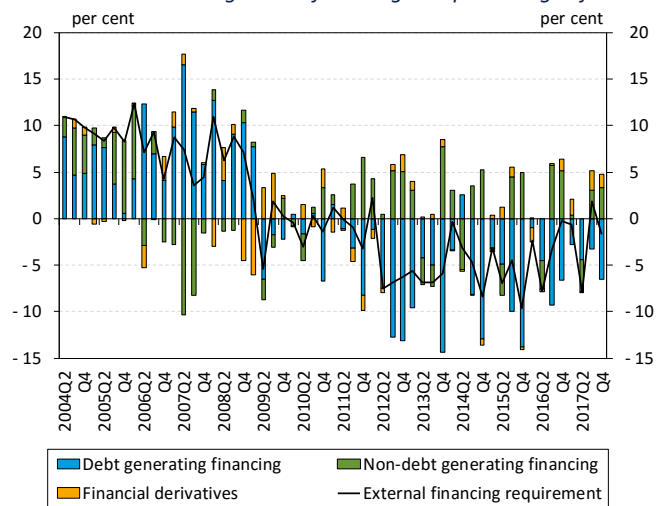
### 2 External balance and vulnerability

Chart 4: Net lending of the main sectors and external balance as percentage of GDP



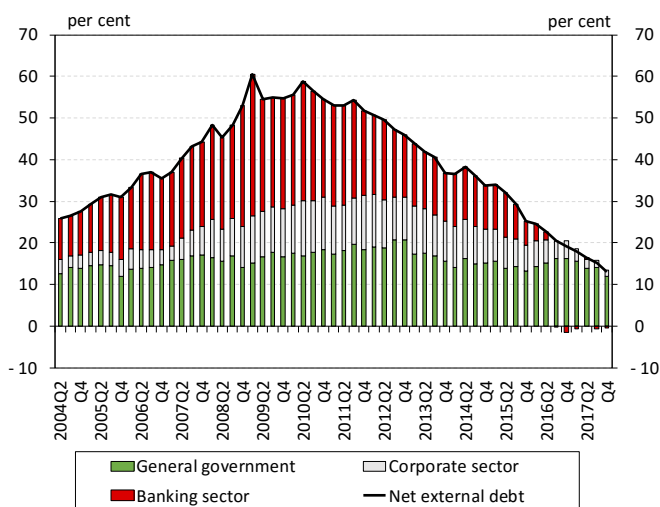
Source: MNB

Chart 5: Net lending and its financing as a percentage of GDP



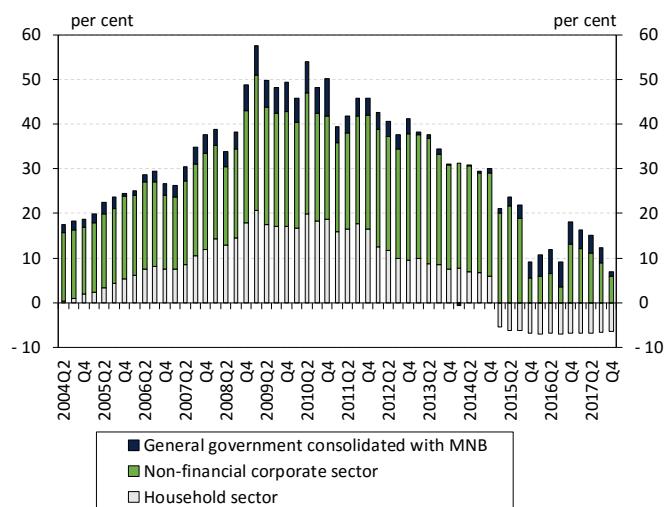
Source: MNB

Chart 6: Net external debt as a percentage of GDP



Source: MNB

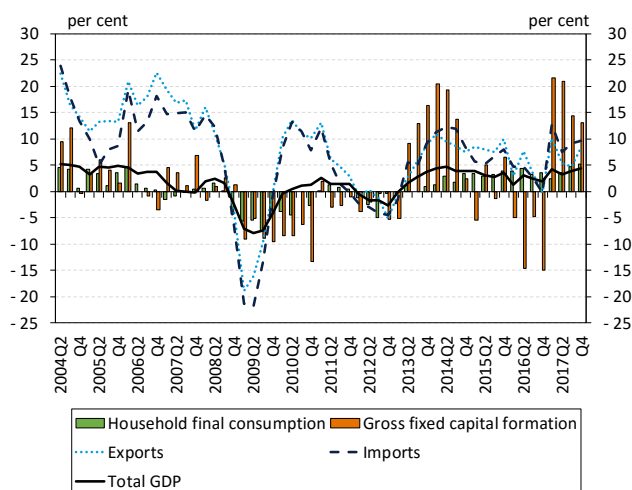
Chart 7: Open FX position of the main sectors in the balance sheet as percentage of GDP



Source: MNB, IMF

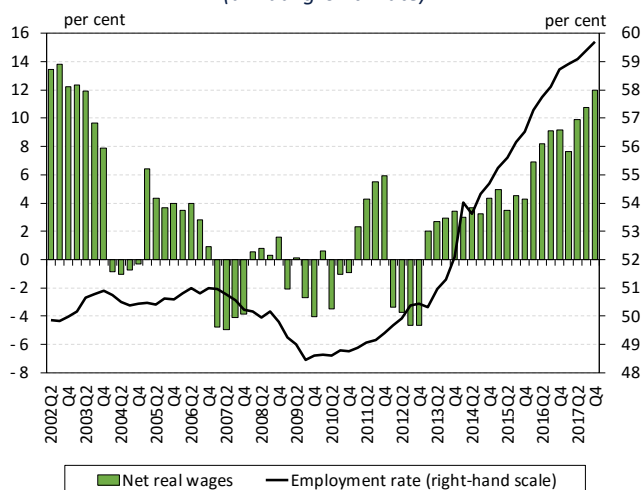
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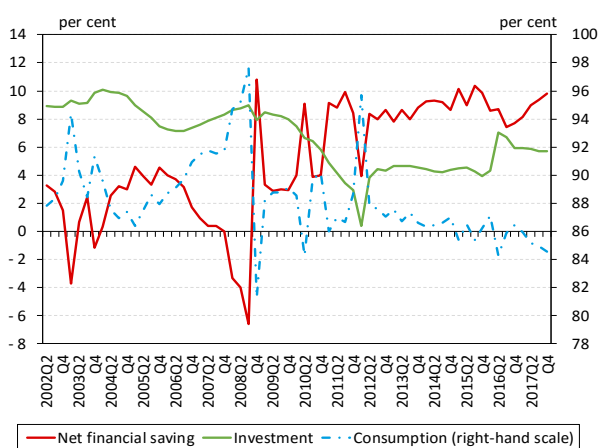
Source: HCSO

Chart 9: Employment rate and net real wage developments (annual growth rate)



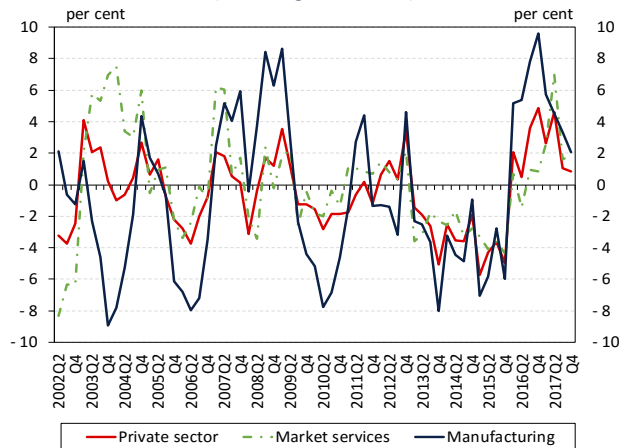
Source: HCSO

Chart 10: Use of household income as a ratio of disposable income



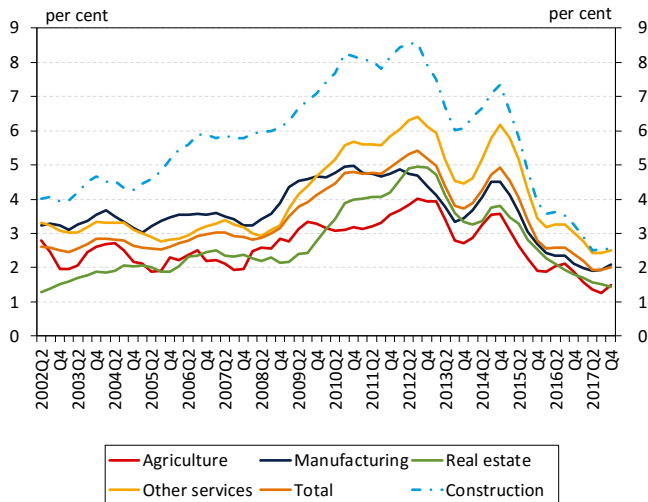
Source: HCSO, MNB

Chart 11: Corporate real unit labour cost in the private sector (annual growth rate)



Source: HCSO, MNB

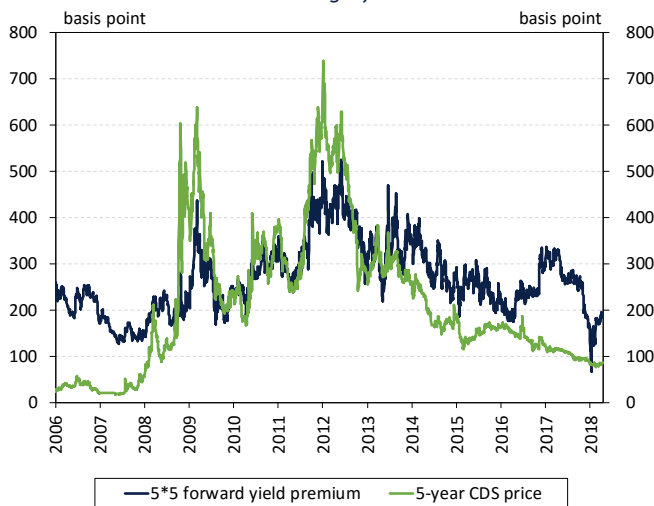
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Source: Opten, MNB, HCSO

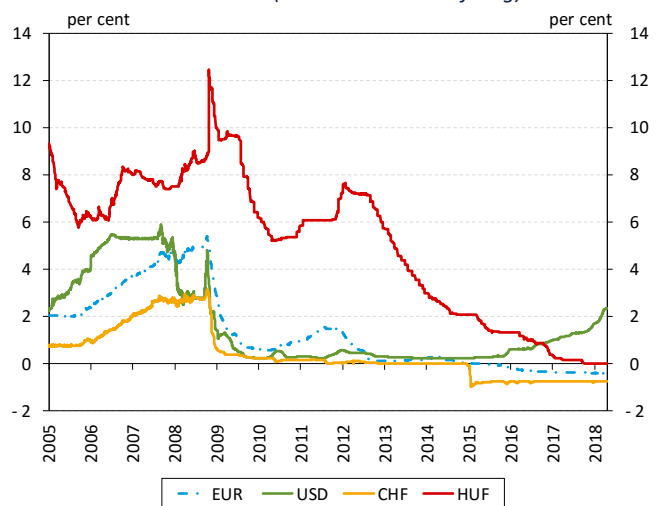
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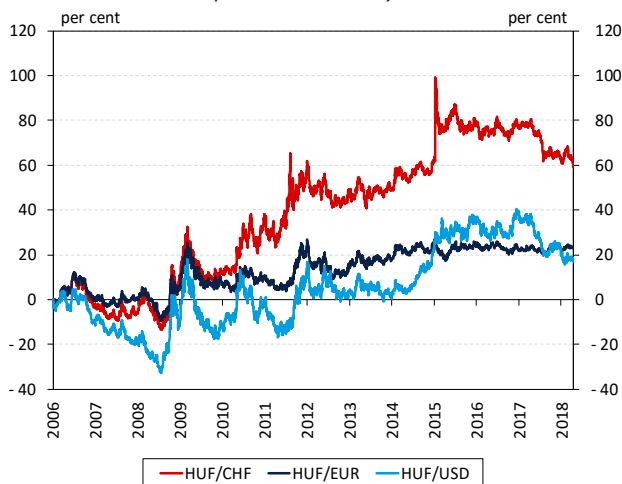
Source: Datastream, Reuters, Bloomberg

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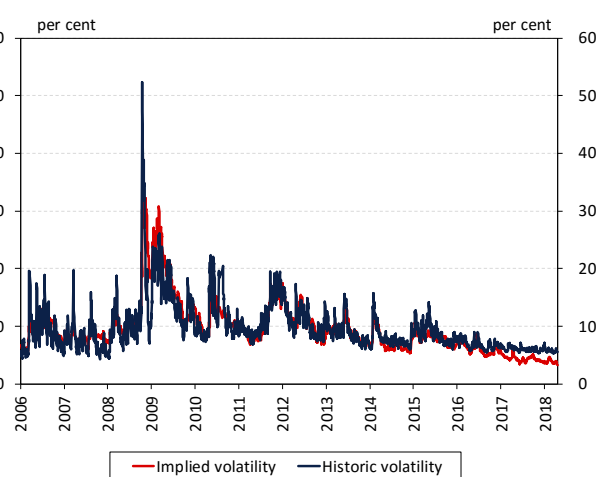
Source: Reuters

Chart 15: HUF/EUR, HUF/USD and HUF/CHF exchange rates compared to 2 For 1 January 2006



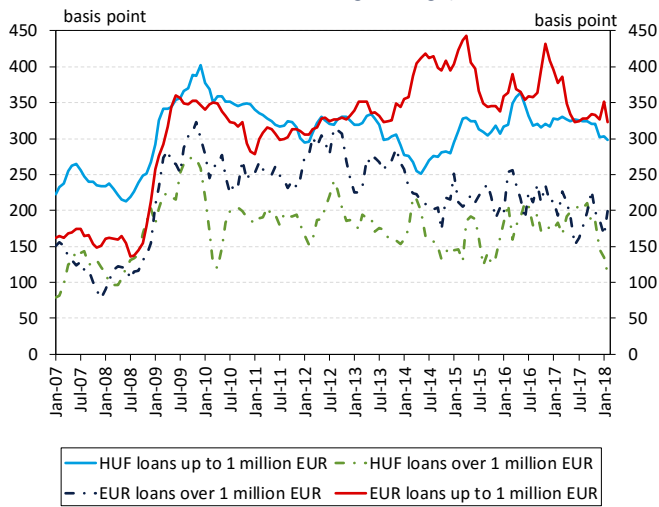
Source: Reuters

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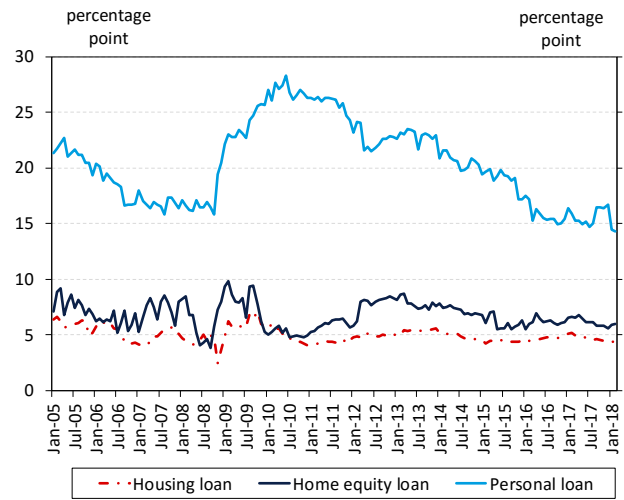
Source: MNB, Reuters

Chart 17: Interest rate premium of new loans to non-financial enterprises (over 3-month BUBOR and EURIBOR, respectively, 3-month moving average)



Source: MNB

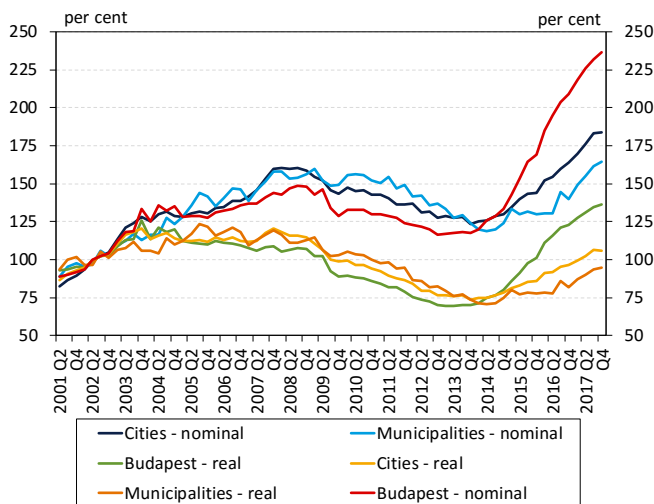
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Source: MNB

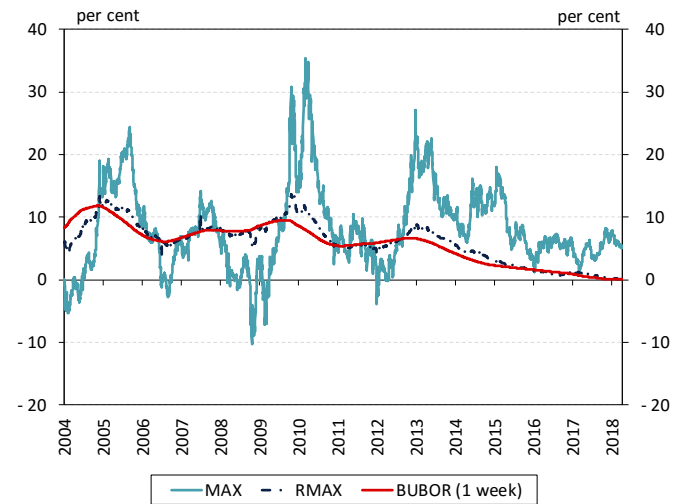
5. Asset prices

Chart 19: MNB house price index break down by settlement type



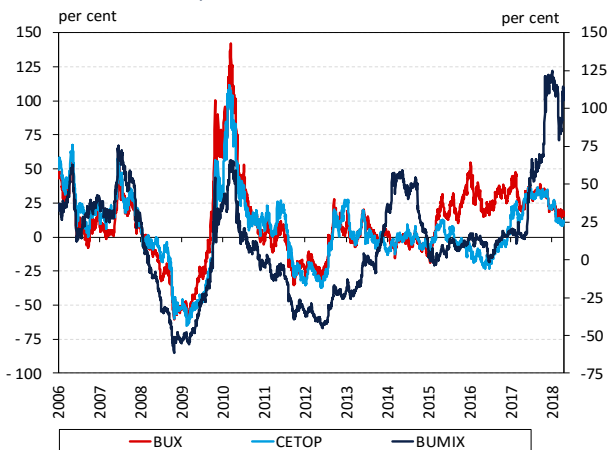
Source: MNB

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Source: ÁKK, MNB

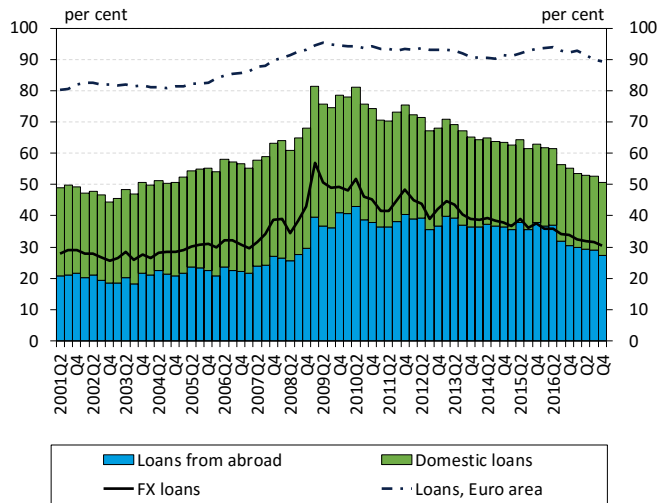
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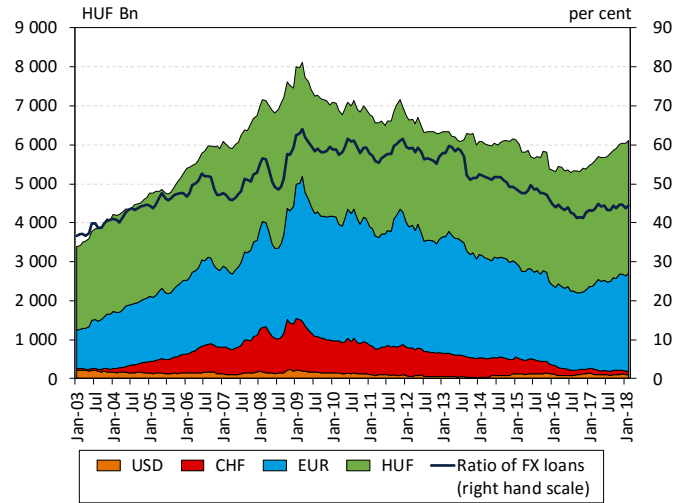
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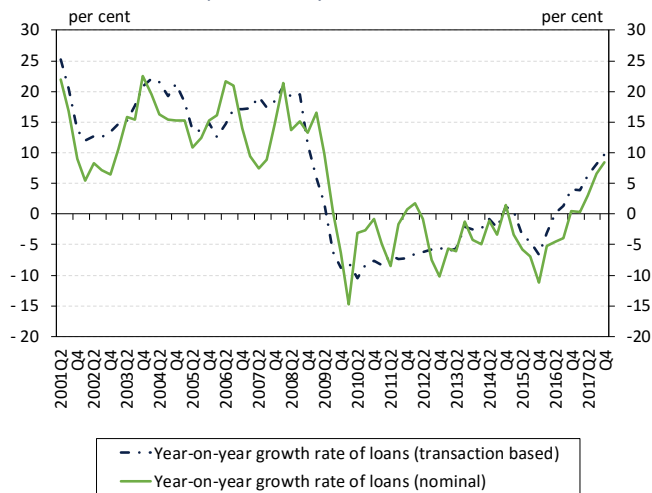
Source: MNB, ECB, Eurostat

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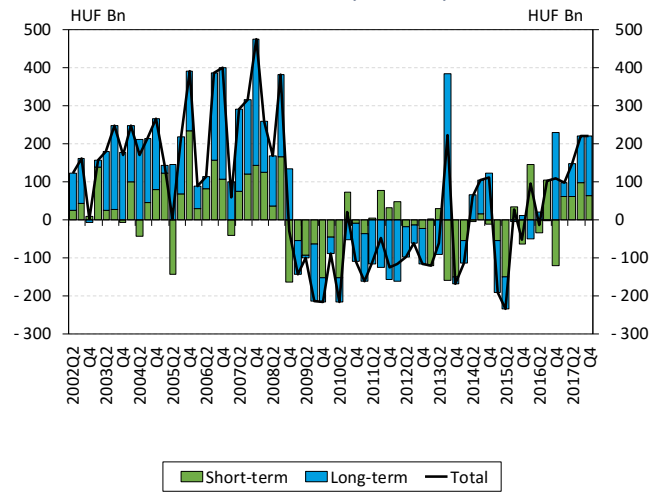
Source: MNB

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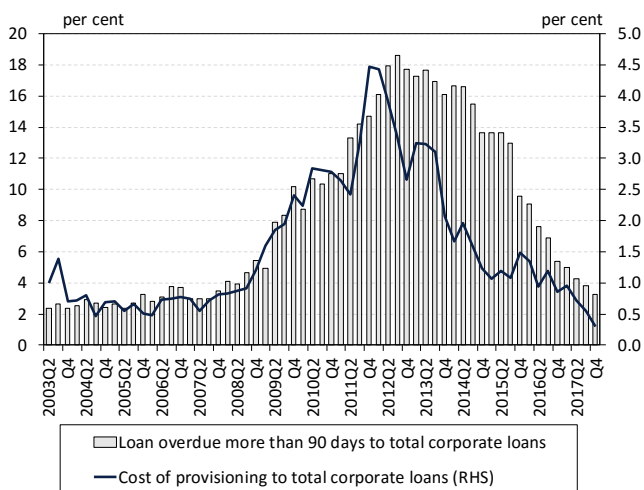
Source: MNB

Chart 25: Lending transactions to the non-financial corporate sector broken down by maturity



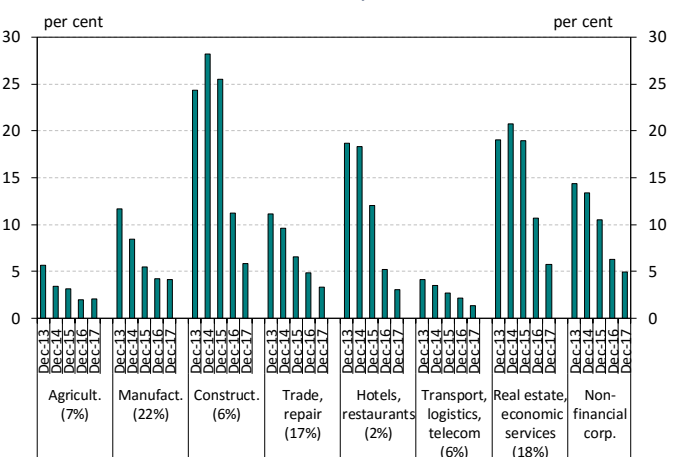
Source: MNB

Chart 26: Quality of the corporate loan portfolio



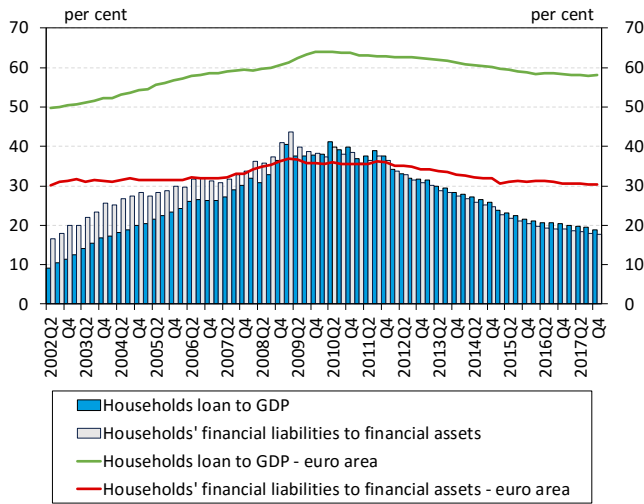
Source: MNB

Chart 27: Provisioning on loans of non-financial corporations by industry



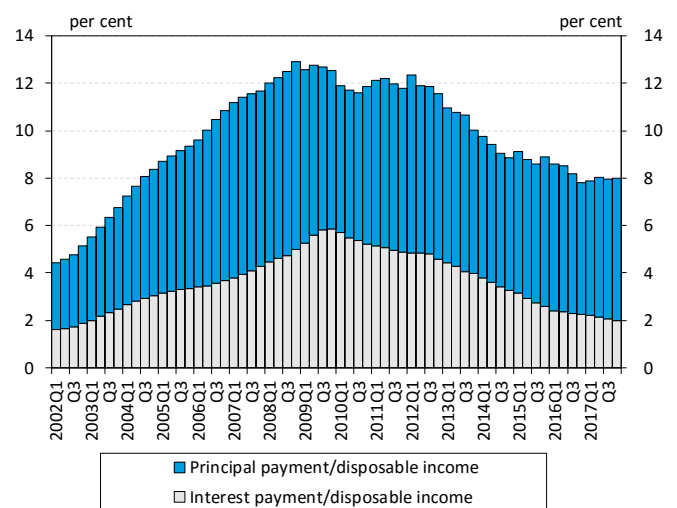
Source: MNB

Chart 28: Indebtedness of households in international comparison



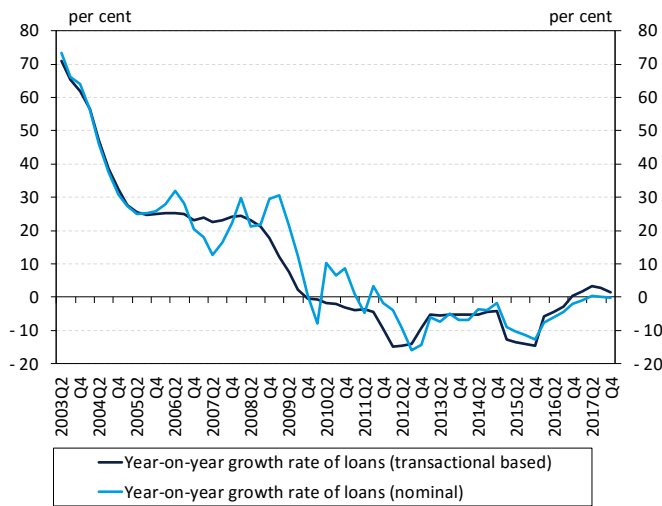
Source: MNB, ECB

Chart 29: Debt service burden of the household sector



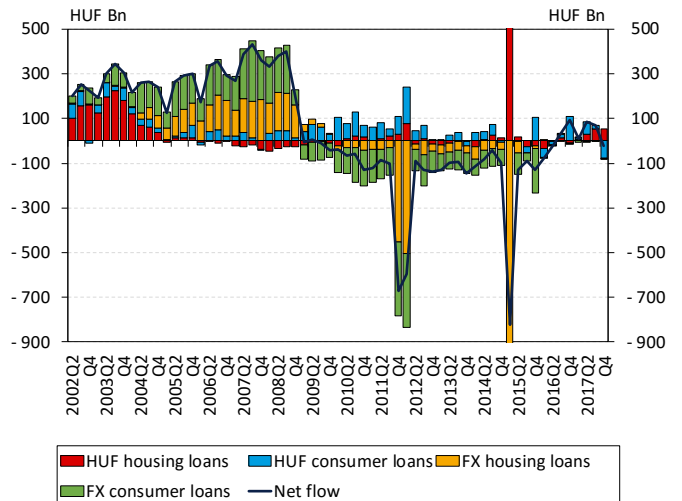
Source: MNB

Chart 30: Annual growth rate of total domestic household loans



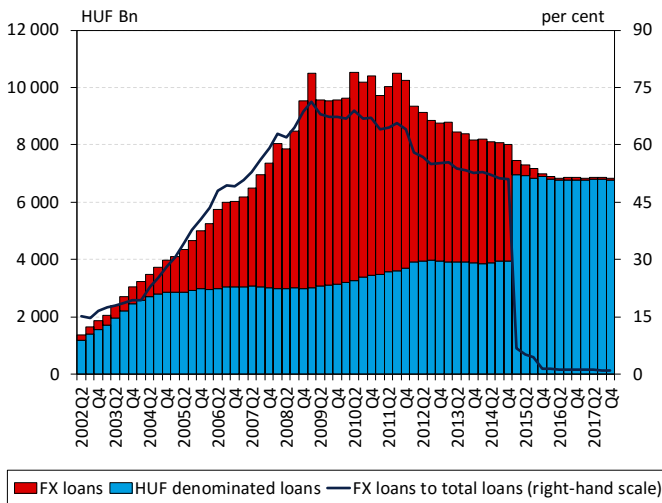
Source: MNB

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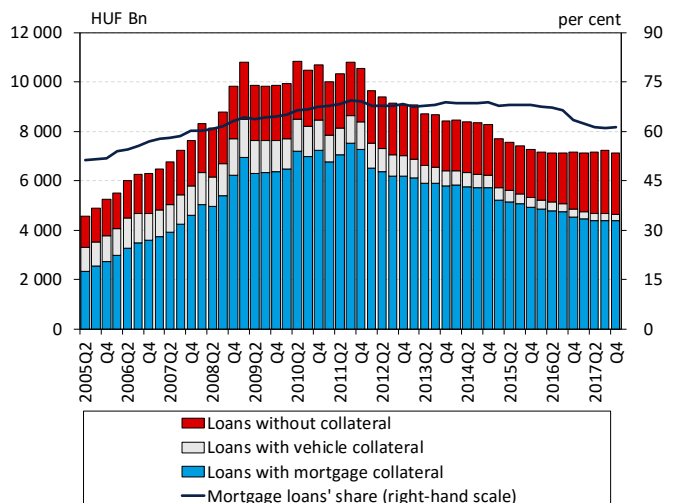
Source: MNB

Chart 32: The denomination structure of household loans



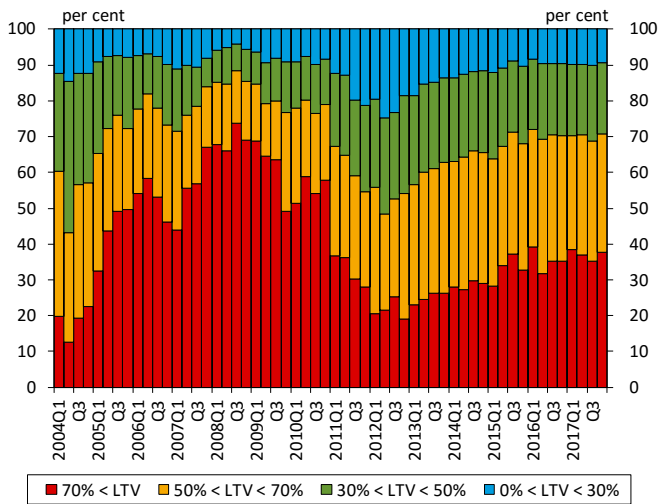
Source: MNB

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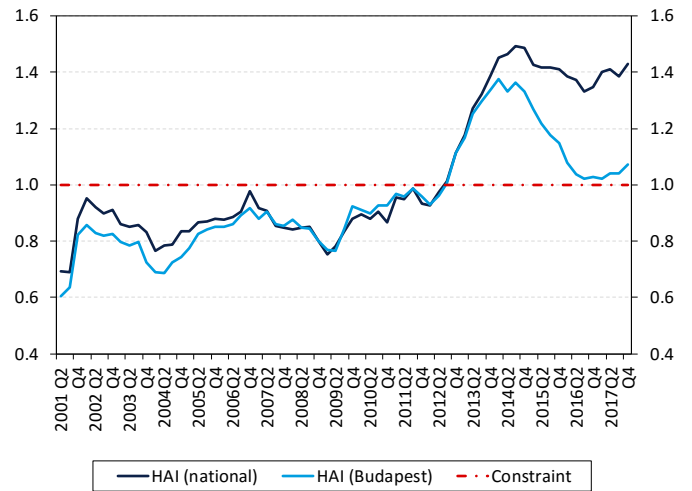
Source: MNB

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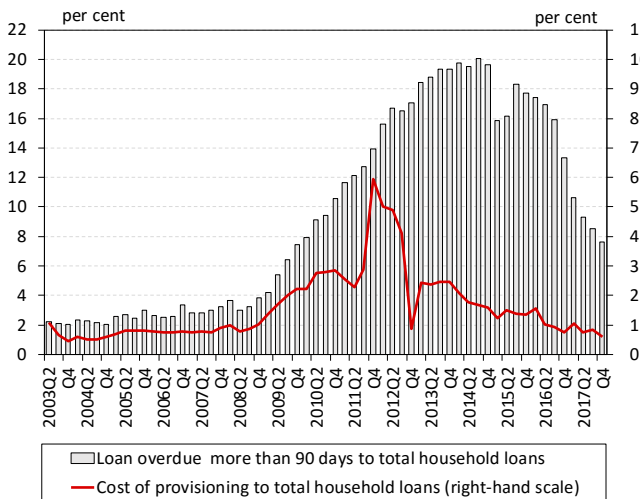
Source: MNB

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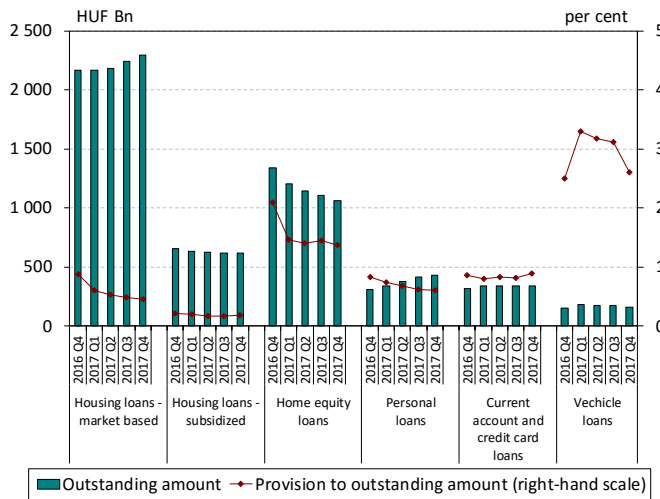
Source: MNB

Chart 36: Quality of the household loan portfolio



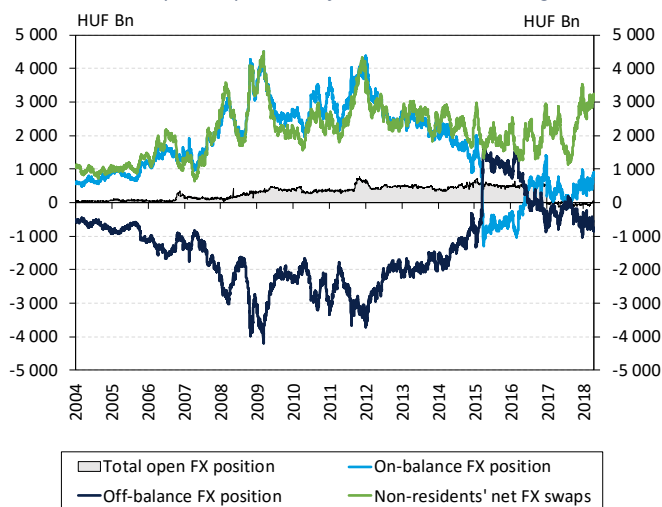
Source: MNB

Chart 37: Provisioning on household loans



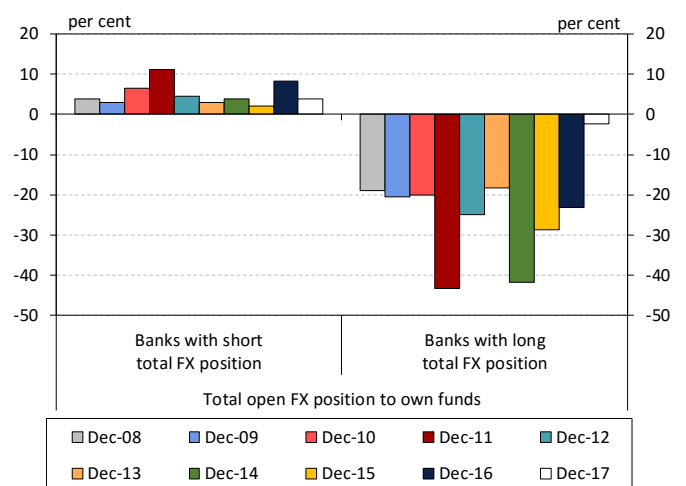
Source: MNB

Chart 38: Open FX position of the domestic banking sector



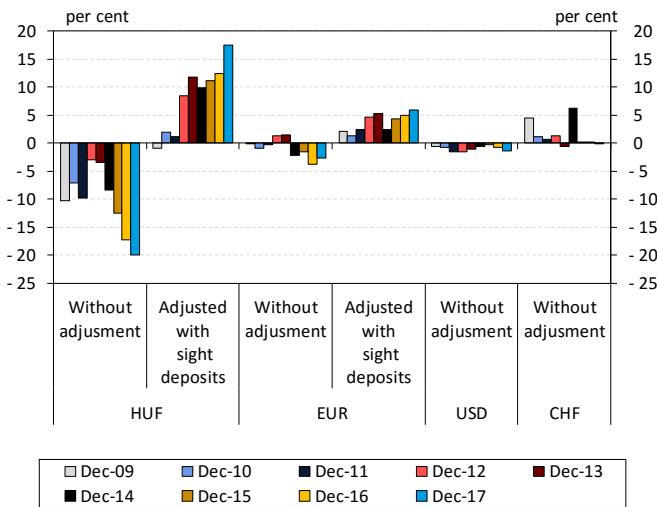
Source: MNB

Chart 39: The exchange rate exposure of the banking sector



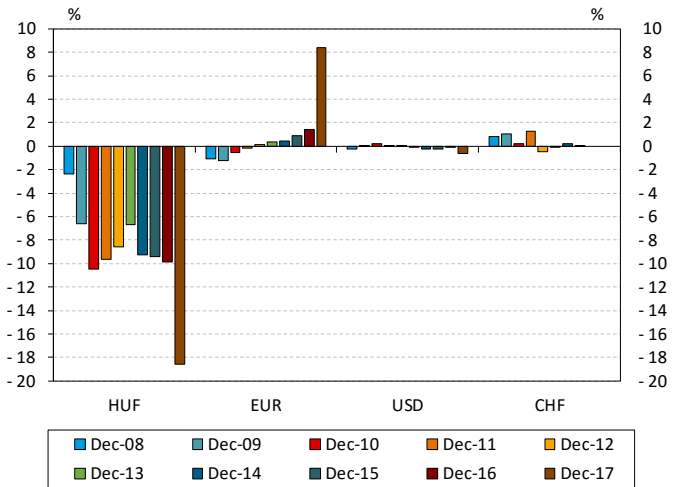
Source: MNB

Chart 40: 90-day re-pricing gap of the banking sector



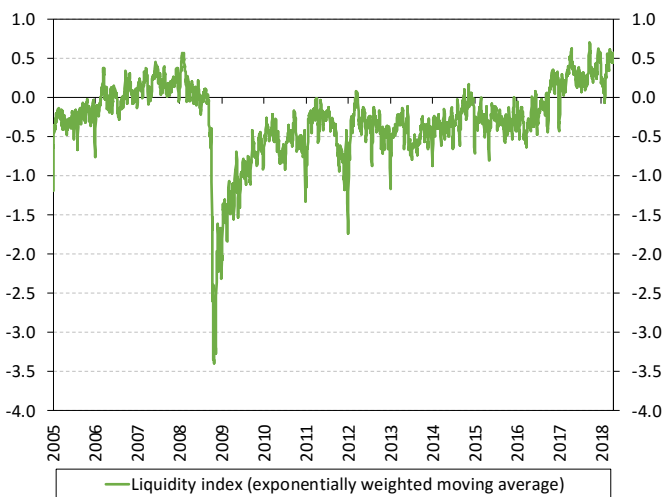
Source: MNB

Chart 41: Estimated maximum loss based on interest rate risk stress tests relative to equity



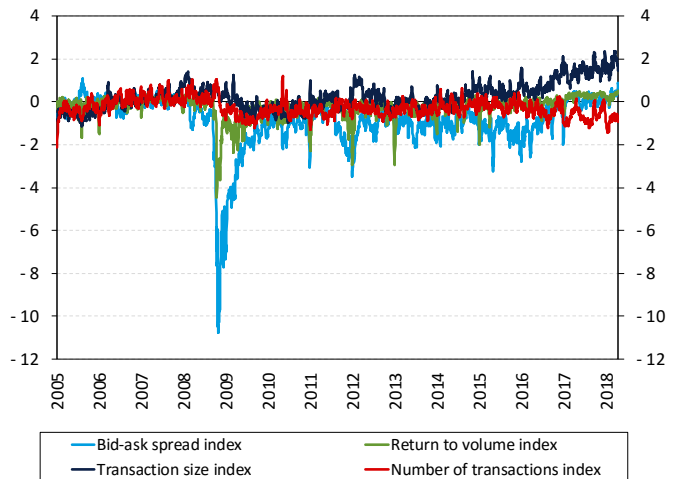
Source: MNB

Chart 42: Liquidity index (exponentially weighted moving average)



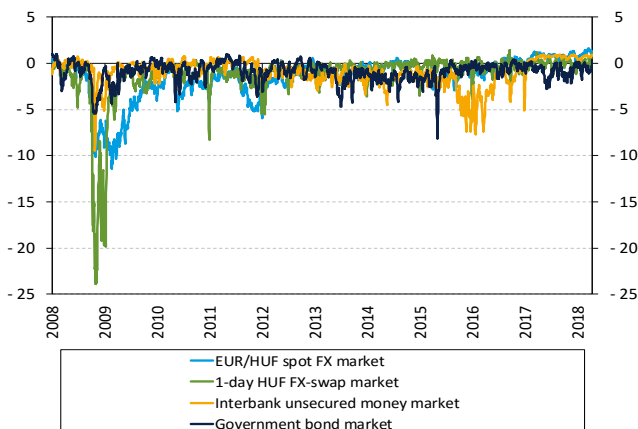
Source: MNB, KELER, Reuters, DrKW

Chart 43: Liquidity sub-indices (exponentially weighted moving average)



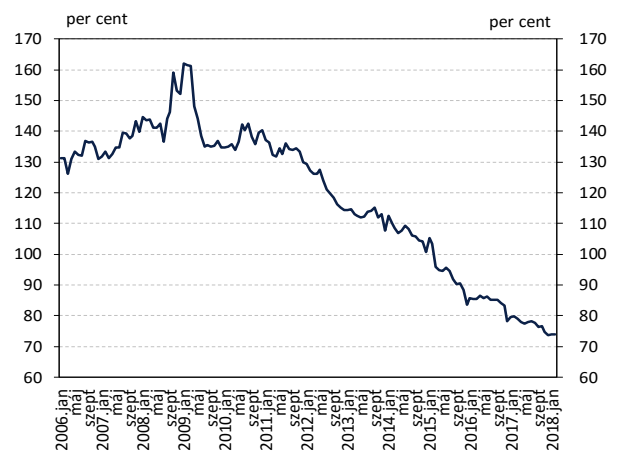
Source: MNB, KELER, Reuters, DrKW

Chart 44: Bid-ask spread indices of the major domestic financial markets (exponentially weighted moving average)



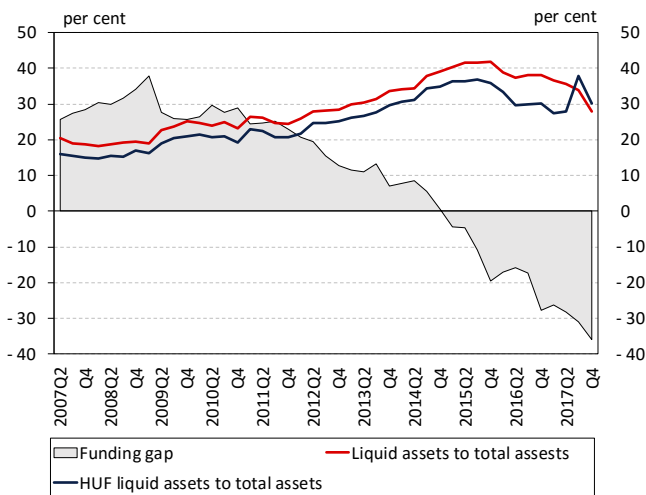
Source: MNB, KELER, Reuters, DrKW

Chart 45: Credit to deposit ratio of the banking sector



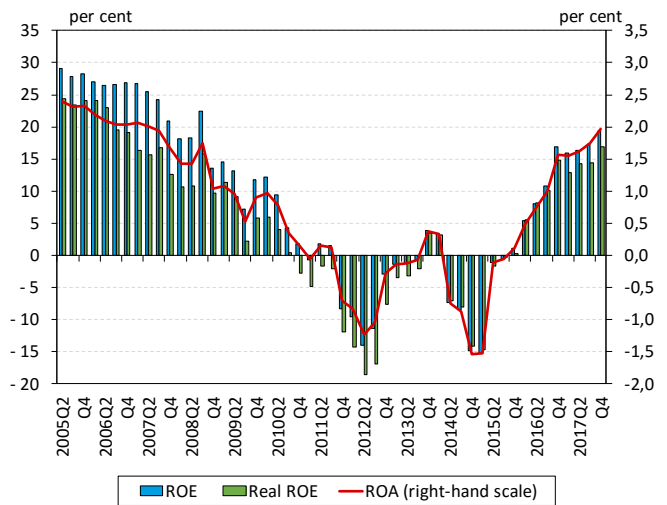
Source: MNB

Chart 46: Liquidity ratios of the banking sector



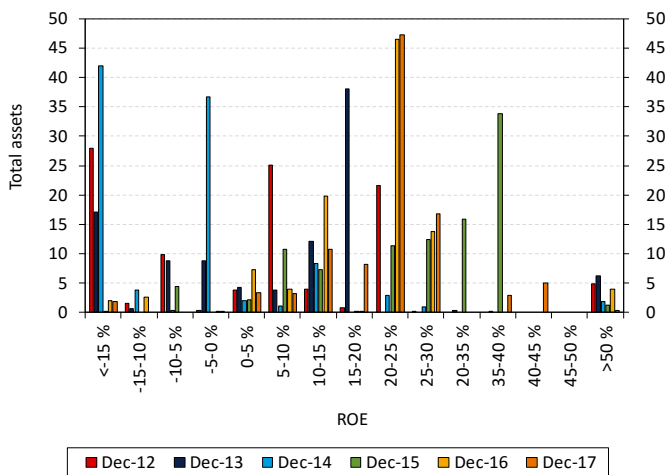
Source: MNB

Chart 47: ROA, ROE and real ROE of the banking sector



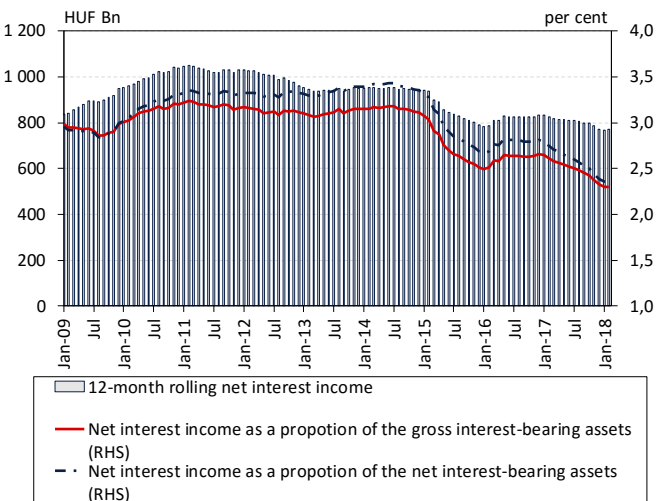
Source: MNB

Chart 48: Distribution of banks' total assets by ROE



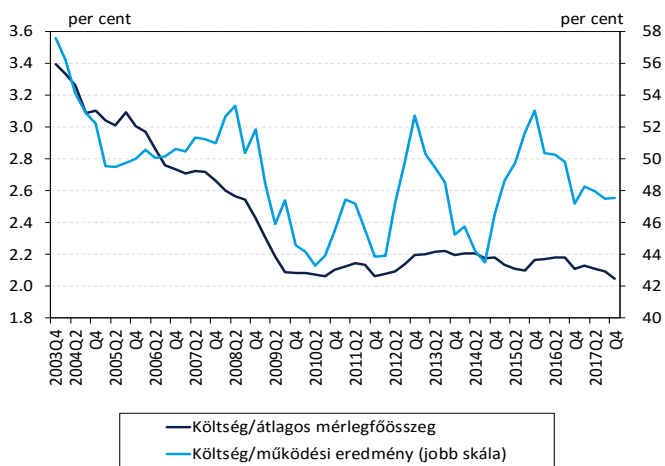
Source: MNB

Chart 49: Net interest income as a proportion of the gross and net interest bearing assets in the banking sector



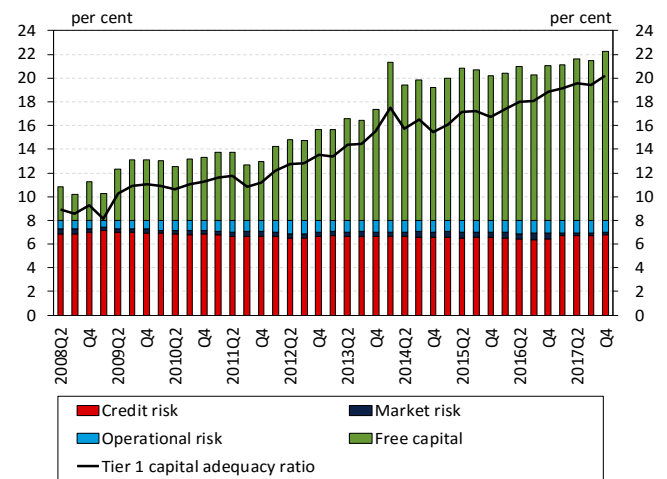
Source: MNB

Chart 50: Operating efficiency indicators of the banking sector



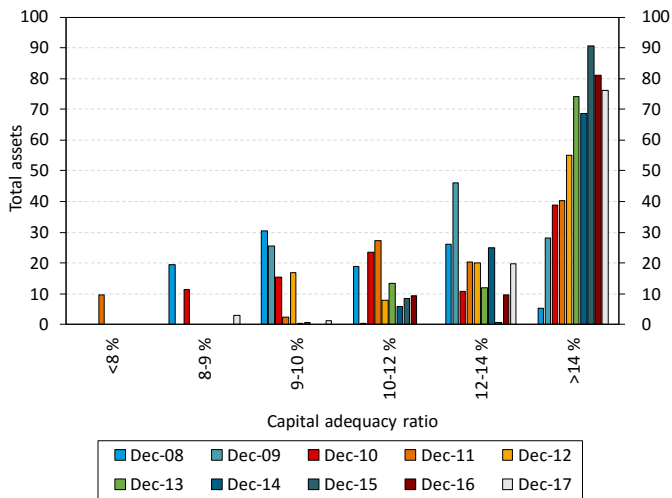
Source: MNB

Chart 51: Banks' capital adequacy ratios



Source: MNB

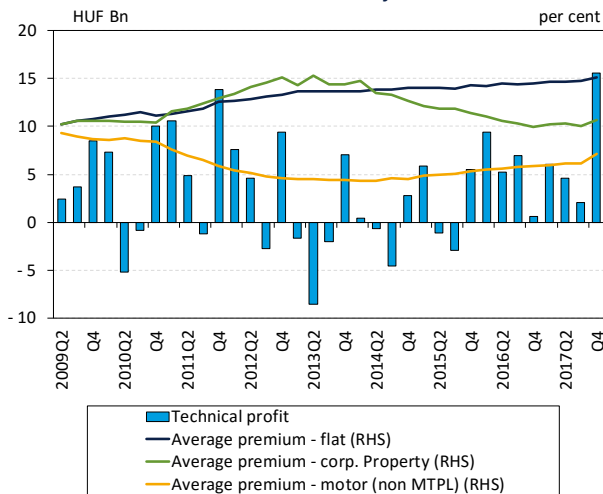
Chart 52: Distribution of banks' total assets by capital adequacy ratio



Source: MNB

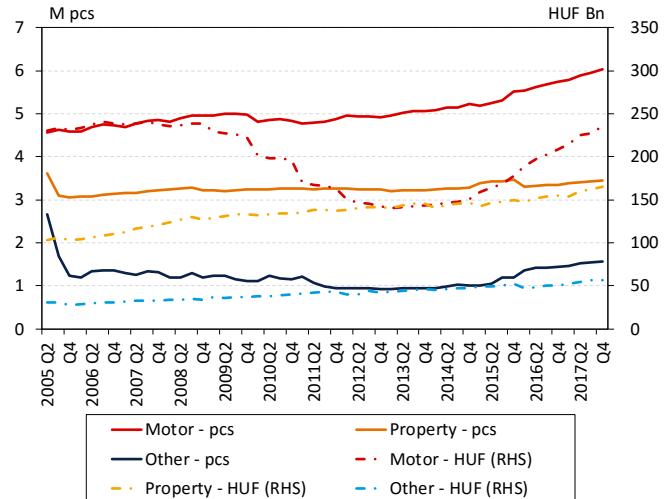
7 Institutional investors

Chart 53: Underline data of insurance tax



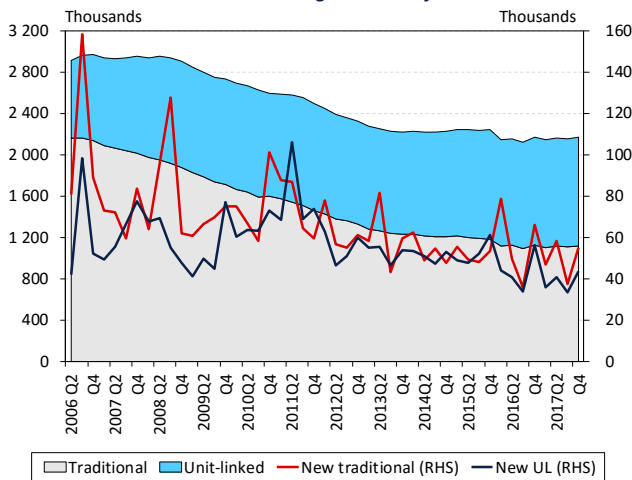
Source: MNB

Chart 54: Development of non-life insurance



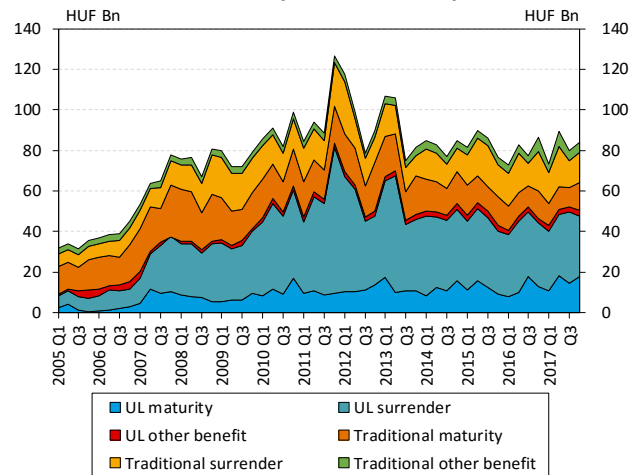
Source: MNB

Chart 55: Outstanding amount life insurances



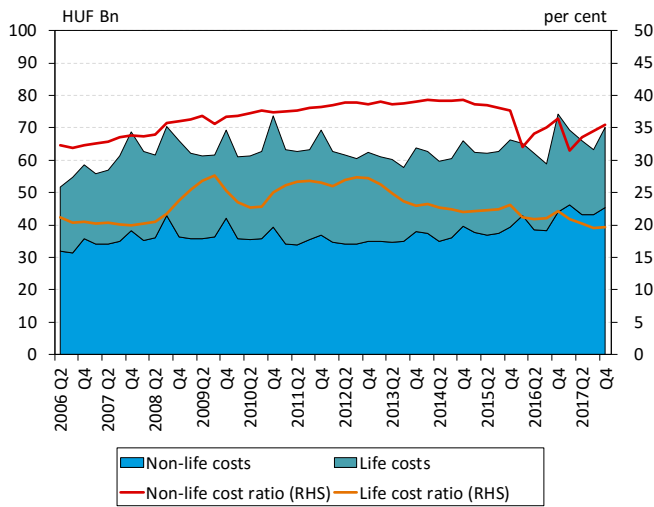
Source: MNB

Chart 56: Life insurance benefit



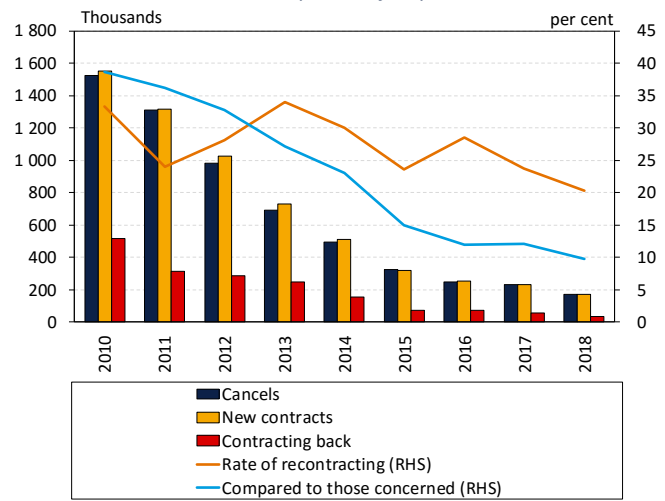
Source: MNB

Chart 57: Costs in the insurance sector



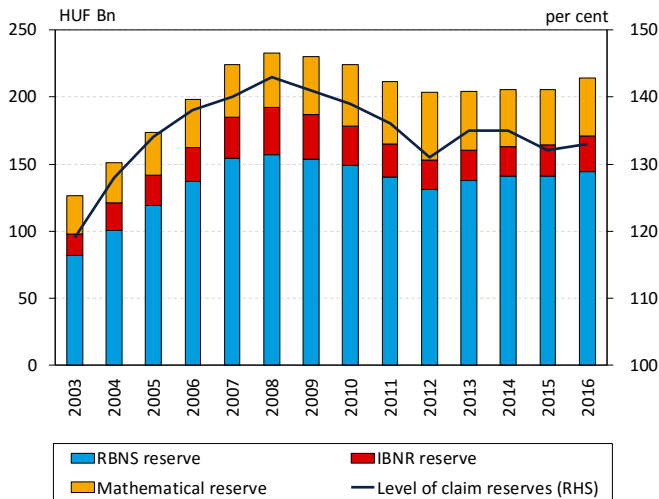
Source: MNB

Chart 58: Development of mtpl insurance



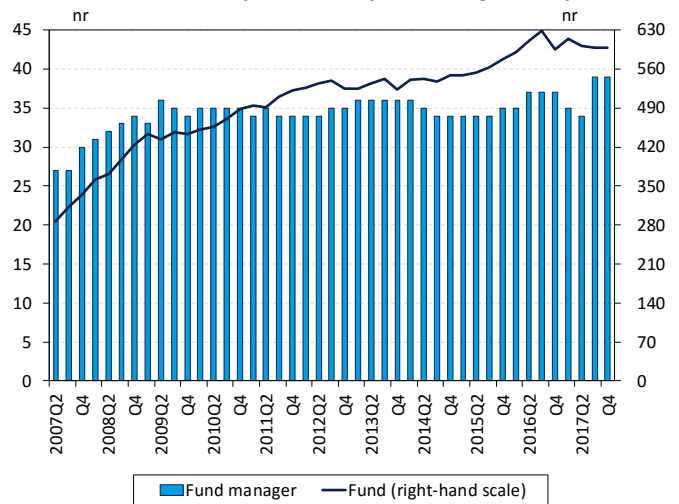
Source: MNB

Chart 59: Development of gross mtpl reserves



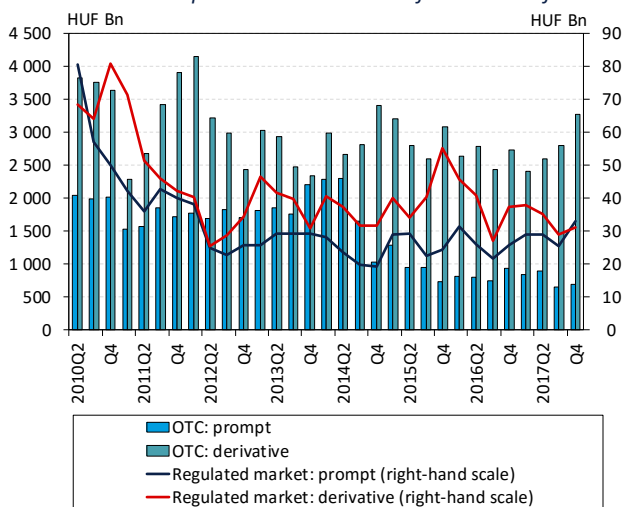
Source: MNB

Chart 60: Number of investment fund managers and funds



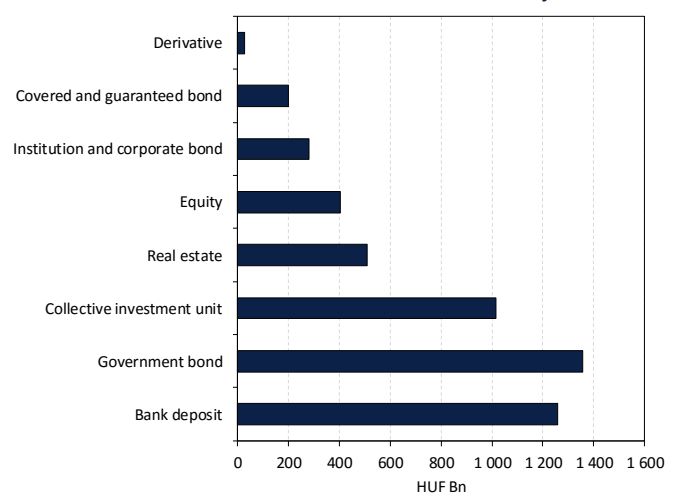
Source: MNB

Chart 61: Capital market turnover of investment firms



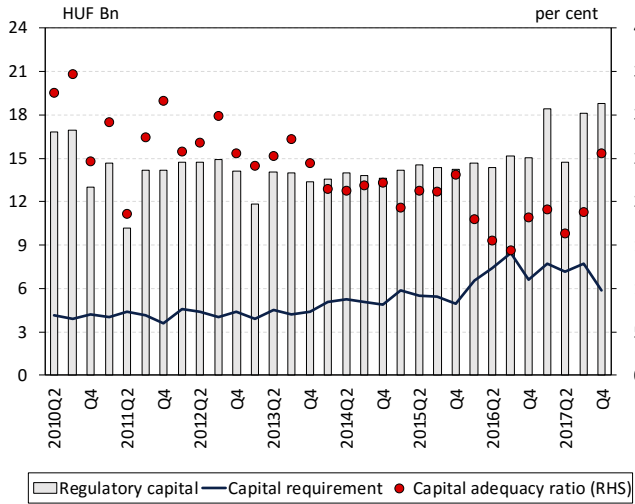
Source: MNB

Chart 62: Asset allocation in mutual investment funds



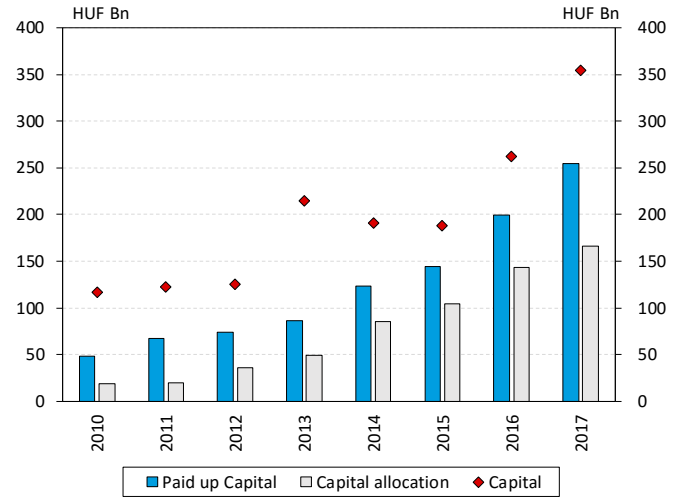
Source: MNB

Chart 63: Capital adequacy (CAR) of investment firms



Source: MNB

Chart 64: Capital and capital allocation of venture capitals



Source: MNB

**Notes to the appendix**

The chart date (e.g. 2016) means the end of the year (the 31<sup>st</sup> of December) if it's not indicated otherwise.

**Chart 1:**

The increased value of the indicator indicates declining risk appetite or increasing risk aversion.

**Chart 2:**

VIX: implied volatility of S&P 500.

MOVE: implied volatility of US Treasuries (Merrill Lynch).

**Chart 3:**

The increased value of the indicator shows declining risk appetite or increasing risk aversion.

**Chart 4:**

General government augmented SNA-deficit includes local governments, ÁPV Ltd., institutions discharging quasi-fiscal duties (MÁV, BKV), the MNB and authorities implementing capital projects initiated and controlled by the government but formally implemented under PPP schemes. The indicator includes private pension savings.

In case of the household sector, financing capacity is consistent with the SNA deficit of the general government and does not take savings in private pension funds into account. The official financing saving of households (in the financial account) is different from data on the chart.

**Chart 7:**

The open FX position of households has turned because of the FX conversion. The compensation of this is shown at banks temporarily (see chart 38), by time it is expected to get to the consolidated state with the MNB.

**Chart 10:**

Disposable income is estimated by the MNB using household consumption, investment and financial savings data.

**Chart 12:**

Number of bankruptcy proceedings of legal entities, aggregated as of the date of publication and cumulated for 4 quarters, divided by the number of legal entities operating a year before.

**Chart 13:**

The 5-year forward forint risk premium as of 5 years from now, compared to the euro forward yield (3-day moving average) and the 5-year Hungarian credit default swap spread.

**Chart 16:**

Historic volatility: weighted historic volatility of the exchange rate (GARCH method). Implied volatility: implied volatility of quoted 30-day ATM FX options.

**Chart 17:**

Spread on the 3-month BUBOR and EURIBOR. Loans with floating interest or with up to 1-year initial rate fixation. Adjusted for money market loans > 1M EUR since 2015.

**Chart 18:**

Spreads based on the APR.

**Chart 19:**

2002 average = 100%.

**Chart 22:**

Nominal values, on current exchange rates. Revised, earlier loans were adjusted for revaluations since 1995.

**Chart 25:**

Exchange rate adjusted values.

**Chart 26:**

Loans overdue more than 90 days are calculated by clients until 2014, and by contracts from 2015.

**Chart 27:**

In brackets below the names of sectors the weights within corporate credit portfolio are indicated for end-of-observation period.

**Chart 34:**

The category 0-30 percent contains also the loans disbursed without mortgage before 2008.

**Chart 35:**

HAI shows how many times the income of a household with two average wages covers the income necessary for the purchase of an average (65 m<sup>2</sup>) dwelling from loan. Parameters of loan product are except for the interest rate throughout unchanged. LTV = 70%, PTI = 30%, maturity = 15 year.

**Chart 36:**

Before 2010 by costumers, since then by contracts.

**Chart 38:**

An increase in the swap stock stands for swaps with a long forint spot leg. Based on the daily FX reports of credit institutions. Calculated from swap transactions between credit institutions and non-resident investors. The MNB does not take responsibility for the accuracy of the data. Revisions due reporting errors and non-standard transactions can lead to significant subsequent modifications of the data series. The data series does not include swap transactions between branches, specialised credit institutions, cooperative credit institutions and non-resident investors. The swap stock is the sum of termin legs calculated at actual foreign exchange rates.

**Chart 41:**

The interest rate risk stress test indicates the projected result of an extreme interest rate event; in this scenario this event is a parallel upward shift of the yield curve by 300 basis points for each foreign currency. For the calculations we applied re-pricing data and the Macaulay duration derived from them.

**Chart 42:**

A rise in the liquidity index indicates an improvement in the liquidity of the financial markets.

**Chart 43:**

Similarly to the liquidity index, an increase in liquidity sub-indices suggests an improvement in the given dimension of liquidity. The source of bid-ask spreads in case of HUF government bond market is calculated from the secondary market data transactions. The earlier version of the liquidity index included the CEBI bid-ask spread.

**Chart 44:**

A rise in the indices represents narrowing bid-ask spread, thus an increase in the tightness and liquidity of the market. The liquidity index of HUF FX swap market includes the data of USD/HUF and EUR/HUF segments, taking into account of tom-next, overnight and spot-next transactions. The earlier version of the liquidity index included only the tom-next USD/HUF transactions.

**Chart 45:**

Client loans include loans and bonds of non-financial institutions, household loans, loans and bonds of financial and investment enterprises, government loans, municipal loans and municipal bonds. Client deposits include the deposits of non-financial institutions, household deposits, deposits of money market funds, deposits of financial and investment enterprises, government deposits and municipal deposits. The loan-to-deposit ratio is exchange-rate-adjusted with respect to the last period.

**Chart 46:**

Funding gap is the difference between the exchange rate adjusted customer credit and deposit, divided by the exchange rate adjusted customer credit.

**Chart 47:**

ROE: pre-tax profit / average (equity - balance sheet profit).

ROA: pre-tax profit / average total assets.

Interim data are annualised.

Pre-tax profit: previous 12 months.

Average total assets: mean of previous 12 months.

Average (equity - balance sheet profit/ loss): 12 month moving average.

Deflator: previous year same month=100 CPI (%).

**Chart 48:**

Pre-tax profit.

**Chart 49:**

Based on aggregated individual, non-consolidated data

Net interest income: 12-month rolling numbers, the difference of interest revenue and interest expenditure

Gross interest bearing assets: 12-month average numbers, total exposure

Net interest bearing assets: 12-month average numbers, exposure minus the provision

**Chart 50:**

Cost: previous 12 months

Income: previous 12 months

Average total asset: mean of previous 12 months

**Chart 51:**

Capital adequacy ratio (CAR) = (total own funds for solvency purposes/minimum capital requirement)\*8 per cent

Tier 1 capital adequacy ratio = (tier 1 capital after deductions/minimum capital requirement)\*8 per cent

**Chart 61:**

Sum turnover of investment firms and credit institution.

**Chart 62:**

29-Dec-2017



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# Ferenc Deák

(17 October 1803 – 28 January 1876)

Politician, lawyer, judge at a regional high court, member of parliament, minister for justice, often mentioned by his contemporaries as the 'wise man of the homeland' or the 'lawyer of the nation'. Eliminating the ever-recurring public law disputes and clarifying the relationship between the ruling dynasty and the hereditary provinces, he not only reinforced the constitution and the existence of the nation but also paved the way for the development as well as the material and intellectual enrichment of Hungary.

Deák was actively involved in preparing the laws for the parliamentary period between 1839 and 1840, and he became an honorary member of the Hungarian Academy of Sciences in 1839. After the death of his elder brother in 1842, Deák the landowner liberated his serfs and voluntarily undertook to pay taxes proving that he was an advocate of economic reforms not only in words but also in deeds. He refused to fill the position of delegate to the 1843/44 parliament because he disagreed with the idea of having to be bound by the instructions received as delegate, and as a moderate political thinker he had his concerns about the radical group led by Kossuth.

He remained level-headed also with regard to the evaluation of the events of 1848, he was afraid of violence and rejected it as a political tool. All the same, he accepted the post of minister for justice in the government of Lajos Batthyány. In December 1849 he was arrested for revolutionary activities, but later on, after being tortured for information, he was released. From then on he acted as the intellectual leader of the national passive resistance movement, and believed from the very beginning that Austrian centralisation was doomed to fail due to its inherent faults. He became the leader of the Address Party in the parliament of 1861, and even though they failed to bring the monarch to accept their ideas, he increasingly managed to take over the initiative over time.

Based on his earlier proposals, in 1865 Deák published his so-called Easter Article – which radically influenced Hungarian politics of the time – and until 1867 he virtually devoted all his time to reaching a compromise with the Hapsburg dynasty. After the compromise between Austria and Hungary ratified in 1867, Hungary was able to return to the path of social and economic development.

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