



# FINANCIAL STABILITY REPORT



MAY  
2017

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

*Ferenc Deák*



# FINANCIAL STABILITY R E P O R T

MAY  
2017

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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 scope of the report broadened in parallel with the MNB's new macro- and microprudential supervisory mandate.

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 Barnabás VIRÁG, Executive Director for Monetary Policy 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 11<sup>th</sup> April and 9<sup>th</sup> May 2017, and those of the Monetary Council following its meeting on 25<sup>th</sup> April 2017.

*This Report is based on information in the period to 28<sup>th</sup> April 2017. 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 in terms of both liquidity and capital adequacy, and the sector can be characterised by solid profitability. In 2016, a complete turnaround in corporate lending has taken in place, while, looking ahead, further expansion can be expected after the Funding for Growth Scheme is phased out. A pick up in household lending is also noticeable, which is accompanied by an upturn on the housing market; these developments should be kept in an adequate channel, and a close attention should be paid to the potentially emerging risks. Thus, expansion in mortgage lending needs to be supplemented by a healthy price competition; this will be facilitated by the MNB proposal on certified “consumer-friendly” housing loans. The decline in interest income resulting from a greater price-competition can be counterbalanced by increased cost efficiency, thus an improvement in both competitiveness and stability can be ensured.***

*The global macroeconomic environment is characterised by diverging monetary policy challenges. On the one hand, the ongoing cycle of interest rate increases by the US Federal Reserve, which has resulted in contrarian expectations being priced in on the bond and stock markets, plays a prominent role in the risks identified in the global financial markets. On the other hand, the new economic policy details of the US Administration are relatively unclear at present, and thus any actual measures may result in a reassessment of risks as compared to current expectations. By contrast, in the euro area the low interest rate environment is expected to remain in place, while the European banking sector continues to be burdened by legacy issues from the crisis. As a result of this, its lending activity is still fragile. Looking ahead, in some European countries the rise in long-term yields may cause vulnerability in relation to their sovereign and private sector debts.*

*As far as the operating environment for the domestic banking sector is concerned, a significant improvement has been seen compared to the previous years. A complete turnaround has occurred in lending developments. Rising consumption and investment demand is generating steadily increasing credit demand in both the corporate and household sectors. In terms of net disbursements and repayments, domestic corporate lending grew by a total 4 per cent, expanding a rate not recorded since the crisis. The credit growth seen in the SME sector is in the 5–10 per cent band which is deemed sustainable by the MNB: an 8 per cent expansion was observed in the case of non-financial corporate SMEs, while the rate of growth including sole proprietors amounted to 12 per cent in 2016. Looking ahead, developments in corporate lending will be driven by rising credit demand, easing credit conditions, the low interest rate environment and continued support from the MLS; consequently, further growth in lending is expected after the Funding for Growth Scheme is phased out.*

*Within the three phases of the FGS, 78,000 credit and leasing contracts were originated with a volume of some HUF 2,800 billion, providing financing at favourable, predictable conditions for almost 40,000 SME clients. Since 2016, a total amount of HUF 685 billion was contracted by participating credit institutions for their SME clients during the third, final stage of the programme which ended on 31 March 2017. This means that 98 per cent of the available amount of HUF 700 billion was utilised. The programme successfully ended the previous annual downward trend of 5–7 per cent in SME lending and triggered a turnaround in lending, while at the same time contributing 2 percentage points to economic growth and boosting employment by a total of 20,000 persons between 2013 and 2016.*

*Signs of a sustained turnaround in household lending can also be identified, accompanied by the continuous easing of credit conditions. Nevertheless, the average interest rate spread on housing loans significantly exceeds those observed in the region, which is mainly attributable to inadequate competition. The pick-up in the housing market has been accompanied by a strong upturn in lending for housing. Based on our equilibrium estimations, the housing market cannot be considered overpriced, neither at the national level nor at the regional level. At present, macroprudential instruments are keeping the outflow of household credit in an adequate channel. However, with regard to the rapid appreciation of housing prices in Budapest, it is necessary to pay increased attention to ongoing developments.*

*The Hungarian banking sector was characterised by solid profitability and solvency in 2016. The sector closed the year with outstanding results, recording a historically high return on equity (16.9 per cent before taxes). This outstanding profit further increases the already robust capital buffers in the sector. At the same time, the positive results are tempered by the fact that the profit of the banking sector is mostly the result of unique and one-off, unsustainable items; excluding these items, the sector's long-term profitability may be much lower than its current profitability. Nevertheless, taking into account the currently low interest rates in addition to the cyclically high non-performing portfolio, the current profitability of the sector can be considered satisfactory on the whole. In 2016, an extensive portfolio cleaning was carried out by banks in both the corporate and household non-performing portfolios; looking ahead, however, further steps are still needed for an appropriate treatment of the outstanding amount. Portfolio cleaning boosts banks' long-term profitability, and despite the one-off loss in the short term, the current profitability is able to cover this.*

*In this issue of the Financial Stability Report, we conducted a detailed analysis of banks' operational efficiency and issues related to loan pricing. The symptoms of "overbanking" observed in the European financial sector are also present in the Hungarian banking sector, and a comprehensive analysis of the sector's efficiency points to insufficient market competition. This is mainly attributable to residential mortgage lending, and accordingly the MNB plans to introduce a recommendation for certified "consumer-friendly" housing loans, in order to improve competition and efficiency on the market. The decline in interest income resulting from a greater competition can be counterbalanced by increased operational efficiency, which can be facilitated according to an international comparison. Thus, increase in price competition and cost efficiency together could ensure an improvement in competitiveness and stability as well.*

## 1 MACROECONOMIC RISKS: VARIOUS CHALLENGES IN THE CHANGING INTEREST RATE ENVIRONMENT

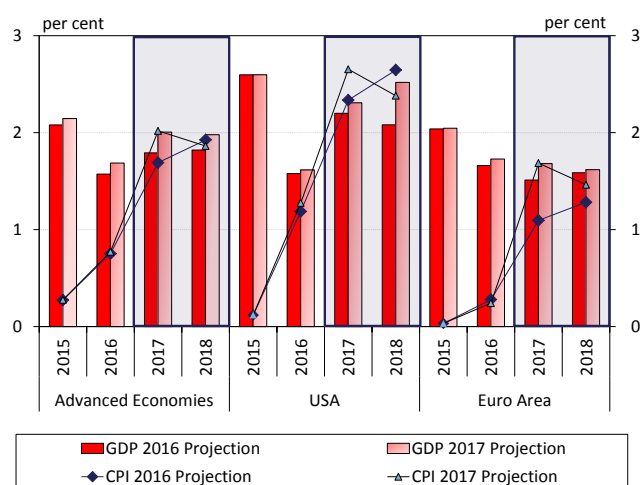
The central banks of developed countries are confronted with increasingly divergent monetary policy challenges. With the reappearance of inflation in the tightening global interest rate environment, market expectations are shifting towards a rise in long-term yields. In Europe, this divergence is observed in different country groups as well. Accordingly, despite the low interest rates, a decisive turnaround in lending still has not taken place. The banking sector remains weak in many southern member states, where the issues of weak lending growth, large non-performing portfolios and low profitability are still typical. Despite modest lending growth, the sustainability of the level of sovereign and private indebtedness continues to be at risk, especially as long-term yields are expected to increase. Although European volatility indices are at low levels, European political 'noise' has become an increasing risk factor on the financial markets. Due to the persistently low interest rate environment, capital is being channelled into investment in real estate markets, resulting in rising prices not only for commercial but for residential property as well in many European countries. In Hungary, for the time being, the sharp appreciation of housing prices in Budapest is not considered to be especially risky, as the current level of housing prices in Budapest only exceeds the estimated equilibrium value to a minimum extent.

### 1.1. Europe remains vulnerable in the tightening global interest rate environment

Increasing divergence is observed in the monetary policies of the central banks of developed countries. In the USA, the current outlook calls for continued tightening in the interest rate environment, while low interest rates are expected to remain in place in Europe (Chart 1). In 2016, global economic growth was more restrained compared to previous years, but the forecasts for 2017 and 2018 point to improvements in economic growth both in the developed and developing economies. As a result of the Fed's tightening monetary policy, global interest rate expectations are also set to rise. In line with improving economic activity, the market expects another two interest rate hikes in 2017, following the increase of 25 basis points in March, which may impact the yield curve.

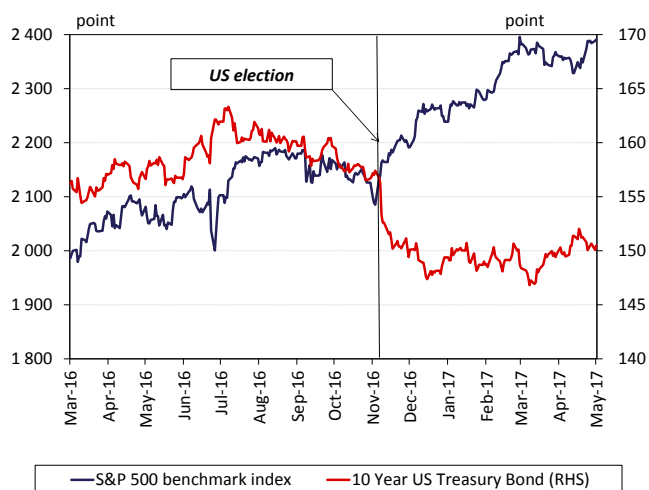
In the rising yield environment, contrasting developments have taken place on the bond and stock markets. Due to the change in the yield environment, many investors reallocated their capital from bond funds to other assets. Following the US elections, market sentiment changed quickly, and expectations concerning a global inflation trend reversal have increased, i.e. the expected higher economic growth may be coupled with a higher level of inflation. The new US government intends to put more emphasis on the reduction of taxes and budgetary expenditures and would press forward with the deregulation of banks and increase protectionist economic policy. The 10-year US bond index has fallen considerably since the US presidential election, while the S&P 500 composite index has risen significantly. As a result, a nega-

Chart 1: Global macroeconomic environment



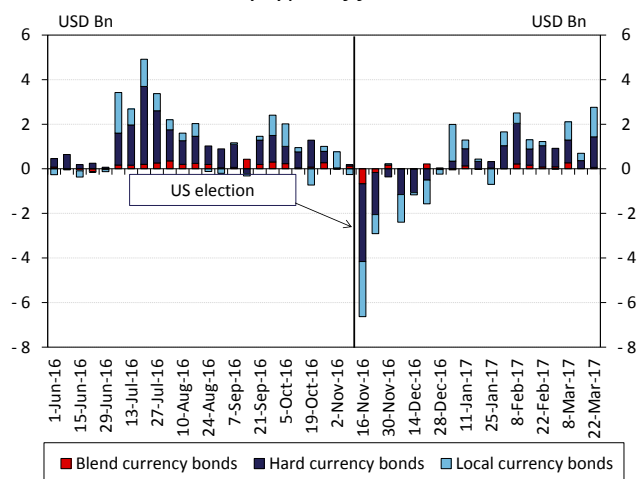
Source: IMF WEO.

Chart 2: Changes in the S&P 500 composite index and the 10-year US bond index following the US elections



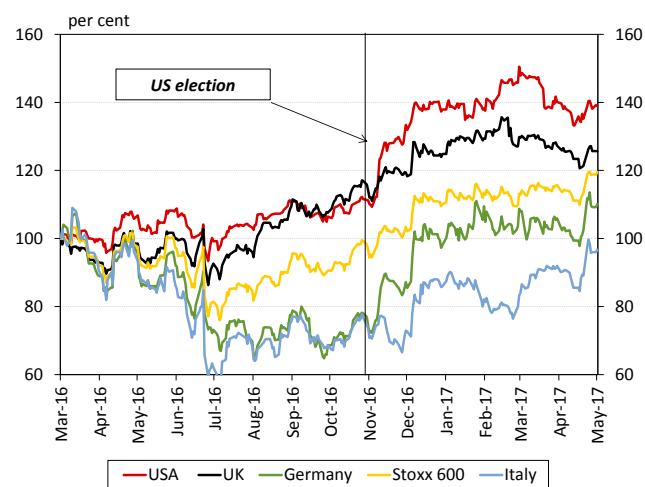
Source: Datastream.

Chart 3: Capital flows of emerging market investment funds by types of funds



Source: EPFR.

Chart 4: Global bank indices



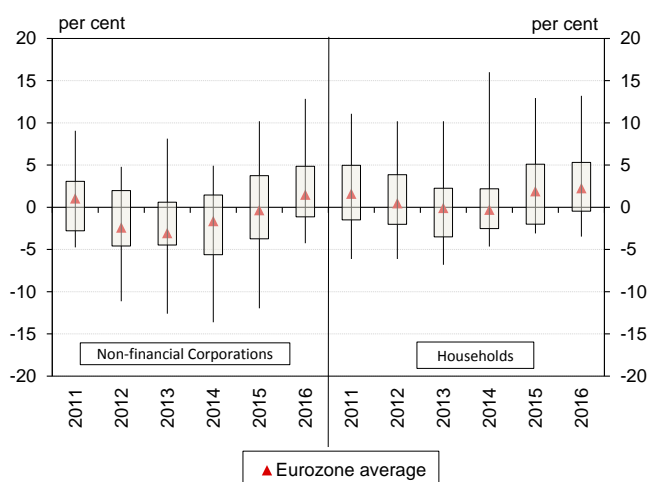
Source: Datastream.

itive correlation was observed between the movements in these two markets for the first time after a long period (Chart 2). Similar developments are being seen in the European markets as well, but to a lesser extent compared to the US market. A change in the interest rate environment and a possible turnaround in risk tolerance may lead to a sudden repricing of securities, which involves serious stability risks for the European and emerging markets.

**In the emerging markets, financial market volatility increased, and the focus continued to shift from bonds to shares.** Following the US elections, as a result of US dollar appreciation and due to political risks, significant capital outflows from the bond markets of developing countries were observed (Chart 3). Capital withdrawal later declined, but the emerging markets remain sensitive to repricing developments. The unfolding political developments after the US elections also increased the vulnerability of emerging countries. A protectionist economic policy would limit the capacity of foreign trade, and thus would have a negative impact on export-oriented emerging economies. The uncertain global trade prospects and tightening financial conditions further increase the risks on emerging markets.

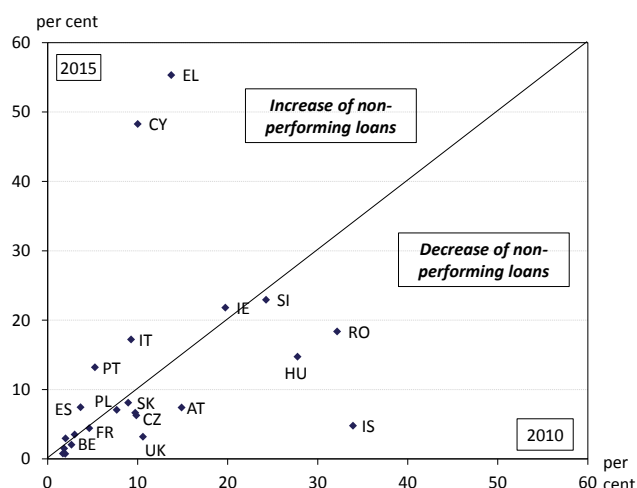
**Contrasting developments on the stock markets may result in a repricing of risks.** With the rise in bond yields, investors' demand for stocks increased, which is also reflected in the rising prices of bank securities (Chart 4). Following the US elections, banks' share prices performed well on the stock exchanges, presumably because of the expectations of serious deregulation and tax cuts. However, stock price have been rising faster than the improvement in bank profits, and the overvaluation of banks equities on the market may continue to increase in parallel with a significant rise in yield expectations. At the same time, in the light of the actual measures, a repricing of market expectations may take place, which may even result in more widespread market turbulence globally. All of this may have a negative impact mainly on Asian and Latin American emerging countries, which may also be exacerbated by the increasing stability risks, due to the financial imbalances and shadow banking system in China.

Chart 5: Annual growth rate of the private sector's outstanding loans in the euro area



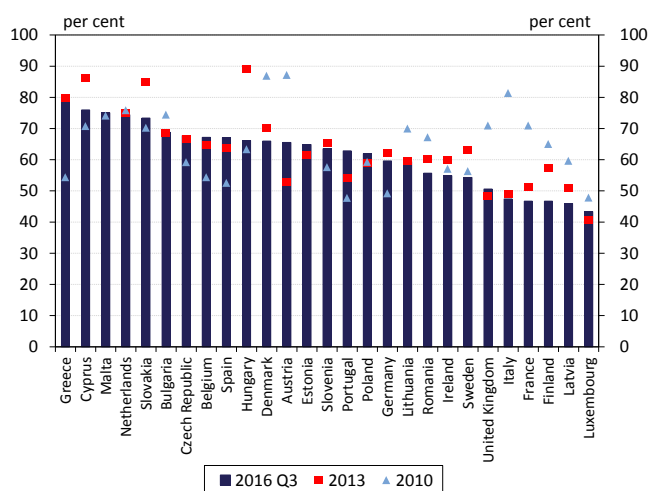
Source: ECB.

Chart 6: Problem loans compared to gross loans outstanding in European countries (2010–2015)



Source: SNL.

Chart 7: Interest income within total bank revenues in EU countries

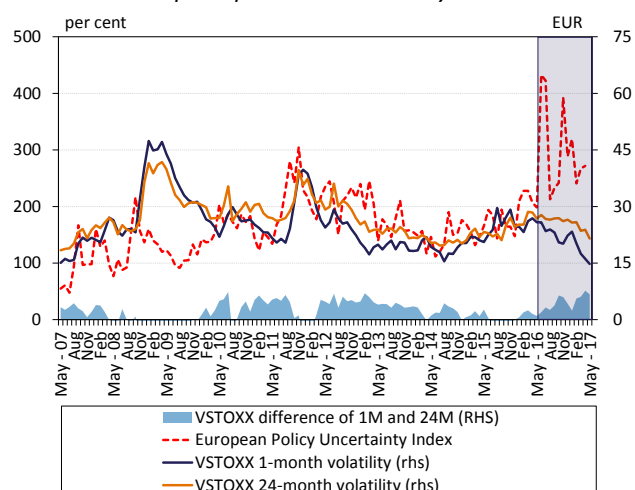


Source: ECB.

Europe is characterised by strong heterogeneity, and consequently lending activity has remained subdued, despite the low interest rates. In spite of the historically low funding costs and the ECB's monetary easing, still no significant turnaround has occurred in corporate lending in Eurozone. According to the ECB's lending survey, as a result of easing lending conditions and strengthening competition, a slight expansion in credit demand has been observed in the household segment. At the same time, due to the restrained economic growth and banks' long-term structural challenges, insufficient credit demand is typical, although developments in private lending took a favourable turn in several countries (Chart 5). In many countries, weak lending growth is coupled with a large non-performing portfolio and low profitability. In the present environment, banks are unable to produce profits in a sustainable manner due to the high amounts of one-off write-offs and losses stemming from the legacy of the financial crisis. The managing of, is still unsolved. (Chart 6).

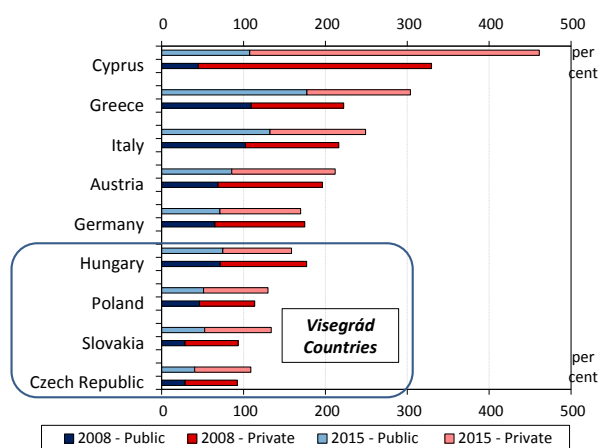
In view of its problems inherited from the crisis, the European banking sector is still vulnerable, and its profitability is also not satisfactory. The European economy has been characterised by subdued economic growth and low interest rate environment for several years, placing heavy burdens on banks' profitability (Chart 7). Banks' interest income is declining gradually in the persistently low interest rate environment. Therefore, they are compelled to rely upon other sources of income, which are available only to a limited extent without increasing risks. At the same time, a rise in yields may foster an improvement in the banking sector's profitability over the longer term, although banks' capital-raising plans are still exposed to investor sentiment and shareholders' commitment.

Chart 8: Changes in VSTOXX volatility indices and the European political uncertainty index



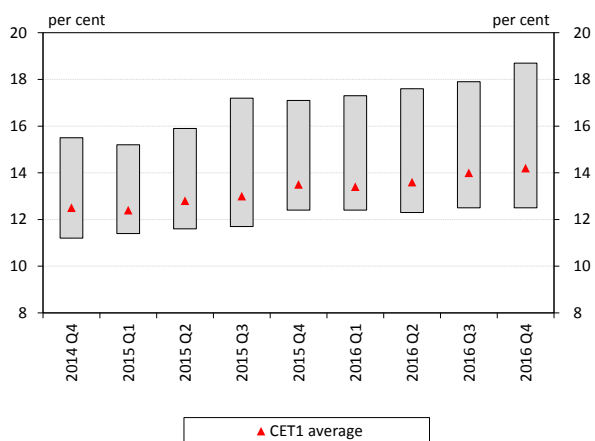
Note: The political uncertainty index expresses the political uncertainty related to economic developments.  
Source: PolicyUncertainty.com, Datastream.

Chart 9: Gross government debt and household indebtedness to GDP



Source: Eurostat.

Chart 10: Capital adequacy of the EU banking sector



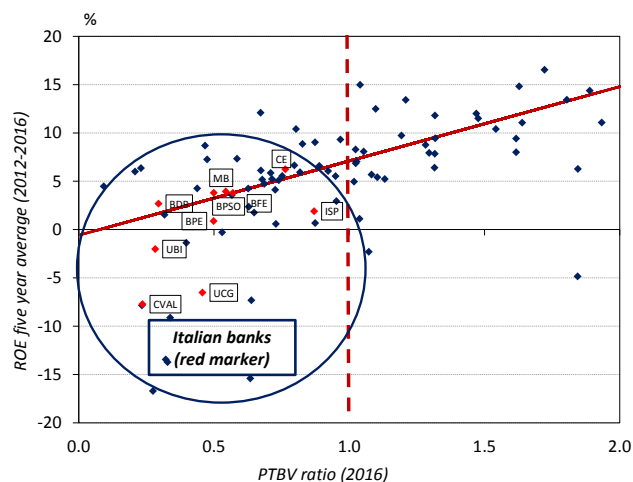
Note: The chart depicts the 25th and the 75th percentile value of the member states' banking systems. Source: EBA.

**Stock market volatility indices are at low levels in Europe, but political ‘noise’ has become a growing risk factor in the markets.** In parallel with the weaknesses of the European banking sector, the rise in political uncertainty may also be a source of stability risks. The perceived political risks increased after the outcome of the referendum in Britain and Italy, and then the European political uncertainty index rose to historical highs in 2016 H2 (Chart 8). In parallel with that, an increase in the risks priced in the derivatives markets was observed. Market volatility and political uncertainty used to move together in previous periods, but in 2016 contrasting developments were observed. This reflects an apparent calmness by the markets, but from 2016 H2 the gap between the volatility indices of various maturities opened up, i.e. investors are pricing increasing risks over the 1–2-year time horizon.

**The sustainability of the level of indebtedness continues to involve risks.** With the increase in long-term yield expectations and political uncertainties, doubts related to the sustainability of public and private sector indebtedness rose again. While the persistently weak economic growth jeopardises debt servicing ability, rising political uncertainty hinders the successful implementation of government reforms. The problem is well reflected by the fact that since the 2008 crisis both household debt and the gross sovereign debt-to-GDP ratio have risen further in most European countries (Chart 9).

**Turmoil on the financial markets would force banks with weak shock-absorbing capacity into a difficult situation in several European countries.** The valuation of the banking sector of some European countries has deteriorated, which is partly attributable to the fact that their capital position does not keep pace with the increasingly frequent and mounting challenges. The condition and shock-absorbing capacity of the European banking sector has been improving continuously since the crisis, although strong heterogeneity is still observed across countries. In a possible stress scenario, the capital adequacy of several banks would not yet reach the adequate regulatory level in spite of the fact that the capital position of the banking sector as a whole continued to improve in 2016 (Chart 10). In addition, banks’ growing capital needs and regulatory capital requirement have been coupled with weak internal capital accumulation capacity for years.

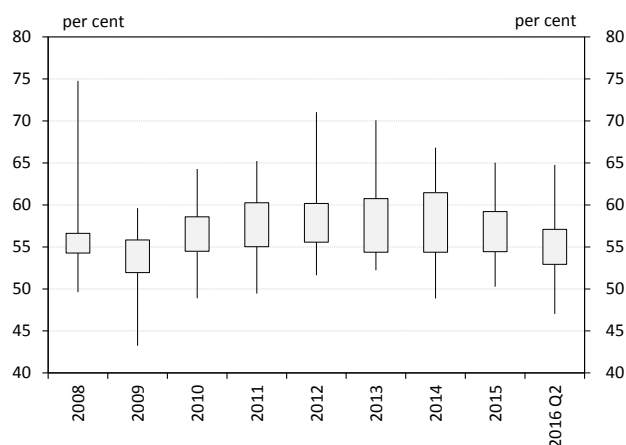
Chart 11: The relationship of European listed bank's price to book value and five year average of ROE ratio



Note: The relationship of variables was estimated by a robust regression.

Source: Datastream.

Chart 12: Operating cost efficiency ratio of the EU banking sector



Note: The chart depicts the 40–60 and 20–80 percentile values of EU Member States' banking systems.

Source: ECB CBD.

**The persistently low profitability of the banking sector has led to the deterioration of market valuation, which may negatively affect recapitalisation efforts.**

For approximately two thirds of listed European banks, the market value of the bank's stock is lower than the company's book value (P/BV), where the average long-term ROE is persistently low, close to zero or even negative (Chart 11). The falling market value of banks is mainly a result of weak profitability and increased concerns about additional impairment losses, along with investors' uncertainty regarding macroeconomic growth prospects. In our analysis, the P/BV was interpreted as ratio of ROE and cost of equity (COE); accordingly, if the given value is below one, the ROE does not cover the cost of equity in our interpretation. The cost of the equity is determined by non-diversifiable market risks as well as the bankruptcy risk stemming from the liability structure and the risk-free rate. The COE as structural index is not volatile and in the case of EU banks it is estimated at between 8 and 12 per cent. As long as European banks are not capable of yielding at least the cost of their equity, it will be more difficult for them to raise capital. Therefore, banks will continue to react to the challenges of recapitalisation and regulation by reducing their share in non-core markets and selling their risky assets (i.e. deleveraging). In this case, the risk of negative feedback between the real economy and the banking sector (pro-cyclical behaviour) increases further.

**The current problems in the EU banking sector originate from the 2008 crisis and various structural problems.** Analysing the vulnerabilities of the economy of the EU,<sup>1</sup> the European Investment Bank (EIB) emphasize the low productivity, the misallocation of investment and structural weaknesses. It also mentions the bank-oriented and fragmented European financial system as a risk, which further exacerbated real economy problems during the crisis with its pro-cyclical behaviour, and hinders growth. In addition to the large amount of non-performing loans, the low cost efficiency (Chart 12) and the overcapacity in the banking sectors (so called overbanking<sup>2</sup>) necessitate the restructuring of business models as well as a re-evaluate of the risk profile and market presence of

<sup>1</sup> Hassan, di Mauro, & Ottaviani, (2016) Banks Credit and Productivity Growth in the EU

<sup>2</sup> For the issue and the interpretation of the European overbanking, see: IMF (2017): Global Financial Stability Report, April 2017. International Monetary Fund.

several participants. In order to improve their portfolio quality, banks are trying to get rid of their non-performing loans. In parallel with that, several banks needed capital injections. Among other things, the banks concerned are taking steps to reach their capital adequacy objectives by streamlining business branches and reducing their risk exposure. In Italy, in addition to market sources, banks need assistance from the state as well for their capital adequacy. Banks' capital raised from the market is coupled with cost rationalisation, which improves cost efficiency.

#### BOX 1: WHAT MAKES A BANKING SECTOR COMPETITIVE?

As a legacy of the financial and economic crisis, numerous European countries are currently striving to improve their competitiveness and productivity. The performance of the economy as a whole depends greatly on the efficient distribution of resources, and one of its most important channels is the proper allocation of funds. A precondition of the latter is **an efficiently functioning financial intermediary system**. Therefore, the identification of the factors that hinder the operation of the banking sector is indispensable for an increase in competitiveness. It is expedient to examine the insufficiency of financial intermediation and certain elements of the level of development in an international comparison, for which a composite index that contains exhaustive information and comprises various types of indicators may prove to be a suitable tool. In the following we analyse the performance of banking sectors with regard to the 28 Member States of the European Union. Upon the selection of individual indicators, the objectivity of data is kept in mind, although in some cases we rely on the public opinion polls of external data providers as well.<sup>3</sup> We briefly present the **basic concept of the MNB Banking System Competitiveness Index** and the preliminary results of the analyses performed to date.

In our opinion, a banking system is **competitive**, i.e. able to support growth in a sustainable and efficient manner in the long run, if it mediates available financial resources **to creditworthy customers for a sufficient use in a cost-effective manner**, and if the sector is **attractive in terms of capital investments** as well. **From the perspective of households and companies**, the key issue is whether the banking sector adequately performs the function of financial intermediation and whether it supports customers' financial inclusion. Demand-side competitiveness can be best captured by properties such as adequate availability, good quality of financial service and efficient pricing. By contrast, **from the perspective of shareholders and investors**, different approaches should be examined, which may be determinants when investors decide on continuing or expanding their activities. Within this context, the aspect of sustainable risk assumption and the related profitability require special attention. A supportive operating and tax environment, adequate growth possibilities as well as technology and efficiency may also be important. An endogenous relationship may also be discovered between the two different perspectives. If the ability to attract capital is low, and a proper banking infrastructure cannot develop, willingness to participate in the financial system will be lower, and thus the efficiency of financial intermediation will decline. At same time, more expensive, lower-quality service and weakening availability lead to lower economies of scale, which, in turn, results in declining return on equity and an even lower ability to attract capital.

Competitiveness barometers<sup>4</sup> suggest that the efficiency of financial intermediation could primarily be improved in terms of **access and pricing**. As for the analysed areas, Hungary is among the laggards in terms of the spread of products, bank digitalisation and the lending spreads applied. Nevertheless, it can be considered a positive feature that

<sup>3</sup> When selecting the individual indicators, we mostly relied on the World Bank Global Findex as well as on the ECB SAFE and Macroprudential databases.

<sup>4</sup> They include, inter alia, the number of bank branches for 100 thousand adults, the ratio of those who pay by bank cards, the ratio of borrowers from banks, indicator of legal possibilities as well as corporate and household loan–deposit margins.

Hungary is in the upper half of the rankings for example in the quality of bank services, and the Hungarian banking sector is middle-ranked in the pricing of bank fees as well. Top-ranked are Sweden, Finland and the United Kingdom, while Bulgaria, Romania and Greece proved to be the least competitive countries. The MNB's Corporate and Household Financing Index is derived by aggregating the aforementioned aspects that apply a customer approach; in this ranking Hungary is in the last fifth.

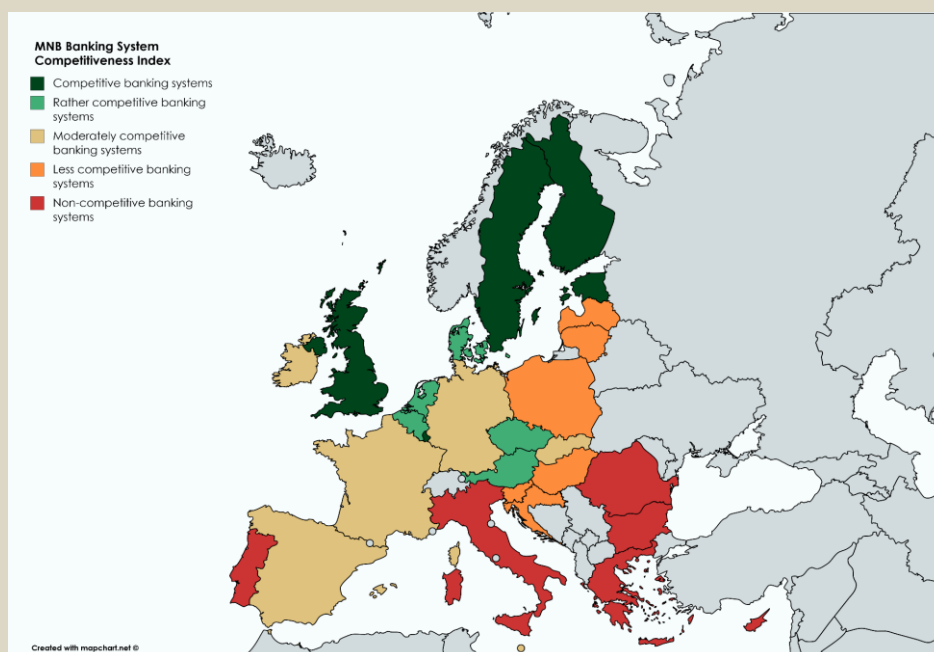
Since the yield sustainable for a long period and the capital invested in the banking sector may be jeopardised by the combination of a high-risk portfolio and low capital adequacy, we consider the issue of stability relevant from the owners' perspective as well. We analyse the coverage of the entire non-performing portfolio by capital and loan loss provisions (the so-called Texas ratio). The assessment of the expected yield is also considered a basic factor in the case of every investment, which

we try to capture, among other indicators, by the profitability adjusted by loan loss provisioning. Within that dimension, Hungary is in the last fifth of the ranking, mostly among the Mediterranean countries. In the case of entering a new market or expanding there, it is relevant to assess the potential difficulties caused by the regulatory environment. Hungary is ranked in the middle of the field in this regard; its position was impaired, for example, by the bank levy. Growth possibilities express the expansion potential of the banking sector, and thus they also contain information in

connection with the sustainability of the income observed so far. Hungary's position is impaired to some extent by the ratio of bank loans to GDP and the ratio of bank financing, but other indicators point to good expansion potential. In terms of technology and efficiency only Romania and Bulgaria are in a worse position than Hungary; while the top-ranked are the Scandinavian banking sectors. Considering all of the above, Hungary's lag is the most significant in this latter dimension, which is mainly the result of its extremely high costs-to-assets ratio. Accordingly, in terms of the MNB's Capital Attraction Capability Index, the Hungarian banking sector is in the last third, falling short of both the EU average and the regional average.

The MNB Banking System Competitiveness Index resulting from the weighing of the two indices of different approaches determine the more and less competitive banking sectors of the countries of the European Union. In this ranking Hungary is in the same group with two Baltic countries and the West Balkan banking sectors as well as Poland. Of the indicators under review, the **pricing aspect of access to financing** may create an opportunity that may, in the longer run, increase the **role of the Hungarian banking sector as the supporter of sustainable economic growth** through the banking system becoming more competitive.

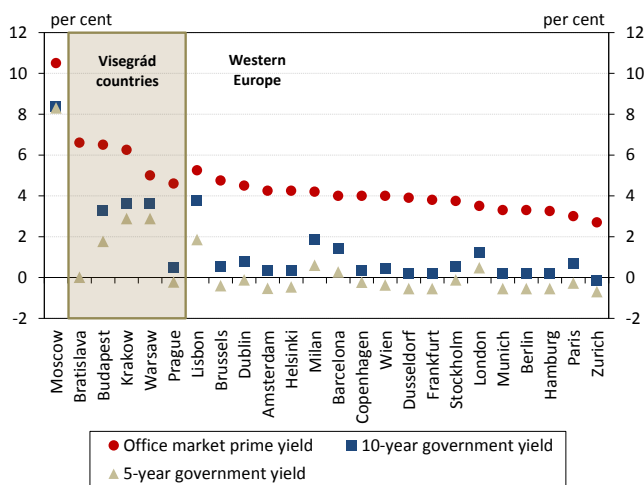
MNB Banking System Competitiveness Index



Source: Mapchart, MNB.

Note: Based on the ranking calculated by averaging the MNB Corporate and Household Financing and the MNB Capital Attractiveness indices.

Chart 13: Best attainable office market yields and the 5-year and 10-year government bond yields

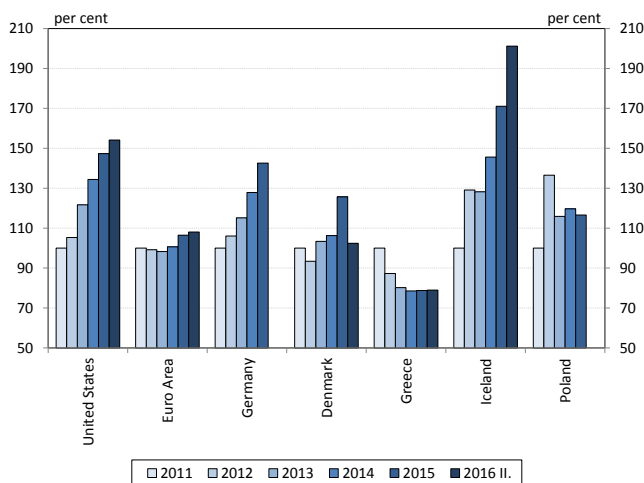


Note: Office market yields refer to 2016 Q4, government bond yields to 30 December 2016.

Source: SNL, JLL, CBRE, Cushman & Wakefield.

The commercial real estate market has become an attractive investment target in the persistently low interest rate environment. As a result of the loose monetary conditions that existed for years, attainable financial market yields not only declined to very low levels, but in several European countries even the average yield of government bonds with a maturity of five years were negative at end-2016. Ten-year government bond yields do not even reach one per cent in most Western European countries, which channels investors towards assets that are riskier, but provide higher yields. In the commercial real estate market, risk is higher as a result of lower market liquidity and weaker market transparency, but the attainable yields persistently exceed those that can be realised in the financial market (

Chart 14: Commercial real estate prices in selected European countries and the USA (2011 = 100%)



Note: Office and retail properties in cities in the case of Germany, the capital and its surroundings in the case of Iceland and city offices in Poland. Including all of the commercial real estate of the whole country in all other cases. 2016 Q3 data were taken into account in the case of the USA and Iceland.

Source: BIS.

Chart 13). At present, the utilisation of properties for rent is very favourable (mostly above 90 per cent) in the European commercial real estate markets. Moreover, vacancy rates in most European cities have improved considerably; as a result, stable yields can be attained from rent. Commercial real estate markets have become attractive investment targets. At end-2016, the rent yield realisable on the office markets of some European cities typically exceeded the given country's 10-year government bond yield by 3–4 percentage points.

Favourable real estate market yields are coupled with rising real estate prices in many countries. The favourable attainable yields and the rising investment volumes have resulted in an increase in commercial real estate prices in many European countries as well as the United States in recent years. While the prices of commercial properties in the USA were up by more than 50 per cent on average in nominal terms in the past five years, the price rise of commercial properties was more moderate in the euro area. This is presumably attributable to the greater territorial heterogeneity: of the European countries for which commercial property price statistics are available, dynamic price increases were observed in Germany and Iceland, while prices for example in Greece or Poland stagnated in the past years (Chart 14). Nevertheless, excessive real estate price increases are coupled with a substantial level of risk. If new development projects launched as a result of the growth in demand in the real estate market start to increasingly rely on bank financing, this exposure may result new

vulnerability again in the financial system.

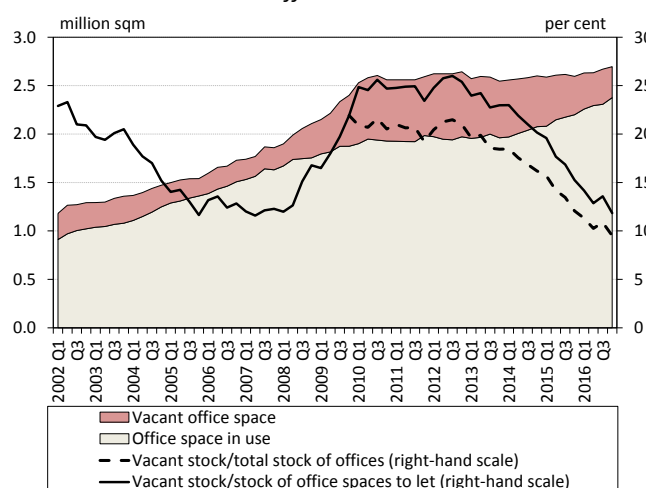
## 1.2. In the recovering domestic real estate market risks are perceived in the changes in housing prices in Budapest

**The Hungarian commercial real estate market improved considerably in 2016.** A further upswing took place in the office rental market in Budapest last year.

The vacancy rate of offices for rent declined to 11.8 per cent, practically corresponding to the value of the indicator observed in 2008 (Chart 15). The yield attainable in prime office market investments declined to some extent (from 7 per cent to 6.5 per cent), while the typical rent realisable by investors rose from EUR 21 to EUR 22/m<sup>2</sup>/month, as told by market participants. All of this suggests an increase in the value of prime office buildings in Budapest. In the case of industrial and logistics properties, the developments in vacancy rates, rents and yields attainable with investments were similar to those in the office market. Beside this background, vacancy increased in 2016 in spite of an expansion in the entire supply. In 2016, a significant upswing has taken place in the Hungarian property market, not only the interest of residential institutional investors has increased as well as the interest of new non-residents for the first time. The volume of Hungarian property market transactions reached HUF 520 billion in 2016, doubling since 2015.

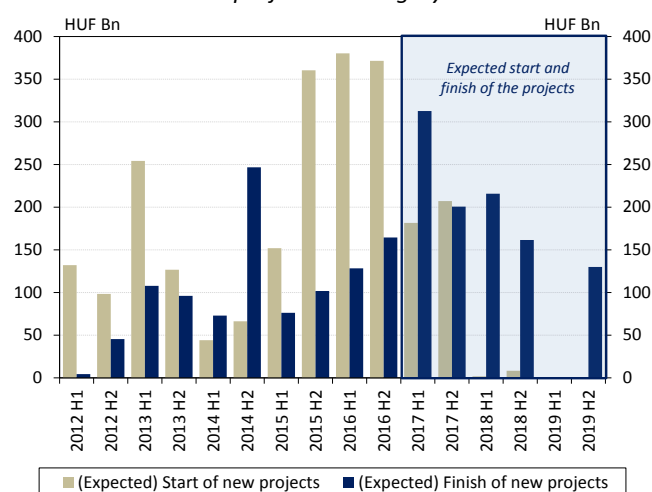
**The pick-up in new commercial real estate developments is bringing an expanding supply to the domestic market.** During 2016, projects related to new commercial real estate developments with a value of some HUF 752 billion were launched, which is almost 47 per cent higher than the volume in 2015, and more than seven times higher than in 2014 (Chart 16). As a result, the supply of commercial properties is expected to increase in 2017 and 2018, which facilitates a balanced upswing in the market. In parallel with that, banks reported an easing in the conditions of commercial real estate loans in the Lending Survey. The easing mostly concerned the conditions of loans aiming at the financing of housing projects, but several banks that eased the conditions of project loans funding logistics centres or office buildings as well. Accordingly, the overall conclusion is that, in addition to the willingness to carry out new development projects, bank financing also played a supportive role in 2016.

Chart 15: Office space to let and vacancy rate in the Budapest office market



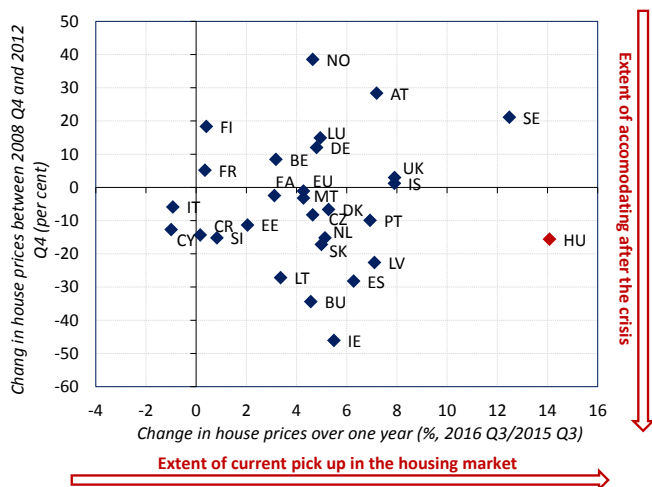
Source: BRF, MNB.

Chart 16: Volume of newly built commercial real estate projects in Hungary



Source: Ibuild.info.

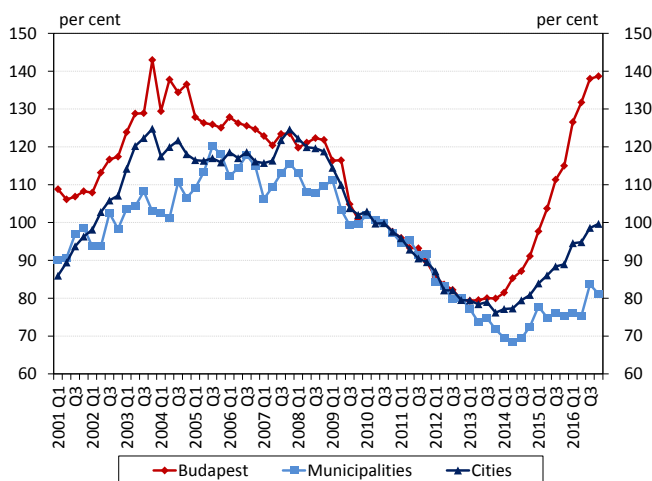
Chart 17: Percentage changes in housing prices last year and in the four years following the crisis



Source: BIS, Eurostat and MNB.

The increased willingness to invest has an impact on the housing market as well, in addition to commercial properties. While commercial properties offer an attractive investment alternative to institutional investors, residential properties offer the same for small investors and the household sector. At the European level, the pick-up in the housing markets may be considered a general phenomenon, as in the past one year a 4–8 per cent rise in housing prices was observed in the majority of European countries. Positive exceptions are Hungary and Sweden, where the observed increase was as high as 12–15 per cent (Chart 17). In the past one year, among European countries the highest housing price increases were recorded in Hungary, but the correction of the housing market following the crisis was significant here as well between 2008 and 2012. By contrast, in several European countries, such as Norway, Austria and Sweden, significant price rises were observed last year in spite of the fact that housing prices had not dropped even following the crisis. Therefore, from in the aspect of balance, further housing price increases may be considered riskier in the latter countries than in Hungary.

Chart 18: Real MNB housing price index broken down by settlement type (average of 2010 = 100%)

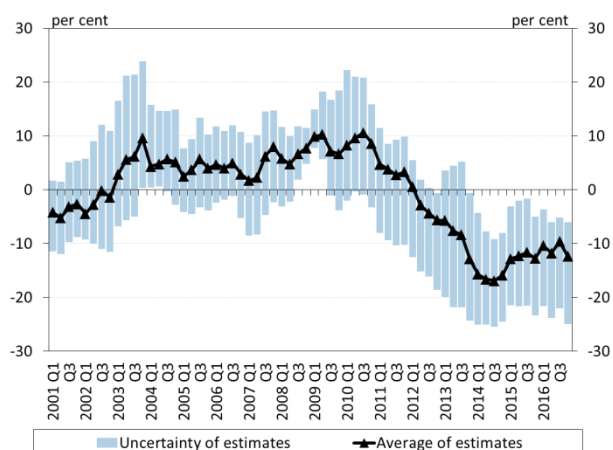


Source: MNB.

The domestic housing market is characterised by strong heterogeneity; prices are surging in Budapest. On a territorial basis, but also considering the sizes of individual settlements, the dynamic pick-up in last 3 years in the Hungarian housing market reveals significant differences. Housing prices increased the most in Budapest, where they were some 71 per cent higher in 2016 Q3 compared to 2013 Q4 (Chart 18). During the same period, a much smaller – some 33 per cent – price rise took place in rural towns and a mere 15 per cent increase at smaller municipalities. In Budapest, as a result of the significant price rise, the rate of expansion of the market turnover already slowed down by 2016 Q3, and by Q4 price dynamics also decelerated considerably. Following the pick-up in the real estate market in the capital, signs of an upturn are seen at municipalities as well, which is well reflected in the increase in the number of transactions carried out in the country. Looking ahead, the lower turnover and the accelerating new supply may reduce the price pressure on the capital.

In terms of the national average and in real terms, housing prices remain lower than the equilibrium level justified by macroeconomic fundamentals. In relation

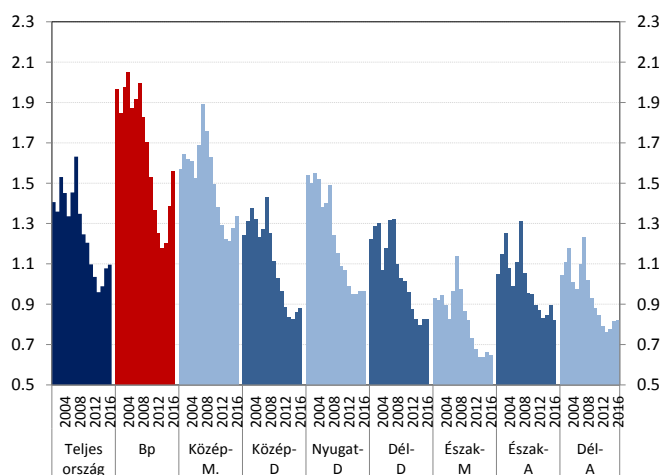
Chart 19: Deviation of housing prices from the estimated equilibrium level



Source: HCSO, MNB.

to the national average, the results of models<sup>5</sup> defining the equilibrium level of Hungarian housing prices do not show any risk of overvaluation yet, as the price level on the housing market is still below the equilibrium level justified by macroeconomic fundamentals (Chart 19). The development of real income is one of the main fundamentals determining the equilibrium level, but the per capita stock of dwellings and the level of unemployment also play important roles. In terms of the current cyclical position of the market, one important aspect was that the real appreciation of housing prices was accompanied by steady improvement in households' income and labour market position, and thus the upward trend in residential property prices at the national level cannot be seen as excessive. The closing of the cyclical position and subsequent potential overvaluation of the residential property market may occur if the appreciation of housing prices exceeds the growth rate of macroeconomic fundamentals (in particular, real income growth).

Chart 20: Average square metre price of used homes as a proportion of monthly net average incomes by region



Source: HCSO, MNB.

**The increase in housing prices in Budapest exceeds that of incomes, while this has not been in other regions of the country.** An excessive increase in housing prices that exceeds macroeconomic fundamentals poses threats to financial stability. Therefore, from a stability perspective it is of key importance to monitor whether the pick-up in the housing market and the rise in housing prices are excessive. This issue is especially relevant regarding Budapest, where residential property prices surged in the past three years. The average square metre price as a proportion of average income was the highest in Budapest in 2016, i.e. its value was more than 1.5 times higher than the monthly average net wage. By contrast, this same ratio was only around 1.2 in 2014. With the exception of Central Hungary, the value of this indicator was below 1 in the other regions in 2016, and no major increases had been observed in previous years. Altogether, the sharp rise in the indicator in Budapest is unique among the regions of the country, although in terms of its level it is still below the values observed during the crisis (Chart 20). In addition, according to our estimate, the level of real housing prices observed at end-2016 slightly exceeds the value justified by macroeconomic fundamentals that determine the housing market (see Box 2).

<sup>5</sup> For more details: MNB (2017): Housing Market Report. May 2017.

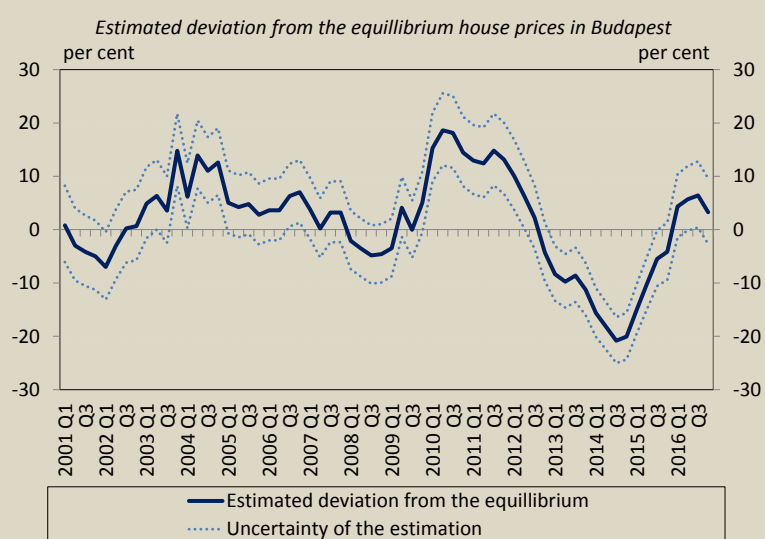
<https://www.mnb.hu/en/publications/reports/housing-market-report/housing-market-report-may-2017>

## BOX 2: ESTIMATED EQUILIBRIUM LEVEL OF HOUSING PRICES IN BUDAPEST

The shift in the domestic housing market that started in 2014 was initially highly concentrated in the capital. Compared to end-2013, housing prices in Budapest increased by 76 per cent by end-2016, while in the case of rural towns and villages the rise observed in the same period was only 33 and 15 per cent, respectively. In these three years, housing prices in the capital rose nearly 5 per cent on average every quarter, while the annual rate of price increases amounted to some 20 per cent. The stronger pick-up in the market in Budapest is attributable to various reasons. Firstly, the housing markets of cities (capitals) are generally more volatile because of resident and non-resident investments; as a result, so-called housing market bubbles may also evolve more often with an excessive rise in housing prices. Secondly, the demographic developments of the past years also contributed to the steady increase in housing market demand in Budapest. Since 2008, the population of Budapest has been growing continuously despite the fact that the total population of the country is declining.

In terms of financial stability, there are several reasons why it is especially important to see to what extent the housing prices depart from the level justified by the macroeconomic fundamentals, i.e. from the equilibrium level, not only in terms of the national average but also for Budapest as well. Firstly, the arguments suggesting that households are able to borrow higher amounts – with a limit concerning the given loan-to-value ratio – as a result of overvalued housing prices are valid for the capital as well. Moreover, overvalued prices raise the risk of a sudden and significant depreciation, which causes losses to financial institutions through the decline in the value of mortgage collaterals. Secondly, with the same indebtedness, higher housing prices in Budapest result in a faster build-up of loans outstanding.

We estimated the level of equilibrium housing prices in Budapest in a dynamic OLS (method of ordinary least squares) model framework. We explained the level of the real MNB housing price index for Budapest with different macroeconomic fundamentals that determine the housing market. Accordingly, in addition to the disposable income of Budapest residents, the model also includes the Budapest labour market situation as an explanatory variable in the form of the relevant unemployment rate. Based on the above, the model primarily captures the impact of demand for housing for dwelling, i.e. the underlying housing market developments. We have found a significant long-term correlation, a so-called cointegrating relationship between the aforementioned variables. In the long run, a rise in disposable income increases, while a rise in unemployment reduces the level of housing prices, which is in line with economic intuitions.



Source: MNB.

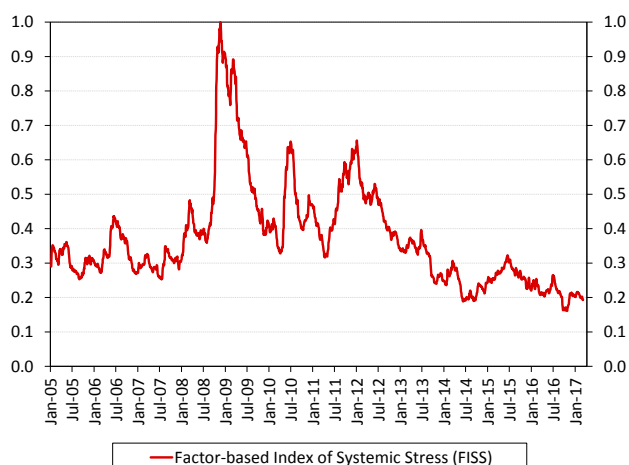
According to our calculations, between 2001 and 2016 the actual real housing price level in Budapest exceeded the – equilibrium – real housing price level justified on the basis of income and labour market developments on several occasions (chart). Until 2003, a dynamic appreciation of real housing prices was observed in Budapest, as a result of which the prices exceeded the equilibrium level. Following that, in view of a slight decline in real prices and as a result of fundamentals (incomes and labour market) remaining unchanged, the overvaluation of housing prices adjusted. Following the crisis, in Budapest the decline in real incomes and the sharp increase in unemployment was followed by a decrease in housing prices only with a delay, resulting in overvaluation again. Starting from 2013, the improving income and labour market situation as well as the declining housing prices resulted in significant undervaluation in the capital. However,

the dynamic housing price increase observed in the past three years was faster than change in fundamentals. By 2016, housing prices in the capital somewhat exceeded the equilibrium level, although the slowdown in the rise of housing prices in the capital observed at the end of the year eased the situation. Continuous monitoring of the dynamics of the housing prices in Budapest and their deviation from the equilibrium level remains a key issue, as a major overvaluation may evolve again in the case of repeated acceleration in housing price dynamics.

### 1.3. Domestic operating environment of banking sector is characterised by supporting macroeconomic and money market atmosphere

**In general, the domestic macroeconomic environment contributed positively to the banking operation.** In 2016, domestic economic growth was more subdued than in the previous years, which is primarily explained by temporary effects. The slowdown in growth was attributable to the weaker-than-expected fiscal impulse, the downturn in investment implemented from EU funds and the subdued performance of industrial production. Nevertheless, growth was still mainly supported by the significant expansion in household consumption. The strong growth in employment continued, with the gradual tightening of the labour market, the unemployment rate declined to 4.5 percent by yearend. The wage dynamics of the private sector was more vigorous in 2016 than in previous year. Looking ahead GDP is expected to grow significantly, where the strengthening of domestic demand is expected to play an increasing role in economic growth. This is determined by continued expansion in household consumption and the gradual upturn in private investment.

Chart 21: The Factor based Index of Systemic Stress (FISS)

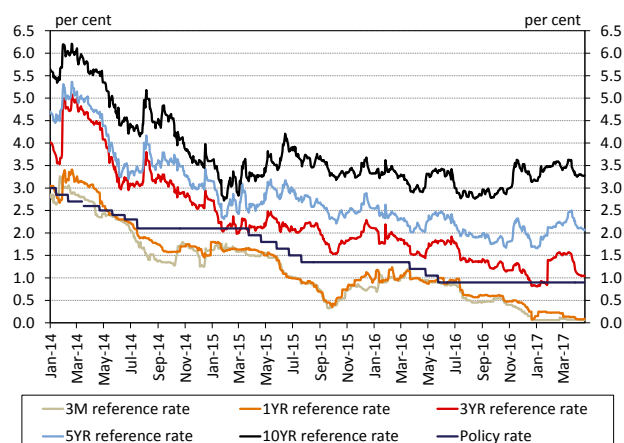


Source: MNB.

**No significant systemic market risk is observed on the basis of the Factor-based Index of Systemic Stress.** Since March 2017, a new Factor-based Index of Systemic Stress (FISS) has been used to measure the stress level of financial markets (see Box 3). There was no major change in the value of the FISS in the past half year. A minor rise was seen in November 2016, attributable to the increase in FX market volatility in connection to the US presidential election (Chart 21). Capital markets also reacted to the outcome of the presidential election, but the total effect was negligible in the domestic financial system. The value of the index is around the level of 0.2, suggesting an overall low level of stress.

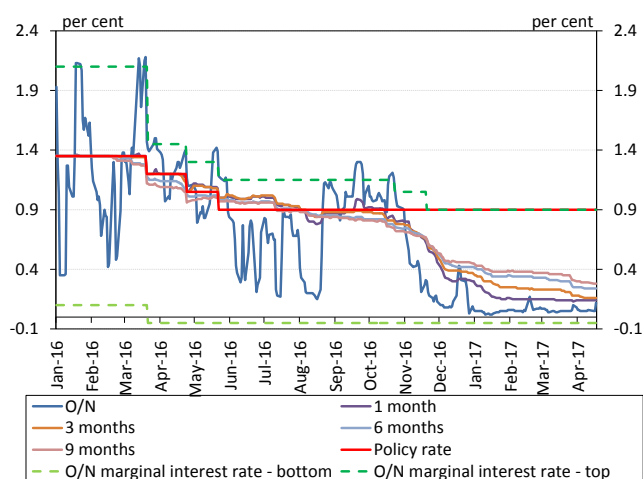
**The yield curve of government securities became steeper.** The quantitative restriction on the three-month deposit also affected developments in government securities yields. As a result of the demand pressure, changes in short-term yields increasingly departed from those of long-term yields (Chart 22). Yields up to

Chart 22: Reference yields of government securities and the central bank base interest rate



Source: ÁKK (Government Debt Management Agency).

Chart 23: The BUBOR and the base interest rate



Source: MNB.

one year declined slightly, while yields over one year changed in line with international capital market trends. Accordingly, the yield curve became relatively steeper in an international comparison. At end-2016, following a 20-basis point fall, stagnation was observed in the case of 3-, 6- and 12-month yields, while – mainly from early 2017 – in the case of long-term reference yields increases occurred in the market. Compared to December, the increase in the yield curve was 60 basis points for 5-year government bonds and 110 basis points for 10-year government bonds.

**Money market yields sank to a historical low.** As a result of the quantitative restriction on the MNB's three-month deposit instrument and the mandatory quotation introduced in the interbank market, the BUBOR has fallen significantly, by a total 70 basis points since October 2016 (Chart 23). Following the introduction of the quantitative restriction, the liquidity buffer of the banking sector remained unchanged, and thus the excess liquidity flowed into various alternative liquid assets. It also contributed to the decline in the BUBOR that as a result of the mandatory quotations the originating extra turnover was strongly supply-driven. Consequently, the 9-month BUBOR is also 0.5 percentage point lower than the base rate. The values of the BUBOR valid for various maturities fluctuate between 0.1 and 0.4 per cent in line with the positive steepness yield curve, while interest rates on O/N deposits were close to zero per cent in early 2017, amounting to 0.06 per cent in March.

### BOX 3: A FACTOR-BASED INDEX OF SYSTEMIC STRESS (FISS) TO MEASURE SYSTEMIC SHOCKS

To perform its tasks related to financial stability, the MNB has used a financial stress index type indicator, the System-wide Financial Stress Index (SWFSI) since 2012. In order to measure market stress situations, the MNB developed a new, **smoother fast-reaction stress indicator**, the so-called **Factor-based Index of Systemic Stress (FISS)**. In terms of its function, the new indicator is identical to its predecessor, but various aspects have been updated:

- It applies a different methodology, which allows the inclusion of **more explanatory variables** (19 market indicators).
- It depicts **all financial stress events**, while the SWFSI focuses only on events that had a material effect on the real economy (mainly for the 2008 crisis). As such, the SWFSI was primarily created as a conditions index, and thus it focuses on the realised risks that entail real economy effects, while the FISS is a pure financial stress index. Accordingly, it takes into account all types of financial shocks regardless of the effect on the real economy.
- **It includes the stress evolving as a result of shocks in a protracted manner, reflecting the functioning of the market in a more realistic way.** The gradual fading out of the shocks also makes the indicator suitable for depicting the additional impact of multiple exogenous shocks occurring in a short period. In addition, lower volatility results in cleaner indication of stress events, allowing easier recognition of extreme financial stress. By

contrast, in the case of its predecessor, extreme values were followed by rapid falls, and the increased stress level added to the volatility of the index as well.

In terms of its methodology, the **FISS is a dynamic, Bayesian factor model**, which defines the factors as a stochastic trend. As a result, the model is able to obtain information from the level of and not from the change in variables. The advantage of the chosen modelling approach is that it is the most efficient in separating the noise originating from the fluctuations of the explanatory variables, thus resulting in **the smoothest possible index that indicates financial stress**. As the FISS is able to aggregate several variables, it provides an index that captures **a wide range of stress events** and it is also capable of **indicating the build-up of shocks** coming from a direction not seen in the past.

The model combines information transmitted by various sources from all areas of the financial system, using a total 19 variables from four financial markets. This allows the index to **capture various types of shocks threatening the financial system regardless of where it originates from**. In the period since 2007, the FISS indicated, inter alia, the initial turbulences of **subprime mortgage debacle** (Bear Stearns), the financial crisis that evolved following the **Lehman bankruptcy** in 2008 as well as the risk premium shock related to the **euro area debt crisis** in 2011.

It can be applied not only as a crisis indicator but also as an inverted **financial stability index**, as its values make a good distinction between the different levels of financial stress. It unites daily-frequency variables, and thus works as a prompt source of information, immediately depicting the systemic money market stress change generated by economic developments.

**The FISS is an index that depicts the stress level without a unit of measure**. Therefore, its value only becomes informative in a time series comparison: the seriousness of the current systemic risks is defined in reflection of the historic values of the index to known crisis or stress periods. At present, the index shows a stable financial environment. In the past ten years, it indicated significant stress events on three occasions: it reached its highest value during the 2008 crisis; in 2010 it indicated the outset of the European crisis with a smaller but still significant value, in connection with the downgrading of Greece and Portugal; while in 2011 it signalled the re-intensification of the EU sovereign debt crisis.

The index is suitable for daily updating, and on the basis of its time series values we can obtain a clear picture of the seriousness of a current stress event. **Accordingly, looking ahead it is suitable for the immediate depiction of a wide range of stress events and for the identification of the sources of stress**.

*Variables of the FISS model*

	Explanatory variables
Government securities	5 year government securities risk premium compared to German government securities
	Government securities yield: 3 months, 10 years
Exchange rate	Historic volatility: EUR/HUF, USD/HUF, CHF/HUF, GBP/HUF (60 days rolling window)
	EUR Bid-Ask spread (spot)
Capital market	Cumulated loss indices on the following stock market indices: BUX, BUMIX, CETOP20, DAX (60 days rolling window)
	VDAX
Bank segment and interbank market	Network index of the Hungarian banking system (Harmonic distance)
	Calculated PD of the domestic banks and the foreign parent banks
	3 months BUBOR
	Overnight HUFONIA
	HUFONIA turnover

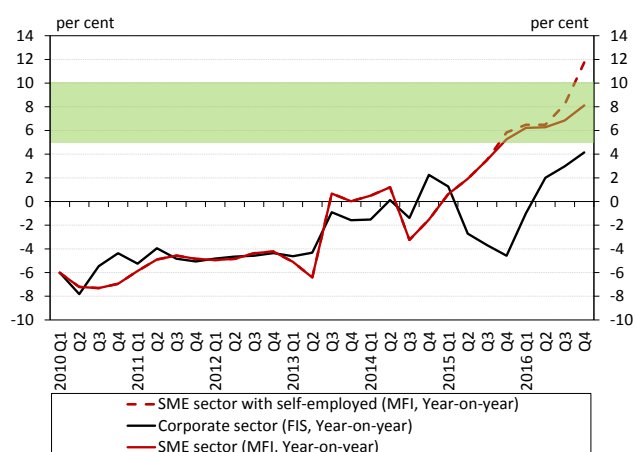
*Note: the definition of harmonic distance is given in: Fukker G. (2017) Harmonic distances and systemic stability in heterogeneous interbank networks. MNB Working Papers, 2017/1*

## 2 DEVELOPMENTS IN LENDING – A SUSTAINED TURNAROUND IN CORPORATE AND HOUSEHOLD LENDING

Corporate lending expanded dynamically in 2016, rising by more than 4 per cent compared to the previous year. This growth was driven by SME lending; the outstanding loans of the SME sector in a narrow sense increased by 8 per cent on an annual basis, while outstanding loans of the SME sector including sole proprietors rose by 12 per cent. The upturn in lending was reflected not only in the loans disbursed under the Funding for Growth Scheme, but also in the expansion in market-based HUF loans, which was significantly supported by the Market-based Lending Scheme. Banks overfulfilled their commitments made under the scheme at the sectoral level and committed to further credit growth amounting to a total HUF 170 billion for 2017. Taking into account the rising trend in credit demand, the easing credit conditions, the low interest rate environment and the MLS support, the Funding for Growth Scheme may be phased out in parallel with a steady expansion in lending.

In the household sector, a balance evolved between loan disbursements and repayments in 2016. As a result, outstanding loans remained unchanged compared to the previous year. Loans borrowed by sole proprietors had a significant impact on the developments in 2016, but even apart from that, there was an improvement in household loan dynamics. The growing trend of new loan disbursements continued, although this is still below the average disbursement observed in a longer period in the 2000s. In 2017 H1, in addition to the easing of credit conditions, a further increase in demand is expected according to the plans of households and banks. Consequently, the outstanding loans of the household sector may embark on an upward path in 2017.

Chart 24: Growth rate of loans to the whole corporate sector and the SME sector



Note: Transaction-based annual growth rates.

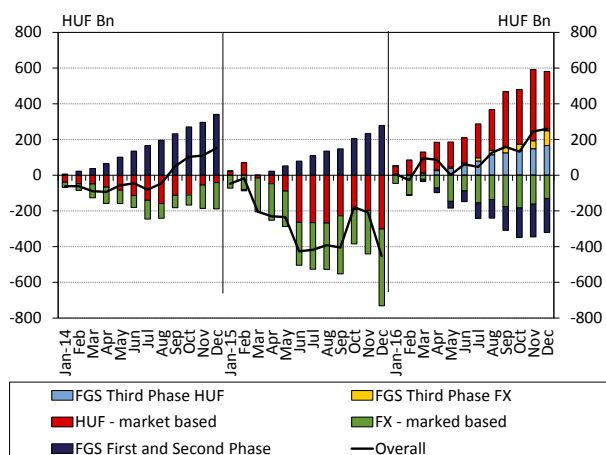
Source: MNB.

### 2.1. Corporate lending expanded dynamically in 2016

**Along with the SME sector, lending to the corporate sector as a whole also expanded in 2016.** Total corporate lending was close to the level that can be considered sustainable, increasing by more than 4 per cent during the year (Chart 24). It corresponds to a total transaction expansion of HUF 291 billion, as a result of an increase in short-term loans and long-term loans amounting to HUF 110 billion and HUF 181 billion, respectively. In a breakdown by denomination, on the whole the sector was characterised by a decrease in FX loans and an increase in HUF loans. Corporate lending was primarily driven by lending activity related to micro, small and medium-sized enterprises, with an annual rate of increase in the 5–10 per cent band, which is considered sustainable by the MNB. Loans to the SME sector in the narrow sense increased by 8.1 per cent in annual terms, while the annual growth rate of loans to the SME sector including sole proprietors was 11.7 per cent. The Market-based Lending Scheme (MLS) and the Funding for Growth Scheme (FGS) also contributed significantly to SME lending.

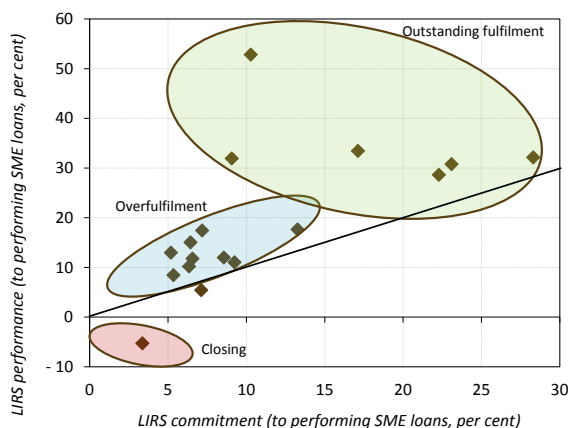
**In addition to FGS loans, market-based HUF loans also expanded considerably during the year.** Examining the growth in transactions in corporate loans outstanding it can be established that in contrast to the previous two years, market-based lending also increased significantly in 2016. The contract utilisation of the third phase of the FGS amounted to HUF 507 billion by the end of the year, includ-

Chart 25: Corporate loan transactions of credit institutions cumulated within the year



Note: Based on exchange rate adjusted data. Source: MNB.

Chart 26: Implicit LIRS commitments of banks and their performance rate



Source: MNB.

#### BOX 4: THE FUNDING FOR GROWTH SCHEME ACHIEVED ITS OBJECTIVES – NEARLY 40,000 ENTERPRISES OBTAINED FINANCING

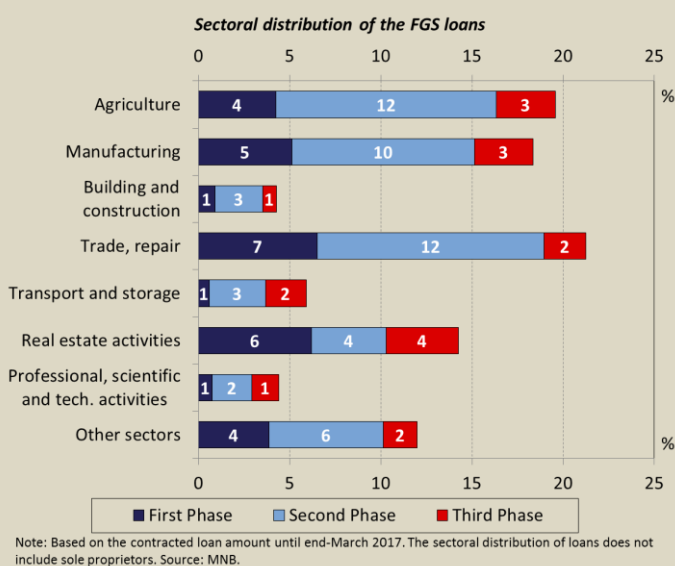
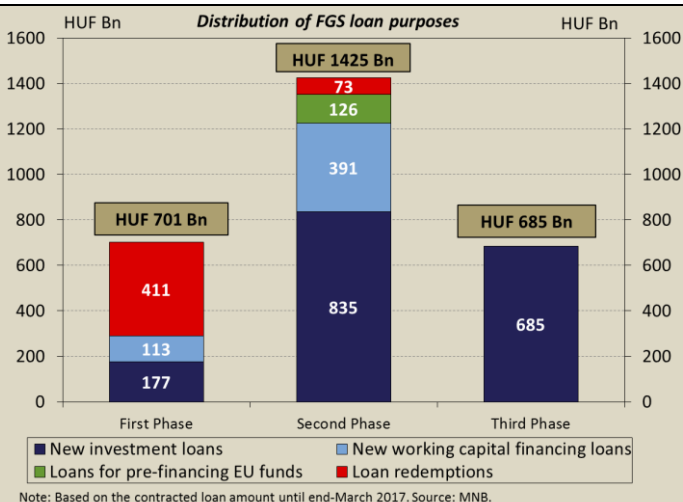
The contracting period of the third, phase-out stage of the Funding for Growth Scheme (FGS) ended on 31 March: since the beginning of 2016, banks had provided funding to domestic micro, small and medium-sized enterprises in an amount of HUF 685 billion, using 98 per cent of the available amount of HUF 700 billion. In the forint and FX pillars, loans and leasing of HUF 474 billion and HUF 211 billion, respectively, were granted, exclusively for investment. In the former, the median loan size continued to decline, compared to the second phase: more than half of the transactions were under HUF 7 million; nearly two thirds of the loans in this pillar were granted to micro enterprises.

A total 78,000 loan and leasing transactions amounting to some HUF 2,800 billion were concluded within the framework of the three phases of the FGS and the FGS+, serving the financing of nearly 40,000 Hungarian micro, small and medium-sized enterprises (SMEs) under favourable and predictable conditions. With this, the Scheme brought a trend reversal in SME lending: the previously experienced annual 5–7 per cent decline in loans outstanding stopped following the launch of the FGS, and an increase started from 2015. In 2016, growth was already in the 5–10 per cent band, which is considered necessary by the MNB for long-term sustainable economic growth; lending to corporate SMEs increased by more than 8 per cent, while taking account of sole proprietors as well it rose by nearly 12 per cent.

ing individual entrepreneurs' contracts amounting to HUF 181 billion. Accordingly, through the drawing of contracts, a loan portfolio of HUF 249 billion was built up in the corporate sector in 2016, while market-based forint loans issued by credit institutions increased by HUF 332 billion (Chart 25). Market-based FX loans outstanding declined by HUF 130 billion, while forint loans issued in the first and second phases of the FGS declined by HUF 191 billion.

**Banks met their commitments under the Market-based Lending Scheme.** By having recourse to the interest rate swap conditional on lending activity (LIRS) introduced as part of the MLS, banks committed to increasing their net SME loans outstanding. At the LIRS tenders, 17 commercial banks and banking groups concluded transactions with a total value of HUF 780 billion, thus undertaking an obligation to increase their loans to the SME sector by a total of HUF 195 billion in 2016. The majority of the institutions – 15 banks or banking groups – closed 2016 with significant overfulfilment, and thus the annual combined compliance reached 150 per cent at the sectoral level (Chart 26). The institutions that did not close their positions vis-à-vis the MNB until end-February 2017, proportionately to transaction size made a further commitment to loans amounting to a total HUF 170 billion for 2017. Accordingly, the MNB expects the MLS to remain one of the supporting pillars of corporate lending even after the closing of the FGS.

As a new, targeted element of the monetary policy instruments the MNB launched the FGS in June 2013 in order to mitigate the disorders observed in SME lending, to strengthen financial stability and to facilitate economic growth. The first phase of the FGS, which lasted only for three months, fulfilled the short-term objectives defined upon its launching, i.e. the easing of credit market constraints, stimulating competition between banks, and played an important role in the conversion of corporate FX loans into forints as well. In the second phase, which started in the autumn of 2013, the emphasis was already on new loans, and investment loans within that; the longer period for concluding contracts and strengthening competition resulted in a high participation of smaller corporate actors. Considering that over the longer term market-based lending will have to prevail again, the third phase of the FGS was launched at the beginning of 2016 in the spirit of gradual phasing out. Until end-March 2017 it allowed more targeted financing than the previous phases. The investment loans and leasing transactions concluded in all the phases of the Scheme amounted to some HUF 1,700 billion.

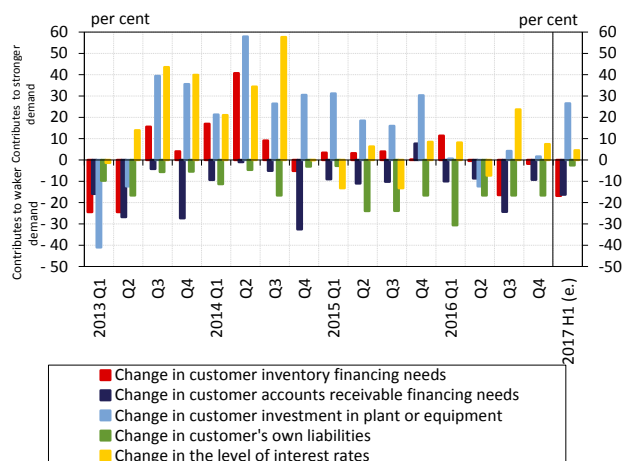


The fixed, low-interest forint loan available for a long, maximum 10-year period provided predictability for SMEs, allowing the expansion and smoother operation of their businesses as well as the implementation of postponed and new investment. According to the MNB's estimates, the FGS may have contributed to economic growth by some 2 percentage points between 2013 and 2016, and may have increased employment by around 20,000 persons. Looking at the distribution across economic sectors, trade, agriculture and manufacturing dominated in the Scheme. Nearly two thirds of the loans were granted to enterprises in these sectors (in addition to them, the sector of real estate activities had accounted for a substantial share in the first phase and in the FX pillar of the phase-out stage). The FGS also played an important

role in the reduction of the regional concentration of the loans to SMEs: while prior to the launch of the FGS more than half of the outstanding SME loans were related to the Central Hungary region, in all the phases of the Scheme taken together only slightly more than one third of the loans was provided to the region around the capital.

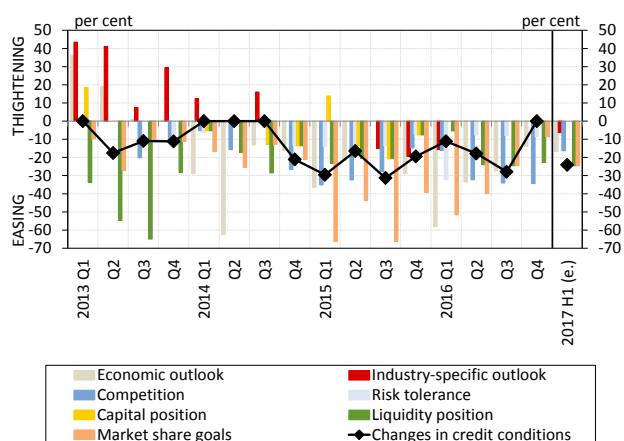
Following the phasing out of the FGS, the transition to market-based lending is expected to take place smoothly, and thus sufficient funds will be available for the enterprises in the future as well. As a result of the interest rate cuts implemented in the past years, market-based loans are also available under favourable conditions for enterprises. In addition, the return to market-based lending is still facilitated by the MNB's Market-based Lending Scheme, in which a further HUF 170 billion increase in lending was undertaken by banks for 2017. In addition, refundable and non-refundable EU funds also facilitate enterprises' access to funding, which is worth exploiting in the coming period. Moreover, the institutional guarantees may play a major role in ensuring increased access to funding for less credit-worthy enterprises.

Chart 27: Factors contributing to the change in credit demand for corporate loans



Note: Based on the difference between the proportion of banks reporting weaker and stronger demand, weighted by market share. Expressed in the deviation from the long-term average since 2010. Source: MNB, based on banks' responses.

Chart 28: Changes in credit conditions and factors contributing to the changes in the corporate segment



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

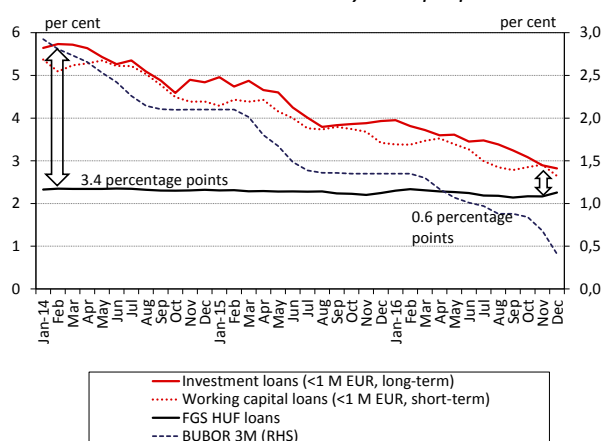
**Credit demand continued to grow in all corporate size categories.** In the Lending Survey,<sup>6</sup> banks reported an expansion in demand for both short-term and long-term loans in 2016. This rising demand was registered for both HUF and FX loans, but significantly more banks perceived rising demand for HUF loans. Both SMEs' and large corporations' demand picked up in 2016. Compared to previous years, a higher proportion of banks – one half of them on average – indicated mounting demand for commercial real estate loans. With the base rate and interbank rates having fallen to historical lows, a larger proportion of banks marked the change in the general interest rate level as a factor that contributes to corporate loan demand compared to previous years (Chart 27). Nevertheless, the expansion in companies' own resources already tended to entail a decline in credit demand. Looking ahead, according to the respondent banks, the investments in tangible assets may contribute the most to the expansion in credit demand. In the case of companies, this typically means investment in means of production (e.g. technical equipment, machinery, vehicles) and real estate. In net terms, this factor was indicated by an outstanding number of banks; 27 percentage points more compared to the long-term average. All of this may indicate that lending activity in the corporate sector may be even greater in 2017.

**As prospects improved, banks carried out a wide-ranging easing of corporate credit conditions.** Banks responding to the Lending Survey primarily eased their price conditions in the period under review. This affected the premium on riskier loans as well as the average level of spreads, indicating that banks admittedly applied not only lower credit risk cost in their pricing, but also reduced the margins related to general bank operations. The banks explained this easing with the increase in competition as well as with improvements in the liquidity position and economic prospects (Chart 28). Looking to the next half year, they projected easing in all corporate size categories as well as concerning the standards of commercial real estate loans.

**The average financing cost of HUF loans decreased further.** The price conditions of lending to non-financial corporations eased during the year. The decline in interest rates was reflected in the fall in the interest rates on market-based SME loans as well. The average interest rate on investment loans below EUR 1 million decreased by 1.1 percentage points, while that on working capital loans declined by 0.8 percentage point during the year (Chart 29). With the

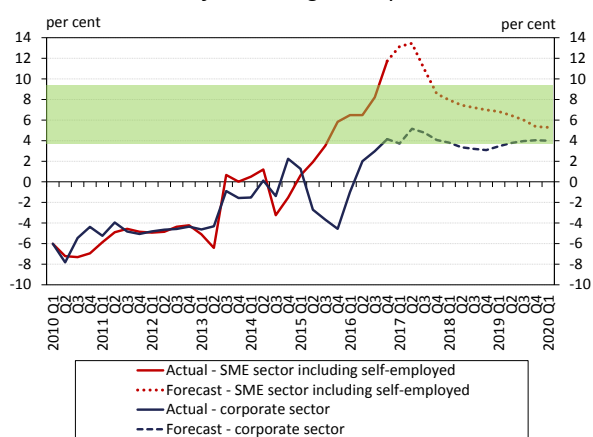
<sup>6</sup> <https://www.mnb.hu/en/publications/reports/trends-in-lending/trends-in-lending-march-2017>

Chart 29: 3-month average interest rate level of SME forint loans in a breakdown by loan purpose



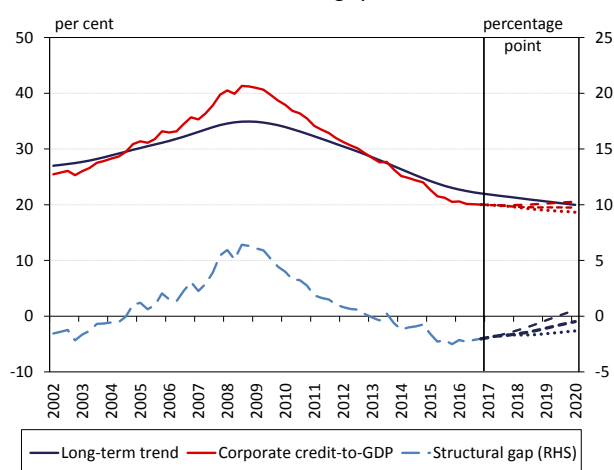
Note: Based on investment loans with maturities of over one year and working capital loans, banking sector data. Source: MNB.

Chart 30: Forecast for lending to corporates and SMEs



Source: MNB.

Chart 31: Corporate sector credit-to-GDP and the structural credit gap



Note: Three forecast scenarios for the average growth rates between 2017 and 2020: i) 4 per cent (baseline scenario), ii) 4–6 per cent, iii) 6–8 per cent. Source: MNB.

decline in the base rate and the general interest rate environment, the interest advantage of the loans granted within the framework of the FGS narrowed considerably. Upon launching the scheme in June 2013, the 3-month BUBOR was 4.4 per cent, which declined to a mere 0.4 per cent by December 2016. All of this makes the changeover to market-based lending much easier.

**Continued expansion is expected in both corporate and SME lending.**

In 2016, banks’ credit supply was characterised by a gradual easing of lending conditions, while looking ahead, further easing was projected by banks for 2017 H1. Improvement in the domestic operating environment and competition among banks is resulting in increasing willingness to lend, but the factors related to lending capacity also contribute to the expansion in credit supply. In addition, on the demand side the low interest rate environment as well as the improvement in economic prospects also result in an increase in lending. Considering the above, continued expansion of some 4 per cent in total corporate lending is expected in the coming years (Chart 30). As a result of the land purchase programme, lending dynamics in the SME segment may temporarily exceed 10 per cent in 2017, and even between 2018 and 2020 the rate of expansion may be in the 5–10 per cent band, which is considered sustainable.

**The deviation of corporate indebtedness from the equilibrium level may end in 3–4 years at the earliest.**

In the years following the crisis, as a result of banking sector and corporate balance sheet adjustments, a considerable difference evolved between the corporate sector’s indebtedness as a proportion of GDP and its presumed equilibrium level. In 2016, this deviation (the so-called structural credit gap<sup>7</sup>) started to close, i.e. corporate lending expanded faster than the nominal GDP (Chart 31). Looking ahead, we examined three possible scenarios over the three-year forecast hori-

<sup>7</sup> Hosszú, Zs. – Gy. Körmendi – B. MÉRŐ (2015): Univariate and multivariate filters to measure the credit gap. MNB Occasional Papers, No. 118

zon between 2017-2020 in order to establish over what time period corporate indebtedness may remain on a convergence path. Accordingly, presuming average growth of 6–8 per cent, the structural corporate credit gap may close in 3–4 years at the earliest.

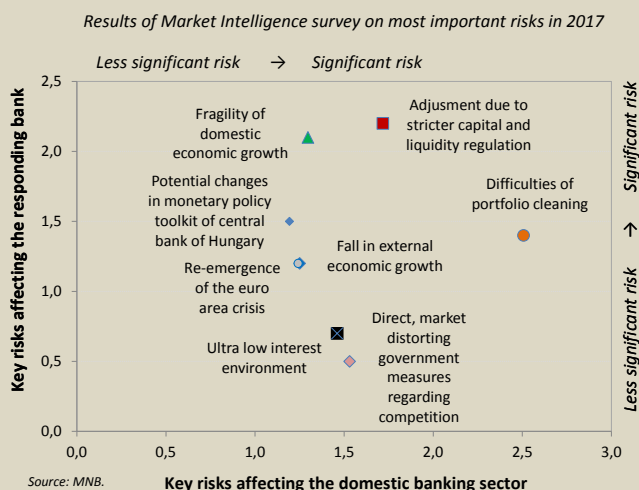
#### BOX 5: BUSINESS EXPECTATIONS OF THE DOMESTIC BANKING SECTOR AND THE MOST IMPORTANT RISKS PERCEIVED

This year, within the framework of its tenth ‘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 this year and the risks they consider the most important. Although banks’ business planning is characterised by a high degree of uncertainty this year as well, summarising the experiences collected in the survey, the following picture is obtained.

Many of the institutions participating in the survey redefined and repositioned themselves in the domestic market in the years following the crisis, in order to make their operations sustainable by determining an adequate business size and business profile. The increasing of SME lending, the expansion of an affluent retail clientele and the acceleration of portfolio cleaning are among the priority objectives of credit institutions for 2017. In parallel with this year’s economic growth, they expect an increase in lending, and the vast majority of banks expect profitable operation in 2017 as well. However, the degree of the latter may fall short of the 2016 profitability, which was exceptionally high due to one-off items. Based on responses given in the ‘Market Intelligence’ survey, the 2017 pre-tax profit of the banking sector may amount to HUF 202–277 billion, corresponding to a 6.7–9 per cent return on equity. Banks emphasised that boosting productivity and efficiency became central elements in their new business models, and they wish to achieve these goals via a reduction of operating costs, continuous product development, strengthening multi-channel sales and increasing digitalisation, in addition to loan portfolio cleaning and enhanced lending activity.

The surveyed market participants reported increased credit demand and rising willingness to borrow in the household segment. According to their expectations, at the sector level the volume of household loans will grow by a gross HUF 50–150 billion, while outstanding loans in the SME sector may increase by HUF 100–250 billion. At the same time, banks expect only minimum growth in lending to large corporations. The introduction of the MNB’s certified consumer-friendly housing loan concept may have a significant impact on the lending to the household segment and on price competition.

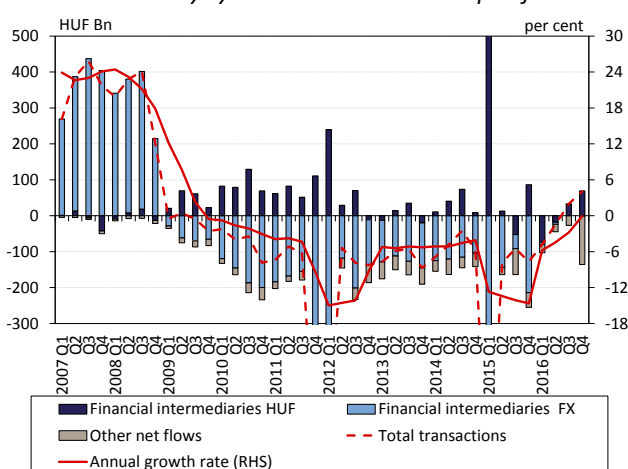
The surveyed institutions consider the favourable macro environment, the MNB’s Market-based Lending Scheme (MLS) and the pre-financing or complementary financing facilities related to EU funds to be factors with a positive impact on lending to the SME sector. In addition, they mentioned the funding of home building projects as a priority financing area. Moreover, gradual improvement is observed in other segments of the project financing market as well. Of the commercial real estate projects, mainly the financing of office and shopping centre as well as hotel projects in the capital were mentioned as the most important areas by the banks participating in the survey.



In the opinion of the majority of respondents, as a result of the low interest rate environment and the strengthening market competition, the phasing out of the FGS does not have a material effect on corporate credit demand. The experiences obtained during the ‘Market Intelligence’ survey show that the majority of domestic banks are prepared to offer – on a market basis – alternative loan products with conditions similar to those of the FGS in terms of the interest rate and the mode of interest payment as well as maturity. However, there was a bank that expects an increase in the cost level and shortening of maturities. The sector welcomed the expansion of institutional guarantee schemes that fosters SME lending; their role appreciat-

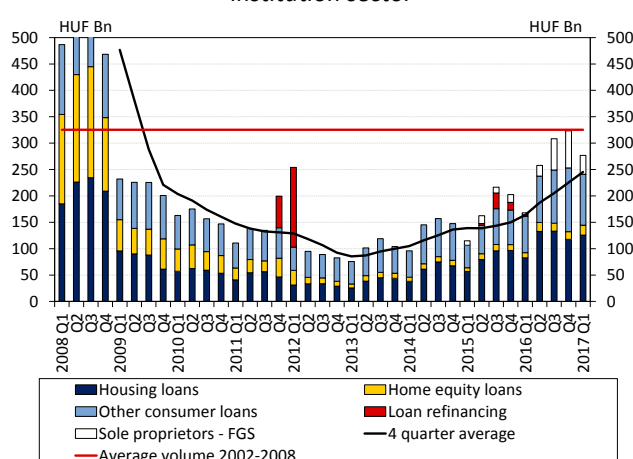
ed, and institutional guarantors' growing risk tolerance may further increase corporate lending activity in the future. Based on credit institutions' responses, a risk map that determines the operating environment of the banking sector was outlined, and it changed significantly during the past years. In 2017, banks identified the 'difficulties of portfolio cleaning', the 'adjustment due to stricter capital and liquidity regulation' as well as the 'fragility of domestic economic growth' as the main risks for themselves and the sector as a whole. They perceived the 'fragility of domestic economic growth' as a risk more at an individual level, while they considered the 'difficulties of portfolio cleaning' an important risk from the perspective of the sector as a whole. At the same time, priority risks of previous years, such as the persistence of the bank levy or the deterioration in customers' capacity to pay, were ranked much lower both at the individual and sector levels in the order of importance determined by banks.

Chart 32: Quarterly transactions of the financial intermediary system's household loan portfolio



Note: Seasonally unadjusted data with rolling exchange rate adjustment. Source: MNB.

Chart 33: New household loans in the entire credit institution sector



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

## 2.2. Household lending on the verge of a shift

### A net balance evolved between household disbursements and repayments in 2016.

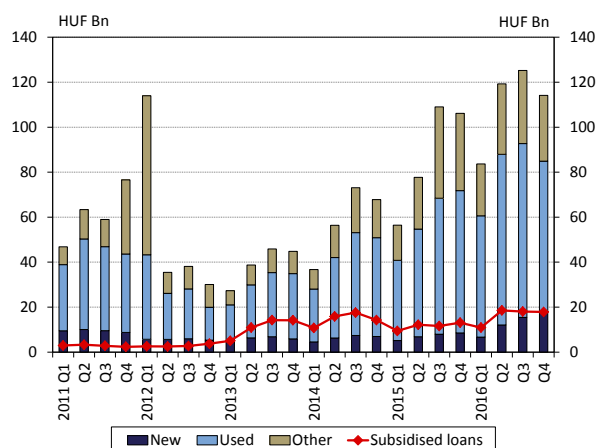
Household loans outstanding of the domestic financial intermediary system declined by some HUF 100 billion in 2016 H1, but in the second half of the year an increase of nearly the same amount was observed as a result of transactions. Accordingly, in terms of transactions, the decline in loans outstanding stopped in annual terms, i.e. a net balance evolved between disbursements and repayments in 2016 (Chart 32). The loans borrowed by sole proprietors<sup>8</sup> in the Funding for Growth Scheme and the land loan programme had a major impact on developments in lending in H2. As a result of transactions, their loans outstanding increased by HUF 148 billion during the year. Household loans outstanding, excluding sole proprietors, declined by 2.2 per cent in annual terms, although this is still a significant improvement after the declines in loans outstanding of 4–5 per cent seen in previous years.

### The volume of new loans rose by 50 per cent, but still does not reach the average level of the 2000s.

In 2016, the volume of new loans amounted to HUF 1,054 billion in the whole sector of credit institutions. Within that, FGS loans to sole proprietors accounted for 15 per cent (Chart 33). During the year, the volume of new loans to households increased by 50 per cent in annual terms, but reached only some 70 per cent of the issuance observed between 2002 and 2008. Housing loans, the volume of which increased by 42 per cent in annual terms, account for half of the new loans. The Home Purchase Subsidy Scheme for Families (HPS) also had an impact on the willingness to borrow for housing purposes: 16 per cent (HUF 72 billion) of the new housing loans were related to this programme. The 12-month cumulative value of new contracts increased in the

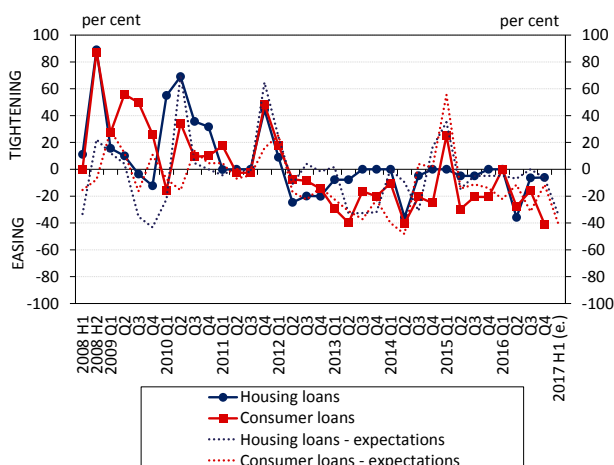
<sup>8</sup> In statistical terms, the household segment includes individuals and the sole proprietors.

Chart 34: Volume of housing loans distributed, by loan purpose



Source: MNB.

Chart 35: Changes in credit conditions in the household segment



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

consumer product group as well: by 61 per cent in the case of personal loans and by 25 per cent in the case of vehicle loans.

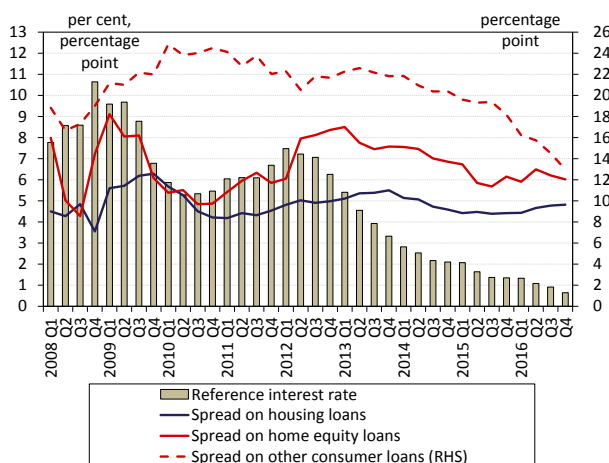
**Both the volume and share of loans for new homes purchase and construction increased.** While in 2015 the expansion in housing loans took place without any major pick-up in loans for new homes, the volume and share of such loans increased considerably starting from 2016 Q2 (Chart 34).<sup>9</sup> On annual average, 12 per cent of new housing loans were borrowed for new home purchase or construction, compared to a mere 8 per cent in 2015. In Q4, already every sixth housing loan was borrowed by households for new homes. The proportion of loans borrowed for the purpose of purchasing used homes was nearly 60 per cent in 2016, while loans for renovation or loan refinancing accounted for one quarter of the volume disbursed.

**The conditions of access to consumer credit eased, accompanied by a strong rise in demand.** According to banks' responses to the Lending Survey, with the exception of Q2, the conditions of housing loans remained practically unchanged in 2016, while demand increased steadily, which is confirmed by the growth in the volume of new loans (Chart 35). In terms of the partial conditions, banks typically reduced the spreads and, to a lesser extent, reported reductions of loan origination fees and easing of the collateral requirements. While in H1 the developments observed in the housing market, in H2 the preserving and increasing of banks' market shares would have justified an easing of credit conditions. Demand expansion was observed in the market of consumer loans as well, but banks eased the credit conditions in this segment in most of the year. This was reflected almost exclusively in the reduction of interest rate spreads. Nevertheless, the easing of the conditions of consumer loans was observed in the case of the unsecured consumer loans segment, among them commodity loans and personal loans in particular, mainly as a result of an increase in competition and prospects for economic activity. For 2017 H1, 41 per cent of banks in net terms plan to ease the conditions of both consumer and housing loans. In addition, 80 per cent of them expect a further increase in credit demand.

**The average interest rate spread on housing loans rose slightly, while the spread on consumer loans declined in 2016.** The cuts in the central bank base rate and the restructuring of monetary policy instruments had a down-

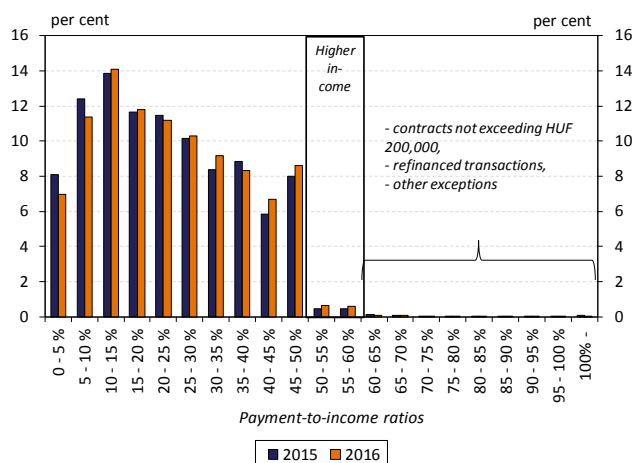
<sup>9</sup> A similar trend was observed in the dynamics of the number of contracts concluded within the framework of the HPS.

Chart 36: Spreads on new household loans



Note: Quarterly average of lending spreads on newly disbursed loans on the 3-month BUBOR. APR-based spreads. Source: MNB.

Chart 37: Distribution of PTI values of new loans by number of units



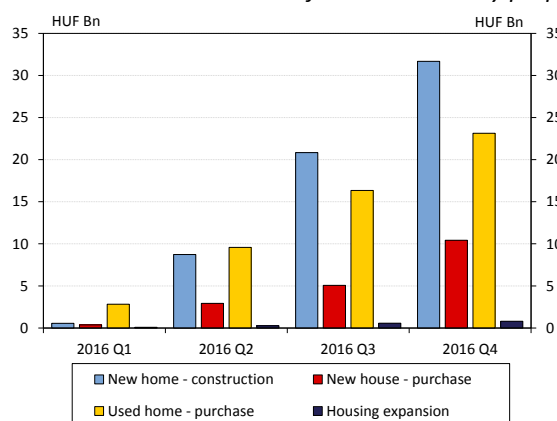
Source: MNB.

ward effect on the interest rate level of new loans as well. The average APR on housing loans declined by a total of 0.3 percentage point during the year, thus amounting to 5.5 per cent at end-2016. The interest rate on home equity loans declined by 0.8 percentage point to 6.7 per cent, while that on unsecured consumer loans was down by 5.9 percentage points to 13.6 per cent. At the same time, developments in credit spreads were heterogeneous: the average interest rate spread remained unchanged in the case of home equity loans, declined by 5.2 percentage points in the case of unsecured consumer loans, and increased by 0.4 percentage point to 4.8 percentage points on housing loans (Chart 36).

**The proportion of fixed-rate housing loans is increasing, together with banks' risk appetite.** The apparent contradiction between the contract data regarding housing loan spreads and the reduction of spreads indicated in the Lending Survey is explained by various factors. Firstly, due to the low interest rate environment, banks' cost of funding can be approximated by the interest rate on time deposits, instead of the interbank rate. Secondly, there was a shift in demand from variable-rate products towards fixed-rate ones, as the ratio of fixed-rate loans within new loan disbursements increased by 4 percentage points. The remaining rise in interest rate spreads is attributable to banks' increasing risk appetite.<sup>10</sup> This is reflected in the maturities and instalments of new loans as well. The average maturity rose by 1.6 months to 15.9 months, while the average payment-to-income ratio rose from 27 per cent to 28.3 per cent. However, no signs of excessive indebtedness are observable: the distribution of PTI values does not show any regional heterogeneity, and the average LTV value of newly disbursed loans did not change significantly compared to 2015. The debt cap rules in force since 2015 do not hinder the sustainable pick-up in lending to households, as only 8–9 per cent of the contracts concluded (10–13 per cent of the volume) falls close to the threshold of the PTI indicator (Chart 37).

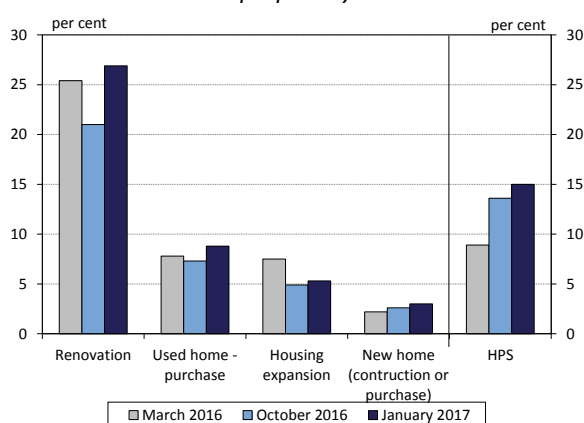
<sup>10</sup> For more details see: Trends in lending, March 2017 (<https://www.mnb.hu/letoltes/hitelezesi-folyamatok-2017-marcius-en.pdf>)

Chart 38: Cumulative volume of HPS contracts by purpose



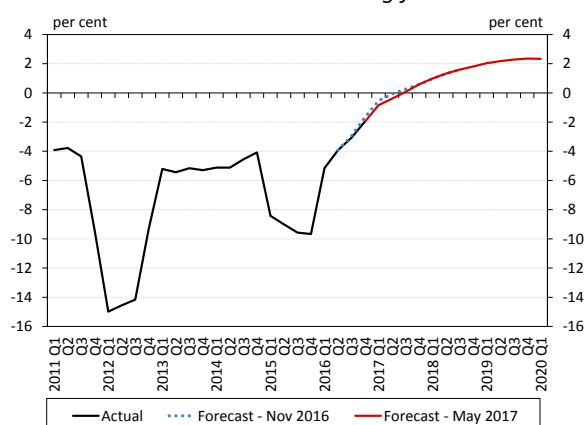
Source: Ministry of National Economy.

Chart 39: Large-amount housing expenditures and HPS propensity



Note: According to a national survey representative by gender, age, settlement type and region; percentages denote the rate of respondents who said 'yes' to the questions whether he/she plans any of the listed housing expenditures in the following 1 year, and whether he/she intends to claim for HPS for this purpose. Source: MNB questionnaire survey.

Chart 40: Household lending forecast



Source: MNB.

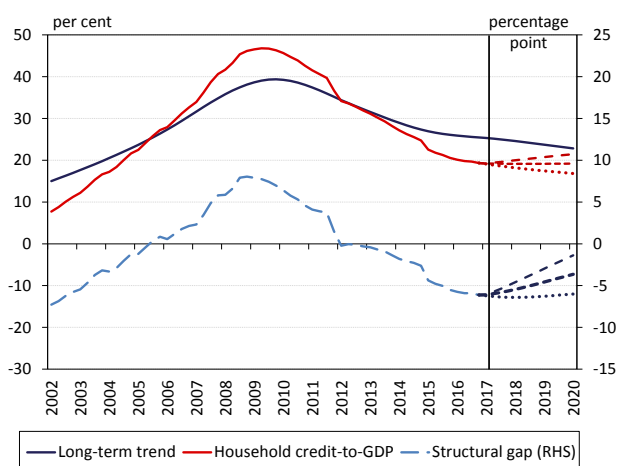
**Two thirds of the amount contracted within the framework of the HPS was utilised for new homes.** The Home Purchase Subsidy has been available in its current form since February 2016. Since then, 23,000 contracts were concluded with a total value of HUF 66 billion until end-2016. Looking at the contract volumes, nearly two thirds, some HUF 42 billion, of the total stock concerned was contracted for purchasing or constructing new homes (Chart 38). In terms of the number of contracts, 70 per cent was for the purchase of used homes, 28 per cent for the purchase or construction of new ones, and a mere 2 per cent was utilised for home expansion.

**15 per cent of those who plan to spend a large amount on housing intend to use the HPS.** According to the representative nationwide household questionnaire survey conducted by the MNB in early 2017, many households are planning a larger volume housing investment in the coming one year. 27 per cent and 5 per cent of the respondents indicated that they would renovate or expand their existing flats, respectively, and 9 per cent and 3 per cent plan to purchase used and new homes, respectively. The proportion of those who plan to take advantage of the HPS increased slightly at the end of the year: among those who plan to purchase or renovate homes in the coming one year, 15 per cent plan to use the subsidy, and nearly 50 per cent of those concerned plan to borrow as well in addition to the subsidy (Chart 39).

**Based on our forecast, a permanent shift may take place in household lending.** In 2016, a balance evolved between household loan disbursements and repayments, primarily as a result of an increase in new loans. Looking ahead, banks expect further upswing in demand and a further easing of supply conditions in 2017. The pick-up in the housing market and the continued rise in real wages project a further expansion in credit demand, which is strongly supported by the low interest rate environment as well. Based on this, a permanent shift in household lending is expected, and an annual 1.5–2.5 per cent increase in total loans outstanding is projected over the forecast horizon<sup>11</sup> (Chart 40).

<sup>11</sup> The impact of the increase in new loans on total loans outstanding is reduced by the fact that due to the annuity repayments the new borrowings are compared to gradually rising principal repayments.

Chart 41: Household sector credit-to-GDP and the structural credit gap



Note: Three forecast scenarios for the average growth rates between 2017 and 2020: i) 1.5–2.5 per cent (baseline scenario), ii) 5–7 per cent, iii) 8–12 per cent.

Source: MNB.

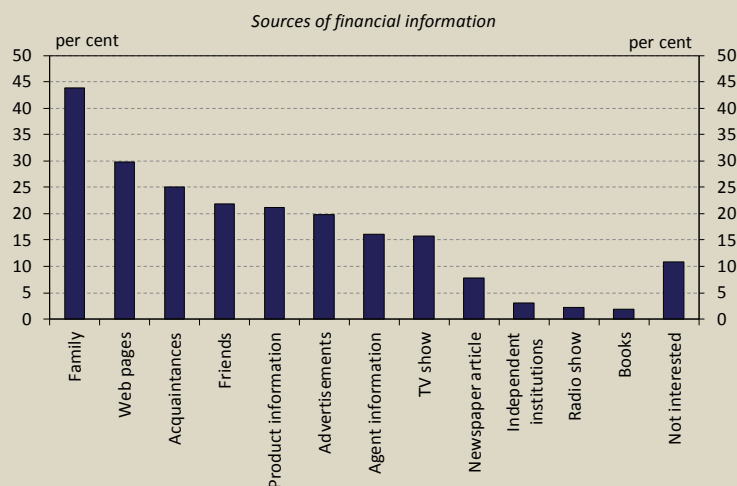
**Household indebtedness as a proportion of GDP remains on the convergence path over the entire forecast horizon.**

The excessive pre-crisis indebtedness was followed by a significant balance sheet adjustment by the household sector in the past years. As a result, a significant deviation evolved between household indebtedness as a proportion of GDP and its equilibrium value (structural credit gap) by 2016, and the size of this gap increased in 2016 as well (Chart 41). According to the projections prepared on the basis of our current GDP and lending forecasts, this deviation from the equilibrium would not close over the forecast horizon either (lending dynamics would not exceed nominal GDP growth), and the size of the credit gap would be around the current level. We prepared alternative scenarios to examine how the deviation from the equilibrium would close if acceleration took place in lending. Accordingly, households' credit-to-GDP would not reach the equilibrium level by 2020, even if lending expanded by 8–12 per cent on average. Consequently, households' indebtedness as a proportion of GDP may remain on a convergence path over the forecast horizon until 2020.

**BOX 6: FINANCIAL LITERACY AMONG THE YOUNG**

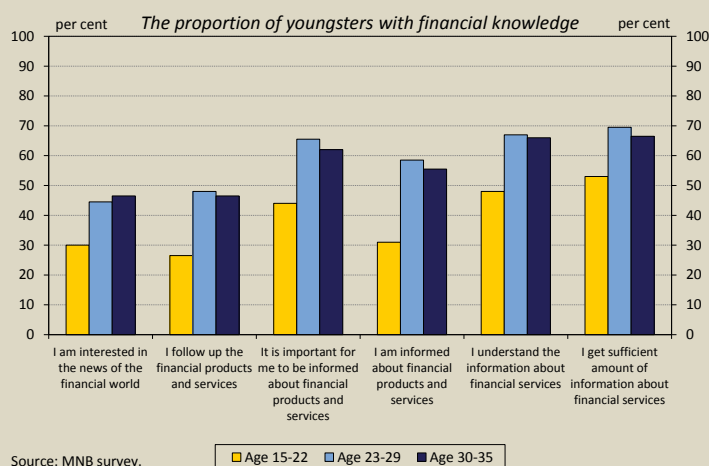
In March 2017, the Magyar Nemzeti Bank examined the financial literacy and banking habits of younger age groups using a questionnaire survey. The research was conducted by asking 200 people in each of the (1) 15–22, (2) 23–29 and (3) 30–35 age groups formed in a stratified sampling procedure in a representative manner according to sex, age, region and type of settlement. The age group under review accounts for one quarter of the total population and some 30 per cent of the employed. Accordingly, their financial attitude and banking habits significantly determine consumer needs.

The majority of respondents did not know all of the rudiments of banking. On the whole, the number of financial terms known is growing with age. While in the youngest age group the ratio of those who knew at least 90 per cent of the terms was 13 per cent, in the next age group this ratio rose to 30 per cent, and exceeded 40 per cent in the case of those above 30 years of age.



Source: MNB survey.

One of the determinant sources of financial literacy necessary for responsible decisions is education, but 82 per cent of



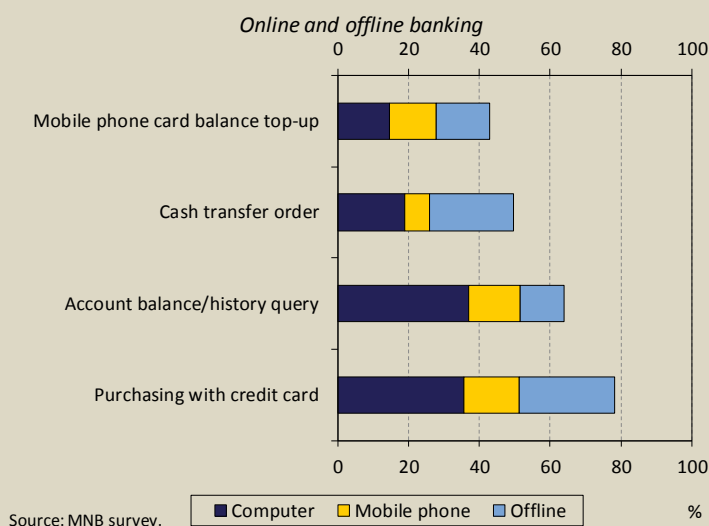
the respondents have not received any financial education during their lives. Only 9 per cent of them obtained this type of knowledge within the framework of (non-specialised) secondary education, while another 9 per cent obtained financial knowledge in specialised secondary schools, in higher education or during training to acquire qualifications listed in the National Qualifications Register.

Financial information can also be obtained outside the framework of formal education: the majority of young respondents mentioned family members as primary sources of information. Although websites take second place, 20–25 per cent also request the opinions of acquaintances and friends. Therefore, the development of financial literacy may bring a general improvement in conscious financial decision-making through the personal social network as well.<sup>12</sup>

Lack of interest was experienced in connection with the news of the world of finance and information related to financial products and services. Stemming from their life situation, the youngest age group showed the lowest interest in finances, while there is no major difference between the replies of the two older age groups: more than half of the respondents admitted that they are not interested in financial news, services or products. In spite of the low interest, relatively many consider the knowledge of financial products and services important: 45 per cent of those aged 15–22, 66 per cent of those aged 23–29 and 62 per cent of those aged 30–35 expressed this sentiment. This apparent contradiction can be explained with their own negative experiences or that of the ones who live in their surroundings.

Financial ignorance is also reflected in the aspects of choosing a bank: more than one third of the respondents aged 23–29 are still the clients of the bank recommended by their parents. It can be established that in this sense financial awareness improves with age: the ratio of selection on the basis of parents' recommendation is higher in the younger age group and lower among those aged 30–35.

The most typical banking activities of young generations are purchasing by bank card (68 per cent), account balance and account history query (55 per cent), money order payment (45 per cent) and mobile phone balance top-up (37 per cent). Two thirds of respondents handle these matters online as well. Transactions through computer or laptop are more typical than through mobile phone in all three age groups. Therefore, among the youngest, in addition to free service, online accessibility also became an important aspect in a possible future changing of banks, while the two older age groups would be motivated by free service upon changing banks.



Monitoring the younger age groups may be justified from a stability point of view in the coming years, as they will

<sup>12</sup> In the 2015 OECD financial literacy survey, on the whole (taking account of factual knowledge, behaviour and attitudes), Hungary finished 22nd out of 29 countries, although in terms of financial knowledge, 60 per cent of the respondents had the minimum expected knowledge, corresponding to the average of the OECD countries (OECD/INFE International Survey of Adult Financial Literacy Competencies 2016).

enter the housing and credit markets as new participants. Looking ahead, their new borrowing attitudes and housing objectives may have a significant impact on the developments in lending, banks' business strategy, the service provision channels as well as the features of individual loan products.

The social responsibility objectives of the Magyar Nemzeti Bank include financial education and the improvement of financial awareness. Therefore, the MNB set up the Financial Consumer Protection Centre, the objective of which is to facilitate the acquisition of financial knowledge. In addition, through the work of the Money Compass Foundation, the central bank participates in the development of the curriculum that targets the young, and also supports the development of textbooks for elementary and secondary school students.

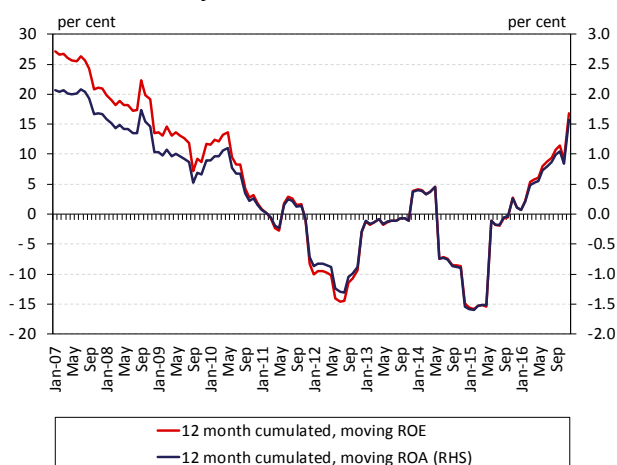
### 3 PROFITABILITY AND CAPITAL POSITION – SUBSTANTIAL IMPROVEMENT IN PROFITABILITY DUE TO UNSUSTAINABLE ITEMS

The credit institution sector closed 2016 with outstanding net income, posting a pre-tax profit of HUF 517 billion. As a result of the historically high profit, return on equity rose to its pre-crisis level, with a pre-tax rate of 16.9 per cent. However, the positive picture is complicated by the fact that the increase in the credit institution sector's profitability mostly stemmed from the improvement of single and one-off, unsustainable profit and loss items. The improvement in the operating profit was influenced to the largest degree by the decrease in credit losses; this profit and loss item also contributed, unusually, to the increase in profitability. However, the sustainability of these developments is questionable: losses suffered on sold portfolios signal that the recovery rate that is achievable by banks does not justify the writing back of loan loss provisions any further.

According to our estimates, the return on equity calculated with the long-term average credit loss, which better reflects the actual processes, was significantly lower, at around 8 per cent. Those profit and loss components that represent the most stable part of the banking sector's earnings – particularly interest income, the fee and commission income and operating expenses – stagnated or improved only slightly during the year. Net interest income, which is deemed high by international standards, is accompanied by high operating expenses in the Hungarian banking sector. However, looking ahead, the persistently low interest rate environment will keep banks' profitability under pressure: 22 per cent of the securities denominated in HUF in the sector's balance sheet (an amount of roughly HUF 1,400 billion) were issued before 2012 – in a high interest rate environment – and will expire in the next three years. Looking ahead, the "rollover" of this portfolio in the low interest rate environment reduces the sector's medium-term and long-term interest revenues.

The volume of net interest income is also impacted to a high degree by changes in the intensity of bank competition. The spreads currently applied by banks in the household credit market imply weak competition, which can be primarily observed in the market of loans with an interest rate fixation of over one year. In order to ensure the transparency and easier comparability of individual products and to support sustainable lending developments, in the second half of the year the Magyar Nemzeti Bank will facilitate the introduction of certified consumer-friendly housing loans, which may contribute to the pick-up of competition and thus to a decline in spreads.

Chart 42: Aggregate 12-month rolling ROE and ROA indices of the credit institutions



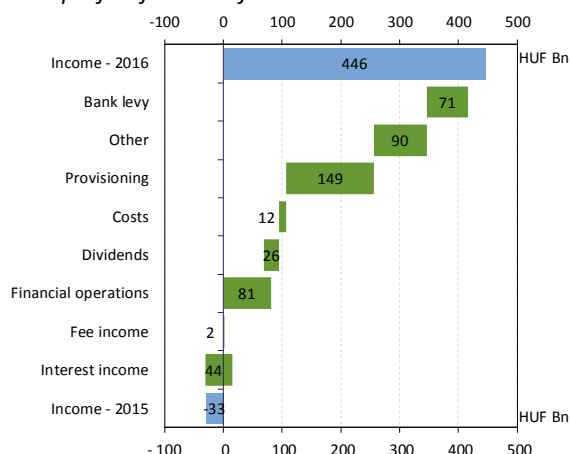
Source: MNB.

#### 3.1. Major improvement in the profitability of the banking sector

**Credit institutions closed the year with a historically high profit; the return on equity reached its pre-crisis level.** The annual profit of the credit institutions continued to rise further in the second half of the year, and the sector closed the year with a pre-tax and after-tax profit of HUF 517 billion and HUF 446 billion, respectively. As a result of the historically outstanding profit, return on equity reached a level last seen before the outbreak of the crisis, in 2008: the 12-month rolling pre-tax return on equity is 16.9 per cent, while the return on assets rose to 1.6 per cent in 2016 (Chart 42).

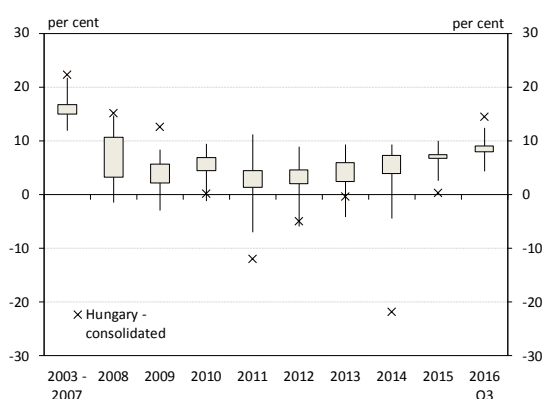
**The extraordinary improvement observed in the profit is mostly the result of unsustainable developments.** When comparing 2015 and 2016, an unprecedented rise of roughly HUF 479 billion can be observed in profit after tax (Chart 43). All of the key profit components made a positive contribution to this change. However, the major portion of the increase was caused by one-off items, which are not sus-

Chart 43: Difference and components of the 2015 and 2016 profit after tax of the credit institutions



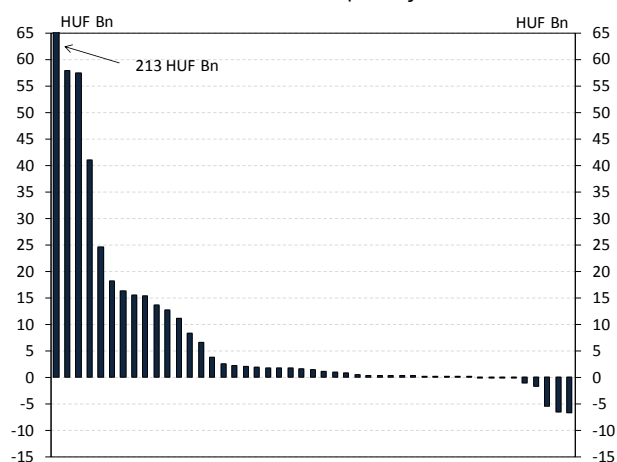
Source: MNB.

Chart 44: After-tax ROE of the EU banking system



Note: The chart depicts the 40–60, 20–80 percentile values of the member state banking systems together with the Hungarian banking system's ROE. Source: ECB CBD, World Bank Database.

Chart 45: Distribution of credit institutions' pre-tax profit and loss at an individual level (data from December 2016)



Source: MNB.

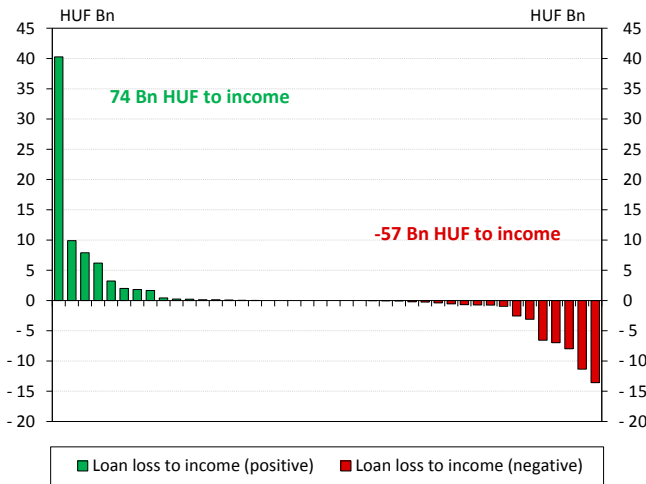
tainable in the long-run. The most important factor was the improvement in impairments' profit reducing impact in the amount of HUF 149 billion: unusually, this item made a positive contribution to banks' profitability in 2016. The amount of received dividends also increased, which may be deemed concentrated at the bank level and volatile; in addition, a one-off effect of almost HUF 30 billion was represented by the sales of VISA's European organisation. In accordance with the amendment of the law, which entered into force in January 2016, the special bank levy was reduced compared to the previous year, and the decrease will continue – albeit at a lower rate – in 2017 as well. No significant improvement occurred in the most stable items of bank profitability (such as interest income, commission and fee income, and operating expenses) compared to the previous year.<sup>13</sup>

**The profitability of the Hungarian banking sector is outstanding by international standards as well.** In the past years, the average return on equity of the EU's banking sectors showed an improving trend, while Hungary successively lagged behind. However, based on the consolidated annualised data of 2016 Q3, the degree of the improvement in the Hungarian banking sector's profit was well above the rate achieved by a wide range of member states (Chart 44) and was outstanding in regional terms as well. The average of the CEE countries was 11.9 percent in the third quarter, while Hungary's figure rose to 14.5 per cent. Although in the coming years, in the absence of the one-off items recognised during 2016, no similar profit can be expected, the reduction of the special tax on banks and the profit impact of the decrease in non-performing portfolios raised the profitability of the Hungarian banking sector close to the average of the region.

**Profitability is still heterogeneous at a sector level, but the number of loss-making banks has decreased considerably.** In addition to the steadily profitable banks with good portfolio quality, the operation of several market participants which typically used to be loss-making due to the previously high NPL portfolio and the negative profit impact of portfolio cleaning, became profitable in 2016. Although the concentration of profitability was significant this year as well, the number of loss-making institutions has not been so low since the start of the crisis (Chart 45). Only 9 credit institutions closed 2016 with a negative result and their balance sheet total-based market share was also low (5.7 per cent). The total loss of these market participants is HUF 22 billion,

<sup>13</sup> The improvement in interest income, amounting to HUF 44 billion, may in large part be regarded as an adjustment related to the previous year, which was caused by the major interest expense increasing effect of two transactions that took place in 2015.

Chart 46: Impairment recognition and write-down, and profit/loss impact of the sale of receivables, by banks



Source: MNB.

which is also a significant improvement compared to earlier years.

**The profit-improving effect of the net reversal of impairment losses is concentrated in a few banks, while the sale of receivables still generates losses.** In the profit and loss account of the banking sector and the branches, the reversal of impairment losses exceeded the recognition of new impairment losses by HUF 46 billion, while the loss suffered by the banking sector on the sale of own receivables amounted to roughly HUF 35 billion.<sup>14</sup> On the other hand, it should be noted that the sector is far from being homogenous in terms of the sign of credit losses. The reversal of impairment losses and the sale of receivables improved the profit in the case of 16 institutions in the total amount of HUF 74 billion, while in the case of 19 institutions the same items generated a loss of HUF 63 billion (Chart 46). The profit impact of the reversal of impairment losses is significant at certain institutions: if the impact of the credit loss had been eliminated at the banks that reversed impairment losses, further three banks also would have realised a loss during the year. The negative profit impact of the portfolio sales indicates that the net value of the receivables included in the banks' balance sheets does not reflect the expectations of the debt purchase market. In the light of the still substantial NPL portfolio, this means that the sector may continue to realise additional losses on this portfolio.

**At present, the reversal of impairment losses represents no prudential risk.** When examining credit losses by credit institutions we found that the impairment coverage ratio of the non-performing portfolio of the banks which realised a profit on the recognition of impairment loss, write-down and sale of receivables in 2016 on the whole is higher than the banking sector's average both in the corporate and household segments. This implies that the banks that reversed impairment losses in 2016 previously recognised provisions more prudently, at a ratio that exceeded the average of the banking sector. These institutions also show a more favourable picture in respect of the net non-performing portfolio expressed as a ratio of the CET1 regulatory capital compared to the banks where the credit losses deteriorated the profit of 2016 (Table 1). In view of the fact that the reversal of impairment losses can be explained by the improvement in economic fundamentals and the reversals were performed by banks with higher coverage, on the

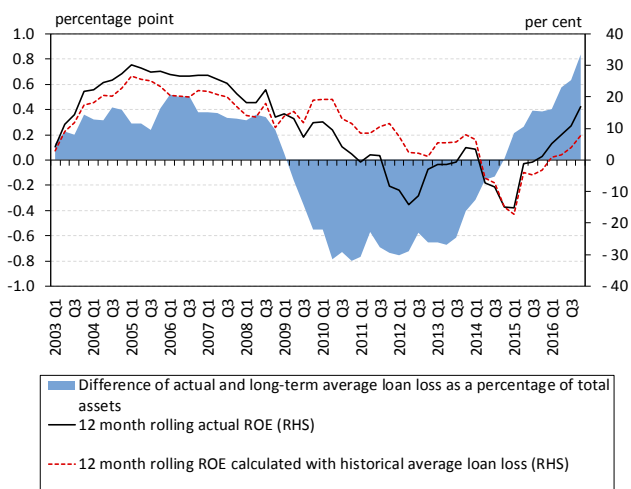
Table 1: Average impairment coverage of non-performing loans by the profit-deteriorating impact of impairment

	Loan loss coverage of household NPL loans	Loan loss coverage of corporate NPL loans	Net NPL outstanding/ CET 1 capital
Banks with impairment reversal	64.4%	50.0%	36.1%
Banks suffering additional loan loss	57.3%	49.9%	43.3%
<b>SUM</b>	<b>60.5%</b>	<b>50.0%</b>	<b>40.1%</b>

Note: the table contains the arithmetic average of the respective values of the relevant institutions. Source: MNB.

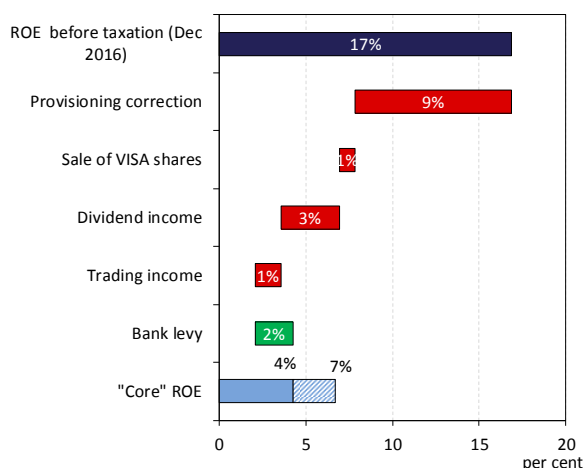
<sup>14</sup> Some of the institutions stated the impairment of the sold receivables as a reversal, thereby increasing both the value of the reversal of impairment losses and the losses incurred upon sales. Upon calculating the values presented here, all these factors were taken into consideration.

**Chart 47: Deviation of the credit losses of the credit institutions from the long-term average; ROE calculated with the average credit loss**



Note: Upon the calculation of the credit losses, the impact of the final repayment was not taken into consideration. Source: MNB.

**Chart 48: Actual profitability and profitability adjusted for one-off effects of the credit institution sector as a proportion of equity**



Note: The uncertainty band includes half of the profitability effects of dividend and trading income. Source: MNB.

whole we do not regard this process as a prudential risk.

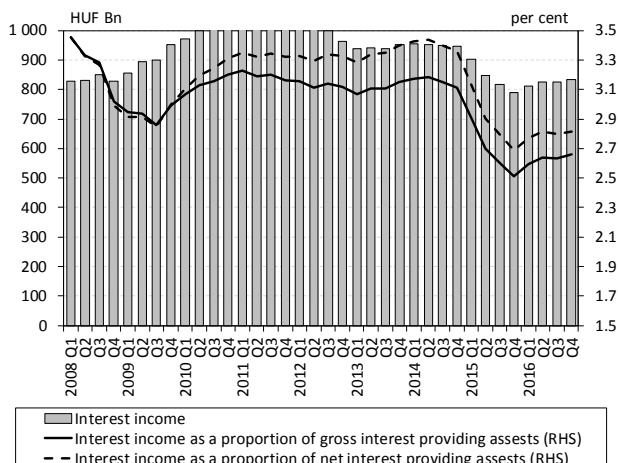
**When calculating with the long-term average of credit losses, the return on equity would be 7.8 per cent.** As regards 2016, the impact on profitability of the 12-month cumulated credit loss as a ratio of total assets of the banking sector and the branches was slightly more than 0 per cent, which exceeds the long-term average by almost 0.9 percentage point<sup>15</sup> (Chart 47). In past years, it was unprecedented that the 12-month rolling credit losses contributed to the increase in profits. However, the positive balance of the reversal of impairment losses represents a source of income for the credit institutions that is not sustainable in the long run as it is also indicated by the losses on portfolio sales. Had we calculated the profitability of the banking sector using the long-term average for credit losses instead of the actual credit losses, in 2016 the pre-tax return on equity, *ceteris paribus*, would be 7.8 per cent, which falls short of the current profitability by roughly 9 percentage points. After adjusting for the other previously detailed one-off and volatile profit items, the pre-tax return on equity of credit institutions may be between 4–7 per cent (Chart 48). For a cyclical evaluation of this, it is worth considering the fact that this has been realised in a low interest rate environment and having a relatively high, steadily loss-making non-performing loan portfolio. In light of this, the sector's return on equity can be considered satisfactory.

**3.2. The low yield environment leads to a decline in interest revenues, while poor competition contributes to the maintenance of high net interest income**

**Credit institutions' net interest income, excluding one-off effects, only rose to a minor extent.** The banking sector's interest income as a ratio of assets decreased substantially in 2015 as a result of the settlement, which was further exacerbated by several one-off items. In 2016, after these one-off items ceased to have an effect, net interest income once again rose, reaching 2.7 per cent as a ratio of assets by December 2016 (Chart 49). Interest income is traditionally the most important and most stable source of income for the Hungarian banking sector, and thus the level thereof and the expected developments therein are key factors for the earnings potential of the domestic banks. In the near future, the securities expiring and to be rolled over in the

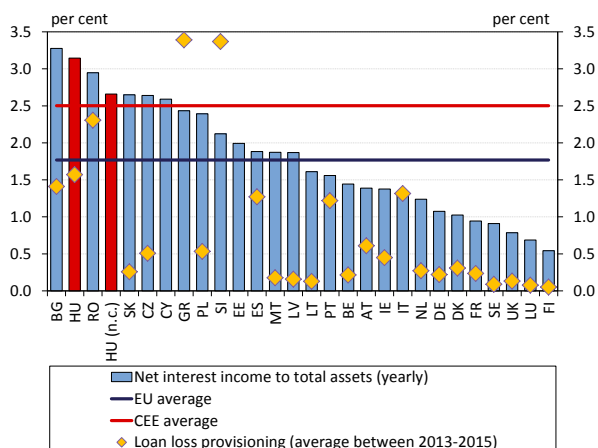
<sup>15</sup> Considering the period from June 2002 to December 2016.

Chart 49: Net interest income of credit institutions as a proportion of the gross and net interest-bearing assets



Source: MNB.

Chart 50: Annual average interest income on bank assets in the EU member states



Note: Based on 2016 Q3 consolidated data. In the case of Hungary, “n.c.” denotes non-consolidated data.

Source: ECB CBD.

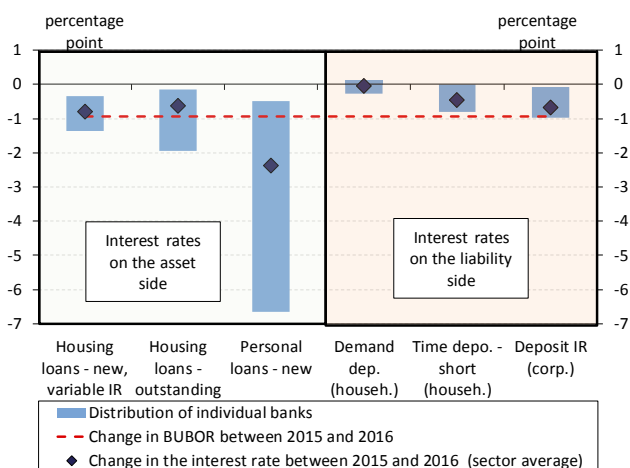
low interest rate environment will put pressure on the volume of interest income, the impact of which may be absorbed to some extent by the low intensity of bank competition in certain segments.

**Net interest income as a percentage of assets approached the average of the region, but it is still above that.** Due to the contraction of the formerly extremely profitable loan portfolio as a result of the settlement and the decreasing interest rates, domestic banks' interest income as a percentage of assets deviates from the region's average of 2.5 per cent to a much lesser degree than before. In spite of approaching the EU average, Hungary still realises higher interest margin on its assets than most other countries (Chart 50). This can be observed, despite the fact that in the Hungarian banking system the ratio of assets bearing a higher interest rate compared to liquid assets (household and corporate loans) is merely 35 per cent within the total assets, while the EU average is 44 per cent, and that of the CEE region is 54 per cent. This implies that the Hungarian banking sector realises an interest income that is higher than that of its regional competitors on a proportionately smaller loan portfolio. The high interest income may be attributable to several factors: in addition to banks' market power, credit risk costs, which are higher than that of the countries of the region, also play a key role; apart from this, the operating expenses in excess of the EU average and the lower ratio of non-interest revenues may also serve as an explanation.<sup>16</sup> In the short run, the higher interest income is also supported by the securities portfolio in banks' balance sheets, characterised by a relatively high interest rate compared to the present yield environment.

**The low interest rate environment keeps banks' interest incomes under pressure.** In 2016, due to the base rate cut and the restructuring of the set of monetary policy instruments, the three-month interbank rate (BUBOR) dropped by almost 100 basis points. This decrease impacted banks' asset and liability sides asymmetrically: while on the asset side major portfolios are tied to BUBOR, which thus directly follow the changes in the reference rate, on the liability side – due to the low level of interest rates – there is no substantial room for the further decrease thereof or for the application of negative interest rates (see sight deposits). All of this is also reflected by the changes in the average interest rate of the concluded transactions. For example, the average cost of new housing loans with a variable rate fell almost to

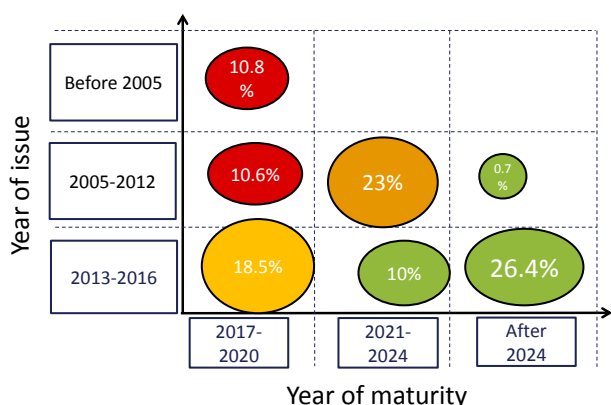
<sup>16</sup> For the detailed information on the causes of the high interest rate spreads, see: Aczél, Á. – Banai, Á. – Borsos, A. – Dancsik, B. (2016): Identifying the determinants of housing loan margins in the Hungarian banking system. Financial and Economic Review, Volume 15, Issue 4, December 2016, pp. 5-44.

Chart 51: Developments in BUBOR and in the average interest rates applied by individual banks



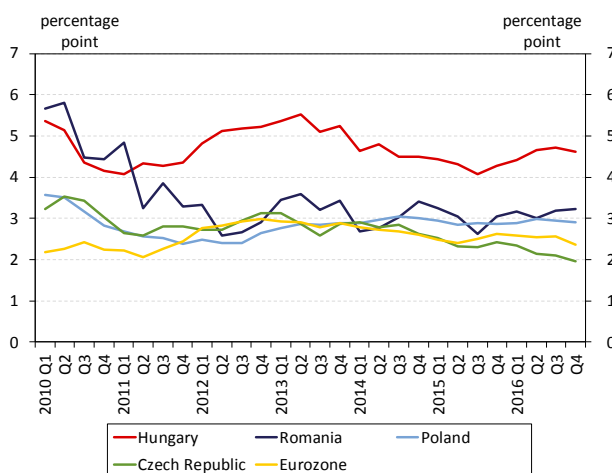
Source: MNB.

Chart 52: Distribution of the banking sector's interest-bearing security portfolio by date of issue and maturity



Source: MNB.

Chart 53: International comparison of APR-based spreads in the case of housing loans



Note: Loans with an initial rate fixation of less than 1 year are compared to the 3M interbank rates, loans with a rate fixation beyond 1 year to 3Y IRS. Source: MNB, ECB, national central banks.

the same extent as the BUBOR, while the interest rate on sight deposits practically did not change and the interest rates on fixed retail deposits also followed the fall in inter-bank rates only to a degree of 50 per cent (Chart 51). It should be noted that the average change observed in the banking sector masks substantial heterogeneity among banks: certain institutions priced in the change in the reference rate only to a smaller degree in their loans, which may imply the stronger market power of these banks.

**Looking ahead, interest income will also be reduced by the need to roll over the securities issued earlier and expiring in the near future.** The impact of the lower interest rate environment on banks' income appears over a longer time. Banks' balance sheets include a high volume of assets that were issued in the pre-crisis years, in a higher interest rate environment. The fall in interest rates and yields has no impact on the interest of fixed-rate assets, if those are held to maturity, but it does represent a risk that upon their rollover the banks can invest only in assets with much lower interest rates. 21.5 per cent of the HUF-denominated, interest-bearing securities of the banking sector and branches (a total of roughly HUF 7,000 billion) was issued before December 2012 and will expire in the next three years (Chart 52). According to our estimates, the "rollover" of this portfolio in the low interest rate environment (assuming the banks replace the expiring securities with securities that have the same maturity as the expiring ones) will have a negative impact of roughly HUF 80 billion on the annual volume of banks' interest income in three years.

**The price of new household loans significantly exceeds their marginal cost.** While the size of the interest income as a percentage of assets provides information on the profitability of the outstanding portfolio, the average interest rate of the new loans determines the future profitability of the portfolios being built at present. In certain markets, the high spread over the cost of funding may imply weak competition, particularly on the recovering housing loan market, which represents a substantial volume, where the size of the spreads is outstanding by international standards as well (Chart 53). In order to measure the intensity of competition by another methodology as well, in addition to the easily calculable spreads, we calculated the Lerner-index, which considers not only the funding costs, but also banks' operating expenses and the costs of credit risk. Based on the indices calculated both for the household and corporate segments, competition in the household segment is far weaker than in the corporate segment (see Box 7).

**BOX 7: INTENSITY OF COMPETITION IN THE HUNGARIAN HOUSEHOLD AND CORPORATE CREDIT MARKET**

The intensity of competition is one of the most important features of all goods or services markets, which ranges between two extremes, i.e. perfect competition and monopoly. In the case of perfect competition, firms are price-takers and the prices of their products are equal to their marginal costs. If the supply side of the market consists of only one firm, the market is monopolistic, and this firm can determine the prices of the products alone, usually with a high margin. Since the objective of the enterprises is to realise as high a profit as possible, they prefer less intensive competition, whereas consumers are interested in fiercer competition.

From the regulator's perspective, the situation close to the two extremes should be prevented and may give rise to intervention. When firms have excessive market strength, tighter regulation is justified for consumer protection reasons; however, in a case of extreme competition overly low prices may cause firms to go bankrupt or generate undesirable instability. Furthermore, firms are unable to spend enough on development and innovation in the absence of sufficient profit.

Accordingly, in terms of financial stability, measurement of the intensity of competition characterising the credit markets bears relevant importance. There are several methods; one of the most common procedures is the calculation of the Lerner index, which may be stated, using the product price ( $p$ ) and marginal cost ( $MC$ ) as follows:  $Lerner = \frac{p-MC}{p}$ . Thus, for example, if the market is characterised by perfect competition, the value of the Lerner index is zero, and the higher the market strength of the firms is, the higher value the index takes.

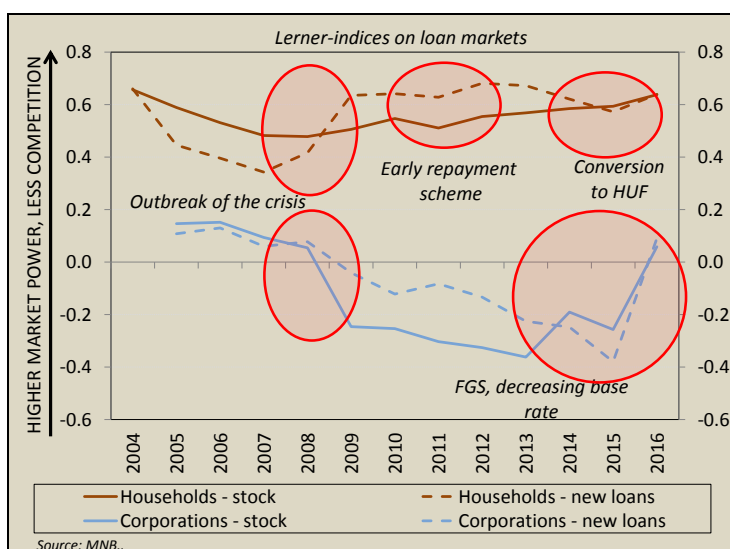
We are the first in Hungary to calculate the index separately for the corporate and the household credit market. We estimated the cost function with Stochastic Frontier Analysis<sup>17</sup> method which investigates the cost-efficiency of banks as well. Measuring efficiency is essential, because low intensity of competition is not only reflected in high prices, but can be reflected in low efficiency as well; therefore, banks with high market strength are not motivated to innovate and improve efficiency in such environment (so called “quiet life” hypothesis).

We calculated the indices both for outstanding and new loans. We took the APR in the case of household loans and the interest rate in the case of corporate loans as price, while for the marginal cost we estimated a cost function based on the data of the 10 largest banks.<sup>18</sup> We obtained the market Lerner index as the average of individual banks' Lerner indices weighted with the household and corporate credit portfolio (see Chart).

In the corporate credit market, the index shows very strong competition both in the case of the outstanding and the new loans in the observed period. By contrast, the Lerner index takes very high values in the household credit market, i.e. the banks are characterised by weak competition and significant market strength. Compared to outstanding loans, the index typically shows faster and larger changes in the case of new loans, which is primarily due to the fact that the interest rate of the first can be changed easily and swiftly.

<sup>17</sup> For more information on the methodology see for example: H. Wang (2002): Heteroscedasticity and non-monotonicity efficiency effects of a stochastic frontier model, *Journal of Productivity Analysis*. 18/3, pp. 241-253 and Molnár, J. – Nagy, M. – Horváth, Cs. (2007): A Structural Empirical Analysis of Retail Banking Competition – the Case of Hungary, *MNB Working Papers*, 2007/1.

<sup>18</sup> As regards the form of the cost function, we assumed a transcendental logarithmic type function. We used total cost as the dependent variable of the estimation and the outstanding household and corporate loans, other interest-bearing assets (as the products of the bank), and the profit deteriorating effect of the operational expenses, cost of funds and impairment loss (as the bank's costs) as independent variables; in addition, we also included the ratio of liquid assets, the size of the capital buffer and the number of branches. Since no impairment can be observed for new loans, in the case of each bank we took the average of the impairments observed annually as costs of risk.

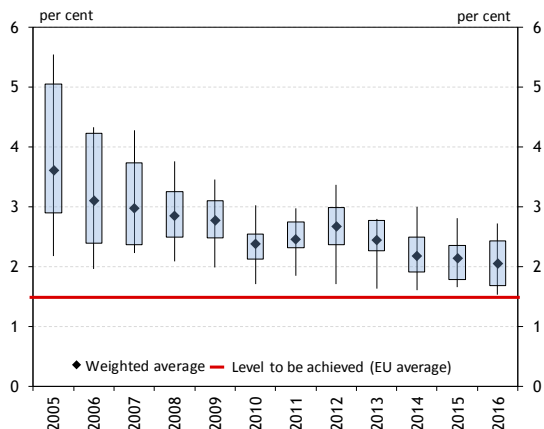


In the case of corporate loans, before the crisis the Lerner index had a low, positive value, which implies strong competition. The index of outstanding and new loans is very similar both in terms of level and dynamics. With the outbreak of the crisis, the funding costs and the credit losses rose substantially, which – in contrast to the household segment – banks were unable to enforce in the interest rates of corporate loans, and hence the value of the index became negative. This means that certain banks failed to price their expected costs consistently and undertook excessive competition. The index belonging to the outstanding portfolio and new loans drifts apart after 2009, since the banks were able to raise the interest rate spread

on new loans, while they had no opportunity for this in the case of the outstanding loans; on the other hand, as a response to the crisis, in this period they made efforts to retain their best clients, offering interest rates that sometimes did not even cover their costs. A turnaround in the development of the index can be observed from 2013, as then, as a result of the recovering economic growth, the credit risks decreased and banks' funding costs fell substantially due to the easing cycle and the FGS. The composition effect also contributed to the rise in the index: in recent years – not independently of the FGS – the structure of corporate lending shifted towards smaller companies representing smaller market strength, while an increasing ratio of large enterprises, with high bargaining power, raise funds directly from abroad. As a result of the foregoing, in 2016 both Lerner indices once again took a positive value, which suggests that the banking sector started to regain its earning capacity in the corporate credit market. However, the historically low impairment losses may have contributed to this to a large degree; nevertheless, even irrespective of this we expect further normalisation of the corporate credit market.

In the household credit market, from 2004 to 2008, as foreign currency lending soared, an intensification in competition was observed. However, after the outbreak of the crisis the index rose back to the 2004 level, almost immediately in the case of new loans and gradually in the case of outstanding loans. The early repayment scheme had a lesser effect on the index (primarily in the case of new loans), when banks' credit supply decreased and interest rates on loans rose. The forint conversion and the related interest rate cut had a temporary decreasing effect on the index in the case of new loans; however, the decrease in funding costs and credit losses in 2016 offset this change and the index bounced back to its 2014 value. In the case of the index applicable to outstanding loans, a gradual increase was observed in the same period. On the whole, the banks had substantial market power in the household credit market in 2016 as well.

Chart 54: Distribution and average of major banks' cost efficiency in Hungary

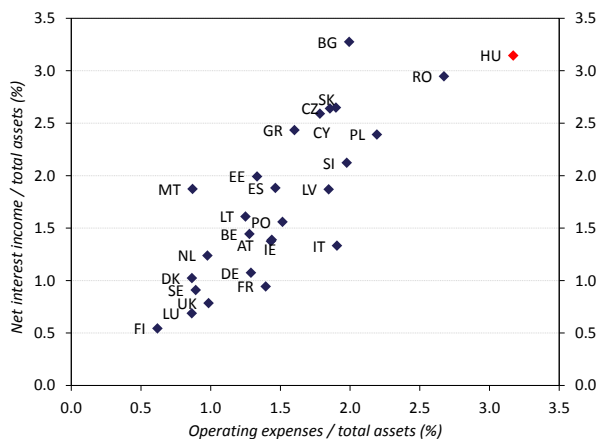


Note: The chart presents an average of the operating expenses / total assets ratio and the estimated costs of household lending / household loans outstanding. The lines are representing minimum-maximum, while rectangles are showing the range between the 25<sup>th</sup> and 75<sup>th</sup> percentiles. Source: MNB.

**There is no improvement in efficiency in most of the sector.** After the break-out of the crisis, between 2010 and 2012, a substantial deterioration in efficiency was seen, attributable on the one hand to the deleveraging of the balance sheet, and on the other to the slow adjustment in operating expenses. From 2013, improving trend was seen, but this development slowed down in 2016, and cannot be deemed as general in the whole sector. While average cost efficiency improved further in 2016, a significant portion of institutions did not follow this trend; moreover, in some cases deterioration was observed (

Chart 54). Based on the methodology presented in the Box above it can be determined, that if less efficient institutions caught up to more efficient ones, it would make a significant improvement even at the sector level, and the average of the domestic banking sector may catch up to the EU average which serves as a reference.

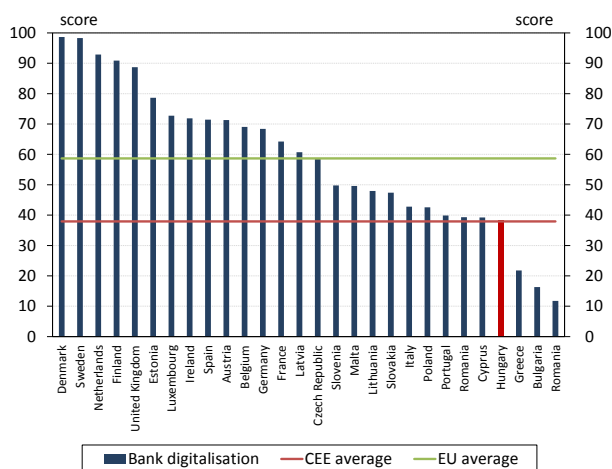
Chart 55: Net interest income and operating expenses as a proportion of total assets in an international comparison



Note: The data source is consolidated, it has data according the IFRS. Source: ECB CBD.

**In an international comparison, domestic cost efficiency is among the worst, which is covered by the high net interest income.** The domestic credit institution sector functions with a relatively high level of operating expenses in proportion to total assets (Chart 55). The high level of operating expenses is coupled with a high level of net interest income, and thus the high operating expenses are covered by the available interest income. However, with the increase in banks' cost efficiency, bank profits may improve, and thus interest income, which is high in international comparison and the operating expenses may decrease in parallel, balancing out each other's effect. Nonetheless, interest income is still at risk, as a result of the close to zero interest rate level, there is more room for repricing in the case of asset-side items than on the liabilities side.

Chart 56: EU ranking based on the Banking digitalisation subpillar of the MNB Corporate and Household Financing Index

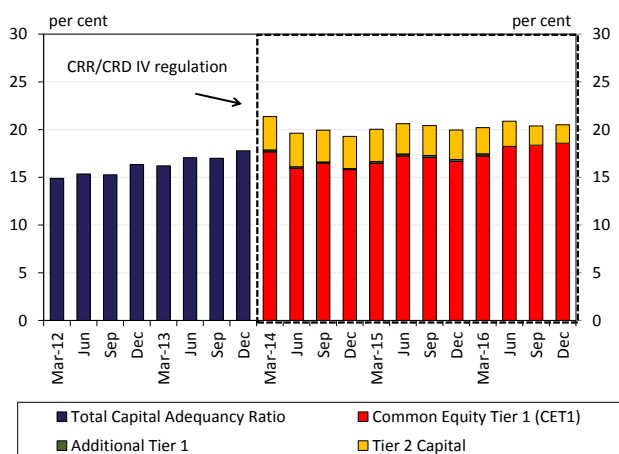


Note: The ranking of the sub-pillar was determined by calculating the average of four scaled indicators (Individuals using the internet for internet banking, Made or received digital payments (% age 15+), Made payment using a mobile phone (% age 15+), Made payment using the internet (% age 15+)).

Source: Eurostat, WB – Global Findex Database, MNB.

**Cost efficiency could be improved by expanding access to digital banking, which might contribute to banking competitiveness as well.** The availability and penetration of digital banking in Hungary lags behind in a European context, as only Greece, Romania and Bulgaria have worse positions (Chart 56). The main reason for this competitive disadvantage is that the share of the population utilising digital payments or other banking services is marginal and the trust in the security of digital services is rather limited. The share of clients using electronic payment methods is low in an EU-wide and a regional comparison as well. On the other hand, the share of clients utilising mobile payments shows promise, as Hungary is a pioneer in the CEE region. In unison with the spread of digital banking solutions and the gradual improvement in Hungarian financial literacy, the domestic banking sector might achieve significant cost reductions and efficiency improvements by developing this unexploited channel. However, this requires a pick-up on the demand side just as much as on the supply side of the market.

Chart 57: Capital adequacy ratio (CAR) of credit institutions



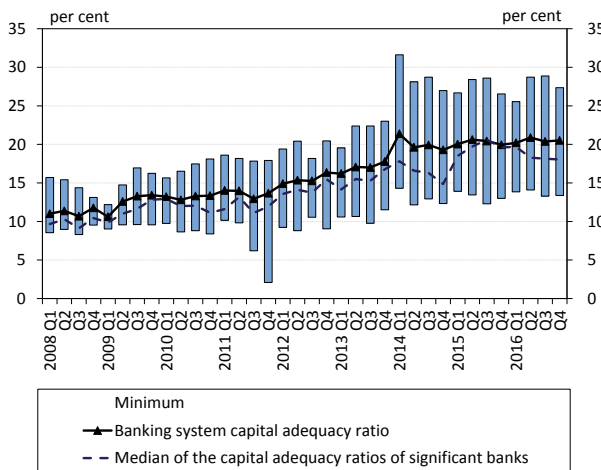
Source: MNB.

**3.3. The capital position of the banking sector is stable; the historically high profit may further increase the capital buffer**

**On the whole, credit institutions may be deemed well capitalised, but a large part of the buffers is concentrated in a few institutions.** Credit institutions’ non-consolidated capital adequacy, not including the positive after-tax result of 2016, amounted to 20.5 per cent at the end of the year (Chart 57). With the positive result, the value of the capital adequacy ratio even reaches 22 per cent, but due to the anticipated dividend payments, this only represents the potential maximum of capital adequacy. In addition to the negative result of the loss-making institutions, the primary underlying cause for the decrease in capital adequacy between the first and second half of the year is the increase in the risk-weighted exposure. Most of the banking sector’s regulatory capital continues to consist of best-quality Tier1 (CET1) capital elements in line with the relevant regulation. The prescribed capital adequacy ratio of 8.625 per cent, including the capital conservation buffer, prevailing in 2016, is satisfied by all banks.

**Banks’ capital adequacy is still characterised by strong heterogeneity.** At the end of the year, the non-consolidated capital adequacy ratio of the major institutions varied be-

**Chart 58: Distribution of the major banks' individual CARs and the average banking sector CAR**



Source: MNB.

tween 13 and 27 per cent (Chart 58). At the end of the year, the volume of the capital buffer at the banking sector level, also considering the capital conservation buffer and the SREP requirements, was HUF 1,121 billion; however, about 78 per cent of this was concentrated in the balance sheet of three institutions. In 2017, the capital requirement rate prescribed for the banks will increase again: in addition to the rise of 0.625 percentage point in the capital conservation buffer, in 2017 the capital buffer applicable to other systemically important institutions, as well as the systemic risk buffer to be accumulated for non-performing project loans will also be introduced. On the other hand, in contrast to the tightening macroprudential capital requirements, the rate of the SREP capital requirement prescribed within Pillar II decreases considerably in 2017 at sector level, primarily due to the improvement of the economic environment and the decrease in risks.

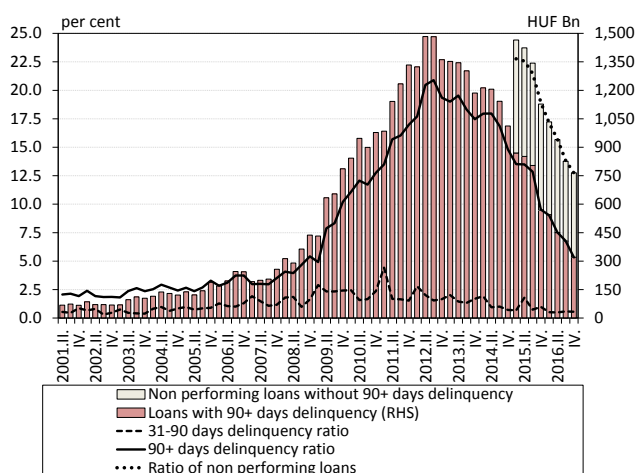
## 4 PORTFOLIO QUALITY – MARKET BASED CLEANING HAS ACCELERATED

In 2016, the ratio of non-performing loans decreased substantially in the credit institution sector's corporate and household portfolios, which was primarily attributable to the significant portfolio cleaning performed in both segments. The ratio of non-performing corporate loans decreased by one half in two years, but within project financing loans the non-performing loan ratio remains high, despite the fast cleaning. There is an increasing difference between the quality of the corporate and household portfolios. While the cleaning of the non-performing corporate loans was performed at an extremely fast rate in the past years, the household loan portfolios – particularly the mortgage loan portfolios – are characterised by slow cleaning. Although at the end of 2016 a larger volume of mortgage portfolios was removed, the credit institution sector still faces additional challenges in the management of the remaining non-performing household loan portfolio. The National Asset Management Agency already reached the planned cap, and thus it is no longer capable of supporting the purchase of the non-performing properties, whereas the number of restructuring contracts concluded within the framework of the recommendation issued by the MNB has fallen short of the expectations for the time being. It would be desirable to improve the volume and efficiency of the arrangements, bearing in mind the common interests of both the debtors and the creditors. Looking ahead, the quality of the credit institution sector's household portfolio may be influenced by several factors. On the one hand, in the case of more than one half of the former contracts with an exchange rate cap arrangement, the instalment is expected to rise by less than 15 per cent, while an increase in excess of that is likely to take place only in the case of 3 per cent of the affected clients. On the other hand, the households that became indebted under a payment-to-income ratio close to the permitted maximum, choosing a variable-rate scheme, may face a stretched income position.

### 4.1. Dynamic cleaning in the corporate portfolio, while project loans represent decreasing, but concentrated risk

**The decrease in the credit institution sector's non-performing corporate loan portfolio continued.** Similarly to previous years, there was also a large decrease in the non-performing corporate loan portfolio in 2016, which was mostly attributable to the significant portfolio cleaning by credit institutions. In 2016, the volume and ratio of non-performing corporate loans fell by HUF 363 billion and 6.2 percentage points, respectively (Chart 59). As a result, the volume of non-performing corporate loans in the credit institution sector decreased to roughly HUF 765 billion, which is nearly half of the portfolio held two years ago. When examining the volume and ratio of corporate loans overdue for more than 90 days, it can be stated that the gross portfolio of about HUF 320 billion and the 5.3 per cent ratio of this compared to the total corporate loan portfolio of the credit institution sector are already similar to the values registered at the outbreak of the crisis. In addition, the ratio of corporate loans overdue for 31-90 days was at a historically low level, i.e. 0.5 per cent, at the end of the year, which is favourable in terms of the forward-looking developments in corporate portfolio quality.

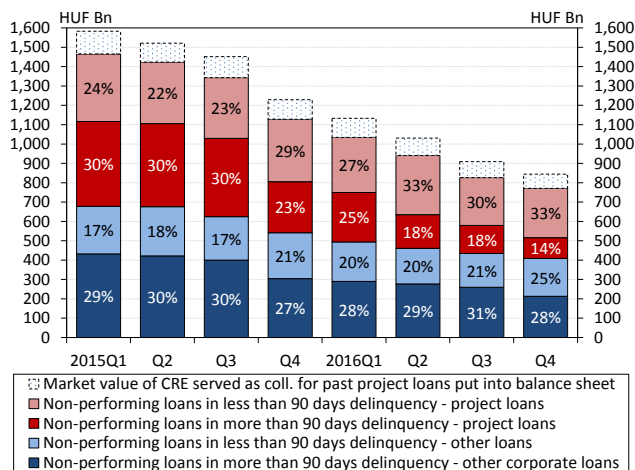
Chart 59: Share of non-performing corporate loans of the credit institution sector



Note: Calculated by clients until 2014 and by contracts from 2015.

Source: MNB.

Chart 60: Non-performing corporate loans by project and other categories and by delinquency

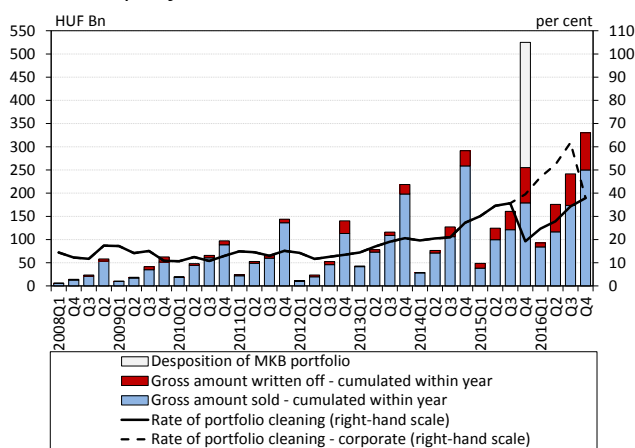


Note: Data of the credit institution sector volumes.

Source: MNB.

The ratio of project financing loans decreased, but on the whole it is still significant within the non-performing portfolio. Project financing loans still account for a large part, i.e. about 47 per cent, of the non-performing corporate loan portfolio (Chart 60). The higher risk of this segment is well demonstrated by the substantially higher non-performing loan ratio compared to other corporate loans. In the case of the first, the ratio of non-performing loans was 28 per cent at the end of 2016, while in the case of the latter this ratio was only 9 per cent. The non-performing project financing loan portfolio, together with commercial properties, which used to serve as collateral and now are taken into the balance sheet, still represents a large volume, i.e. around HUF 436 billion.<sup>19</sup> 62 per cent of non-performing project loans are concentrated at six large commercial banks, while the commercial properties are mainly concentrated in the balance sheet of three institutions. At several banks with substantial non-performing portfolios, the NPL ratio of project loans exceeded 30 per cent at year-end. On the other hand, it is a positive development that in the last two years both the volume and ratio of the non-performing projects loans decreased to a larger extent compared to other corporate loans.

Chart 61: Cleaning of the non-performing corporate portfolio in the credit institution sector



Note: The denominator of the rate of portfolio cleaning changed to nonperforming loans from loans in 90+ days delinquency in 2015 Q4

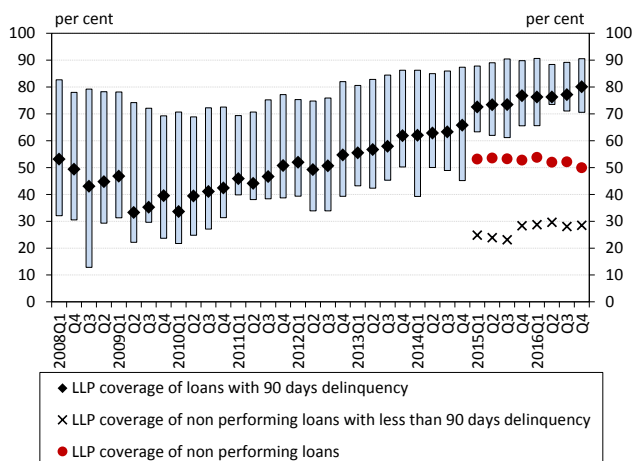
Source: MNB.

The cleaning rate of the non-performing corporate loan portfolio has accelerated. The gross volume of non-performing corporate loan portfolio cleaned in 2016, i.e. written down or sold, amounted to roughly HUF 330 billion at the level of the credit institution sector. As a result, around 38 per cent of the outstanding average non-performing corporate loan portfolio was removed from credit institutions' balance sheets in 2016. Within one year gross receivables amounting to roughly HUF 250 billion were sold, while further HUF 80 billion was written down by the credit institutions (Chart 61). 67 per cent of the cleaned gross portfolio was project financing loans. The annual cleaning ratio, net of the large volume of portfolio divestiture performed at MKB at the end of 2015, continuously increased in 2016.<sup>20</sup>

<sup>19</sup> The statistical definition used here is not identical to the definition used for the calculation of the problematic exposure applied for the SRB.

<sup>20</sup> The end-2015 resolution events related to MKB Bank are considered separately from the market transactions when assessing the underlying processes.

Chart 62: Loan loss coverage of non-performing corporate loans in the credit institution sector



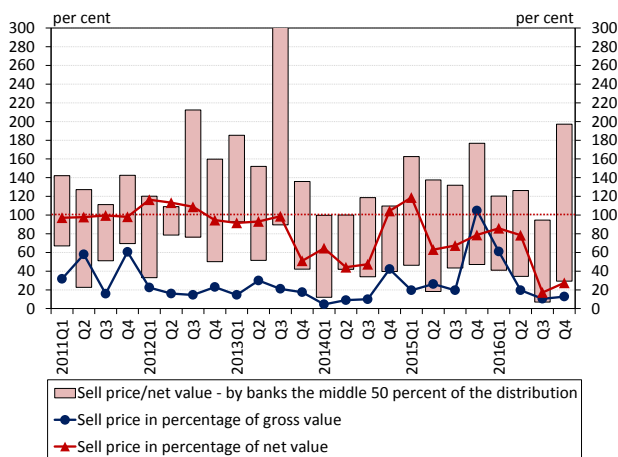
Note: The range of LLP coverage covers the larger banks.

Source: MNB.

**The non-performing corporate loan portfolio is still characterised by high coverage.**

The loan loss coverage ratio of the corporate loan portfolio overdue for more than 90 days was 80 per cent at the end of 2016, which is a historic high (Chart 62). A high coverage ratio is typical for most large banks, with only small variance between the indicators for the individual institutions. The highest and lowest coverage ratios at the end of 2016 were 91 and 71 per cent, respectively. The coverage ratio of the entire non-performing portfolio, including the non-performing loans less than 90 days past due, was 50 per cent, marking a slight decrease compared to the previous year. This is mostly attributable to the composition effect: the volume of non-performing loans less than 90 days past due, with lower coverage, increased, while that of loans more than 90 days past due decreased.

Chart 63: Recovery indicators of the sold non-performing corporate loans



Source: MNB.

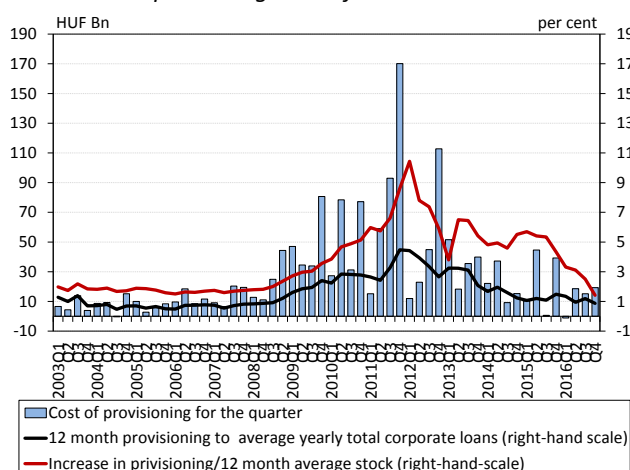
**Despite the high coverage with impairments, there are regular sales with losses.**

The non-performing loan portfolios sold in 2016, with the exception of the first quarter, were removed from the balance sheets at 14 per cent of the gross value, which cannot be regarded as a historically low recovery. However, the sales price of the sold portfolios has been below the net value of the receivables at the sector level for a considerable time, i.e. the credit institutions suffer losses in the course of cleaning (Chart 63). This phenomenon may have two explanations. On the one hand, the level of the recognised impairment may be lower than would be justified in the case of many non-performing corporate receivables. On the other hand, the recovery of the workout market already permits the sale of the worst portfolios as well; however, here the market, or eventually the liquidation price may be more volatile.

**The costs of risk applicable to the credit institution sector's corporate portfolio are at a historic low.**

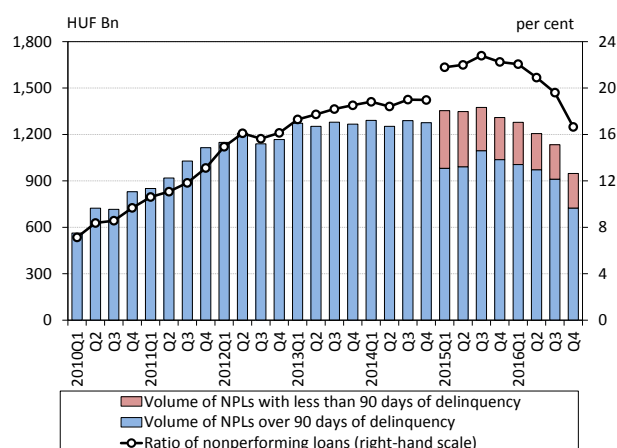
The 12-month profit deteriorating effect of the impairment and sales amounted to less than one per cent of the corporate loan portfolio of the entire credit institution sector at the end of 2016. As a result, the indicator, capturing the risk cost of the loan portfolio fell to its

**Chart 64: Cost of provisioning and sales to total loans in the corporate segment of the credit institutions**



Note: We did not include the part in the increase in provisioning which was written back in the same year. Source: MNB.

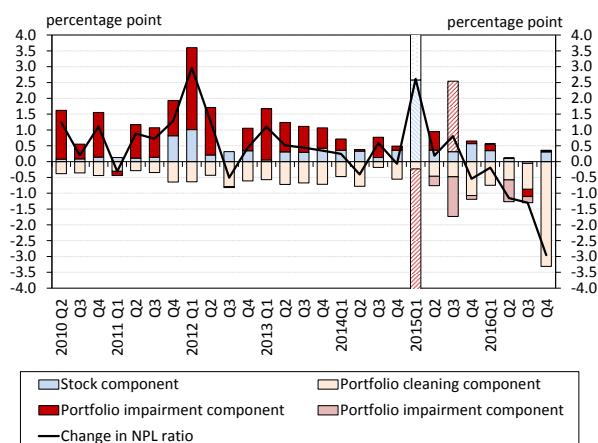
**Chart 65: Ratio of non-performing household loans in the credit institution sector by contracts**



Note: Before 2015 Q1 the non-performing loan ratio shows the ratio of loans overdue for more than 90 days.

Source: MNB.

**Chart 66: Factors affecting the changes in the ratio of non-performing household loans in the credit institution sector**



Source: MNB.

pre-crisis level. The low costs of risk may be attributable to two factors. On the one hand, it may be due to the substantially better quality of the new portfolios, and on the other hand to the previous prudent over-provisioning for the previously accumulated non-performing portfolios, as a result of which the credit institutions were able to reverse impairments in respect of certain portfolios. This is evidenced by the fact that gross new impairments (the increase in the impairment balance) were substantially higher than the net impairment adjusted for rewrites (profit deteriorating effect of impairment) (Chart 64).

**4.2. Despite the accelerated cleaning, the non-performing household loan portfolio is still high**

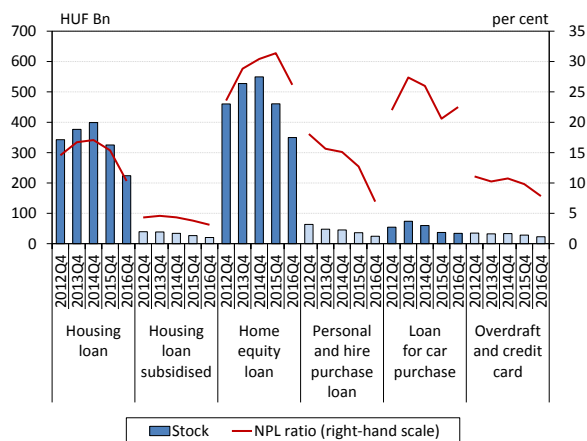
**In 2016, the ratio of non-performing household loans within the credit institution sector decreased further.**

The non-performing loan ratio fell from 22.3 per cent at the end of 2015 to 16.7 per cent, and within that the ratio of the portfolio overdue for more than 90 days dropped from 17.6 per cent to 12.7 per cent. As a result of these processes, at the end of 2016 the volume of non-performing loans amounted to HUF 948 billion, while that of the loans overdue for more than 90 days stood at HUF 725 billion in the credit institution sector (Chart 65). Looking at the mortgage loan portfolio, which is of outstanding importance in terms of financial stability and social policy, 18 per cent was non-performing, with a total gross value of about HUF 749 billion.

**The decline in the ratio of non-performing household loans was primarily the result of large-scale portfolio cleaning.**

In the first half of 2016, sold and written down household loans made a moderate contribution to the decrease in the non-performing ratio, while in the second half-year their impact rose significantly: in the fourth quarter the gross volume of portfolio sales and write-downs reduced the non-performing loan ratio by roughly 3.3 percentage points. The improvement in portfolio quality, observed around mid-year, was likely attributable to several factors. On the one hand, the end of the extraordinary foreclosure and eviction moratorium in spring 2016 may have contributed to the improvement, by giving a new way in the enforcement of claims. On the other hand, it was about this time that the MNB's recommenda-

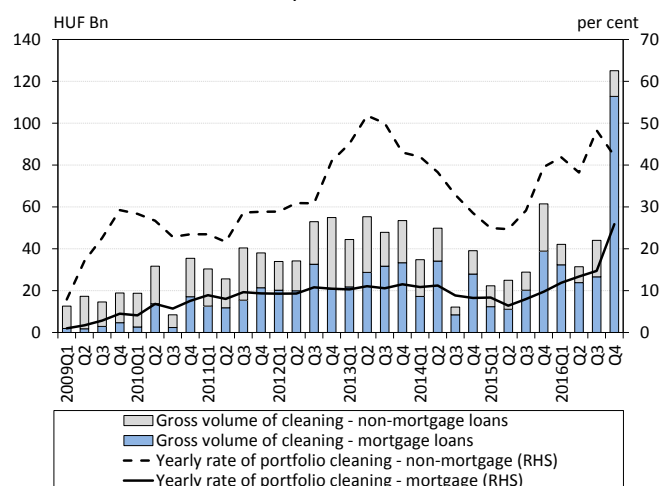
Chart 67: Ratio and balance of household loans overdue for more than 90 days by product



Note: based on data of banks and branches.

Source: MNB.

Chart 68: Cleaning ratio in the household segment by product



Note: based on data of banks and branches.

Source: MNB.

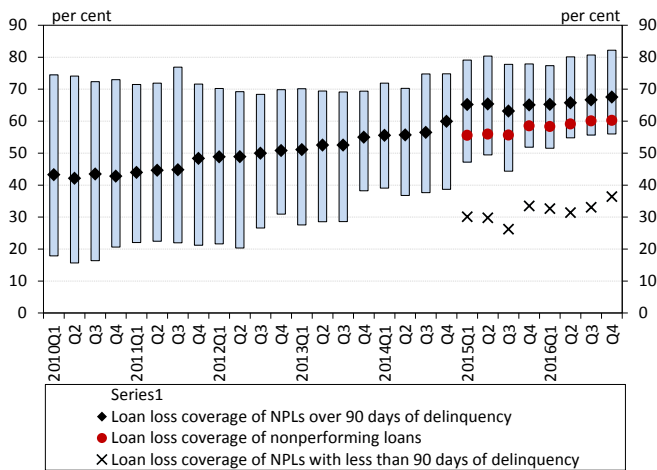
tion on the restoration of the mortgage loan debtor's solvency was published, which prescribed that lenders contact non-performing debtors according to a fixed schedule and to make an attempt for agreement. During the year – particularly in the spring and summer periods – the MNB and the Chamber of Hungarian Court Bailiffs reminded non-performing debtors, in several communication campaigns, of the importance of cooperating with lenders, which may have had a positive impact on the willingness to pay. On the whole, as the combined result of the aforementioned three components, the ratio of non-performing household loans fell roughly by 5.6 percentage points in the credit institution sector (Chart 66).<sup>21</sup>

**Compared to end-2015, the ratio of loans overdue for more than 90 days decreased in almost all product groups.** The largest decrease was seen in market-based housing loans, accounting for the largest volume: at the end of 2016, the ratio of the loans overdue for more than 90 days was 10.3 per cent. The highest non-performing ratio was still observed for home equity loans (26.2 per cent) and car purchase loans (22.5 per cent); moreover, in the latter case, an increase of 1.9 percentage points was registered compared to end-2015. The largest challenge – primarily due to their high volume – is still represented by home equity loans and housing loans with a market-based interest rate, which together account for roughly 85 per cent of the overdue portfolio (Chart 67).

**In the last quarter of 2016, there was a substantial increase in the volume of sold or written down non-performing household loans.** In the last quarter, the credit institution sector removed from its balance sheet gross HUF 113 billion of mortgage loan receivables and almost HUF 12 billion of unsecured household receivables. A significant part of the cleaned volume can be linked to the portfolio sales by a few large banks. According to our expectations, the recovery of the workout market experienced in 2016 and the more favourable legislative environment (e.g. the ceasing of the extraordinary enforcement and eviction moratorium) will stimulate portfolio sales in the future. As a result of the dynamic portfolio cleaning in the last quarter, the annual cleaning ratio of mortgage-backed household loans rose considerably, reaching roughly 25.9 per cent by the end of the year (Chart 68).

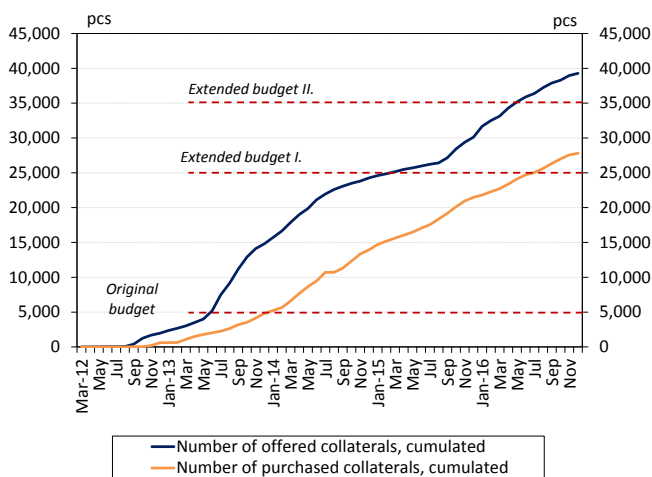
<sup>21</sup> Note: In 2015 Q1 the change in the NPL ratio was substantially influenced by three one-off items. Firstly, the settlement reduced primarily the arrears, secondly, the settlement also reduced the total loan portfolio, and finally, the NPL ratio became higher as a result of the new definition. 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 one-off effect.

Chart 69: Loan loss coverage ratio of non-performing household loans in the credit institution sector



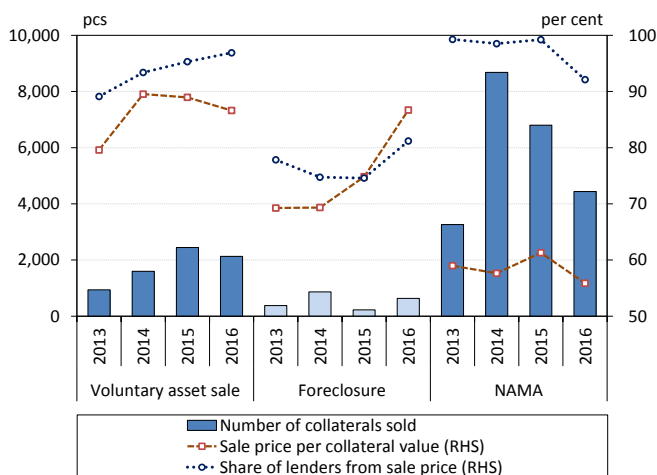
Note: range of LLP coverage covers the larger banks.  
Source: MNB.

Chart 70: Number of collateral properties offered and purchased in the NET programme



Source: NAMA.

Chart 71: Number of collateral realisations in the banking sector and average return



Source: MNB.

**The loan loss coverage of the non-performing household loans increased slightly.**

The loan loss coverage ratio of the household loan portfolio overdue for more than 90 days stood at 67.5 per cent at the end of 2016, which – similarly to the corporate loans – is a historic high (Chart 69). The variance of the coverage ratio among the institutions is still low: the highest and the lowest coverage ratio was 82 per cent and 56 per cent, respectively, at the end of 2016. The coverage ratio of the entire non-performing portfolio, including the non-performing loans less than 90 days past due, was 60 per cent, which is a slight increase compared to the end of 2015.

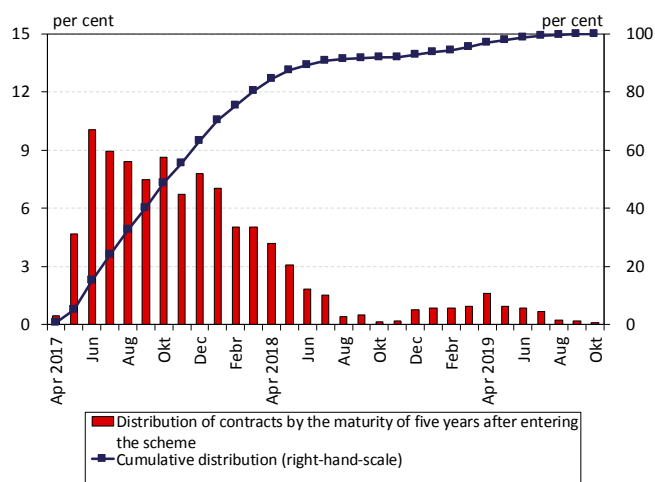
**The National Asset Management Agency still plays a key role in the cleaning of the household mortgage loan portfolio.**

The National Asset Management Agency (NAMA) purchased 6,326 collateral properties in 2016, and thus until the end of the year the Hungarian State acquired (Chart 70) altogether 27,800 properties. In total, almost 40,000 collateral properties were offered by financially distressed borrowers for purchase, and thus the limit provided by the law has practically been reached.

**The recovery realised by lenders is the highest in the case of voluntary sales.**

If the debtors' income position or willingness to cooperate does not permit sustainable restructuring, lenders often try to enforce their claims by the realisation of collateral. The return on the realisation of collateral depends strongly on the manner of enforcement: lenders realised the highest recovery in the case of voluntary sales: a sales price of 80-87 per cent compared to the last collateral value (Chart 71). The property market boom seen in the last two years also had a positive impact on the recovery of the foreclosure procedures: the sales price relative to the last collateral value rose from 70-75 per cent registered in former years to 87 per cent last year. The continuous increase in the property acquisition discounts applied by the National Asset Management Agency slightly undermined the recovery of the lenders – calculated in accordance with the foregoing – which fluctuates in the band of 56-61 per cent; however, the predictability of the programme, its relatively low administration cost and the fast liquidation performance is still attractive for banks. It is still typical that during voluntary sales and sales within the NAMA programme, lenders obtain a larger part of the sales price than in the case of a foreclosure procedure (respectively 89-97, 92-99 and 75-81 per cent). In the light of the foregoing, it is particularly important to reach a consensual agreement between the affected parties when addressing the problem of the non-performing mortgage loans.

Chart 72: Distribution of contracts with exchange rate cap arrangement by the expiry of the five years calculated from the date of entry



Source: MNB.

Looking ahead, there are two key factors that may influence the quality of the household loan portfolio. The exchange rate cap scheme introduced in 2011 and extended in 2012, played an important role in achieving a tangible reduction in the instalment burden of the foreign currency loan debtors. The regulation is an exemplary model of cooperation between the Government, the lenders and the borrowers, as it ensured the restructuring of the loan contracts in a way that – in addition to sharing the burden between participants – it also improved the borrowers' solvency and preserved their willingness to pay. The restructuring prescribed by the regulation also fits in the sustainability criteria defined in the MNB's recommendation issued in 2016. In 2015, the Act on conversion terminated the exchange rate cap regime, and stated that until the end of the fifth year after joining the exchange rate cap scheme the instalment to be paid may not be higher than it was during the time spent in the exchange rate cap regime. Thereafter, according to the law, the instalment may increase by not more than 15 per cent, which must be ensured by the banks by prolonging the maturity.<sup>22</sup> The aforementioned five years will expire between mid-2017 and early 2018 for most of the clients affected by the exchange rate cap scheme, when many of them may experience a rise in the instalment burdens (Chart 72). Based on the survey performed among the larger financial institutions, there will be no rise at all for 42 per cent of the affected debtors, it will be less than 15 per cent for 55 per cent of them and only 3 per cent of them will experience a rise of more than 15 per cent. However, the increase in the instalments will take place in a substantially better income and labour market situation, compared to the period when the exchange rate cap regulation was introduced, and thus it will only have a moderate effect on households' financial situation. In addition, in the case of the variable-rate loans, the instalments may also rise, thus the financial situation of borrowers with high payment obligation compared to their present income may become difficult.

#### BOX 8: RESULTS OF THE MNB RECOMMENDATION ON THE RECOVERY OF OVERDUE HOUSEHOLD MORTGAGE LOANS

**2016** was a **turning point** in the management of the non-performing household mortgage loans in several respects. The extraordinary foreclosure and eviction moratorium, introduced as a supplementary measure related to the settlement and the forint conversion, was lifted in March, which offered a new opportunity for portfolio cleaning. With the end of the moratorium, the MNB and the market participants expected a substantial increase in the realisation of collateral, which seems to be confirmed by the 2016 statistics.

<sup>22</sup> The instalment may increase by more than 15 per cent if the maturity cannot be prolonged in such a way that the new maturity lasts maximum until the borrower's age of 75 years.

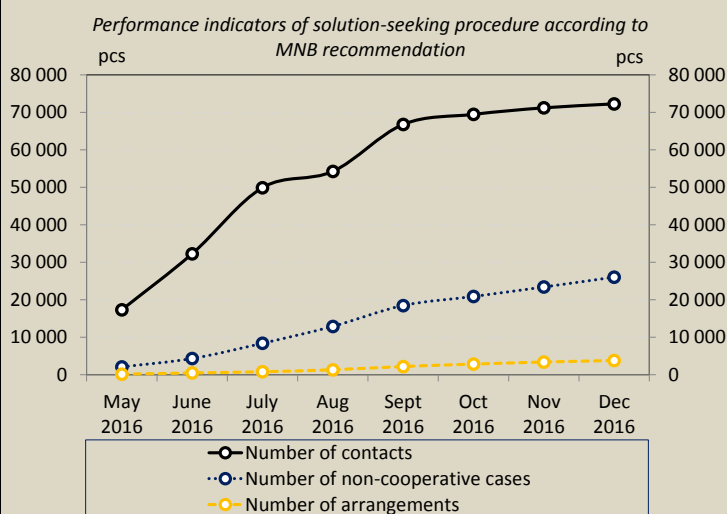
Number of collateral sales and transfers of possession in 2015 and 2016

Period	Foreclosure/sale stage			Eviction/transfer of possession stage				Total
	Sales during court foreclosures	Voluntary sales	Total	Conclusion of resolution in housing cases	Eviction following the sale outside the court foreclosure	Eviction ordered by the request of National Asset Management Agency	Transfer of possession after a successful auction	
2015	226	2 446	2 672	1 275	24	206	626	2 131
2016	635	2 129	2 764	1 097	25	360	1 734	3 216

Source: MNB, Chamber of Hungarian Court Bailiffs.

The number of court foreclosures rose spectacularly in 2016, but the number of the voluntary sales was still much higher in the last two years. According to the data provided by the Chamber of Hungarian Court Bailiffs, the number of transfers of possession clearly rose in 2016: in year-on-year terms the bailiffs managed by 49 per cent more cases (see table). The total number of transfers of possession was 3,216: almost half of the transfers of possession (1,734) were transfers of possession after a successful auction, while one-tenth thereof (360) were transfers of possession ordered at the request of the National Asset Management Agency. Compared to 2015, the increase in the number of eviction cases during the post-auction transfer of possession, was exceptionally high; in addition, there was also a large increase in the number of evictions initiated by the National Asset Management Agency. The latter figure is in line with the property market boom of recent years, which may give new momentum to banks for portfolio cleaning.

In parallel with the favourable property market and labour market processes, a **pick-up in the workout market** was also observed in 2016. While the sale of the unsecured receivables was typical in former years as well, the sale of receivables secured by property took place only as intra-group transactions within a single large group in previous years. The rise in prices encourages an increasing number of banks to reconsider their strategy related to the non-performing portfolio, i.e. the option of selling the receivables comes up more frequently instead of seeking a compromise with the debtor.



Source: MNB.

In March 2016, the MNB issued a recommendation on stimulating the permanent restoration of the solvency of defaulting household mortgage loan debtors. The lenders falling within the scope of the recommendation contacted the debtors from May 2016 at a predefined schedule: by the end of the year the first contact was established with roughly 72,000 debtors. Almost one-third of the debtors were uncooperative during the contact, thus in the case of these transactions the lenders may enforce their claim by selling the receivables or launching the foreclosure procedure. For the time being the number of compositions falls short of the MNB's expectations: until end of December 2016, the parties managed to conclude a compromise only in the case of 3,800 transactions. Almost half of these were aimed at the restructuring of the loan transaction in the total debt amount of HUF 11 billion, i.e. these transactions may be regarded as potentially "recovered".

The low number of compromises is attributable to several reasons. The search for solutions, specified in the recommendation, is a time-consuming process: 5 to 6 months may elapse from the first attempted contact until the agreement, depending on the complexity of the information collection phase. Presumably, both the debtors and lender follow a wait-and-see strategy, as the debtors expect a more favourable offer from the lender, while the lenders count on better collateral or receivable sales opportunities. Moreover, the solutions offered by the lenders were often aimed at the rescheduling of the overdue debt rather than at the long-term easing of the debt servicing (i.e. debt servicing sustainable in the long run), which may also justify the borrowers' wait and see attitude. Due to the pick-up in the workout and property markets, and the fast and predictable recovery of the sales of receivables, the sales of certain portfolios is often more attractive for the lenders than the case-by-case restructuring. However, upon making deci-

In March 2016, the MNB issued a recommendation on stimulating the permanent restoration of the solvency of defaulting household mortgage loan debtors. The lenders falling within the scope of the recommendation contacted the debtors from May 2016 at a predefined schedule: by the end of the year the first contact was established with roughly 72,000 debtors. Almost one-third of the debtors were uncooperative during the contact, thus in the case of these transactions the lenders may enforce their claim by selling the receivables or launching the foreclosure procedure. For the time being the number of compositions falls short of the MNB's expectations: until end of December 2016, the parties managed to

sions related to sustainable solutions, the banks must also bear in mind that a major increase in the portfolio sales and foreclosures also represents a risk of recovery, which in the longer run makes the agreement with the borrower more favourable, even with the risks related to restructuring.

Looking forward, it can be stated that the problem of non-performing mortgage loan debtors **may persist for years without regulatory intervention**. The population, which included roughly **136,000 borrowers** at the end of 2016, is strongly segmented, and thus targeted measures should be taken to address the problems of the distinct groups with different income positions and attitudes. There are two more homogenous groups within the non-performing mortgage loan debtors. Firstly, almost one-third of the debtors struggle with severe payment difficulties, i.e. they have no regular income or if they do, it does not exceed the minimum wage, and thus they are unable to keep up with their payment obligations. This group presumably includes a large number of households where targeted, welfare-based intervention would be necessary. The second group includes debtors whose debt can be managed in a sustainable<sup>23</sup> manner. This group includes clients who partially fulfil their payment obligations, but their debt servicing burden is relatively high compared to their income and also those with low loan-to-value ratio and marketable collateral residential property. In the first case, restructuring of the contract, while in the latter case the fostering of voluntary collateral sales may facilitate resolving the problem.

The debt settlement procedure provided by Act CV of 2015 on Personal Bankruptcy offers broad protection both for debtors and lenders during the agreement and debt servicing. In our view, in addition to these guarantees, it may be justified to encourage lenders to cooperate and bear reasonable burdens in the debt settlement procedure. The MNB recommendation aimed at the restoration of defaulted household mortgage loans puts special emphasis on the latter, by introducing the criteria of sustainable restructuring. The criteria are aligned with the purpose and rules of the debt settlement procedure and do not rule out agreements that, beyond this, create more favourable conditions for the debtor.

However, it should be noted that a substantial part of the debtors manageable in a sustainable manner may be characterised by moral hazard, i.e. despite their adequate solvency they do not pay their outstanding debt; thus, on the whole, such complex measures are necessary as a result of which the debtors' payment moral improves and on the other hand they reach the socially disadvantaged in a targeted manner. The Magyar Nemzeti Bank is able to capture primarily the financial stability aspect of the problem, thus due to its social scale it may be also necessary to provide social policy support for the search for solutions.

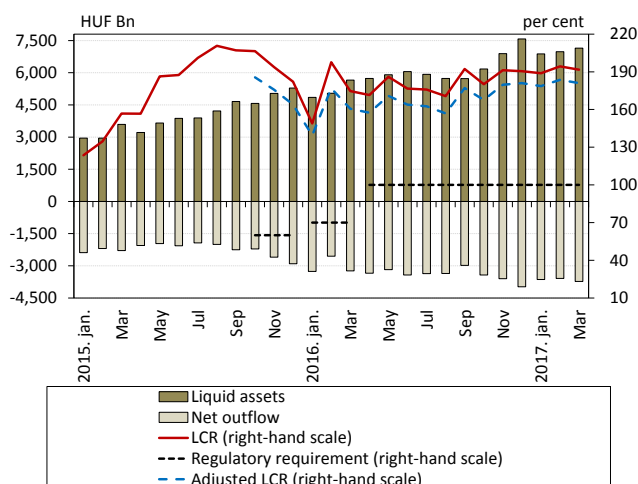
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<sup>23</sup> Those solutions are deemed sustainable that correspond to the provisions of Sections 57-59 in MNB Recommendation 2016/1.

## 5 LIQUIDITY IN THE BANKING SYSTEM – SIGNIFICANT LIQUIDITY BUFFERS, DECLINING RELIANCE ON FOREIGN FUNDING

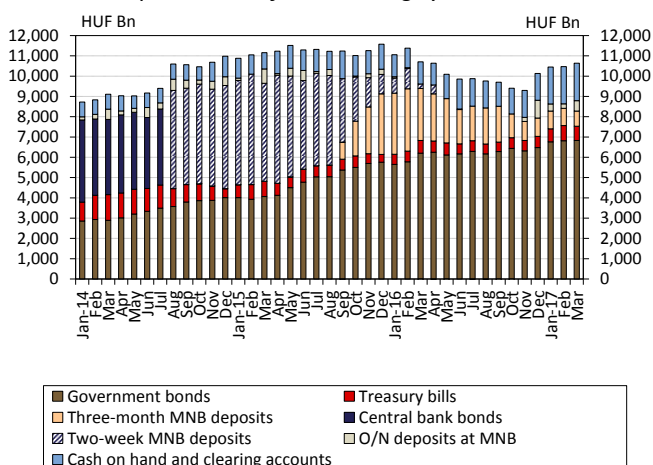
The domestic banking sector continues to possess an extremely high liquidity buffer, and the use of external liabilities has been further reduced. Over the recent period, owing to the quantitative limit of the key central bank's assets, the portfolio of government securities without any reduction in liquid assets continued to increase in the balance sheet of the banking sector, which on the one hand increased the value of the LCR indicator and slightly increased the interest risk of forint assets on the other hand. Banks have been relying on domestic funds to an increasing extent, and therefore the portfolio of external liabilities and the related vulnerability continued to decrease in this sector. At the same time, the portfolio of external liabilities of certain domestic branch offices has continued to increase, and furthermore, the swap portfolios against the forint have increased mainly due to intra-group financing.

Chart 73: Development of the LCR indicator of the banking sector and branches



Source: MNB.

Chart 74: Liquid assets of the banking system and branches



Source: MNB.

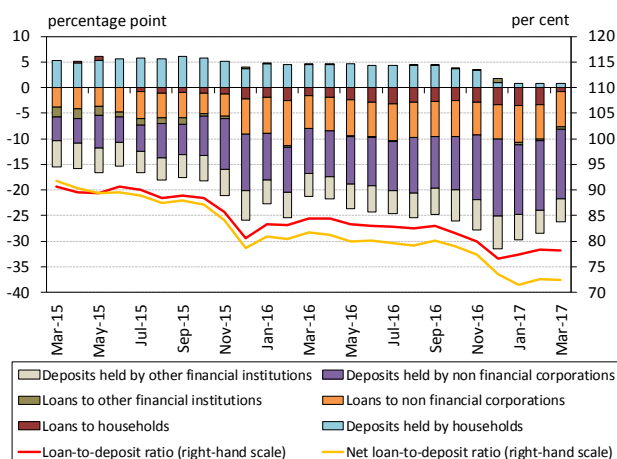
### 5.1. The liquidity position of the banking system strengthened further

The value of the LCR indicator continues to hover high above the regulatory level. The value of the LCR indicator<sup>24</sup> in the banking system stood at 192 per cent at the end of March 2017 (Chart 73). It is primarily the increased portfolio of government securities and funds that drove the expansion of the portfolio of liquid assets that has occurred since September. The concentration of liquidity buffers continues to be very high, as 60 per cent of liquid assets are concentrated in the hands of three large banks. The banks comply with the regulatory expectation of 100 per cent, both jointly and severally. Filtered of mortgage banks and building societies, the LCR indicator is almost 10 percentage points lower than the indicator of the entire banking sector, but is still high above the regulatory requirements.

In the recent period, the stock of liquid assets in the banking sector has grown, within which the ratio of government securities has continued to rise. In the recent period, the increase in the stock of government securities in balance sheets was mainly driven by the Self-financing programme of the MNB and the related decision of the Monetary Council made in September 2016, which introduced a quantitative limit on the three-month key deposit. The quantitative limit was set at HUF 900 billion for the last quarter of 2016. As a result of this measure rearrangement was registered within liquid assets, i.e. the earlier high liquidity of the banking system has not decreased as a whole. The stock of government securities projected in the balance sheet total HUF 7,528 billion in March 2017, which corresponds to 23 per cent of the balance sheet total (Chart 74). According to its nature, the stock of overnight deposits placed at the central bank shows high volatility at the end of 2016, when the increased quantity can be pri-

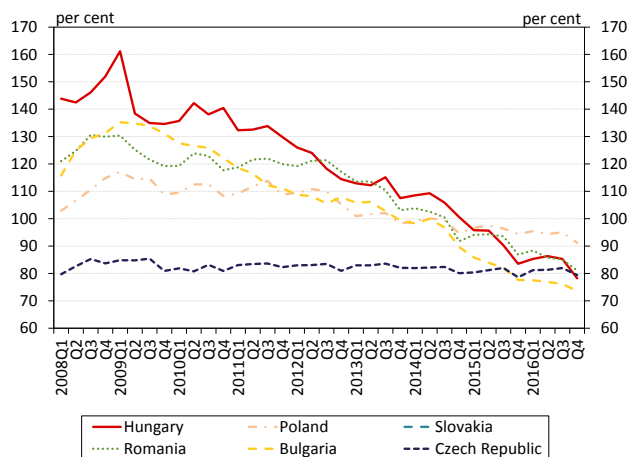
<sup>24</sup> Liquidity Coverage Ratio

**Chart 75: Decomposition of the change in the loan-to-deposit ratio of the banking sector and branches**



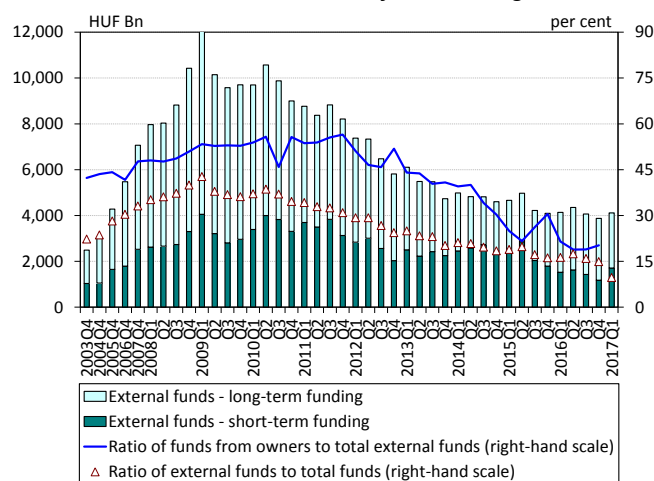
Source: MNB.

**Chart 76: Loan-to-deposit ratio of the banking sector in an international comparison**



Source: MNB, ECB.

**Chart 77: External liabilities of the banking sector**



Source: MNB.

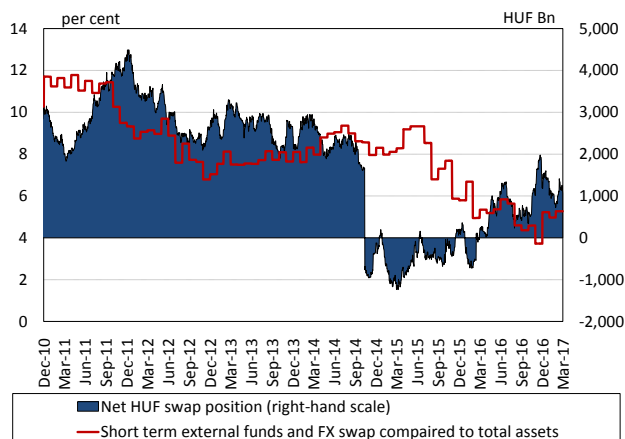
marily associated with the high, one-time expenses of the central budget at the end of the year. The increase in the stock of demand deposits registered at the beginning of 2017 was mainly caused by the increase in the deposit of one large bank placed at a foreign monetary institution.

**The value of the loan-to-deposit ratio has decreased further, primarily due to the increase of the stock of deposits.** Since 2015, in addition to the entire gross loan portfolio, we can find customer deposits of at least the same volume on the liability side (Chart 75). The decline in this indicator was mainly caused by the substantial increase in deposits held by the corporate and household segment, which showed a high value historically as well in December 2016. The corporate deposit portfolio totalled HUF 6,354 billion in March 2017, while the deposit portfolio of households was HUF 7,361 billion. Compared to December 2015, deposits have grown by 4.5 per cent, while unadjusted gross outstanding loans have decreased by almost 1 per cent. As the combined effect of all of these factors, at the end of December 2016 the loan-to-deposit ratio stood at 76.6 per cent, and the net loan-to-deposit ratio adjusted by impairment at 73.5 per cent.

**By the end of 2016, the value of the loan-to-deposit ratio was approaching the average of the CEE region.** In an international comparison, the value of the Hungarian loan-to-deposit ratio has dropped the most since the outbreak of the crisis, and thus compared to 160 per cent in 2009, its value halved by the end of 2016 (Chart 76). In total, if we assess the region in a narrower sense, we could observe a similar trend, and thus from the end of 2015 in the region the loan portfolios were already fully backed up by customer deposits.

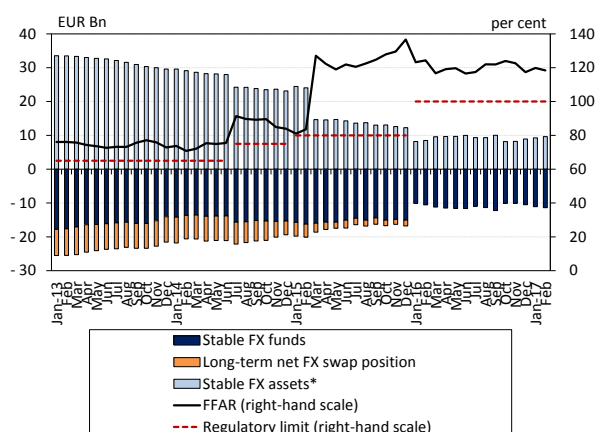
**By the end of 2016, the portfolio of short-term external liabilities had fallen to a historical low.** The short-term external debt of the banking system was approximately halved compared to the first quarter of 2015, in December 2016 it stood at an historical low, HUF 1.179 billion (Chart 77). The significant drop of short-term external debt contributed significantly to the improvement of the external vulnerability of the country. This decrease can be mainly tied to the continued decline in the placement of funding by the parent bank, which can be associated with the significant tightening of the interest rate difference between the forint and foreign currencies, in progress since 2012. In the first quarter of 2017 a slight rearrangement of short and long-term liabilities can be observed, which can be tied, for the most part, to the transactions of one large

Chart 78: Development of the net swap portfolio in the banking system and branches and short-term external funds



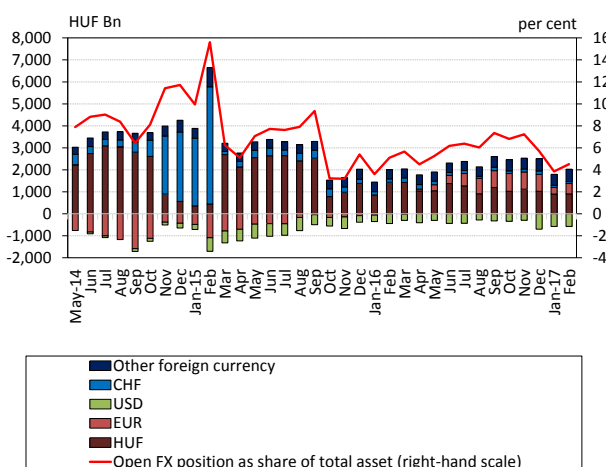
Source: MNB.

Chart 79: Development of the The foreign exchange funding adequacy ratio (FFAR) in the banking system and branches



Source: MNB.

Chart 80: Monthly development of the open, full foreign currency position of the banking sector and branches, weighted by maturity



Note: The value of open position at a value adjusted by the expected value of outflows on and off the balance sheet.

Source: MNB.

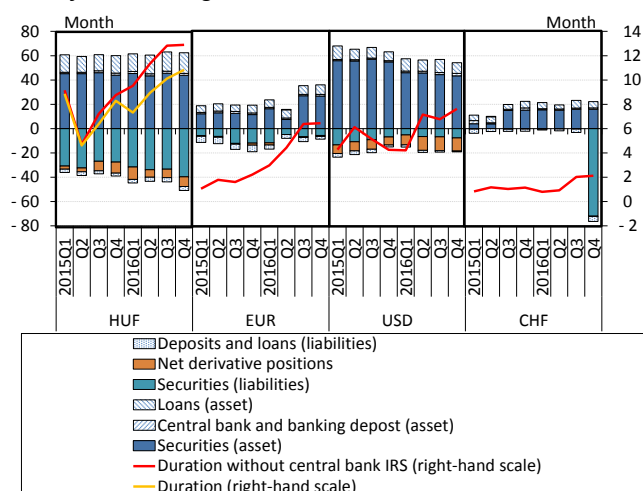
bank.

**The swap portfolios against the forint appreciated during the recent year, but the level of total external vulnerability continues to be low.** In 2016, an increase was observed in the swap portfolios against the forint, mainly driven by the intra-group transactions of large banks and the rise of the positions of domestic branch offices supported from the deposit side. Therefore, the growth is primarily supported by non-domestic financing needs (Chart 78). The low level of need for foreign funding is reflected, in addition to the forint, by the popularity of the continuous MNB swap tenders. As a result of the restriction of the key asset, the MNB has created foreign currency swap fine-tuning tools for the management of uncertainties related to the forint liquidity processes. There has been a constant flow of forint liquidity into the banking system in the quantity determined by the foreign currency swap tender. Including the tender of the thirteenth of March, the additional liquidity provided by the MNB to fourteen domestic banks and branch offices totalled HUF 550 billion in March 2017.

**The FX financing of the banking sector remains stable.** The value of the FCCI is still well above the regulatory level: at the end of February 2017 it stood at 118.4 per cent, with each bank complying individually (Chart 79). One extremely good illustration of the efficiency of the DMM indicator is that the banks are keeping the value of the indicator near the regulatory level, i.e. they regularly adjust their positions on and off the balance sheet to the risk level required by the MNB. In 2016, owing to the tightening of the regulations, the scope of financed stable FX assets narrowed, while the FX swap portfolio with a maturity of over one year was removed from the indicator.

**Considering the maturity dates, the EUR position can be characterised by continuously open state and the USD position by overcoverage.** The overall maturity risk of the main HUF and EUR items, both on and off the balance sheet, dropped significantly in the first two months of 2017, while the overcoverage of the USD position continued to increase. All in all, the factors described above reduced the asset-side maturity risk compared to the balance sheet total by 1.2 per cent, in comparison to December of the previous year (Chart 80). Compared to August, the maturity risk in the case of HUF declined slightly, falling by HUF 7, while in the case of the EUR it declined substantially, by HUF 224 billion. Both the gross decrease in the household and corporate loan portfolio, and the decrease in the secure future cash flow positions contributed to this. The overcoverage of the USD position increased by a total

Chart 81: Duration of interest sensitive assets and liabilities of the banking sector and its total interest rate risk



Note: By interest rate risk we mean the total interest rate risk of negotiable liquid assets and that of off-balance sheet items weighted by outstanding balance; we calculate its value based on estimated weighted average durations. The duration of individual assets is calculated non-weighted.

Source: MNB.

of almost HUF 290 billion, which is primarily due to the funds of the owners of two domestic branch offices.

**The interest rate risk has increased over the last 6 months compared to every major foreign currency.** In the case of HUF and CHF, the change in interest rate risks was mainly driven by the stock, while in the case of EUR and USD the stock and maturity factors both had an impact. Expressed in terms of duration, by December 2016 the interest rate risk had increased by 2.4 months for HUF, 2.1 months for EUR, 1.5 months for USD and 1.3 months for CHF compared to March (Chart 81). The increase in the interest rate risk of HUF was driven by the increase in the portfolio of securities, and within that by the increase in the portfolio of government securities, as well as the decrease in net derivative coverage. However, it is important to emphasise that in the case of the HUF position the actual existing interest rate risk is almost 16 per cent lower owing to the various IRS instruments of the central bank. The interest rate risk of USD was caused by the increase in net derivative positions on the asset side. In the case of EUR and CHF, the decrease in the liability-side net derivative positions was caused by the shortening of maturity.

#### BOX 9: DEVELOPMENT OF MORTGAGE-BASED FINANCING IN THE BANKING SECTOR

The introduction of the requirement of the MNB to involve stable HUF funds triggered significant changes in the mortgage financing market. After the conversion of mortgage loans denominated in FX, typically with a maturity of more than 10 years, and in order to ensure the healthy financing of the mortgage loan market which exhibited strong growth, the regulation prescribing the Mortgage Funding Adequacy Ratio (MFAR) introduced by the MNB took effect from 1 April 2017, with an initial compliance level of 15 per cent. As a result of the regulation, significant changes have been initiated in the mortgage financing market: new mortgage banks have been founded, a significant volume of mortgage bonds has been issued, and furthermore, with regard to the rising activity on the mortgage bond market, the legislator changed the relevant rules on mortgage liens and the operation of mortgage banks.

In order to comply with the requirements, two new mortgage banks were founded, which have completed their first successful issues. Owing to economies of scale, in order to ensure stable financing over the long term and owing to the intention to participate actively in the refinancing market, Erste Bank and K&H Bank decided to establish their own mortgage banks. The two new mortgage banks started operating in 2016, and since then they have completed their first successful issuances.

Since the middle of 2016 mortgage banks have issued significant amounts of mortgage bonds. Mortgage banks are allowed to issue mortgage bonds basically with three major objectives: in order to ensure the MFAR compliance of their own banking group, to refinance the mortgage loans of other banks, and to renew bonds reaching maturity in order to maintain their MFAR level. Since July 2016, in the banking system until the entry into force of the MFAR requirement, mortgage bonds had been issued in a total amount of HUF 440 billion, with maturities of 3 to 5 years, with both fixed and variable interest. On the subscriber side, the banking sector has appeared as a significant market actor, but actors outside the banking system also participated in the auction, including the EBRD, which is planning further significant purchases.

By the beginning of 2017, secondary market spreads had declined considerably compared to the average spread in

2016. In the case of mortgage bonds with maturities exceeding 3 years, in February 2017 the typical spreads relative to government bonds hovered around 50-60 basis points, which is much more favourable than the average spread of around 90 basis points in 2016. Owing to the upgrade by all three credit rating agencies, in the future it is expected that new mortgage bonds will also be issued with favourable spreads.

Owing to the recovery in mortgage lending, and in order to further reinforce stable funding, the MFAR requirement will be tightened further. The Financial Stability Board of the MNB has resolved that from 1 October 2018 the MFAR regulation will be amended in four areas. The required minimum level of the MFAR will be raised from 15 to 20 per cent, and thus the maturity mismatches of the banks on the balance sheet will be further reduced, and the expected issues of mortgage bonds can help further deepen the mortgage bond market. Based on the more stringent regulation, the expected maturity of the eligible funds will be raised from 1 to 2 years, and the mortgage bonds purchased by the bank will be partially “netted” against the funds eligible under the decree, encouraging market actors to involve funds from outside the banking sector at a systemic level. Finally, the mortgage bonds subscribed by building societies can be taken into account as real, stable financing from October 2018.

In the upcoming one and a half years, as a result of the changes to be implemented in 2018, new mortgage bonds may be issued in the additional volume of HUF 150-200 billion. The increasingly active and sophisticated mortgage bond market may support the growth of the household mortgage loan market in a healthy structure by enhancing the dissemination of loan products with longer interest fixation periods and the reduction of interest costs.<sup>25</sup>

There are now several examples in Europe for regulations that encourage the involvement of mortgage-based stable funds. In addition to the regulations requiring the issuance of mortgage bonds for financing residential mortgage loans that have been in effect for quite a long time in Denmark and Slovakia,<sup>26</sup> the regulatory authorities intend to mitigate the maturity mismatch by the development of the mortgage bond market in Poland as well. This is based on two major elements: on the one hand, it enforces the security properties of mortgage bonds, and on the other hand, demand is also directly stimulated through the amendment of tax and investment rules.<sup>27</sup>

<sup>25</sup> The Macroprudential Report of October 2016 contains a more detailed analysis of the anticipated effects of the MFAR requirement.

<sup>26</sup> For more details see the Act on mortgage lending and mortgage bonds in Denmark (Bekendtgørelse af lov om realkreditlån og realkreditobligationer m.v.): <https://www.retsinformation.dk/forms/r0710.aspx?id=173399> and information on the developments of the mortgage lending market in Slovakia in the corresponding report of the European Commission: [http://ec.europa.eu/economy\\_finance/publications/eeeb/pdf/eb006\\_en.pdf](http://ec.europa.eu/economy_finance/publications/eeeb/pdf/eb006_en.pdf).

<sup>27</sup> For a short description of the regulatory changes in Poland in 2016, please refer to the joint summary of the European Mortgage Federation and the European Covered Bond Council: <https://hypoblog.org/2016/06/07/new-opening-of-the-polish-covered-bond-market/>.

## 6 STRESS TESTS OF THE BANKING SYSTEM – IMPROVING SHOCK RESILIENCE EVEN WITH STRICTER REQUIREMENTS

The general resilience to liquidity stress of the institutions under review improved in the second half of 2016. In terms of the components of complex liquidity stress, the increase in interest rates and the deposit withdrawals of households reduce the LCR compliance of the banks to the highest extent. However, if we allow for short-term adjustment opportunities, most of the banks would meet the regulatory requirement even after the stress events.

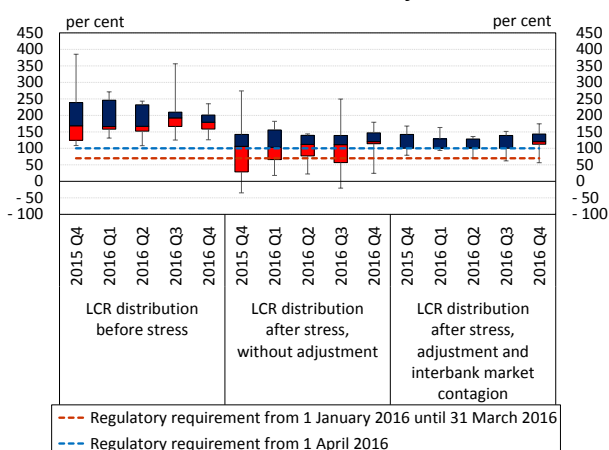
According to our credit risk stress test, the capital adequacy of banks is sufficiently high to meet the regulatory requirements even if many significant unfavourable shocks occur at the same time. In the capital adequacy assessments, we also take into account the additional impairment needs occurring due to the IFRS 9 standard. However, the strong resilience to shocks at the sectoral level is met with a significant institutional concentration of capital buffers.

Table 2: 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 of owners' funds	30 per cent	HUF/FX
Calls in corporate lines of credit	30 per cent	HUF/FX			

Source: MNB.

Chart 82: Distribution of the LCR before and after stress, based on the number of banks



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

Source: MNB.

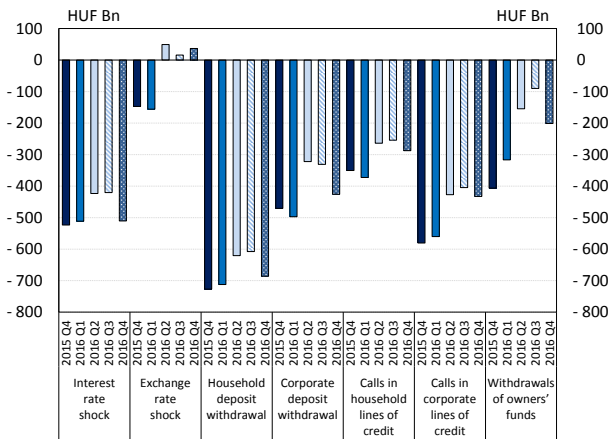
### 6.1. The institutions' resilience to liquidity stress has improved, most of the banks are able to adjust even in the stress

The short-term, complex liquidity stress test measures the impact of the simultaneous occurrence of liquidity risks, also assuming short-term adjustments of banks and the resulting contagion effects. The liquidity stress test examines the impact of an assumed low-probability, simultaneous occurrence of financial market turmoil, exchange rate shock, deposit withdrawals, calls in credit lines and withdrawals of owner's funds on the LCR. In addition, upon determining the result 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 2).<sup>28</sup>

The resilience of banks to liquidity stress improved in the second half of 2016; most of the banks are capable of meeting the regulatory requirement even in a stress scenario. Our stress test was conducted at a quarterly frequency, for the end-of-quarter LCR of the nine largest financial institutions, which account for 86 per cent of the banking sector (as a proportion of balance sheet total). Over the last six months, the methodology of our stress test has been reviewed and modified slightly, allowing the institutions more significant adjustment opportunities. As a result, more banks are capable of adjusting to the regulatory minimum, which means that our results after stress, adjustment opportunities and contagion have markedly improved (Chart 82). Hence, even though in the hypothetical case of not allowing for adjustment opportunities, due to the assumed severe negative shock, the LCR indicators of several banks would fall below the regulatory require-

<sup>28</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 with that.

Chart 83: Aggregate impact of stress components



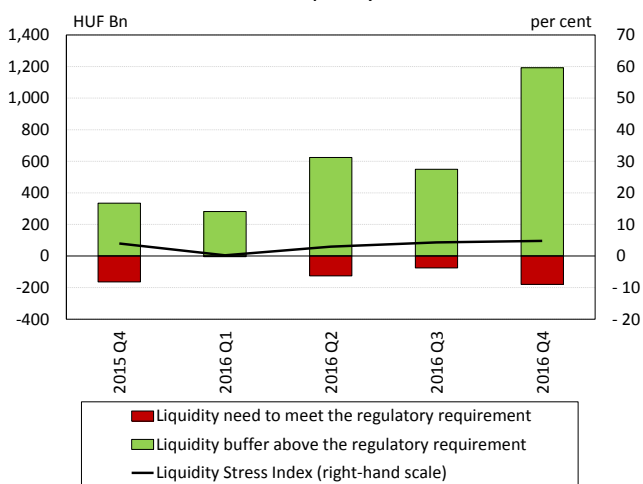
Note: To calculate the impact of each shock we applied the assumption that the given shock occurs on its own. Therefore, the sum of the impacts of the shocks does not necessarily reflect the impact of the shocks taken together.

Source: MNB.

ment; furthermore, in the third quarter of 2016 an institution would even sink under the 0 per cent illiquidity threshold, the final results calculated by also taking adjustment opportunities into account show an improving trend compared to the first half of 2016. Although in each period there are institutions that could not meet the regulatory minimum again after the stress even with the full exploitation of the adjustment opportunities, the upper quartile of the distribution of the results is rising, and its median exceeds the level of the regulatory minimum.

**Of the components of the stress, the interest rate shock as well as the shock of households' deposit withdrawals have the most significant LCR-reducing impact at a systemic level.** Due to the dominance of positions against HUF, the exchange rate shock to banks' derivative holdings has had a slight liquidity-improving effect over the recent quarters (Chart 83). However, at the aggregate level, the interest rate shock as well as the shock of households' deposit withdrawals can be considered the risk factors with the greatest impact. Compared to the second quarter of 2016, by the fourth quarter the negative effect of risk sources has increased and the positive effect of the exchange rate shock slightly decreased. Over the entire time horizon under review, the shocks of calls in corporate credit lines and withdrawals of owner's funds lost some of their importance.

Chart 84: The Liquidity Stress Index



Note: The indicator is the sum of the liquidity shortfalls in percentage points (but a maximum of 100 percentage points) compared to the 100 per cent regulatory limit of the LCR, weighted by the balance sheet total in the stress scenario. The higher the value of the indicator, the higher the liquidity risk.

Source: MNB.

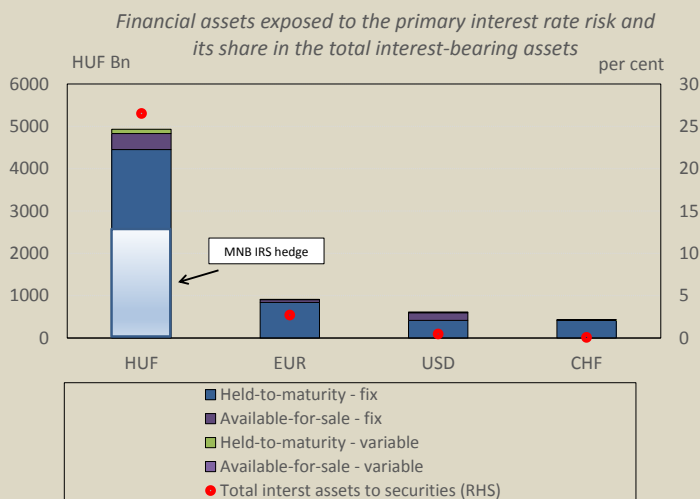
**The level of the Liquidity Stress Index has fallen significantly as a result of the methodological revision.** In order to capture the heterogeneity among institutions, an analogous version of the previous Liquidity Stress Index was formulated. The index aggregates the after-stress percentage point liquidity shortfalls compared to the regulatory limit calculated at the individual bank level by considering the size of the given bank. Taking into account the size of the institutions allows us to draw conclusions concerning the magnitude of a possible problem within the banking sector. The Liquidity Stress Index defined in this manner has decreased significantly as a result of the aforementioned methodological revision. The index showed a slight increase during 2016 from its historical low of 0.21 per cent in the first quarter of 2016, and thus in the fourth quarter its value became 4.78 per cent (Chart 84). At the end of 2016 banks' liquidity surplus exceeding the regulatory limit amounted to HUF 1,192.6 billion, while their liquidity needs necessary for meeting the regulatory requirement amounted to HUF 179.6 billion.

**BOX 10: LIQUIDITY INTEREST RISK IN THE BANKING SYSTEM**

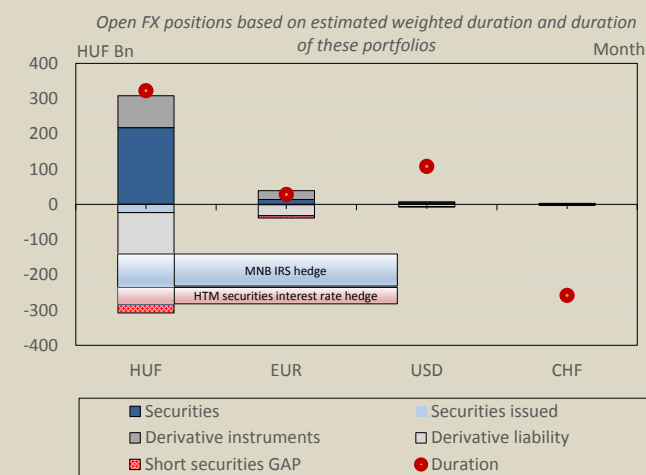
In the context of the persistently low interest environment that developed in the period after the crisis, there was less discussion of the interest rate risk of positions with fixed maturity. This issue was once again put on the agenda, primarily because central banks in the world had to take action as a result of the rising inflation. The low interest rate environment means that the risks which are based on the increasing interest rates in the future are a topical issue. As a result of the existing extremely low baseline values, even normal interest raises will have a strong effect owing to the rising yield curves.

The Fed announced 3 interest rate increases for 2017, with the first increase of 25 basis points taking place in March. So far, this has not been followed by tightening of the same extent in the euro area. In Hungary, based on the FRA rates, at present analysts expect an increase in interest rates by the end of 2018, but it is important to emphasise that the short side of the FRA yield curve has remained low for several years, i.e. the interest rate expectations have been shifting constantly.

The interest rate risk of the Hungarian banking sector has been traditionally low, as the ratio of assets with variable interest in the balance sheet is high. In the recent period, banks have increased their liquid asset portfolios, and within these portfolios especially their holdings of government securities denominated in HUF primarily due to the need to meet the liquidity requirements of the regulatory authority, and



Source: MNB.



Source: MNB.

partly because of the Self-financing programme and the quantitative limit of the key central bank assets. However, the total exposure to securities with primary interest rate risk of the banking sector constitutes only 15.7 per cent of the total portfolio of interest-bearing assets, excluding the portfolios provided by the central bank, covered by CIRS and LIRS<sup>29</sup> transactions. It strengthens the profit-neutral nature of the interest rate risk of the banking sector that the overwhelming majority of the securities are recognised in investment, which means that they are typically held until maturity. Furthermore, holding until maturity is obligatory concerning the large banks migrating to the IFRS accounting standards in 2017. In total, this means that although the coverage, acceptance value of these securities would decrease as a result of a possible raise of interests, still, this reduction in coverage value would not adversely affect the reported P&L of the banking sector, because of the fixed cash inflow.

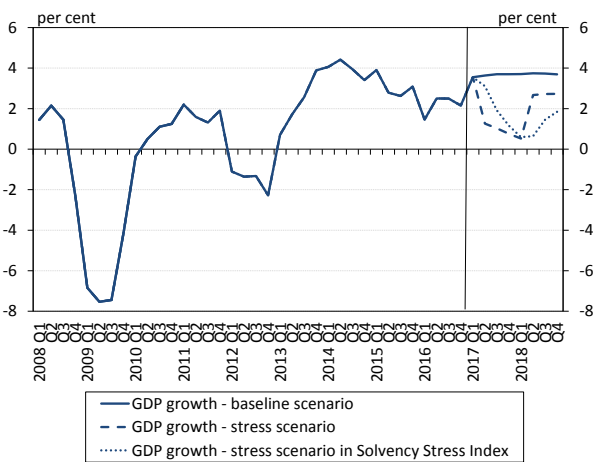
The risk protection of Hungarian banks is well-organised, supplemented by the CIRS and LIRS tenders, even against interest risks that may build up from a low baseline. As a result of an interest rate increase occurring simultaneously on the HUF, EUR, USD and CHF markets, the coverage value of the entire array of positions exposed to liquid primary

<sup>29</sup> The MNB's central bank interest rate swap and lending interest rate swap instruments. <http://www.mnb.hu/en/monetary-policy/monetary-policy-instruments/tenders-quick-tenders/interest-rate-swap-tenders>

interest rate risk would decrease by less than HUF 56 billion, which is lower than 0.8 per cent of the asset-side exposures. The instant profit impact of the presented interest rate increases – bearing interest rate coverage of long positions – would only be about HUF 7.5 billion even in the case of the most severe scenario. Based on the above, the liquid positions of the Hungarian banking sector can be considered well protected against any increase in yields and interest rates in the future.

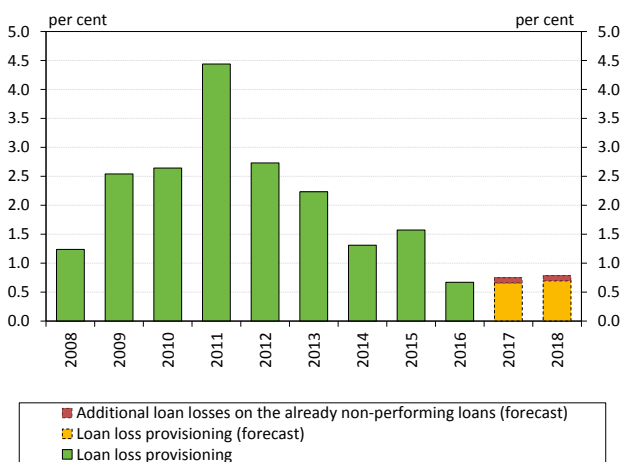
The decreasing in the central bank's IRS will not bring major change in the stocks and smaller rearrangements can occur due to the newly issued mortgage and MREL<sup>30</sup> compatible securities. The stock of government securities without IRS exceeds the value of the pre-MNB's IRS period by more than HUF 1,000 billion. According to these facts, the current liquidity needs of the banking sector result in market-based hedging of interest rate risk, mainly with off-balance sheet items. Over the longer term, however, the tightening interest rate environment can lead to decreasing liquidity.

Chart 85: GDP growth rate in the scenarios  
(compared to the corresponding period of the previous year)



Source: MNB.

Chart 86: Loan loss rate for the corporate portfolio in the stress scenario



Source: MNB.

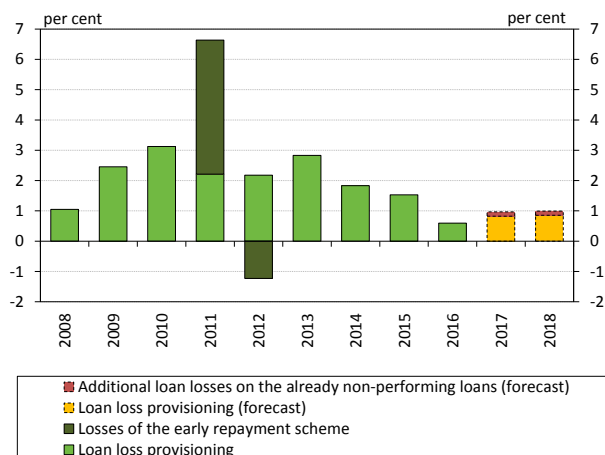
## 6.2. The solvency situation of the banking system is strong, and no additional capital requirement is calculated in the stress scenario

In the stress scenario, we examine the combined effect of a significant economic slowdown, a weaker exchange rate and a higher interest rate level on the capital adequacy of banks. Our stress scenario was formulated considering the forecast published in the March Inflation Report as the baseline scenario and assuming the simultaneous occurrence of external and internal unfavourable shocks. In doing so, we consider the simultaneous occurrence of a slowdown in the emerging economies, turbulence in the financial markets, an increase in global inflation and a weaker-than-expected domestic investment path. In accordance with the external shocks mentioned already, weaker economic growth (Chart 85) would be accompanied with gradual FX weakening and an increase in interest rates. Thus, in the second year of the stress scenario, compared to the baseline scenario, we assumed a 12.2 per cent weaker exchange rate and a 212 basis points higher interest rate level on average.

In the case of the corporate loan portfolio, in the baseline scenario we anticipated slightly decreasing losses, while in the stress scenario we used somewhat higher lending losses than in the previous year. As a result of more favourable macroeconomic circumstances and the conservative approach of the banks to risk-taking, the risk of corporate loans issued after the crisis is much lower than that of previous ones, and thus the shock-absorbing capacity of the whole portfolio has been constantly improving. Consequently, the cost of provisioning is relatively low even in a stress situation. While a further slight decline in loan losses is expected over the forecast horizon in the baseline sce-

<sup>30</sup> Minimum requirement for own funds and eligible liabilities according to Directive 2014/59/EU for the recovery and resolution of credit institutions.

Chart 87: Loan loss rate for the household portfolio in the stress scenario



Source: MNB.

nario, we anticipate only slightly higher ratios than last year in the stress scenario (Chart 86).

**We expect that the lending losses of household loan portfolios will remain stable in the baseline scenario, while in the stress scenario we anticipate a moderate increase.** In the household portfolio, the conversion of FX loans into HUF combined with the low interest rate level considerably reduced the parameters of credit risk, as well as their sensitivity to stress situations. Accordingly, in the baseline scenario we expect lending losses similar to those of the previous year, while in the stress scenario we project a higher level that is still lower than the levels registered after the crisis (Chart 87).

**Introduction of IFRS 9 will probably result in additional impairment recognition by the banks.** With implementation of the IFRS 9 accounting standard, it will become necessary to recognise additional impairment for the performing portfolios as well. The institutions will have to keep a volume of impairment on performing portfolios that equals the lending losses expected by them for the given portfolio looking forward to a time horizon of one year. In our stress test, we applied this effect in such a manner that in each scenario we took the lending loss expected for the last year and recognised it in the capital according to the rules applying to the introduction of the new standard. Since in our stress scenario the lending loss expected for 2018 will increase, the implementation cost of the IFRS 9 standard is higher in the stress scenario. The application of the new standard could also bring about changes in the impairment practice of non-performing portfolios, however, the extent of the impact to be recognised in the beginning depends strongly on the quality of the given non-performing portfolio and the already recognised impairments. Since at present we do not have appropriately detailed data to quantify this, for the time being we disregarded the impact on the non-performing portfolio. This assumption is equivalent to stating that so far, every institution has impaired their non-performing portfolio as prudently as possible.

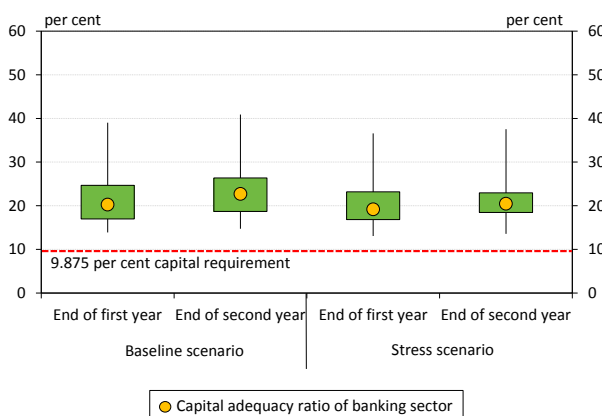
**Compared to our earlier stress tests, we project more favourable profitability for the banks in each scenario.** In line with the improvement assumed in the macrolevel scenarios and registered in the profitability of the banks, compared to our former stress tests we arrived at more favourable estimates for the earnings before loan losses and bank tax. In the stress scenario, we only applied 83 per cent of the income realised in the baseline scenario, however, it still significantly exceeds lending losses. Therefore, a significant part of the institutions remains profitable even

Table 3: Stress test results at 8 and 9.875 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)	2 032	2 433	1 894	2 117
9.875% capital requirements	Capital need of banks (HUF Bn)	0	0	0	0
	Capital buffer of banks above requirement (HUF Bn)	1 721	2 123	1 576	1 799

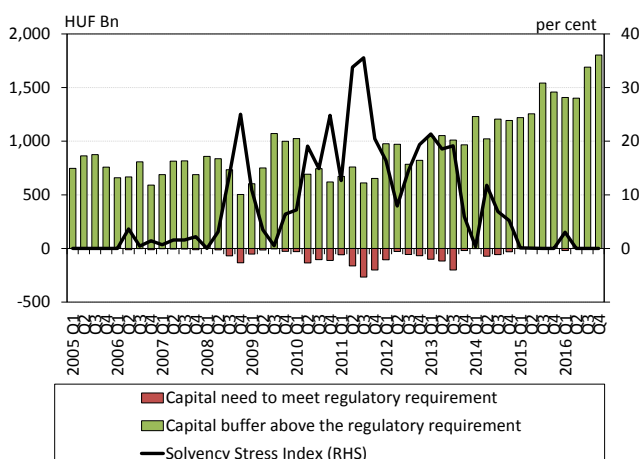
Source: MNB.

Chart 88: Distribution of the capital adequacy ratio based on the number of banks



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

Chart 89: Solvency Stress Index



Note: The indicator is the sum of normalised capital shortages relative to the regulatory minimum level, weighted by the capital requirement in a common stress scenario calculated with fixed shock. The higher the value of the index, the higher the solvency risk. Source: MNB.

in the stress scenario.

Considering market risks, in the case of the interest rate shock significant effects could occur at the level of the individual institutions, while the effect of the FX shock is negligible. An interest rate shock could result in a non-negligible profit or loss for some institutions, but at the systemic level the resulting market risk is still not outstanding. Disregarding the strategic open positions, the FX rate position of the banking system is almost completely closed, and therefore an FX shock will not exert any significant effect through market risk.

Every bank meets the regulatory requirement both in the baseline and stress scenarios; at the same time, the sectoral level capital buffer is still concentrated. At the end of the time horizon of our stress test we require a capital adequacy of 9.875 per cent, and every institution complies with this in both scenarios (Table 3). The capital buffer and capital adequacy of the banking system is high even at the end of the stress scenario, as average capital adequacy exceeds 20 per cent even at the end of the stress scenario (Chart 88). However, this is strongly influenced by the fact that we do not take into account either dividend payments or the expansion of the loan portfolio. In addition, it still applies that the capital buffer of the banking system is highly concentrated, and therefore, heterogeneity among the institutions remains in this respect.

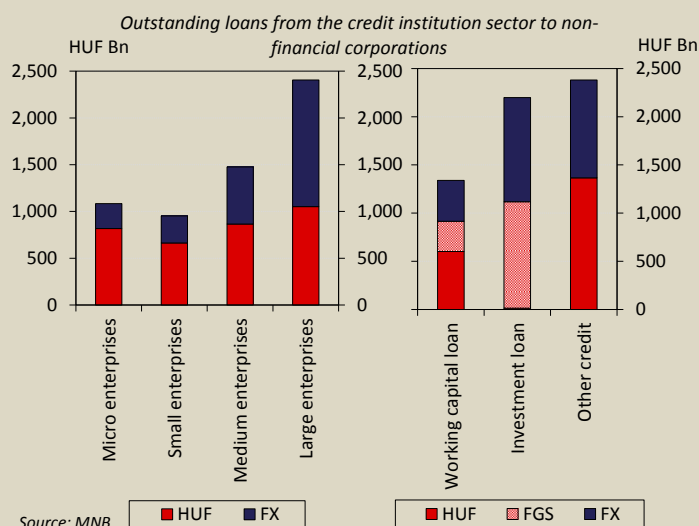
Based on the Solvency Stress Index, the shock-absorbing capacity of the banking system is still strong. Even if annually increasing capital requirements are taken into account, the value of the Solvency Stress Index is very low, still standing at its theoretical minimum (Chart 89). In calculating the index, we applied the effect of the implementation of IFRS 9 not only in the last scenario, but also retroactively, for each of the scenarios launched from the initial date of 2016 according to the assumptions detailed earlier, since the horizon of these scenarios will be closed in 2018 already, and therefore they include the date of the introduction.

**BOX 11: INTEREST RATE RISK OF NON-FINANCIAL ENTERPRISES**

Considering the potential changes to be expected of the cyclically low interest rates, in the following part we assess the open interest rate risk, the vulnerable groups of companies and their characteristics by the balance sheet of credit institutions and the individual data of the companies.

At the end of 2016, domestic companies held loan portfolios at credit institutions in the value of some six thousand billion forints. 43 per cent of these were loans denominated in a foreign currency, while 57 per cent was composed of HUF loans.

The portfolio of HUF loans is distributed roughly evenly among the individual corporate size categories, and it is mainly large companies that borrow FX loans, companies that typically manage their interests rate risks more consciously; furthermore, their financing options are also more favourable than those of the SME sector. The bank loans of SMEs are mainly comprised of HUF loans (67 per cent), so in the following part the HUF interest rate risk will be assessed in more detail. Within the category of HUF loans, those with variable interest – usually tied to the 3-month inter-bank rate – directly exposed to changes in the HUF yield environment through instant interest repricing, while in the case of loans with fixed interest



the impact of an interest raise will only be realised by the company upon the expiry of the interest period or when a new loan is borrowed (refinancing, extension). In Hungary, typically corporate loans with variable interest have been issued over the recent years, the only exception to this – of significance at an aggregate level – is the portfolio of loans provided within the framework of the Funding for Growth Scheme. It is a safeguard for the companies that the interest rate of loans provided in the framework of the programme are fixed for the entire term of the loan. In the balance sheets of companies direct HUF interest rate risk may be associated with a loan portfolio of HUF 2,000 billion. If the interest rate of these rises by 1 percentage point while everything else remains unchanged, it would result in an additional burden of some HUF 20 billion annually on them. Naturally, they have various channels of adaptation, although to varying extents, which could mitigate this additional expenditure. Large companies with a parent company have the most alternative options. This additional burden of HUF 20 billion cannot be considered as a significant for stability risk at aggregate level. However, if the burden is not distributed evenly, rather there are some identifiable expressly interest sensitive sectors, it could still raise some stability issues.

In the following part we assessed the financing structure of the domestic corporate sector and within that the interest rate risk of companies in more detail, relying on the individual level data of the companies. 23 per cent of the 261,000 companies operating in the form of business partnerships take funds from banks. In the SME segment, 87 per cent of the 65,000 companies with loans use funds of domestic banks and almost half of the actors of the sector, 31,000 enterprises have borrowed from the Funding for Growth Scheme. 6 per cent of undertakings using funds of domestic banks only hold FX loans, 8 per cent both HUF and FX loans and 86 per cent only HUF loans. Of those companies that also hold HUF loans, 85 per cent use HUF loans with variable interest, i.e. 78 per cent of the entire corporate sector using domestic bank loans are exposed to interest rate risk to some extent. In determining the interest rate

*Variable interest rate exposure and buffer of sectors*

	Low buffer	High buffer
Low exposure	Real estate, Construction, Transportation	Manufacturing, Energy
High exposure	Trade, Communication	Accommodation, Agriculture

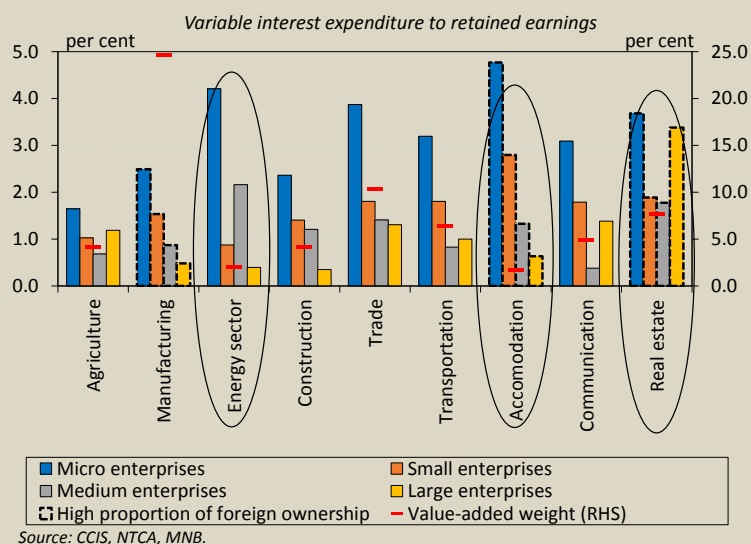
Note: At exposure we used variable interest rate credits, at buffers we used retained profit at total assets  
Source: CCIS, NTCA, MNB.

risk of companies in more detail, relying on the individual level data of the companies. 23 per cent of the 261,000 companies operating in the form of business partnerships take funds from banks. In the SME segment, 87 per cent of the 65,000 companies with loans use funds of domestic banks and almost half of the actors of the sector, 31,000 enterprises have borrowed from the Funding for Growth Scheme. 6 per cent of undertakings using funds of domestic banks only hold FX loans, 8 per cent both HUF and FX loans and 86 per cent only HUF loans. Of those companies that also hold HUF loans, 85 per cent use HUF loans with variable interest, i.e. 78 per cent of the entire corporate sector using domestic bank loans are exposed to interest rate risk to some extent. In determining the interest rate

risk, we assessed the robustness of the companies, i.e. to what extent is the Hungarian corporate sector capable of absorbing the shock in the case of a possible increase of burdens without coverage. The energy, trading, real property, communication and accommodation sectors have a relatively high level of exposure to loans on average, as a proportion of their balance sheet total. In addition, apart from the branch of communication this is coupled with relatively low retained earnings, which means that in these sectors the increased interest expenditure could result in a significant additional burden to enterprises that belong to the group of companies with relatively low resistance.

In order to assess distribution within branches in more detail, we have sorted the companies according to size and assessed what percentage of the retained earnings of previous years would be absorbed in these identified groups annually by the HUF expenditure entailed by an interest rate raised by 1 percentage point.

The levels of the raised interest expenditure proportionate with the retained earnings usually decrease with the increase in company size, and the micro enterprises have the lowest interest absorbing capability. Assessed from a sectoral approach, the increased interest burden to retained earnings is the highest for companies operating in investment-intensive areas. The highest sensitivity can be registered in the real estate sector, but the energy and accommodation sectors can also be allocated to this group, in which the higher than average interest sensitivity is largely focused in one size category, in the balance sheet of micro enterprises. At the same time, the proportion of these branches in the national economy can be considered low, together they contribute 11 per cent of the added value.

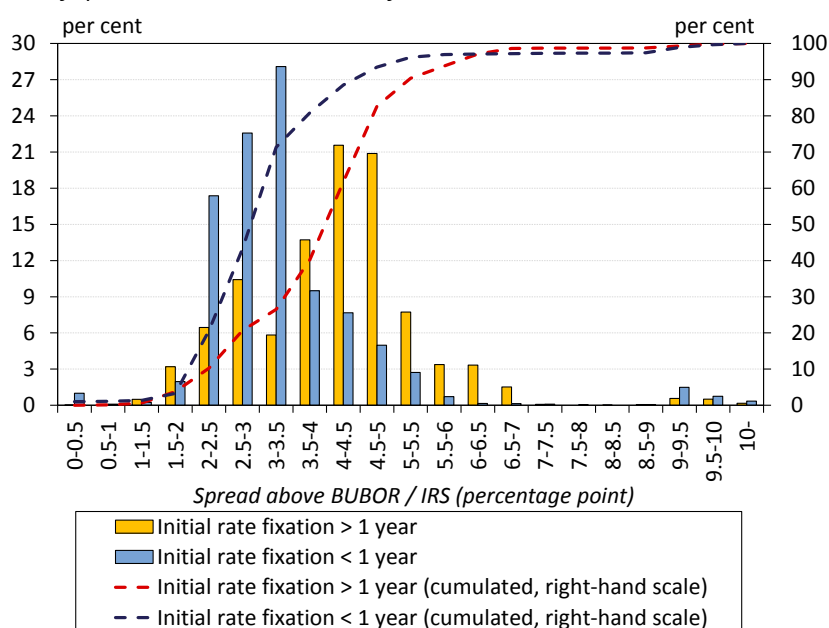


The retained earnings accumulated in the previous years should basically serve as a buffer for loss bearing, while the interest expenditures of companies should be primarily covered by their profit earned in the given year. The most recent available actual data could give some indication about the income outlooks characteristic on average of a particular industry, which we tried to measure by the return on equity of companies. In the most endangered micro enterprises the income on equity varies very substantially, the average corporate return on equity (ROE) is between 7-22 per cent. In the energy, accommodation and real estate sectors this value hovers around 7, 10 and 11 per cent, close to the lower limit. Continuing our review with large companies, in the real estate sector the ROE of 12 per cent is coupled with an interest burden of about 3 per cent compared to the retained earnings, which once again indicates a relatively high level of risk. At the same time, among medium and large companies the accommodation and real estate sectors are characterised by a higher ratio of foreign ownership, which usually broadens the opportunities of companies belonging to this sectors for adaptation, thereby indirectly reducing the impact of interest rate risk on income. In addition, the high growth potential characterising the cyclical situation of the sector is another mitigating factor. Looking ahead, however, risks can increase if the more vulnerable companies will have to face rising wage pressure, in addition to the higher interest burden.

## 7 A NEW PRODUCT ON THE CREDIT MARKET: THE CERTIFIED CONSUMER-FRIENDLY HOUSING LOAN CONCEPT OF THE MNB

The MNB monitors the status of the credit markets on a continuous basis, paying special attention to ensuring that not only the quantitative, but also the qualitative characteristics of lending develop soundly. Although retail lending shows signs of picking up in terms of volume, based on certain criteria of disbursed loans, there may still be room for further improvement in the market. In the housing loan market, there is a substantial difference in spreads, depending on the interest type of the loan. In the case of variable-rate loans the spread over the reference rate is already converging to the values observed in the countries in the region, whereas this is not the case with loans featuring longer interest fixation periods. As regards the Hungarian data, when calculating the interest rate of new contracts, for almost three fourths of the variable-rate loan contracts, the spread over the funding cost corresponding to the length of the interest fixation period does not exceed 350 basis points, while in the case of loans with longer fixation periods, this is true for less than one third of the contracts (Chart 90).

Chart 90: Distribution of spreads over IRS and BUBOR for variable-rate loans and those with interest rate fixation



Source: MNB.

In comparing the interest rate to the marginal cost of loans, we found that the margin applied by the banks is extremely high, which implies the outstanding strength of certain market participants and thus the weakness of bank competition. The problem is concentrated in loans featuring interest rate fixation of more than one year, which may imply that consumers are willing to pay a particularly high premium for steady instalments, whereas in the present market environment, the risks undertaken by the bank in respect of the loans disbursed under a longer interest period do not justify the higher spreads currently observed. Thus, due to the weakness of competition, certain institutions can make ill use of clients' preferences, and set higher-than-justified rates for borrowers.

The lack of easy comparability of individual bank products is one the major causes of poor competition. Upon developing a product, the banks may attach a number of special features; in addition, the borrowing process also varies by institutions, as borrowers face a lending process of different length, complexity and cost at each bank. As a result, consumers compare the prices of products containing different services, rendering an exact comparison impossible.

In order to ensure the transparency and easier comparability of individual products and to support sustainable lending processes, in the second half of the year the Magyar Nemzeti Bank will facilitate the introduction of certified consumer-friendly housing loans. On the one hand, the certification may contribute to invigorating competition and thus reducing spreads, and on the other hand – through strengthening prudent borrowing – it may support a wide range of consumers

in becoming familiar with and gaining access to products that feature long-term predictability, transparent criteria and easy refinancing.

### 7.1. Key features of consumer-friendly housing loans

In response to the problems described above, in the second half of the year the MNB will promote the market entry of certified consumer-friendly housing loans. Based on the certification concept, banks that wish to offer housing loans complying with the requirements prescribed by the MNB may apply for certification by the central bank in relation to certified consumer-friendly housing loan products and use of the related logo. The certified consumer-friendly housing loan is a product that enables consumers to compare banks' favourably priced offers quickly, cheaply and accurately. On its website, the MNB will create an interface where borrowers can enquire about and compare the offers of all banks in a standardised manner based on their debt servicing capacity data and individual loan requirements. The purpose of introducing the certification is to enhance the transparency of the market, mitigate the information distortions mentioned above and reduce the interest rates on housing loans as a result of stronger competition.

Relevant examples of credit product certifications are offered both by the United Kingdom and the USA:

- The British 'FairBanking Foundation'<sup>31</sup> scores credit products in a multi-stage system based on their compliance with prescribed consumer-friendly requirements. The specifications include that the lender must encourage the consumer to act in a prudent manner when borrowing and to become indebted only up to the necessary degree. In addition, simple and cheap prepayment options must be made available for the consumers, and the financial institution must also offer temporary solutions for the event of payment difficulties.
- The mortgage loan certification practice<sup>32</sup> developed by the US Consumer Financial Protection Bureau also shows some similarity to the MNB's initiative. The certified mortgage loan must comply with a number of criteria. For example, the qualification sets a limit in respect of upfront fees and costs related to the loan transaction, and limits loan maturity. Certain schemes are excluded from certification from the outset.

**It is advisable to initially introduce the concept of certified consumer-friendly loans in the Hungarian market in the mortgage-backed loan market.** It is justified to focus on the housing loan market due to its social policy importance and the present developments in lending. Due to the high amount of housing loans compared to net wages and their long maturities, which may extend to 30 years, these loan products entail a high expenditure for borrowers for the long run. Accordingly, it is extremely important to ensure optimal allocation during borrowing, and strong competition between banks is also a condition for this to occur. Due to the rapid upturn in loan disbursements and the continuous increase in house prices in the present economic environment, efficient competition is even more important. An increase in housing loan competition and the resulting fall in interest rate spreads, as well as the diversion towards loans disbursed with longer interest fixation periods, which mitigate the interest risk of lending, also fit well with the other high-priority regulatory programmes of the MNB, such as the MFAR framework prescribing sound mortgage loan financing.

In developing the Hungarian certification concept, the MNB took into consideration the following aspects:

- The products should be available for a wide range of consumers, including borrowers using the Family Housing Allowance (CSOK);
- Housing loan products that are easy to understand for consumers, have transparent conditions and are available after a simple and fast administration process should be developed;
- Consumer-friendly products should contain no hidden costs;
- It should be possible for the debtor to calculate the future payment obligation over the longer run as well;
- It should be possible for borrowers to compare various banks' offers related to consumer-friendly loan products in simple way;
- Banks should cooperate with consumers over the entire term of the loan contract;

<sup>31</sup> <http://fairbanking.org.uk/>

<sup>32</sup> <https://www.consumerfinance.gov/about-us/blog/qualified-mortgages-explained/>

- The products should provide proper incentives for loan refinancing, with a view to enforcing consumer surplus as strongly as possible.

**In view of the novel nature and broad impact of the certification, the MNB started intensive consultation with market participants and consumers' representatives to finalise the details of certification.** As a result of the extensive consultations, the certification concept and the related application process has been developed in such a way that permits the distribution of products satisfying consumer needs as much as possible, along with efficient strengthening of market competition.

*Table 4: Key criteria of certified consumer-friendly housing loans*

<b>Criteria of certified consumer-friendly housing loans</b>	<ul style="list-style-type: none"> <li>▪ Instalments can only be based on an annuity</li> <li>▪ The length of the interest fixation period may only reach 3, 5 or 10 years, or the interest rate should be fixed for the whole loan term.</li> <li>▪ The interest rate spread must not exceed 350 basis points.</li> </ul>
<b>Requirements related to upfront fees and pre-payments</b>	<ul style="list-style-type: none"> <li>▪ Fees applied before disbursement and prepayment fees are capped:               <ul style="list-style-type: none"> <li>○ Disbursement fee: at most 0.75% of the disbursed amount, but not more than HUF 150,000.</li> <li>○ The prepayment fee must not exceed 1% of the prepaid amount; prepayments using building society deposits are free of charge.</li> </ul> </li> </ul>
<b>Requirements related to administrative deadlines</b>	<ul style="list-style-type: none"> <li>▪ The deadline for evaluating the loan application is 15 working days.</li> <li>▪ The deadline for disbursement is 2 working days from the time of satisfying the disbursement-related criteria, unless the borrower requires otherwise.</li> <li>▪ In case of noncompliance with the above mentioned deadline the creditor waves a proportion of the disbursement fee.</li> </ul>

Based on the results of the consultations, following the development of the technical conditions and allowing sufficient time for market participants for preparation, the distribution of loans may commence as soon as possible. Banks can apply for certification of their products from the summer of 2017 and the distribution of the products may commence thereafter.

**The MNB compiled the potential proposals aimed at strengthening price competition using a comprehensive approach.** We expect that the market entry and spread of certified consumer-friendly housing loans will make the credit market more transparent. The strengthening of comparability will reduce the information asymmetry currently present in the credit market, which – by simplifying the switching of banks and reducing the costs thereof – will result in lower-priced products that are calculable for a longer term being available for both new and existing housing loans. As an additional step in order to increase transparency and decrease information asymmetry it would be desirable to extend the credit registry with mandatory positive credit information too.

## 8 MACROPRUDENTIAL MANAGEMENT OF PROBLEM PROJECT LOANS AND CHANGES IN THE LEVEL OF RELATED RISKS

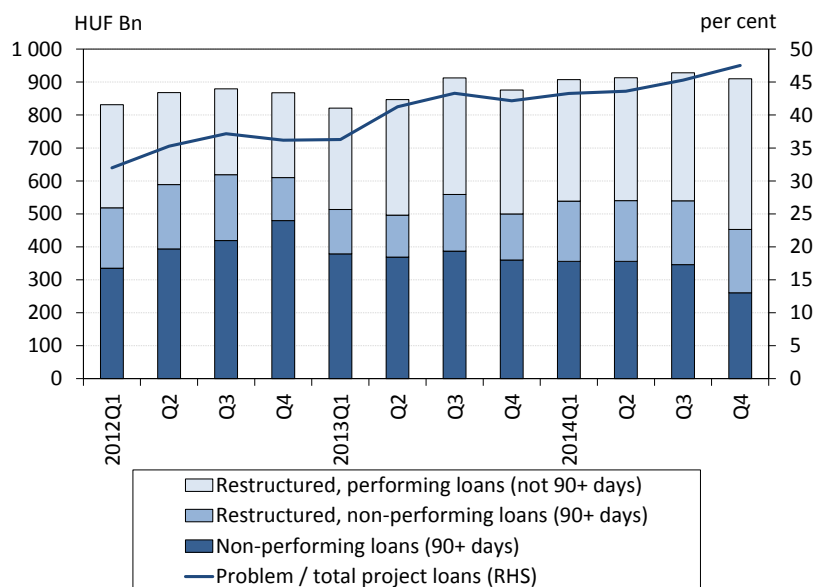
### 8.1. Systemic risks stemming from problem commercial real estate exposures

**Prior to the crisis, unsustainable lending was observed not only in the household, but also in the corporate segment as well.** The overwhelming majority of the portfolio amounting to some HUF 2500 billion that built up before the 2008 crisis were FX-denominated real estate project loans extended to residents. However, the commercial real estate market, which collapsed as a result of the crisis, significantly impaired the earning power of the projects that served as collateral, and thus many of them became insolvent, and both the properties and the credit claims became unsaleable.

**Due to their high ratio and concentration, risky commercial real estate exposures posed a systemic risk.** In view of the low intensity of the portfolio cleaning, at end-2014 the MNB classified the high proportion of non-performing corporate loans, especially the direct and indirect exposures linked to commercial real estate, as a key systemic risk that had to be addressed.<sup>33</sup> The relatively rapid growth in risky project loans compared to other problem corporate loans as well as their significant portfolio and persistence hindered the banking sector in fulfilling its role in supporting economic growth. The risky exposures reduced banks' profitability, and absorbed capital and human resources, which also had an indirect negative effect on banks' general risk appetite and lending activity. In addition, the accumulated stock restrained banks' lending capacity following the occurrence of the non-performance as well, as it still carried the risk of potential losses.

**The high institutional and geographic concentration of risky loans further exacerbated the systemic risk.** The overwhelming majority of the loans, i.e. some 85 per cent, were held by ten large banks. With respect to geographical distribution, almost two thirds of the loans were linked to commercial properties in and around Budapest.

Chart 91: Size, proportion and composition of the risky project loan portfolio of the banking sector



Note: All project loans 90 days past due and restructured project loans. Data of individual banks.

Source: MNB.

**The MNB's supervisory tools supported the prudent assessment and loan loss provisioning, but were unable to terminate the systemic risks related to the magnitude, concentration, denomination and persistence of risky portfolios.** During the supervisory review and evaluation process (SREP), following the crisis the MNB devoted special attention to the risks stemming from problem project loans. Although they strongly motivated the reflection of the risks perceivable at individual bank level in loan loss provisioning, the additional capital requirements established here were unable to effect

<sup>33</sup> Financial Stability Report, November 2014.

a final and satisfactory solution to the problem. Even though the receivables were always accounted for in line with the identified losses, the uncertainty and potential source of losses stemming from the freezing of the market and from the burdens on banks' balance sheets remained, resulting in the passivity of the banks concerned in providing new loans.

## 8.2. Addressing the risks of problem commercial real estate exposures using macroprudential instruments

**The management of the systemic risks arising due to problem project loans could be best ensured by a targeted macroprudential instrument, the Systemic Risk Buffer (SRB).** The SRB is a macroprudential instrument for the management of concentrated risks, stemming from specific exposures. The SRB has to be accumulated of the best-quality (CET1) capital elements in addition to the SREP capital requirement. Basically, the SRB can manage risks in two ways: firstly, due to the higher capital requirements, it significantly increases the resilience to shocks of the institutions concerned; secondly, through increasing capital requirements and thus capital costs, it efficiently encourages institutions to reduce problem project exposures.

**In order to create the necessary conditions for the adequate management of the risks, the MNB started multiple consultations at end-2014.** In the course of these, the MNB assessed banks' efforts in the field of risk mitigation and informed market participants about the regulatory possibilities it identified. The MNB provided ample preparation time for the sake of adequate adjustment: following the communication in 2014, the Financial Stability Board adopted the general framework of the introduction of the SRB in November 2015,<sup>34</sup> and the capital buffer has to be built up for the first time as of 1 July 2017, based on data for the end of 2017 Q1.

**The SRB rate for each institution is determined in proportion to the individual contribution to the systemic risk.** The rate is determined based on a calibration index calculated on the basis of the problem project exposure relative to the domestic Pillar I capital requirement. In order to capture the total extent of the problem, the numerator of the calibration index covers a wider range than the non-performing loans: the so-called problem portfolio defined by the MNB contains commercial real estate financing project loans that have defaulted or are classified for other reasons as non-performing, the loans restructured for less than a year, as well as the commercial real estates for sale acquired as collateral by the creditor bank. The denominator of the index is the domestic Pillar I capital requirement, which adequately represents both the size and risk profile of the institutions. Depending on the value of the calibration index, the capital buffer rate may be between 0 and 2 per cent. In order to take into account the portfolios relevant at a systemic level, a materiality threshold was also introduced: based on the contribution to the systemic risks, an SRB is determined only in the case of a problem portfolio that exceeds HUF 5 billion. The capital buffer rate itself must be applied to total domestic risk-weighted exposure, which thus already means a incentive stimulation for cleaning compared to the problem portfolio.

Table 5: SRB capital requirements according to the size of the problem project exposure

Problem project exposure as a proportion of the domestic Pillar I capital requirement	Capital buffer rate
0.00 – 29.99%	+0.0%
30.00 – 59.99 %	+1.0%
60.00 – 89.99 %	+1.5%
above 90.00%	+2.0%

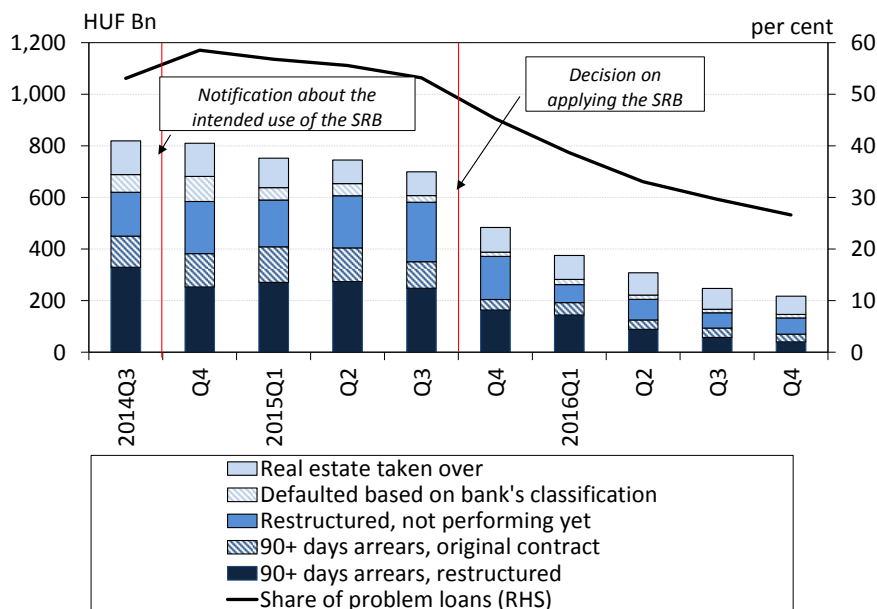
## 8.3. Changes in the level of risks as a result of the introduction of the measure

**Since the announcement of the measure, banks have cleaned up their balance sheets substantially.** As a result of the portfolio cleaning, the portfolio of some HUF 823 billion of 2014 Q3 shrank by 74 per cent to HUF 217 billion by end-2016. For a complete exemption from the SRB, the banks concerned needed to carry out a further clean-up of HUF 64 billion in 2017 Q1. The degree of the clean-up varied by institutions, but it was substantial at the individual level, as well. A major cleaning related to a resolution event also contributed to the decrease. The sector-level adjustment was implemented

<sup>34</sup>The general decision regarding the application of the systemic risk buffer: <http://www.mnb.hu/letoltes/srb-altalanos-hatarozat-en-20161024.pdf>

typically by selling the problem project loans and to a lesser extent by selling the properties used as collateral. The composition by denomination of the problem portfolio also changed significantly, primarily due to the greater-than-average decline in in CHF exposures.

Chart 92: Changes in the problem commercial real estate exposure by the components of the SRB definition



Note: The problem portfolio data according to the definition in the SRB decision is compiled at a consolidated level on the basis of the MNB's dedicated data provision, taking into account the properties taken over and the problematic but actually not defaulting transactions.

Source: MNB.

**According to the expectations, there will be institutions that may be required to accumulate an SRB.** Although risks at the banking sector level have declined considerably during the past 2 years, there are institutions that continue to have large problem portfolios. In 2017 Q2, the MNB will impose the obligation of maintaining capital buffers on the institutions concerned through individual decisions. In the future, the MNB will review the capital buffer rate every year.

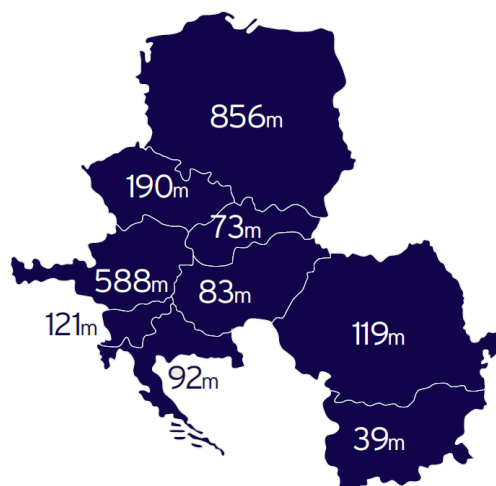
**The reduction of negative impacts that might stem from the additional capital requirement was also ensured by the long preparation time prior to the introduction of the capital buffer.** The other regulatory capital requirements that burden the portfolios concerned are easing significantly at the banks that have carried out the adequate clean-up, and the financing and human capacities tied up until now by the problem portfolios are becoming free. This may considerably strengthen banks' risk appetite, credit supply and thus the banking sector's contribution to growth.

## 9 FINTECH INNOVATIONS AND THE CHALLENGES REGULATORS HAVE TO FACE

### 9.1. FinTech innovations pose challenges for regulators as well

**The novelties of the current revolution of innovation have reached the financial intermediation as well.** Financial technology (FinTech) is such a new industry still in its development stage whose start-ups could, by using the innovations of the digital age, make the financial sector more efficient, potentially displacing the traditional actors whose approach is less IT-focused. Among the FinTech companies one can distinguish two sub-categories: enabler and disruptor enterprises, which affect the existing industrial solutions in different forms and to different degrees.<sup>35</sup> Owing to the fundamentally conservative nature of financial intermediation, for a long time the banking sector was resistant to disruptive technological novelties. The losses after the financial crisis and the increasingly strict regulatory environment have shifted the R&D developments of the banks in time, which resulted in a significant deterioration in the innovation capability of robust financial institutions, compared to their non-bank competitors. At the same time, since this sector is among the most regulated ones, it is difficult to incorporate a novelty into the existing legal environment. The advantageous constellation of the advent of a new type of customer needs, the quickly developing technology and the favourable economic environment has made the FinTech industry one of the most popular sectors among investors, of which the CEE region also represents a significant portion (Chart 93).

Chart 93: Size of the FinTech market in the region in 2016



Note: This definition includes the services ordered/built up by the banks, all data are in million EUR and indicate the equity investments inflows until 2016.

Source: Deloitte – Fintech in CEE, Charting the course for innovation in financial services technology (2016).

**FinTech companies may affect the entire range of the financial sector.** Over recent years, FinTech companies have posed new challenges for the entire financial sector. Of the introduced novelties, ledger processes based on the blockchain and/or distributed ledger<sup>36</sup> and robo-advisors<sup>37</sup> have attracted significant attention. Certain technologies have already

<sup>35</sup> The so-called enabler companies support the actors of the existing financial system in order to be able to meet the challenges posed by the digital transformation. They typically enhance an already existing technology, thereby increasing the efficiency of a particular product, but they do not meaningfully affect the business model. On the other hand, the so-called disruptor companies were created in the first place in order to become competitors to traditional financial institutions (banks, insurers, asset managers, etc.). By the “disruptive” technologies substantial increase can be accomplished in efficiency, drastically reducing the production cost of the typical product/service. This kind of development is capable of fundamentally shaking the established business model of a particular industry and generate quite wide-ranging impacts. Good instances are the mobile Internet or the cloud-based technology.

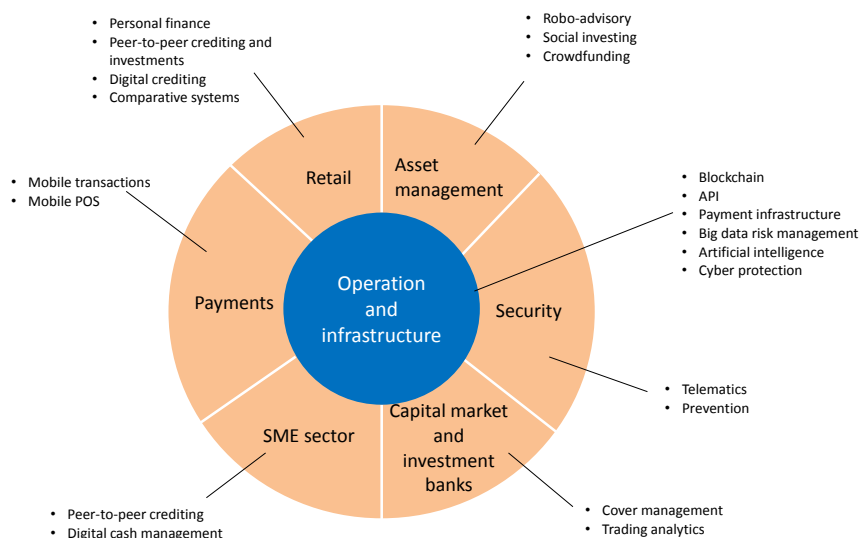
Source: Christensen, Bower (1995): Disruptive Technologies: Catching the Wave: Harvard Business Review.

<sup>36</sup> For the sake of accuracy, we must distinguish blockchain technology and distributed ledger processes, while the former is a cryptographic procedure, the latter is a disintermediating solution based on some kind of cryptographic technology, which can be the blockchain but also something else.

<sup>37</sup> The robo-advisors are new, automated forms of investment consulting, with increasingly deepening opportunities.

appeared in Hungary, typically in the form of payment and retail solutions, while for example, in the insurance sector services based on telematics (analysis of sensor data) are still in their infancy (Chart 94).

Chart 94: Appearance of FinTech companies in the financial sector



Source: Using Dietz M, HV Vinayak, Lee G. (2016): Bracing for several critical changes as fintech matures,<sup>38</sup> MNB.

**The regulatory authorities should develop their positions on FinTech companies.** Although the FinTech companies are trying to introduce many novelties in the financial sector, their immature business models can also carry significant dangers, not only for the financial sector, but also for the customers. If the approach of the regulatory agencies is too permissive, it could create a situation in which the authorities have only indirect control over a constantly increasing part of financial intermediation. In addition, they may find themselves facing such systemic, macroprudential risks, which cannot be addressed, as no legislative environment exists for them (e.g. lack of deposit insurance). On the other hand, in countries where the regulatory authorities are too restrictive, the financial intermediary system could easily lose some of its efficiency and by this ultimately, its competitive edge. Finding the ideal state is a shared interest of every actor, in which the cooperation between the regulatory authority and the FinTech companies has a determining role, with regard to the proactive role of the regulator in striking the delicate balance between the stimulation of innovation and the avoidance of risks (maintenance of financial stability).

## 9.2. The most affected financial services

### Settlement systems and smart contracting – areas of application of distributed ledgers

**Ledgers distributed among financial actors could simplify and make syndicated lending and securities settlement systems, and even cross-border payments more efficient.** The technologies behind distributed ledgers (e.g. blockchain) enable the relatively fast, transparent and secure settlement of payment services, or even securities transactions between the relevant parties, without the involvement of intermediaries or clearing houses, since this information is stored at every participant of the system, and therefore can be constantly validated, for which there is no need for one single settlement (ledger). Although by excluding the third parties which currently conduct the transactions the settlement time could not be reduced to real time, it could still result in a very significant cost reduction even in the case of migration between a few actors conducting substantial traffic.<sup>39</sup> On the other hand, significant simplification can be accomplished in such areas, traditionally requiring the reliable cooperation of several parties, as syndicated lending, where the use of one single reliable source of information could make the transactions cheaper, faster and more transparent in every phase,

<sup>38</sup> The article is available here: <http://www.mckinsey.com/industries/financial-services/our-insights/bracing-for-seven-critical-changes-as-fintech-matures>

<sup>39</sup> According to the survey of the research institution called Autonomous Research, the application of blockchain technology could reduce the settlement costs of banks by almost 30 per cent, by minimising the role of back-office areas and the number of staff members working there. Source: <http://www.businessinsider.com/what-is-blockchain-2016-3>

from due diligence all the way to countersigning.<sup>40</sup> In addition to all these, it is also a factor for financial stability that a large part of the risks ultimately carried by the global CCPs could be eliminated from the financial system, by which the security of fundamental settlement functions would not be jeopardised. At the same time, there are only a small number of locations where it is actually applied, and several technological problems must be resolved (scalability, issues of data protection), and the cybersecurity risks inherent in the technology have not yet been thoroughly investigated.

**The simplification of legal contracts that have required a third party so far, furthermore, making the origination of financial instruments more efficient and secure, are important areas of application.** The essence of the concept known as smart contracting is that the parties to the contract are able to create digital contracts without disclosing their own identities<sup>41</sup> and without involving a third party, contracts whose legal consequences and clauses will be implemented automatically as a result of well-defined circumstances. However, it is a disadvantage of contracts of this type that in the case of occurrence of unexpected events and changes in legislation the implementation of contractual obligations will be violated, and so far no really satisfactory solution has been found to this issue. An important financial area of application of smart contracting could create a revolutionary breakthrough in securitisation or in the origination of other financial instruments, significantly speeding up the pertinent processes.

### Payment solutions

**Currently payment services are undergoing a crucial transformation, one that could substantially rearrange the relationships among actors of the payment services markets as well.** Financial innovations enable the separate management of payment services that had been tied to the banking system earlier, in addition, services provided by non-banking companies could be significantly cheaper than solutions offered by banks. It could be a further benefit of the services that they enable significant comfort functions for the users (e.g. complex purchases and instant settlement), and they provide easier access for them (e.g. smart phone applications, product bundling). However, it must be added that only six per cent of the FinTech capital of USD 783 million invested in the United Kingdom in 2016 went into the area of payment services, which could imply that the barriers to entry are typically high in the segment, and that in the beginning this activity is characterised by extremely low economies of scale. The legislative background of PSD2 and the interoperable central infrastructure of instant payment could change the high barriers to entry and the moderate market competition. With the introduction of instant payment service (target date for MMB: 1 July 2019) presumably several FinTech companies will enter the domestic market of payment services, which could further strengthen competition, but it could even create the conditions for a viable cooperation between old and new type service providers.

### Peer-to-peer lending (P2P)

**Although peer-to-peer lending is not so common in Continental Europe, in several countries it could pose the biggest challenge to the traditional financial system.** Of all FinTech companies, the term disruptive, as defined by Clayton M. Christensen, best describes the peer-to-peer (P2P) platforms, since these can exert the most disruptive effect against the business model of existing credit institutions. P2P platforms provide an interface for their customers in exchange for a relatively small commission, where a straight relationship can be developed without the involvement of banks between owners of savings on the one hand and parties needing a loan on the other hand, thereby reducing the margin between loan and deposit interests. While such a form of financial service has its own clear advantages, with regard to its dissemination it is essential to recognize and survey the pertinent lending and liquidity risks. The most important advantage of platforms of this kind is that they do not have to build up their own chains of branch offices, and the significant cost saving contributes to reducing the costs (margins) of financial intermediation. However, the system could also reduce transparency and increase the likelihood of abuses. Lending risks could remain low in such a system if there is strong control of creditworthiness,<sup>42</sup> and if the lending losses can be distributed evenly among the lenders. However, any incorrect risk

<sup>40</sup> <https://bravenewcoin.com/news/major-banks-demonstrate-how-blockchain-technology-can-improve-syndicated-loan-market/>

<sup>41</sup> It should be noted that the implementation of certain digital solutions of FinTech is often limited exactly owing to problems of identifiability. Resolving the contradiction between anti-money laundering, discussed below in the regulatory part on the one hand, and the efficiency of the financial markets on the other hand is one of the most difficult tasks of FinTech regulation.

<sup>42</sup> For the time being, in the United States the service providers operate as a new sales channel for customers with superior creditworthiness.

assessment could become systemic (as happened, for example, in the case of Chinese corporate lending), and could create similar dangers to those that we observed during the financial crisis.<sup>43</sup>

### 9.3. The legal and regulatory environment is hardly supportive to Fintech companies at present

#### The European regulation

**Only an appropriate regulatory environment could create the circumstances necessary for the spread of FinTech start-ups.** As in many countries of the world, a legislative process that lays the foundations for the legitimate<sup>44</sup> operation of FinTech services was launched in the European Union as well, which supports the spread of these new and innovative financial tools and technologies. In the following part we present those major regulatory steps within the European Union that affect the FinTech environment, such as the new Payment services directive (PSD2), the new Anti-money laundering directive (AML2) or the new directive on Investment services (MiFID2).

#### PSD2 – payment solutions and relationship with the current actors

**Scheduled to take effect in January 2018, the PSD2 directive could introduce many changes in payment services.** PSD2 will shape the payment services market by several new provisions. The most significant impact of this directive is that banks will be required to make their credit transfer and account management systems accessible to third parties, however, the directive intends to implement that with appropriate security, coupled with more powerful protection for the consumers. According to the rules of the directive, two new service provider types will be introduced: account information service providers (AISP) and payment initiation service providers (PISP). These new service providers will be allowed to step between the bank and the customer without a separate consent of the bank, they will not have to maintain a contractual relationship with the bank, furthermore, the banks have to enable the new service providers to use the infrastructure of the bank in an open and transparent manner, for example, with the appropriate authorisation of the customer they will have access to the account of the customer. It is expected that the final technical parameters will be published in the summer of 2017, based on which the banks will have to adapt to the new environment and open their IT systems in accordance with the predefined framework (API).

#### AML2 – directive for the prevention of money laundering concerning payments and peer-to-peer lending

**As a result of the advent of new lending platforms, the upgrade of the regulations against money-laundering has also become important.** Most of the financial start-ups are developing applications that are services related to account maintenance and online payments. The PSD2 directive enhances the security of services and provides a higher level of protection to the customers, but the regulation on the prevention of money laundering and terrorism is also very much in focus concerning this new innovative regulation. In order to meet the new challenges generated by PSD2, the regulations related to the prevention of money laundering and terrorism are currently under review. The individual Member States are required to implement Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing (4MDL) in their own legislations by 26 June 2017. This directive requires the supervisory authorities and the service providers subordinated to them to assess the risks and to take appropriate risk mitigating actions proportionate with them, in accordance with the results, findings of the national risk analysis, to be prepared and then to be reviewed continuously. From the aspect of FinTech services it is an important step forward that the Directive enables – if appropriate guarantees are provided – the performance of customer due diligence and establishment of the business relationship without a personal meeting. In Hungary, the draft on the prevention and blocking of money laundering and terrorist financing was submitted to the National Assembly on 13 April 2017.

<sup>43</sup> It indicates an important phenomenon that recently, among others PayPal of the U.S. and Monzo of UK have applied for a full banking license, whose most important benefit is the obtaining of deposit insurance. Although this way new actors are created thanks to the technological revolution, ultimately they will appear as competitors among the traditional actors of the banking system.

<sup>44</sup> The Commission consultation paper on FinTech is currently trying to map the benefits, the possible barriers to the market entry and development of the companies, the regulatory environment and the further possible action points.

***MIFID/MIFIR 2 – the directive which serves investor protection for automated consulting developments***

**MiFIDII affects the licensing, operating conditions of investment firms and regulated markets, robo-advisors are also expected to comply with these.** The process of investment services is becoming more and more sophisticated and digitised – with special regard to automated consulting service providers, and the robo-advisors mentioned above – which makes it more difficult to implement the directive. MiFIR includes the rules on trading premises, the requirements on publication applying to investment firms, the rules of transparency reports to be sent to the competent authorities, requirements on derivative transactions, non-discriminatory settlement rules on financial instruments, and also deals with the powers of the competent authorities (supervision of products and positions). Pursuant to MiFID II Directive (EU) 2015/849 Article 93, the member states should have accepted and announced those provisions in the form of laws, decrees and administrative ordinances that serve compliance with the directive by 3 July 2016, and they should have applied them from 3 January 2017. However, considering the fact that on 30 June 2016 the directive and regulation were published that modified both MiFIR and MiFID II, MiFIR will be applicable from 3 January 2018 instead of 3 January 2017, while the deadline for the implementation of MiFID II in national legislation was changed to 3 July 2017 (instead of 3 July 2016), its provisions are to be applied from 3 January 2018.

***Issues of domestic implementation and regulation***

**The contents of the EU regulations (CRR and MiFIR) are obligatory for every member state, however, there could be some latitude in the implementation of the regulations in Hungary.** CRR regulation (EU) No 575/2013 on the capital and liquidity requirements is directly effective in each member state of the EU, and therefore in Hungary as well, there is no opportunity to depart from it in a separate domestic statute. In the same way, it is not permissible to depart in national legislation from the transparency and settlement requirements of MiFIR (Regulation (EU) 600/2014 either, which regulates investment service providers. The CRD IV Directive (2013/36/EU) has been implemented in Hungary partly in the law on credit institutions and partly in the MNB Law.<sup>45</sup> Although these regulations are directly applicable, concerning the directives the rules on exceptions and options/discretions could allow some latitude to the member states. However, the options and discretions currently provided in the statutes typically have not been developed in consideration of the activities of FinTech companies (only the exemption rule of PSD2 may be relevant).

**In Hungary, FinTech companies also have to obtain license for their activities.** According to the legal regulation currently in effect in Hungary, whoever intends to provide financial or supplementary financial service, or even intends to be involved in the provision of financial services as an intermediary, must apply for a license to the MNB and comply with the requirements contained in the law on credit institutions and with the law on certain payment services. Financial services may be provided in a defined legal form; furthermore, the amount of the starting capital and the staff and facilities necessary for the provision of financial and supplementary financial services are defined, but the same rules apply also when someone intends to provide services as a financial intermediary. Therefore, the market entry of FinTech companies is subject to very stringent rules, which involve significant costs and restrictions. It is clear that the current regulatory environment does not facilitate the provision of financial services by start-ups. However, a so-called regulatory sandbox solution with significantly support the service development of start-ups within a controlled framework, which would serve both the interests of the customers and the efficiency of the banking system in the long term.

***Regulatory sandboxes in the world***

**The regulatory sandbox is a regulatory framework where the newly emerging FinTech companies have the opportunity to test the financial products developed by them on real customers.** Typically, the innovative services developed by FinTech companies do not have either a legislative background customised to them or an appropriate impact study on the consumers. The application of regulatory sandboxes would temporarily release these companies from the need to comply with prudential regulation, or they would receive a restricted license.<sup>46</sup> That way it could be determined within a short

<sup>45</sup> <http://www.mnb.hu/en/supervision/regulation/supervisory-disclosure/options-and-national-discretions>

<sup>46</sup> Although enterprises without a license would not be released from compliance with the law, at first they could receive a license with some restrictions (a so-called restricted authorisation), and the pertinent system of criteria is provided by the competent national authorities, usually on a case-by-case basis, taking into account all circumstances of each case.

time whether the given product will provide added value to the consumers (practically, it functions as a “test course”). Regulatory sandboxes are favourable not only for FinTech companies, but also for investors, since they would be able to find out whether there is meaningful demand for the product of a given FinTech company. In addition, the regulatory authority is also able to identify the risks of the operation of the product and those critical points that it will intend to regulate in the future.

**The idea of the regulatory sandbox is quite novel, but it has been spreading in the developed financial centres of the world.** The original idea of the regulatory sandbox comes from the United Kingdom, but it has become really popular primarily in countries of Southeast Asia, where its operation is seen as a significant tool to enhance competitiveness (see Table). Accordingly, regulatory sandboxes have been operating in Hong Kong, Malaysia and Singapore, where efforts have been made to find a balanced relationship between new technologies and regulation, what are those points on which these companies may receive a temporary exemption and what are those where no exemption is allowed. Typically, no exemption is allowed in the field of the protection of personal data of customers, the assurance of a fair business conduct loyal to the customers, the money of the customers is and will be managed only by an authorised entity, and furthermore, money laundering and terrorist financing continue to be prohibited. However, in certain countries exemptions may be granted from the obligation of asset maintenance, from the composition of the board of directors, from the maintenance of obligatory cash stocks, from credit rating and also from certain capital adequacy and liquidity rules. Australia started the regulatory sandbox in March 2017, based on the British example. The interesting point about the Australian case is that individual exposure limits are imposed for companies and customers participating in the regulatory sandbox. At present, frameworks for the regulatory sandboxes are being developed in Thailand, in the United States and in Dubai.

**The currently applicable Union legislation does not support the development of regulatory sandboxes.** The opportunity of full implementation is restricted in the European Union, since the national authorities are only allowed to grant exemptions concerning the legislation within their powers.<sup>47</sup> In November 2016, the European Commission set up a working group for the removal of the barriers, where the PSD2 directive discussed above is an important element.

Table 6: Regulatory sandboxes around the world

Characteristics	Country
There is already a regulatory sandbox operating in the country	United Kingdom, Malaysia, Singapore, Australia, Canada, Netherlands
Only supervised institutions are allowed to take part in it	Hong Kong
Under preparation/consulting	United States, Thailand, Dubai, European Union <sup>48</sup>

Source: Collected by MNB based on the national websites.

#### 9.4. The MNB is closely monitoring the developments and needs of the FinTech market

**The MNB pays special attention to the innovations of FinTech companies, their expected impact on the stability and efficiency of the financial system, while it makes suggestions for the necessary regulatory steps.** In the near future, the MNB plans to assess in more detail the needs of the domestic market, the international developments and the best practices in the FinTech sector. As an institution responsible for financial stability and the development of financial culture, it would like to foster the flow of information, and furthermore, as a supervisory and macroprudential authority, it wants to reach a reasonable regulatory equilibrium regarding digital solutions. These efforts are driven by considerations of financial stability on the one hand, and on the other hand, by the deliberation of the regulatory authority for the purpose of eliminating the backlog in the technology and efficiency of the domestic banking system, which is also intended to take into account the possible favourable impacts of the entry of new market players.

<sup>47</sup> Precisely because of this – for example, in the case of the United Kingdom and the Netherlands – at present mainly those innovations are attracting the most interest whose special features are not subject to EU regulations (e.g. blockchain, automated consulting). Hopefully, the EU regulation will take into account and catch up with the current trends in the future.

<sup>48</sup> Actually, the EU consultation expects feedback concerning regulatory sandboxes: would it be necessary to issue guidance/regulation at the European level in order to harmonise the practices of the Member States, and the development of a European sandbox, in order to address the cross-border activities of FinTech companies?

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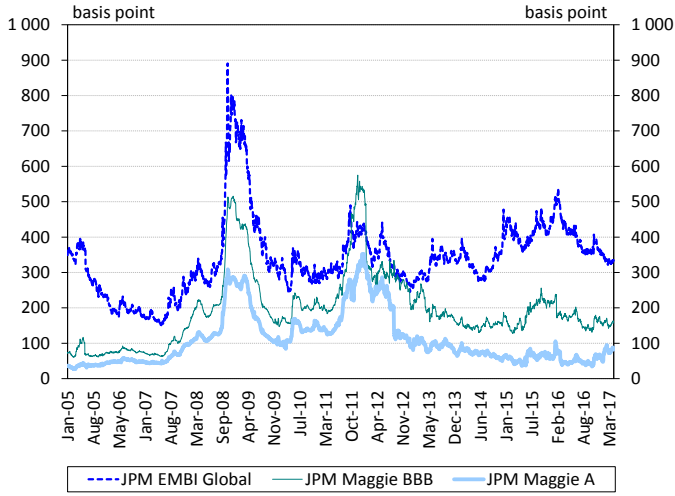
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APPENDIX: MACROPRUDENTIAL INDICATORS

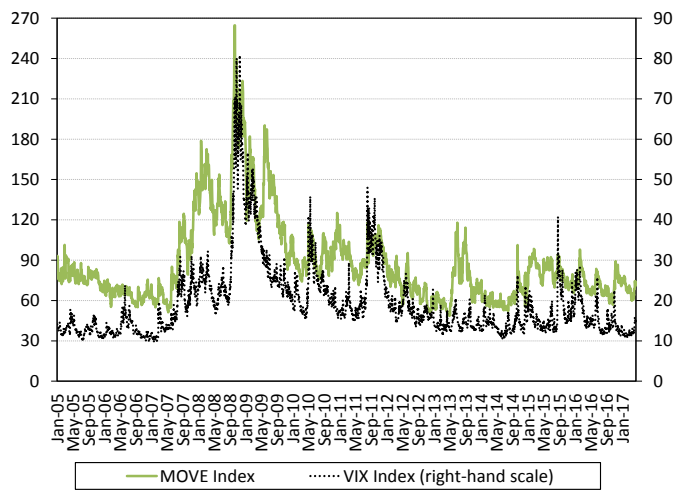
1. Risk appetite

Chart 1: Primary risk indicators



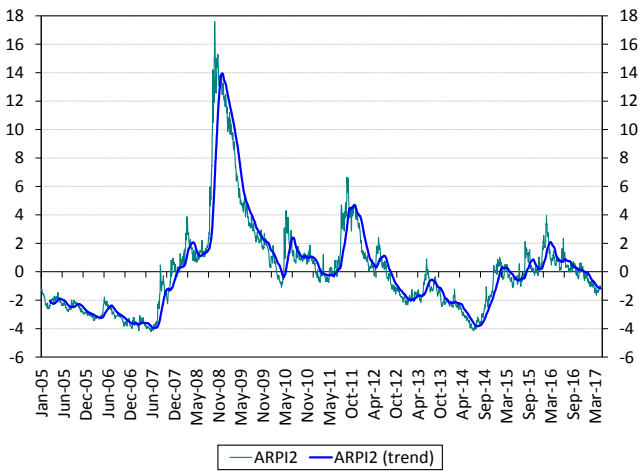
Source: Datastream, JP Morgan.

Chart 2: Implied volatility of the primary markets



Source: Datastream, Bloomberg.

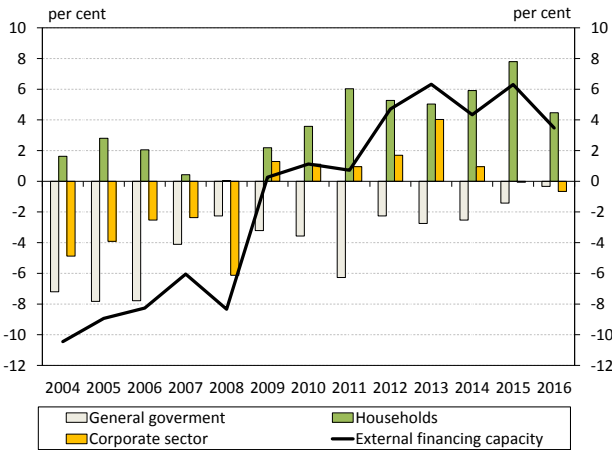
Chart 3: Dresdner Kleinwort indicator



Source: DrKW.

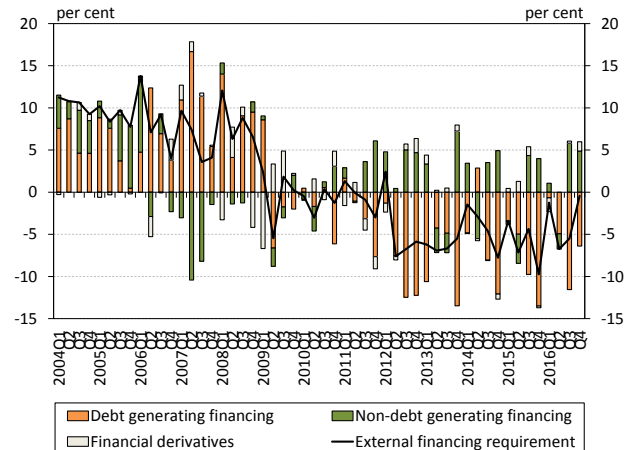
2. External balance and vulnerability

Chart 4: Net financing capacity of the main sectors and external equilibrium as percentage of GDP



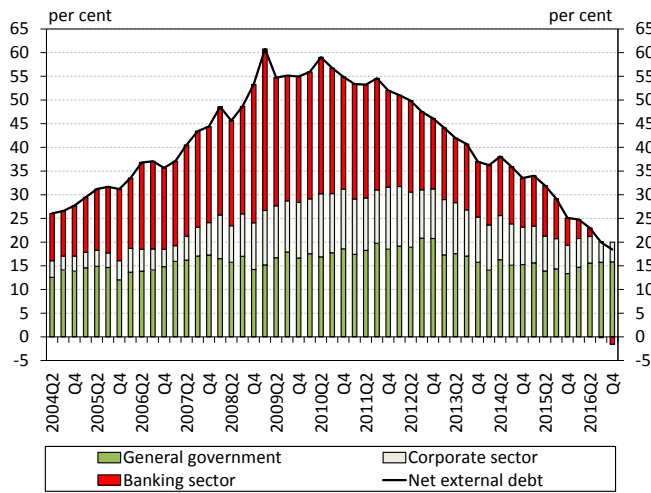
Source: MNB.

Chart 5: External financing requirement and its financing as percentage of GDP



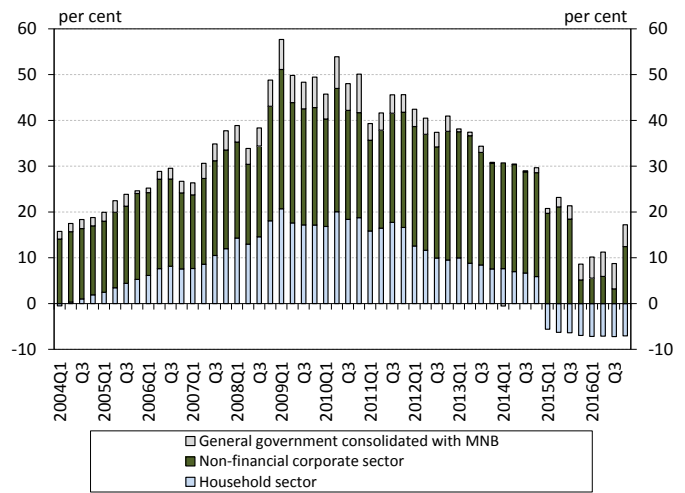
Source: MNB.

Chart 6: Net external debt as percentage of GDP



Source: MNB.

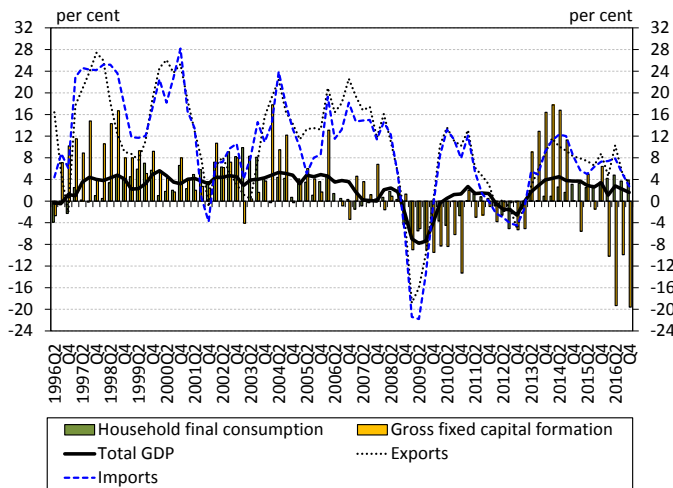
Chart 7: Open FX position of the main sectors in the balance sheet as percentage of GDP



Source: MNB.

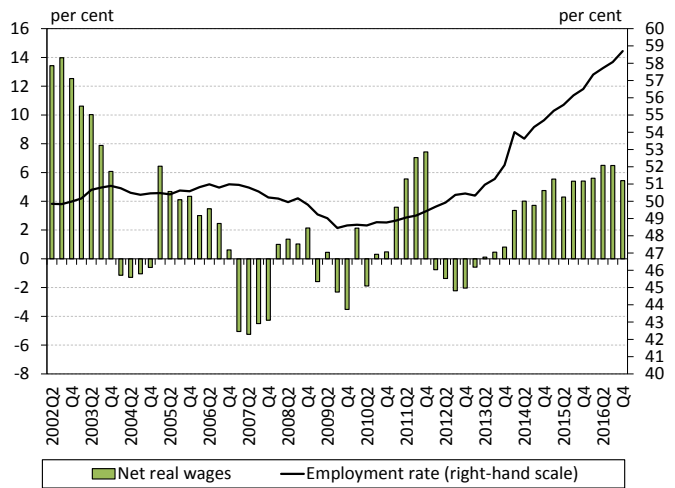
3. Macroeconomic performance

Chart 8: GDP growth and its main components (annual growth rate)



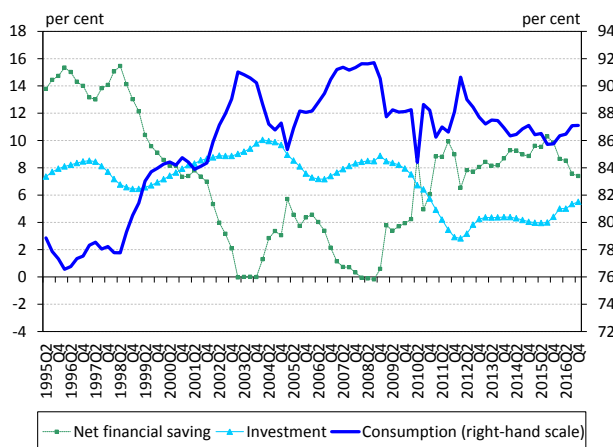
Source: HCSO.

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



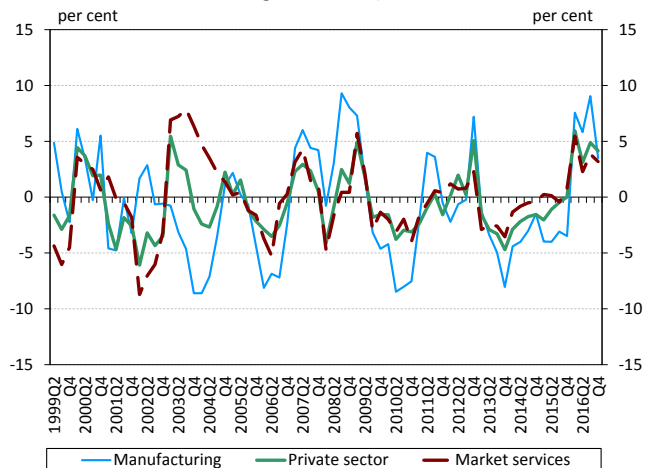
Source: HCSO.

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



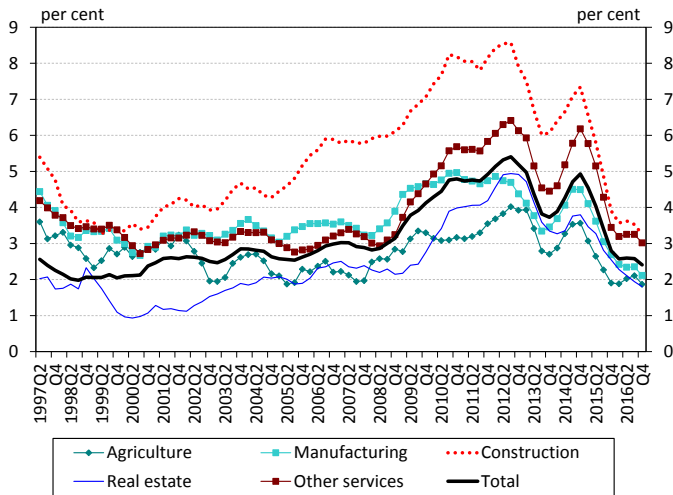
Source: HCSO, MNB.

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



Source: HCSO, MNB.

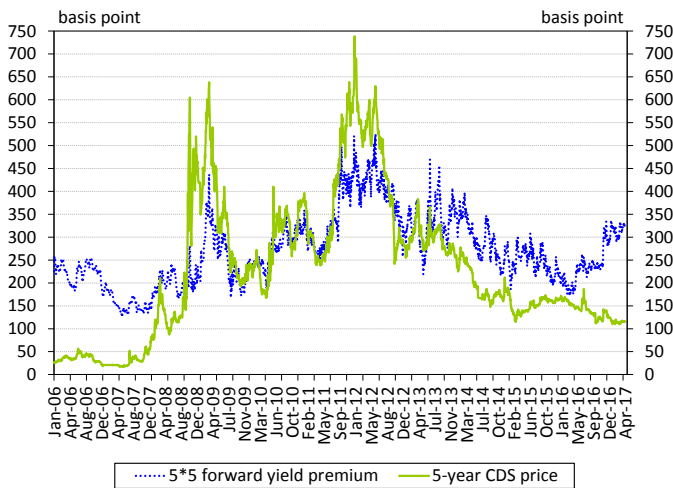
Chart 12: Sectoral bankruptcy rates



Source: Opten, MNB, HCSO.

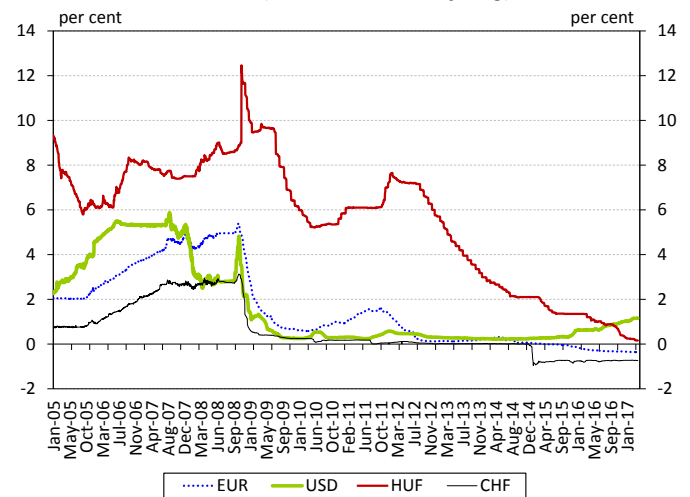
4. Monetary and financial conditions

Chart 13: Long-term default risk and forward premium of Hungary



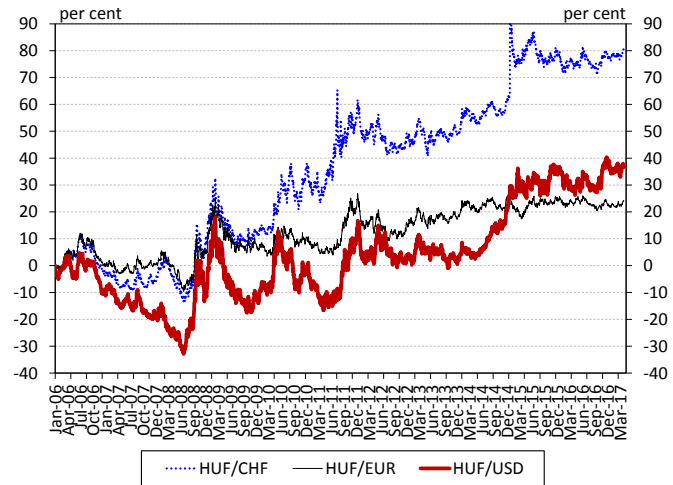
Source: Datastream, Reuters, Bloomberg.

Chart 14: Three-month EUR, USD, CHF and HUF money market interest rates (LIBOR and BUBOR fixing)



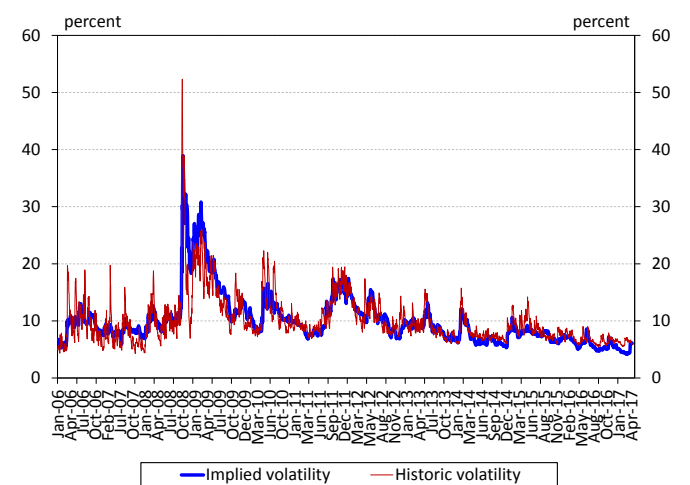
Source: Reuters.

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



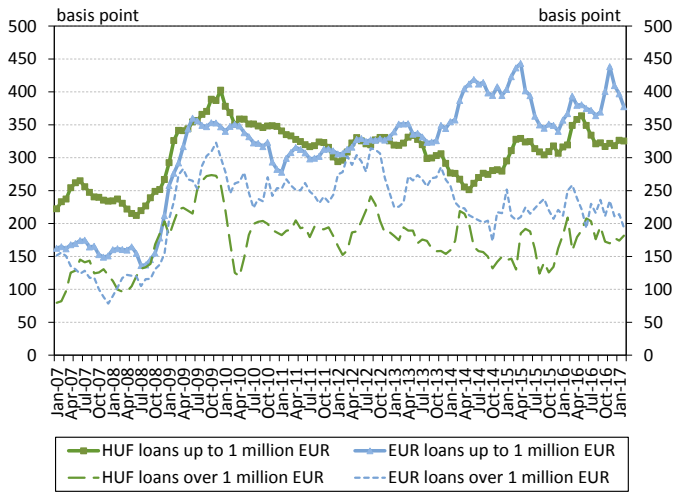
Source: Reuters.

Chart 16: Volatility of the HUF/EUR exchange rate



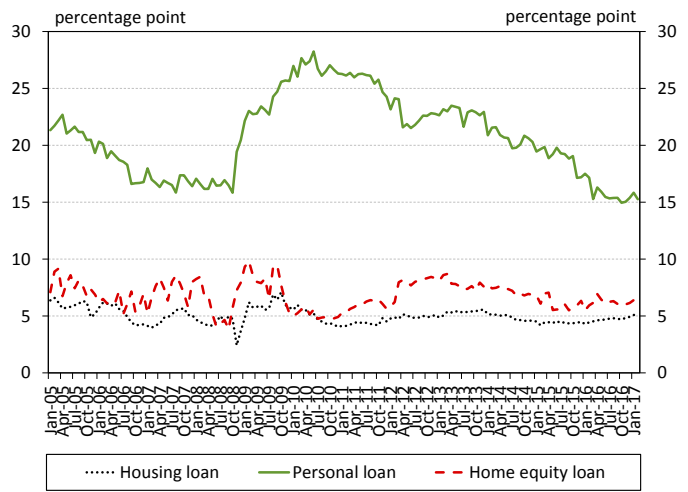
Source: MNB, Reuters.

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.

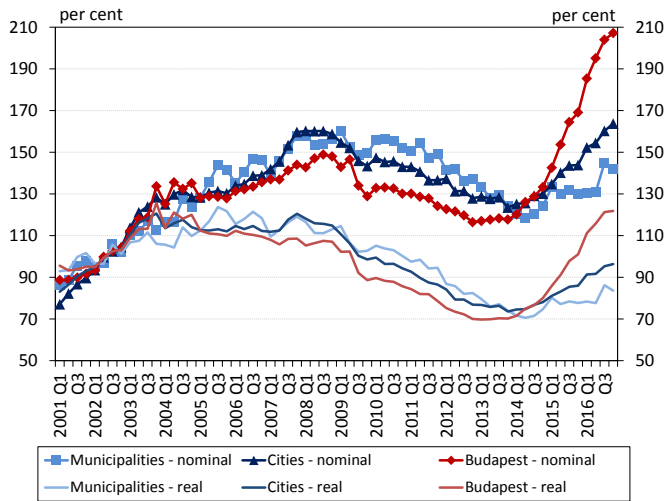
Chart 18: Interest rate premium of new HUF loans to households (over 3-month BUBOR)



Source: MNB.

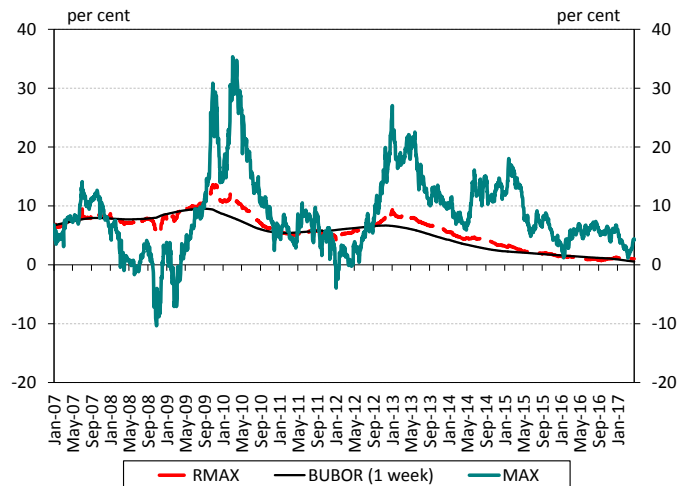
5. Asset prices

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



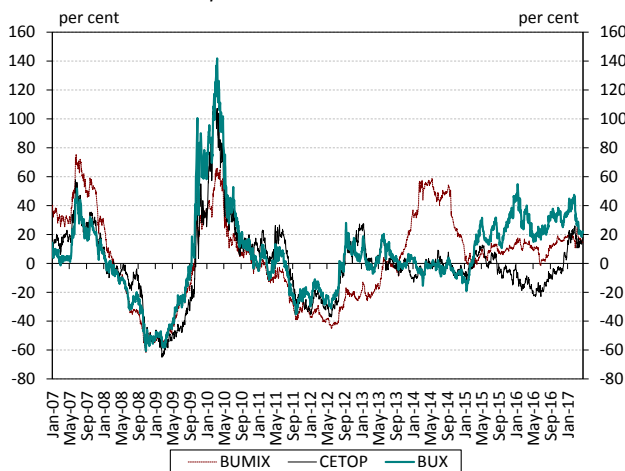
Source: MNB.

Chart 20: Annualized yields on government securities' indices and money markets



Source: ÁKK, MNB, portfolio.hu.

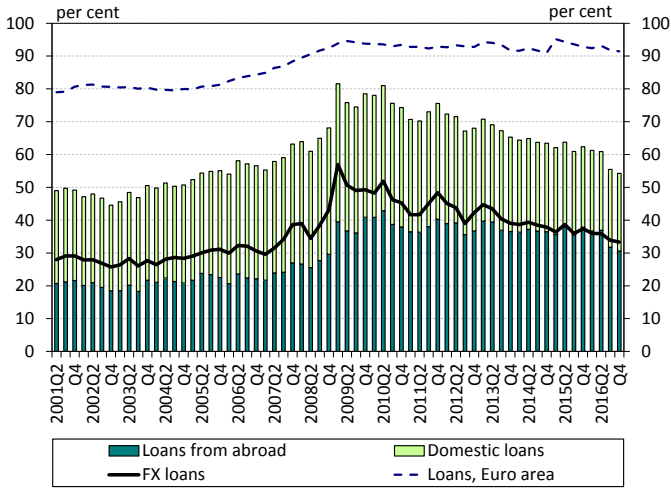
Chart 21: Annual yield of key Hungarian and Central and Eastern European stock market indices



Source: BÉT/BSE, portfolio.hu.

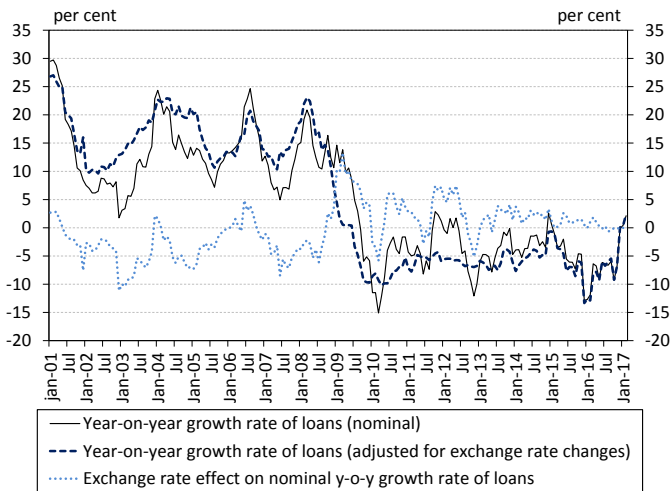
6. Risks of the financial intermediary system

Chart 22: Indebtedness of non-financial enterprises as a percentage of GDP



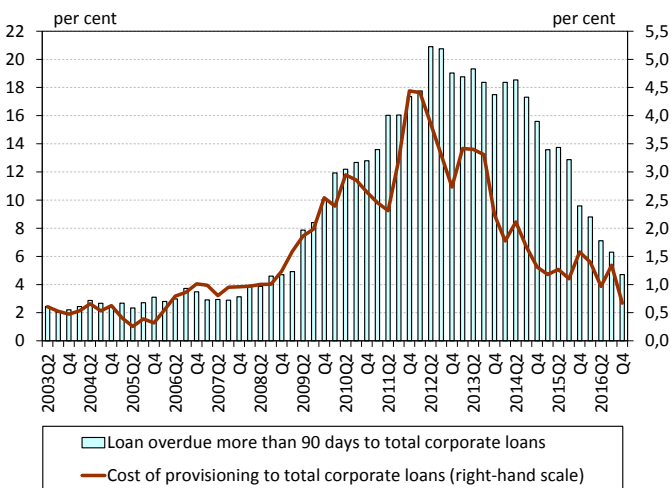
Source: MNB, ECB, Eurostat.

Chart 24: Annual growth rate of loans provided to non-financial corporations by domestic banks



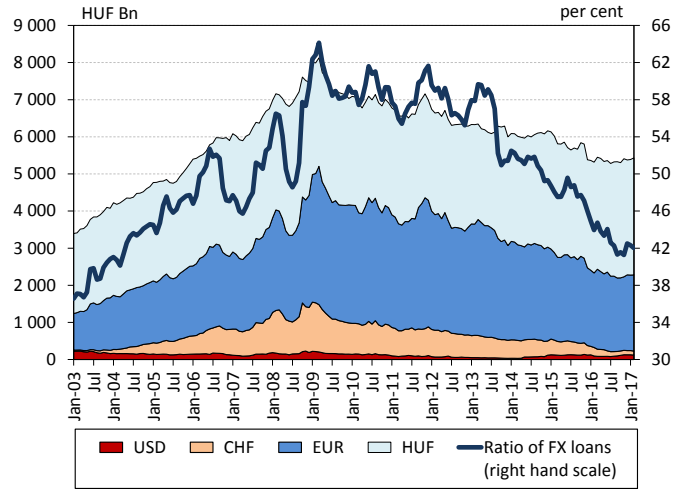
Source: MNB.

Chart 26: Quality of the corporate loan portfolio



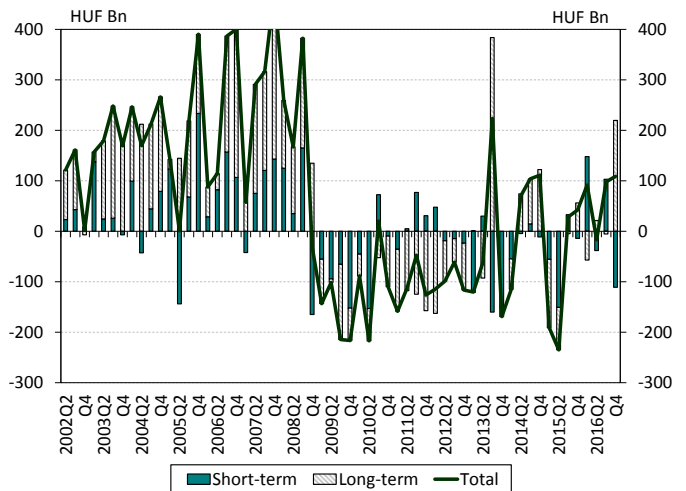
Source: MNB.

Chart 23: Denomination structure of domestic bank loans of non-financial enterprises



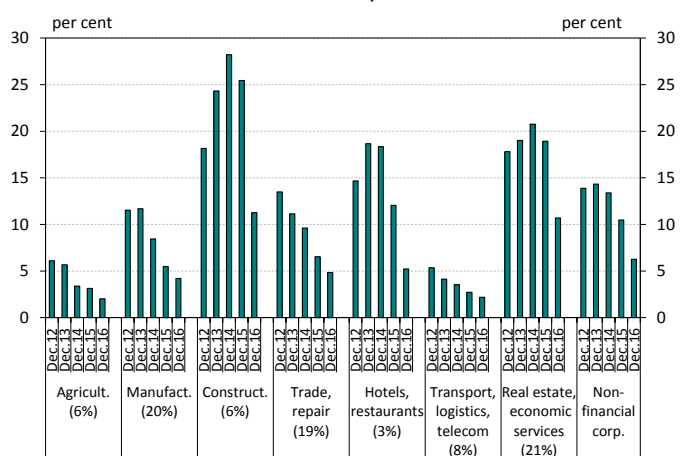
Source: MNB.

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



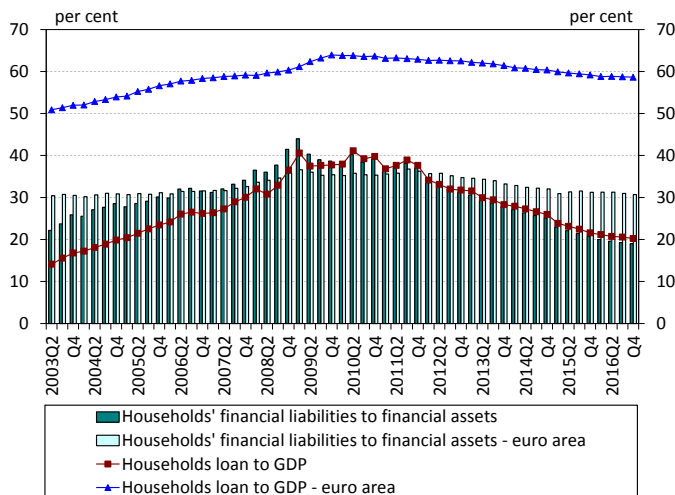
Source: MNB.

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



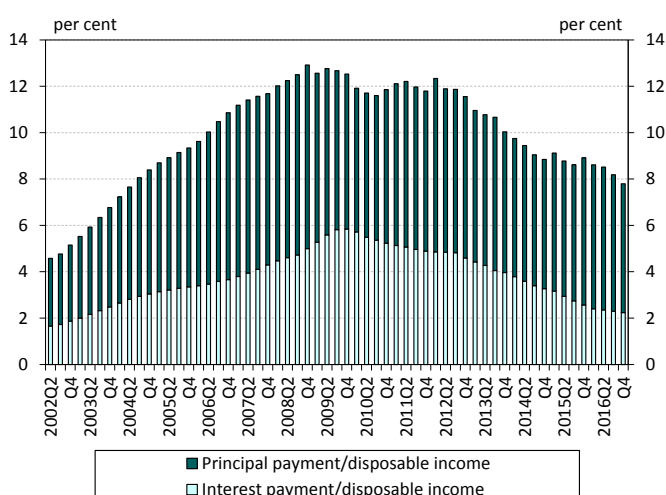
Source: MNB.

Chart 28: Indebtedness of households in international comparison



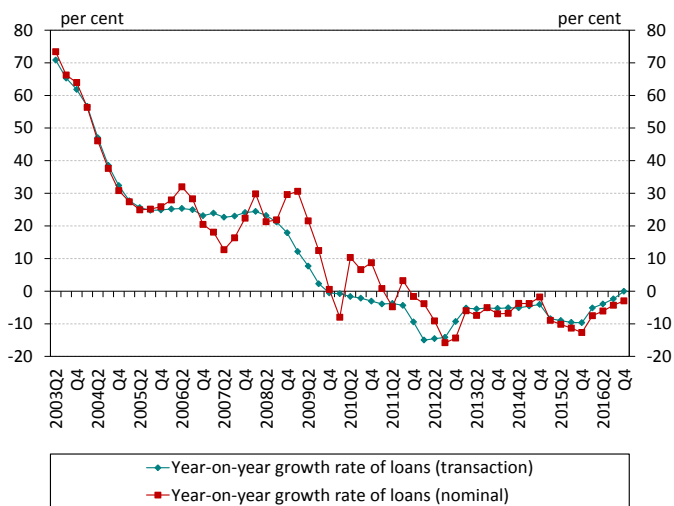
Source: MNB, ECB.

Chart 29: Debt service burden of the household sector



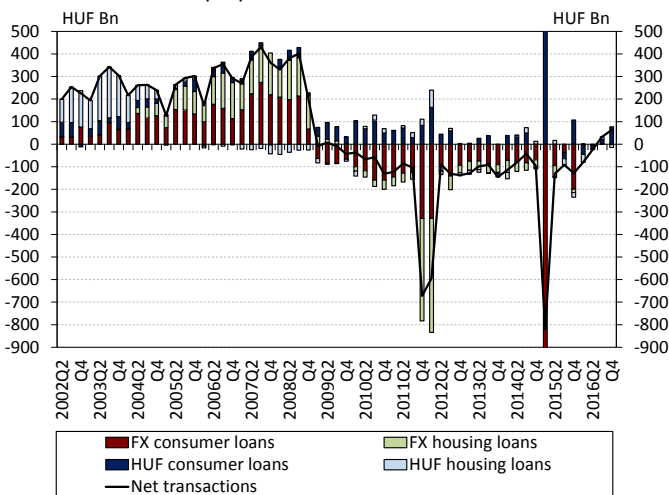
Source: MNB.

Chart 30: Annual growth rate of total domestic household loans



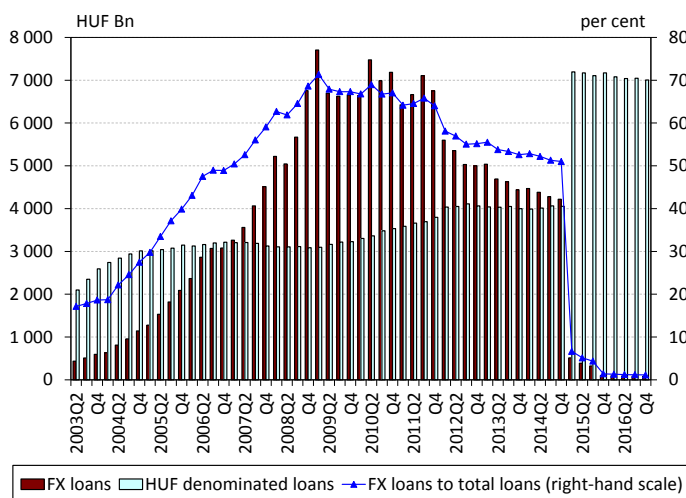
Source: MNB.

Chart 31: Transactions of household loans broken down by credit purpose and denomination



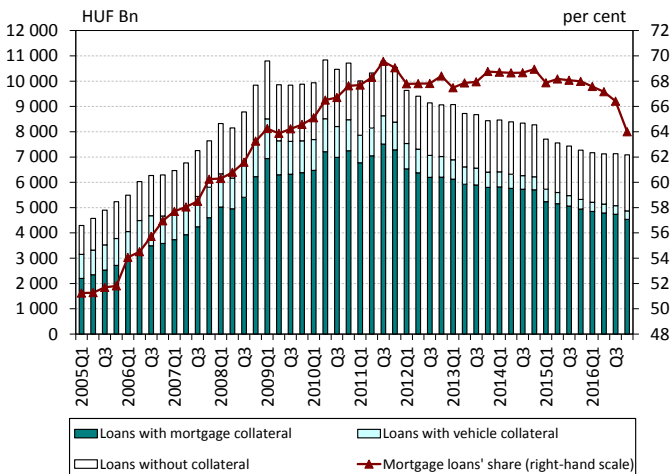
Source: MNB.

Chart 32: The denomination structure of household loans



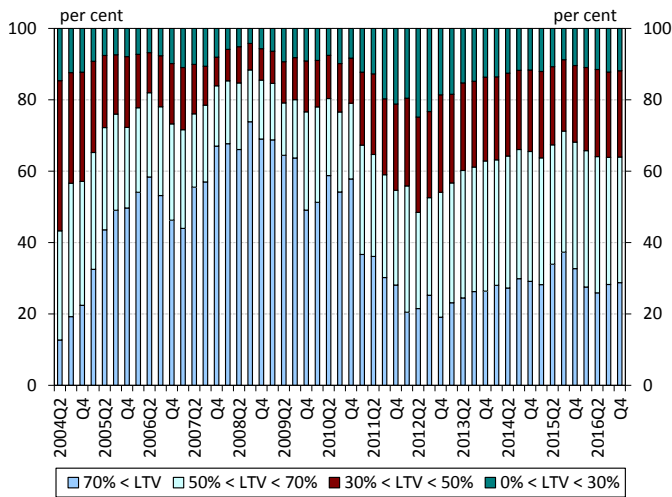
Source: MNB.

Chart 33: Distribution of household loans by collateralisation



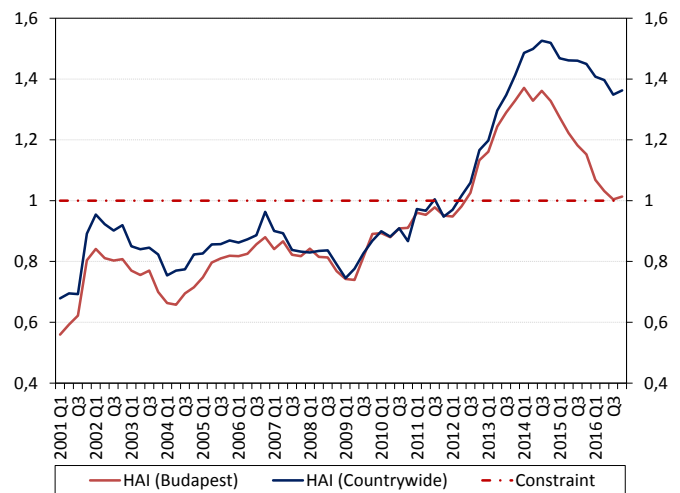
Source: MNB.

Chart 34: Distribution of new housing loans by LTV



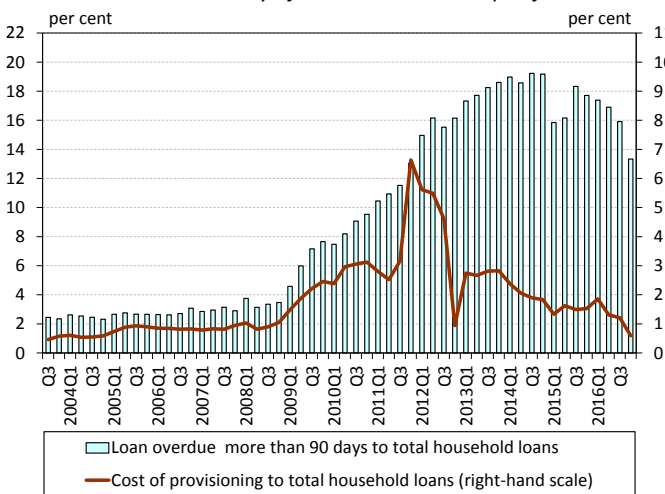
Source: MNB.

Chart 35: Housing Affordability Index (HAI)



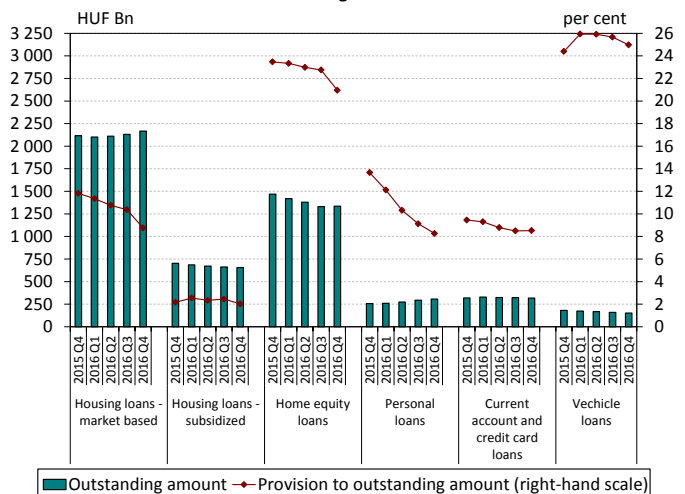
Source: MNB.

Chart 36: Quality of the household loan portfolio



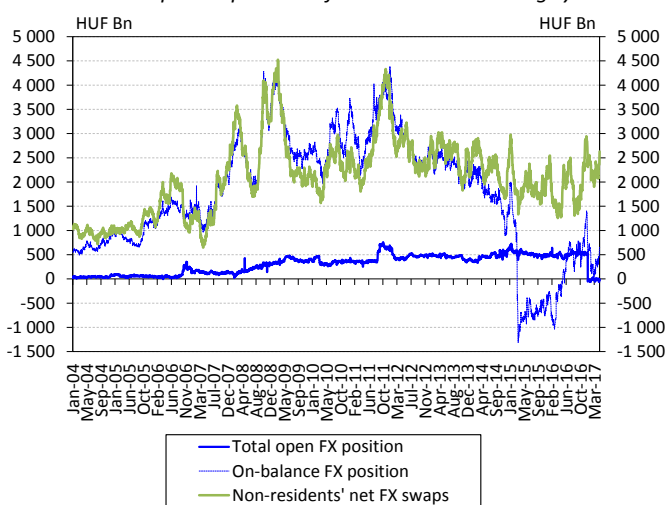
Source: MNB.

Chart 37: Provisioning on household loans



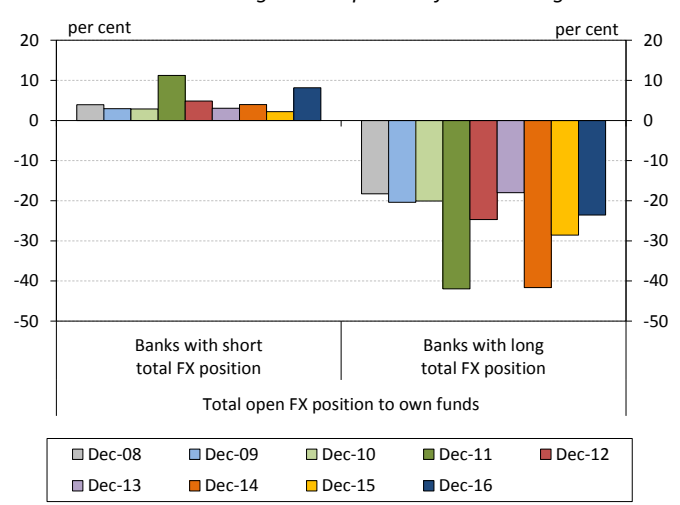
Source: MNB.

Chart 38: Open FX position of the domestic banking system



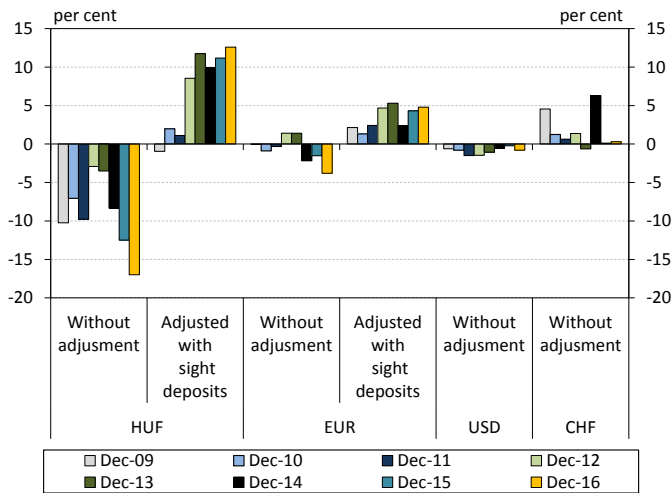
Source: MNB.

Chart 39: The exchange rate exposure of the Banking sector



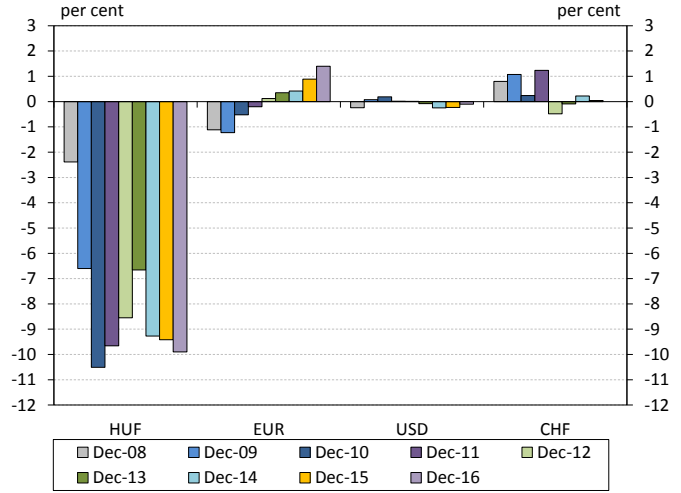
Source: MNB.

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



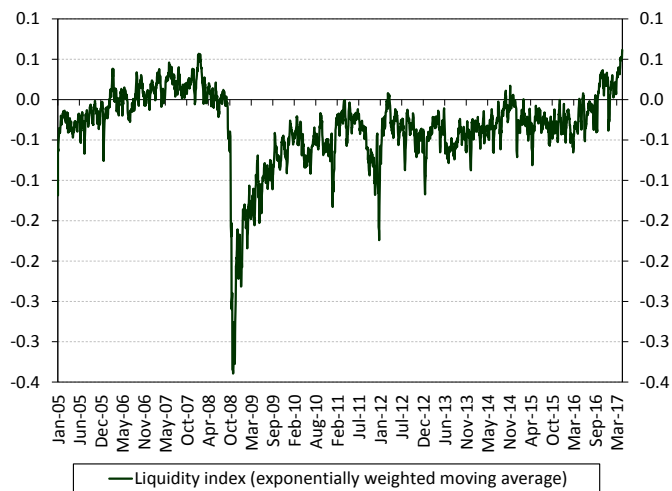
Source: MNB.

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



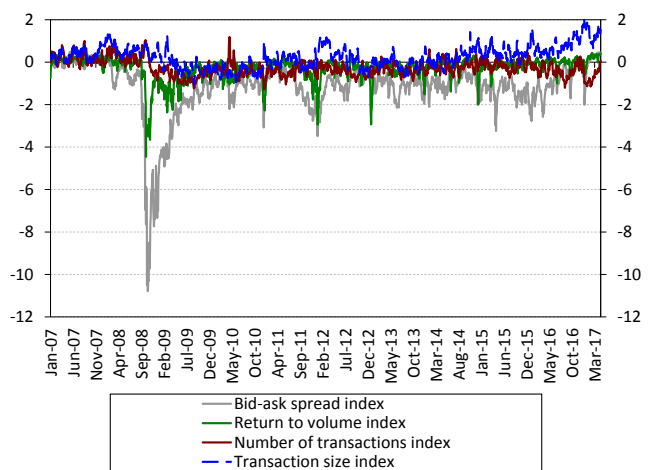
Source: MNB.

Chart 42: Liquidity index (exponentially weighted moving average)



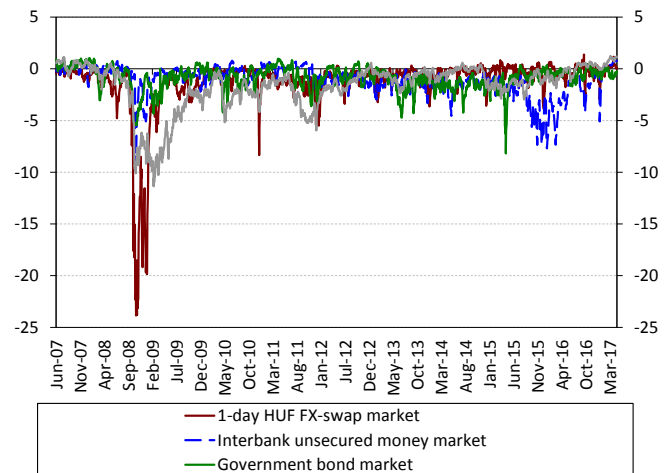
Source: MNB, KELER, Reuters, DrKW.

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



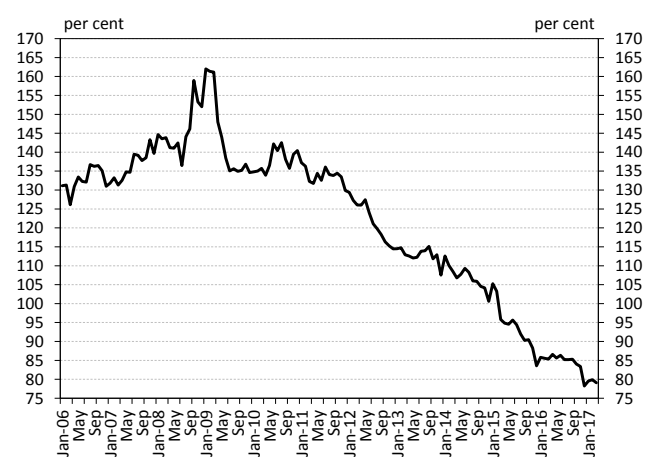
Source: MNB, KELER, Reuters, DrKW.

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



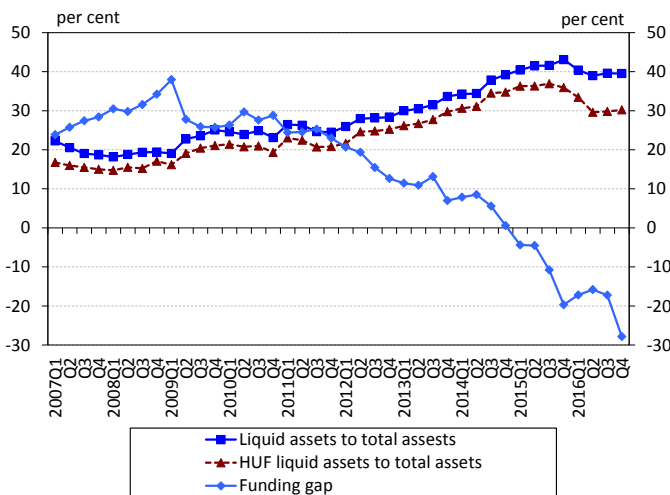
Source: MNB, KELER, Reuters, DrKW.

Chart 45: Credit to deposit ratio of the banking sector



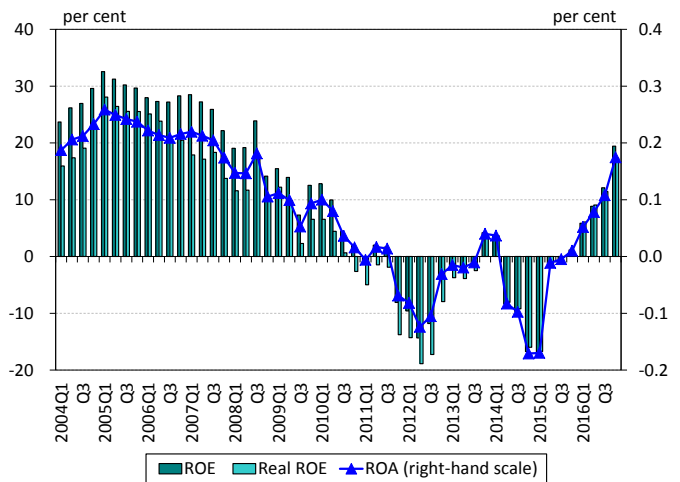
Source: MNB.

Chart 46: Liquidity ratios of the banking sector



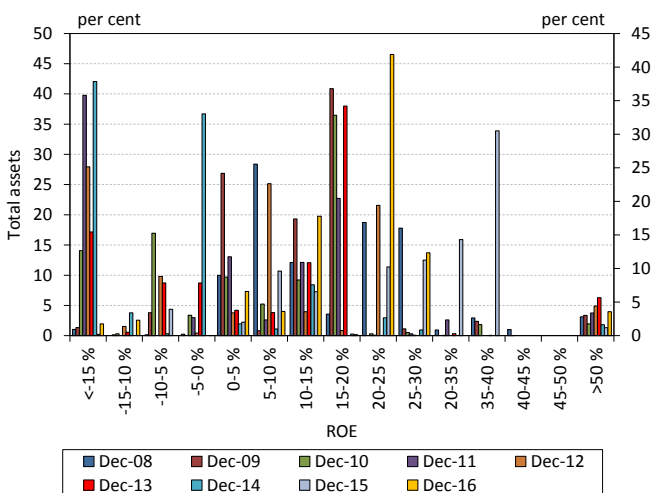
Source: MNB.

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



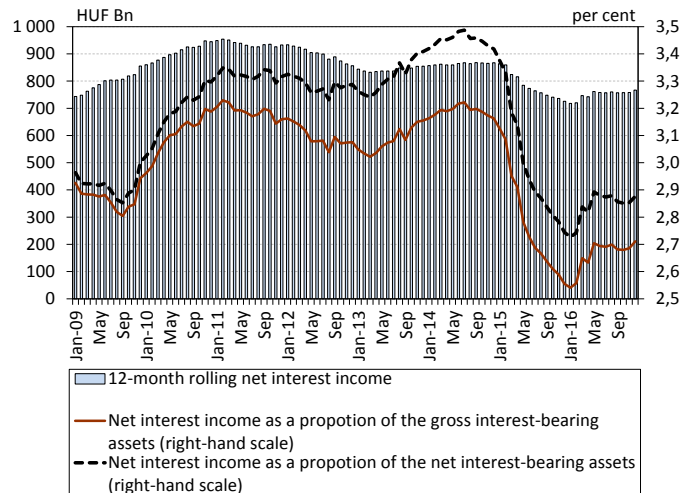
Source: MNB.

Chart 48: Dispersion of banks' total assets by ROE



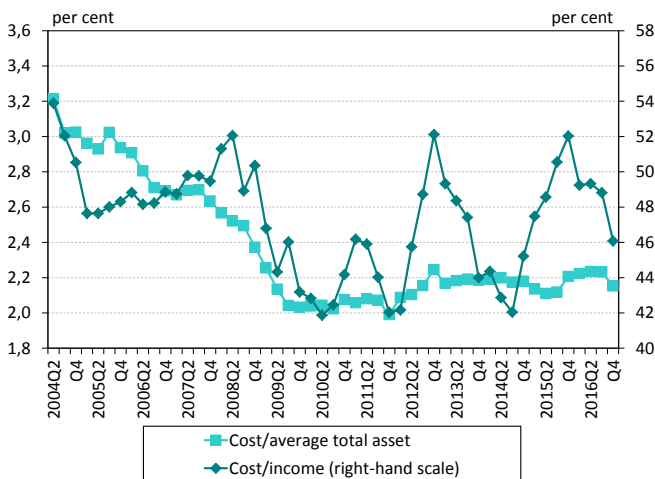
Source: MNB.

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



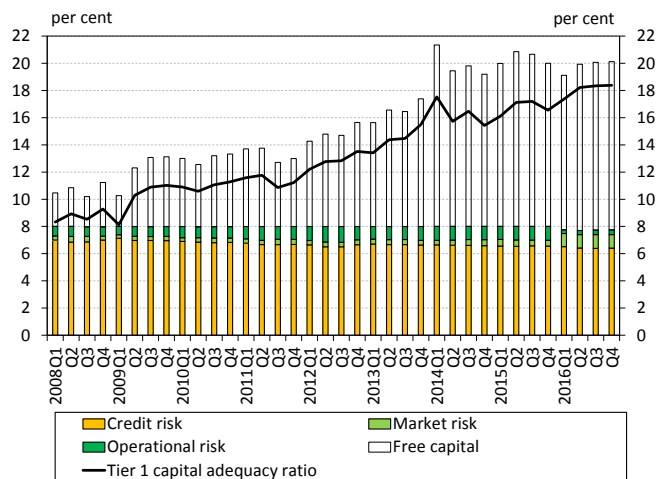
Source: MNB.

Chart 50: Operating efficiency indicators of the banking sector



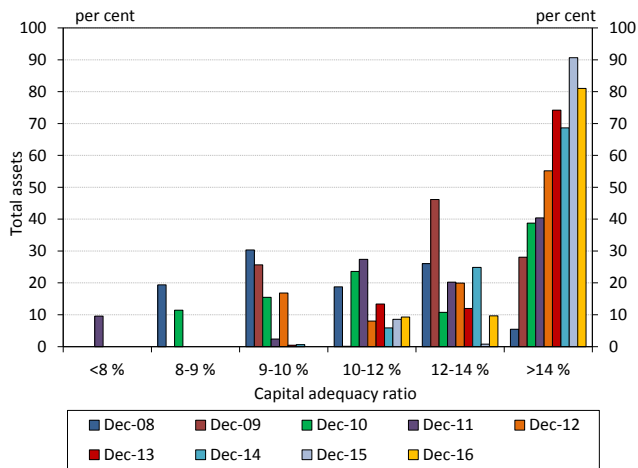
Source: MNB.

Chart 51: Banks' capital adequacy ratios



Source: MNB.

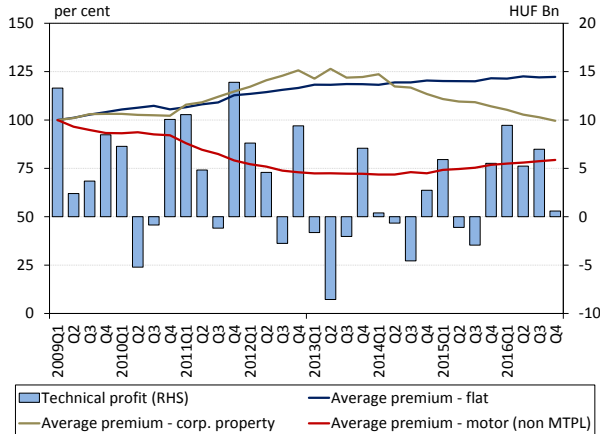
Chart 52: Dispersion of banking sector's total assets by capital adequacy ratio



Source: MNB.

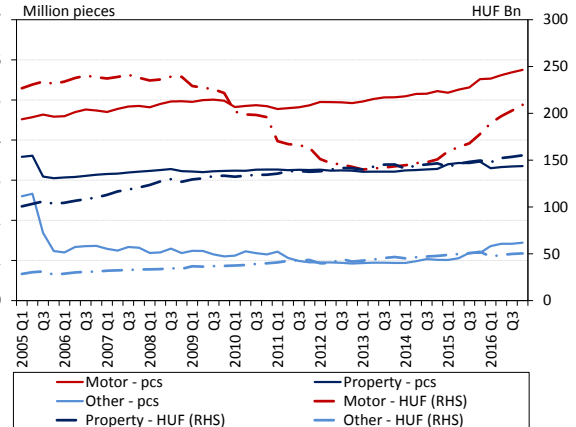
7. Institutional investors

Chart 53: Underline data of insurance tax



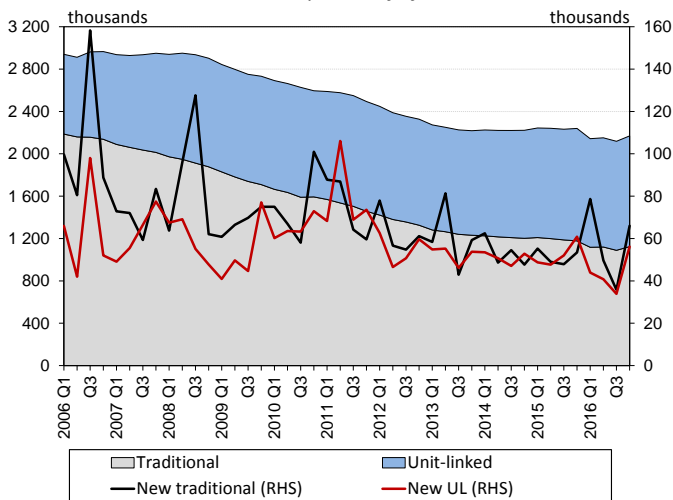
Source: MNB.

Chart 54: Development of non-life insurance



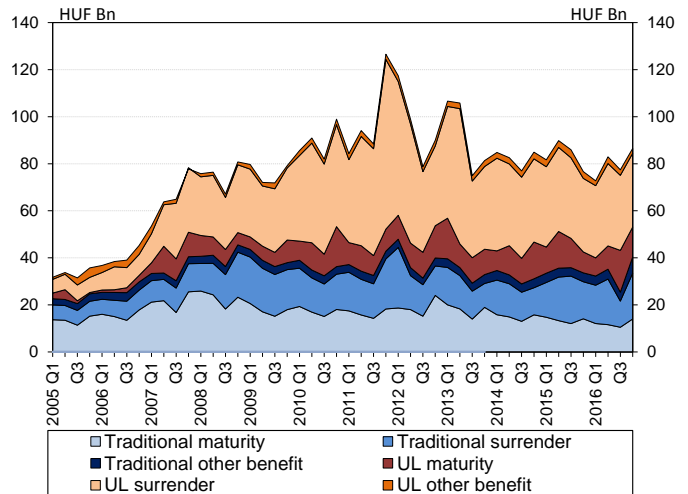
Source: MNB.

Chart 55: Development of life insurance



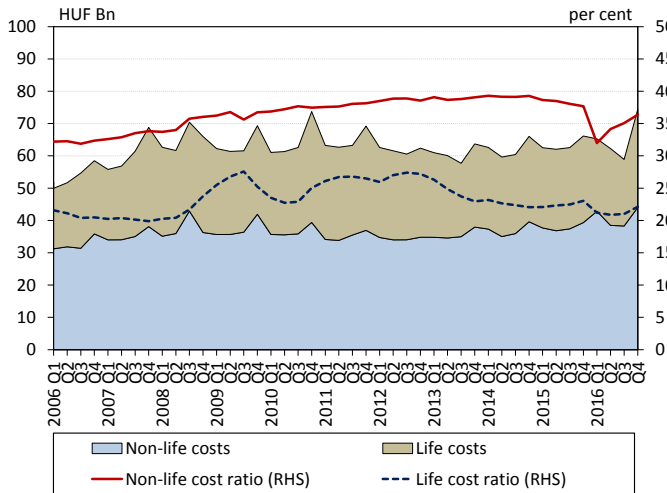
Source: MNB.

Chart 56: Life insurance benefit



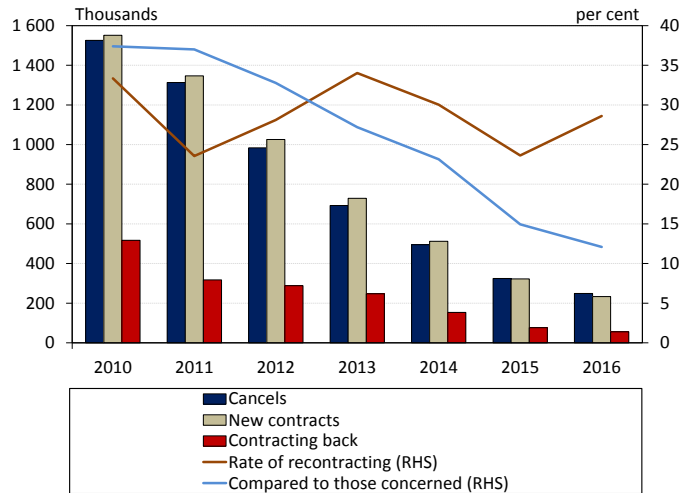
Source: MNB.

Chart 57: Costs in the insurance sector



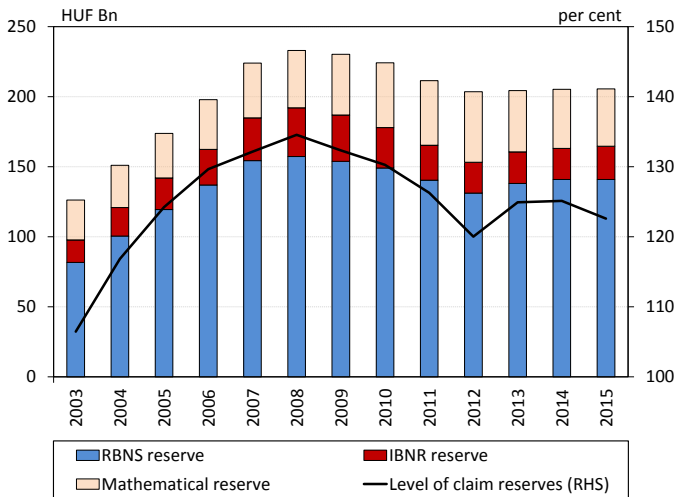
Source: MNB.

Chart 58: Development of mtpl insurance



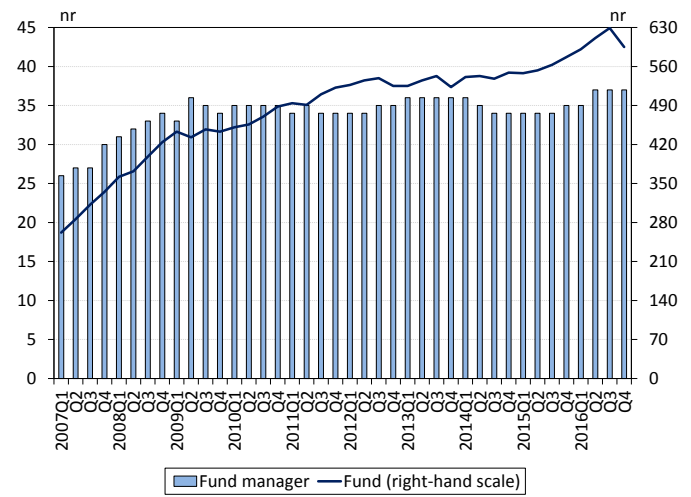
Source: MNB.

Chart 59: Development of gross mtpl reserves



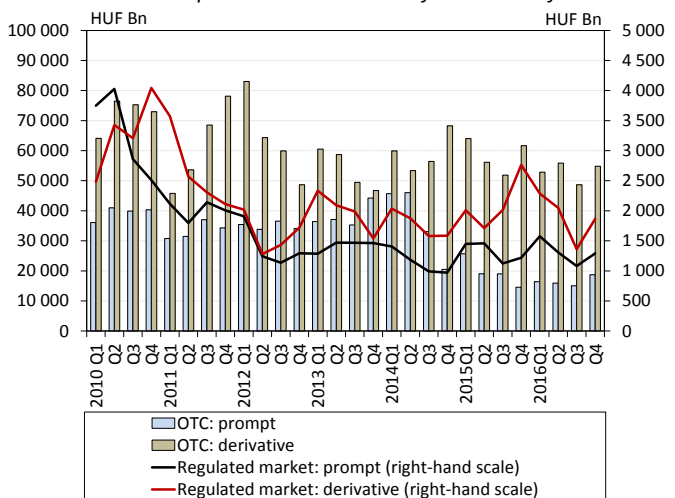
Source: MNB.

Chart 60: Number of investment fund managers and funds



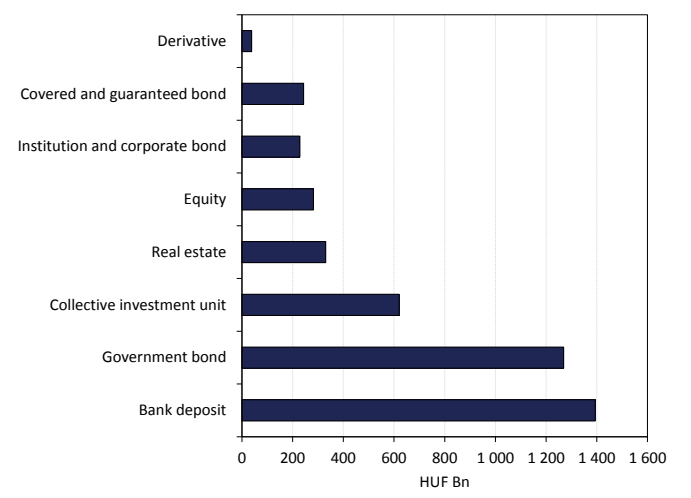
Source: MNB.

Chart 61: Capital market turnover of investment firms



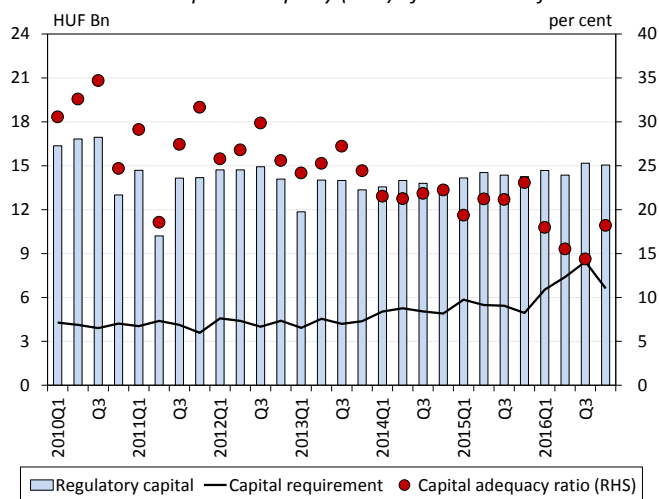
Source: MNB.

Chart 62: Asset allocation in public offered investment funds



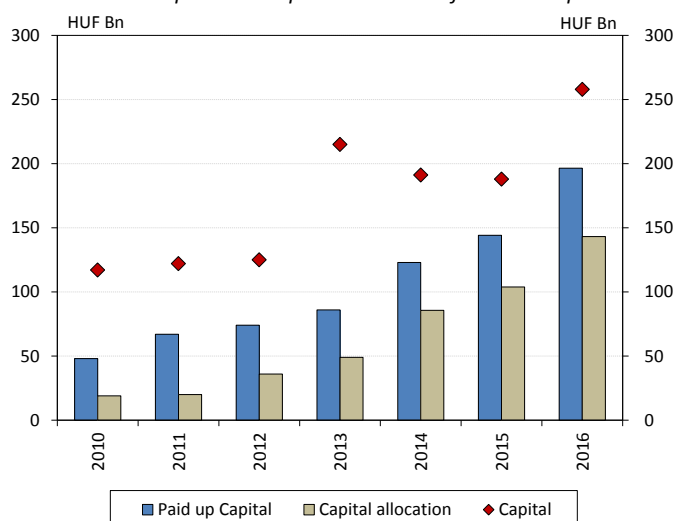
Source: MNB.

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. 2008) 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 24:**

FX loans, exchange rate as of end-February 2016, HUF loans adjusted by state loan refinancing in December 2002.

**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:**

31-Dec-2016



# 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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