FINANCIAL STABILITY
REPORT

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

Ferenc Deák

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

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

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

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

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

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EXECUTIVE SUMMARY

The shock-resilience of the Hungarian banking sector is robust, its external vulnerability continued to decline along with the vulnerability of the whole economy, and the resulting positive effects have been appreciated considerably in the light of the increased global financial stability risks. Market-based corporate lending, where subdued activity has been the main problem since the crisis, is expected to improve significantly during 2016 due partly to the Growth Supporting Programme. At the same time, the considerable non-performing household and corporate loans exposure stuck in the balance sheets of banks continues to pose a primary risk. Managing NPLs is essential for the banking sector to become able to adequately support sustainable economic growth.

The shock-absorbing capacity of the Hungarian banking sector continues to be strong; its capital position remains robust even in case of severe financial and economic stress. Capital adequacy at banking sector level amounts to 20 per cent, while the liquidity situation remains adequate in spite of the decline in liquidity stemming from certain central bank measures. The liquidity reducing impact was adequately offset by the expansion in banks' government securities holdings, which was stimulated by the MNB's self-financing programme as well, and it also reduced the external vulnerability of the country through the increasing domestic financing of government debt. The vulnerability of the banking sector continued to decline in 2015 H2 as a result of the conversion of the remaining household FX loans into HUF and a decrease in short-term external liabilities. The further decline in the vulnerability of the banking sector and the country was particularly important in the light of the increased global financial stability risks.

Overall, market-based corporate lending did not recover in 2015 either, which is also attributable to high risk aversion of banks. Corporate loans outstanding excluding one-off items shrank by 2.1 per cent. However, the focus should be on SME lending, as it proves to a more reliable indicator on trends in lending. SME sector plays a pivot role in terms of sustainable and inclusive growth, while large corporation can easily substitute domestic bank loans and given large loan sizes and subsequently high concentration, one-off cases can distort figures to a great extent. Outstanding loans to small and medium-sized enterprises further increased in 2015 H2, by 3.6 per cent year on year. The MNB launched its Growth Supporting Programme in early 2016, aiming at the restoration of market-based corporate lending. Based on banks' SME lending commitments related to the programme, SME loans outstanding may increase by 5–10 per cent during 2016 and 2017, and thus market-based corporate lending is expected to recover.

The housing loan and real estate markets picked up markedly during 2015 H2, which has been reflected in the considerable surge in housing prices and market turnover, as well. At the same time, the market is rather segmented; the pick-up was driven by used homes in the capital. Considerable pick-up is seen on the demand side as a result of increasing employment, growing real incomes and a low interest rate environment. All this may result in a wide range surge in demand. This trend is expected to continue, given that housing prices in nominal terms only returned to their levels seen ten years ago. Demand may further be heated by investment purpose, as last year's real estate market yields are attractive in the low interest rate environment. Looking at the supply side, however, the construction of new homes remains subdued both in historical and international comparisons, which may lead

to market frictions and a tight real estate market. As of 2016, the extended family housing allowance and the VAT reduction may drive the demand towards new homes, facilitating at the same time the adjustment of supply as well. Currently the rise in housing prices and demand for housing loans is not excessive, while the central bank macroprudential safety net also ensures sound lending. Nonetheless due to market frictions and external impacts, MNB has to closely monitor the real estate market and lending for housing.

The most important challenge of the current period is managing the problem of non-performing mortgage loan debtors. The National Asset Management Agency (NAMA) is settling the debts and dwelling of a total 35 thousand non-performing debtors, who are in a more difficult social situation. Nevertheless, even after that, the situation of some 130,000 non-performing mortgage loan debtors, i.e. nearly one quarter of total debtors, will remain unsettled. In this segment there are significant restructuring reserves as two thirds of the debtors have declared income, while more than 40 per cent paid off their debts partially, but not sufficiently for being classified as performing. Non-performing debtors' cooperation, observed to be low previously, is improving with the ceasing of the eviction moratorium, which is a key to successful search for a solution. In order to explore reserves in recovery, the MNB issued a recommendation for credit institutions, determining in detail the expected mini-mum framework of the cooperation between debtors and banks, focusing on sustainable solutions. The MNB continues to closely monitor the impact of its recommendation, and examines the necessity of applying further incentives.

In the case of corporate non-performing loans the resolution of a large bank reduced the banking sec-tor exposure markedly; however substantial problematic commercial real estate exposure remained in the balance sheets of the banks with a restrained cleaning rate in the past years. Looking ahead, im-proving commercial property market and of distressed assets may support the cleaning of banks' bal-ance sheets. Incentives announced by MNB play a significant role in the pick-up of the market of im-paired assets both on the demand and the supply side.

The profitability of the banking sector turned positive last year, and along with the decline in fiscal burdens, the growth in lending and increase in cost efficiency can result in a return on equity of 6-8 per cent in the banking sector for 2016 and 2017. In the longer term, despite the growing regulatory capital needs, RoE can rise to 10 per cent but the clean-up of distressed assets and systemic-wide con-solidation for further improvement of cost-to-asset ratios are needed. This trend could be suitable for the banking sector to be able to adequately support sustainable economic growth over the long term.

1. MACROECONOMIC AND FINANCIAL MARKET ENVIRONMENT – ACCUMULATING GROWTH AND FINANCIAL RISKS IN THE WORLD

Since the autumn of 2015, global financial stability risks have increased. In the developed countries, the uncertainty surrounding economic growth, while in the major emerging countries the growing vulnerability as well as the weak economic performance of commodity exporting countries and of the energy producing sectors add to the volatility of financial markets, and increase the peril of the global repricing of risk premiums. The growth prospects of the United States declined, but remain much more favourable than those of Europe. At the same time, due to the elevated global risks, the cycle of interest rate hikes in the USA is expected to be slower and flatter. This may result in a decline in the divergence observed between the monetary policies of the Fed and the ECB. In Europe, the macroeconomic environment continues to be weak and fiscal positions remain fragile, which is further exacerbated by the legacy of the crisis. In order to reduce the banking sector's protracted problems that have been unsolved for years and the increasing risks that surround financial stability, in March 2016 the ECB announced new measures to stimulate the economy. In spite of the uncertainty surrounding global economic growth and the weak performance of the euro area economy for several years, the Hungarian economy was able to grow in 2015 as well; the external balance improved further, and earlier systemic risks declined considerably.

Chart 1: Balance of direct and portfolio investments and changes in share prices in China
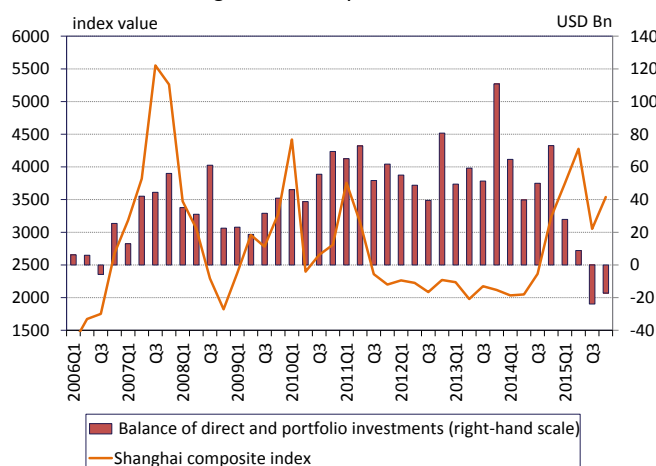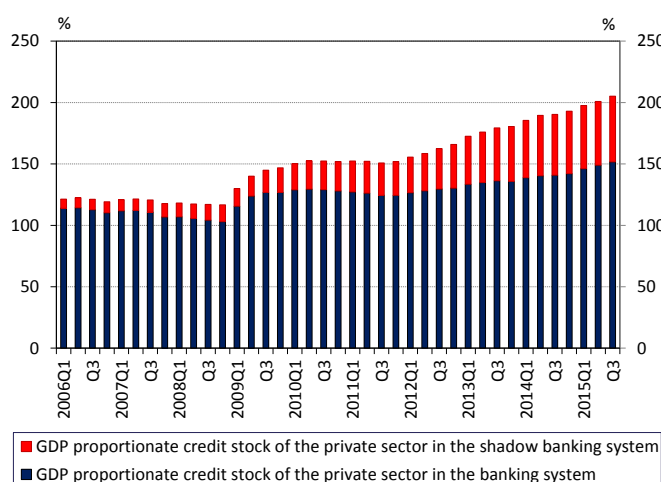

Source: State Administration of Foreign Exchange, Bloomberg.

Chart 2: Private sector credit-to-GDP in China

Source: BIS.

1.1. Increasing risks in emerging countries, continued unsolved problems in developed countries

Global growth is expected to be more subdued than anticipated earlier, primarily due to decelerating dynamics in China and the decline in prices, which has a negative impact on commodity and energy exporting countries. The decline in expected growth rates and the risks surrounding economic prospects are primarily attributable to the increasing vulnerability of the major emerging countries and commodity exporters. Euro area economy may grow by 1.5 per cent in 2016, which is 0.6 percentage point lower than the previous forecast, and is well below the growth expected in the United States (2.4 per cent). In spite of the weaker euro and the supportive monetary policy, attempts to put the economy on a permanent growth path have still remained unsuccessful in Europe. The subdued performance of the real economy continues to postpone the recovery from the crisis, and increases the probability that financial risks will materialize.

The growth prospects of emerging countries are characterised by heterogeneity, which further strengthens global financial risks. Due to the accumulation of risks surrounding emerging countries, a change may take place in investors' willingness to take risks. The market turbulence at the beginning of the year started from China, and resulted in significant capital outflows (Chart 1) and stock market volatility. Downside risks related to the prospects of the Chinese economy continued to strengthen this year, and although the growth rate is still considered high in international comparison, historically it has not been so low for a long time. It is a question whether an expansion in domestic demand will be able to offset the stronger than expected fall in the export performance of the Chinese economy. Nowadays, a significant restructuring is taking place in the Chinese econ-

Chart 3: Changes in major commodity prices (USD)
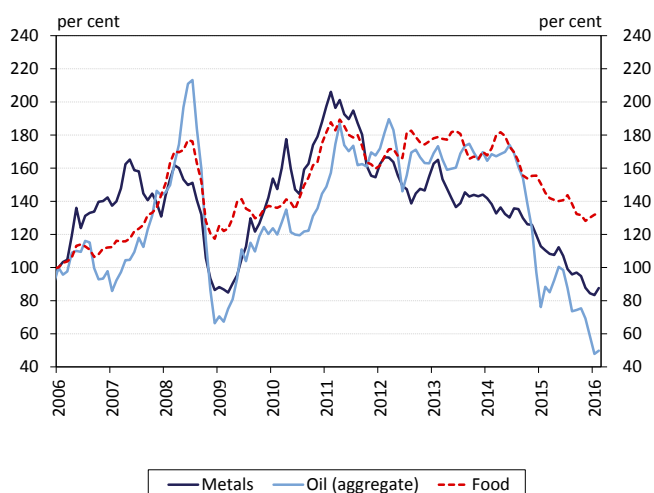
Notes: January 2006 = 100. Source: IMF.

Chart 4: Changes in the macroeconomic outlook in the USA and the euro area
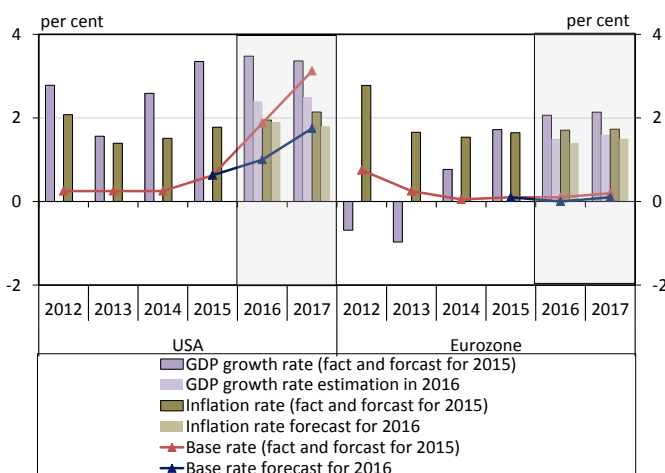
Notes: IMF, ECB and FED forecast for 2016 and 2017.
Source: IMF WEO, FED, ECB.

Chart 5: Changes in ECB balance sheet total to GDP and the volume of securities related to monetary policy operations
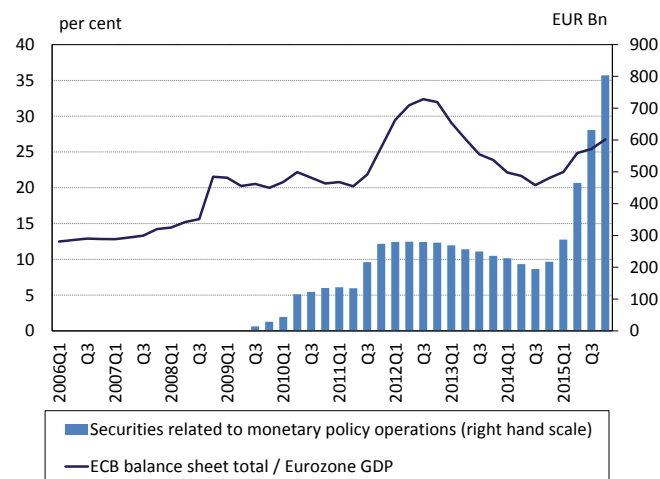
Source: ECB.

omy, and the related risks are further increased by the fact that in the meantime market mechanisms are also being introduced in a widening range. The mounting risks surrounding the Chinese economy and banking sector, such as the spreading of overheated lending and the shadow banking sector (Chart 2), may seriously affect not only China, but are significant at global level as well. Of the major emerging countries, the expansion of the Indian economy is impressive, and its growth prospects are good as well. At the same time, recession may deepen in Brazil. Firstly, commodity exporting economies are hard hit by the significant fall in commodity and energy source prices (Chart 3), which resulted in current account deficits in many countries, and secondly, the sovereign and corporate debt that accumulated earlier, mainly in dollars, represents an increasing burden, often accompanied by deteriorating credit rating. Moreover, the expectations hoping that the decline in commodity prices would result in global economic growth did not prove true. At the same time, as a result of the decrease in commodity prices, the investments of sovereign funds also fell significantly, and these investments are also missing from making the world economy more dynamic. In these days the world market price of crude oil is cheaper than in 2009, and in the case of several oil exporting countries it is below the production costs.

In early 2016, a material change took place in the earlier expectations concerning the Fed's interest rate hike cycle. Finishing its quantitative easing, which lasted for years, the Fed raised the interest rate in December 2015, but further steps are surrounded by uncertainty. The 25 basis point rate hike of the Fed was typically welcomed by the markets; the tightening was not followed by a global wave of asset repricing. As a result of the rate hike, the dollar continued to strengthen against the majority of currencies. However, this appreciation hindered the exports of the US economy, and as a result of approaching the level of full employment, the earlier source of expansion of domestic demand became drained. Moreover, due to the low crude oil prices, inflation expectations continued to decline, although the rate of inflation had already been below the 2 per cent inflation target. All this resulted in changes in the expectations related to the Fed's tightening, i.e. the Fed's interest rate hike cycle is expected to be slower and flatter this year (Chart 4). Therefore, the divergence observed between the Fed's and the ECB's monetary policies may decline, although the central banks of developed countries continue to conduct different monetary policies. While the Fed and the Bank of England (BoE) have already finished monetary easing, the ECB (Chart 5) and the Bank of Japan (BoJ) continue their respective quantitative easing policies. Of the central banks

Table 1: Measures of the ECB's Governing Council

Measure	Timing
Rate cut to 0% on main rate, to -0,4% on deposit rate, and to 0,25% on marginal rate.	From March 16th 2016
Launch of a new targeted longer-term refinancing loan program (TLTRO II), allotting four-year loans at extremly low interest rate (even at -0.4%).	From June 2016
Extension of eligible bonds' scope and combined monthly bond purchases under the asset purchase programme (APP) are to increase to €80 billion from €60 billion.	As of 1 April 2016

Source: ECB.

Chart 6: Annual growth rate of the private sector's outstanding loans in the euro area
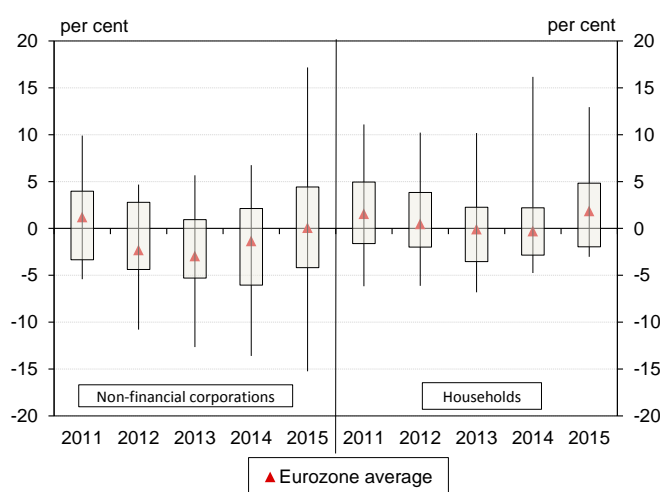
Notes: The chart depicts the 25–75 percentile value of the EU member states' yearly growth rate in lending volume together with the average value of the Eurozone. Source: ECB.

Chart 7: Changes in portfolio quality among EU Member States

Notes: Gross total doubtful and non-performing loans/total debt instruments and total loans and advances. Source: ECB CBD, EBA.
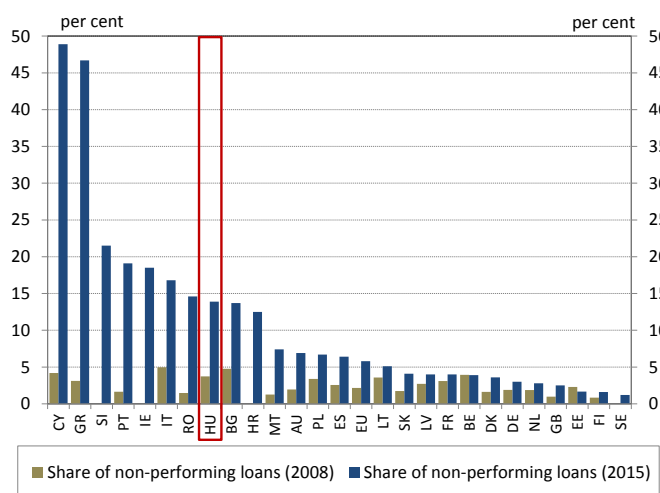
of developing countries, the People's Bank of China reacted to the unfavourable macroeconomic data and the financial market turbulences with several measures, and in the recent months it injected additional liquidity amounting to CNY 5000 billion (USD 765 billion) into the Chinese banking sector.

Due to the many-sided risks surrounding the Union, the difference in growth rates between the EU and the USA may remain in place. Protracted geopolitical risks are indicated by the increasing frequency and intensity of tensions. The conflict between Russia and the Ukraine is still unsolved, and the crisis in the Middle East is deepening. In addition, it is increasingly difficult for Europe to cope with the growing number of migrants. Moreover, until the result of the referendum about the Brexit, the EU also has to take into account the possible exit of the United Kingdom. The protracted geopolitical tensions have an unfavourable impact on the economic growth of EU Member States, hinder investment and structural reforms, and through the deteriorating market sentiment they pose a financial stability risk that is becoming steady.

The sustainability risk of corporate and sovereign debts continues to be significant. As a legacy of the crisis, high corporate and sovereign debts are coupled with permanently low economic growth and political instability in several EU Member States. The current loose monetary policy has a favourable effect on debt financing, but subdued growth, weak profitability and low inflation do not facilitate a quick reduction of outstanding debts. The prospects related to Greece were somewhat improved by the fact that one of the major credit rating agencies raised the country's credit rating. Nevertheless, Greek banks are still dependent on the ELA funds (the ECB's emergency liquidity assistance).

To date, the ECB's monetary easing has not resulted in a breakthrough, thus it carried out a further easing of monetary conditions in March. After a longer break, in March 2016 the ECB cut the interest rates again (Table 1), as the economic prospects of the euro area continued to worsen, and lending dynamics remain weak and segmented. On its March rate-setting meeting, the Governing Council of the ECB cut its policy rate to 0 per cent, reduced the interest rate on the deposits placed with the ECB to -0.40 per cent and its overnight lending rate to 0.25 per cent. The monthly limit of the asset purchase programme was raised from EUR 60 billion to EUR 80 billion, and now the ECB may also purchase euro-denominated bonds issued by (non-bank) euro area companies that are in the investment category. The TLTRO II will be launched in June 2016. Within its framework, the ECB will grant 4-year loans to banks, and the in-

Chart 8: Negative feedback loop between bank profitability and economic growth
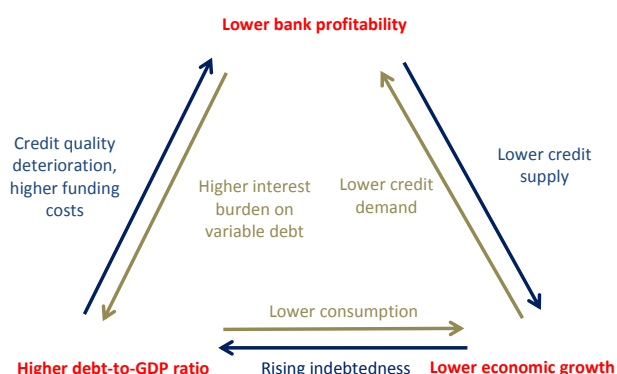
Source: ECB.

Chart 9: Changes in Hungarian GDP growth (year-on-year)
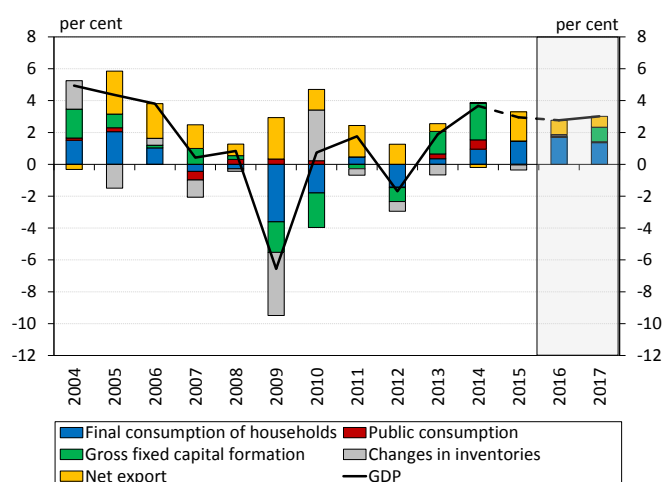
Source: Quarterly Report on Inflation, March 2015, MNB.

Chart 10: Hungarian sovereign 5-year CDS spread and its decomposition, and developments in the 10-year government securities yield
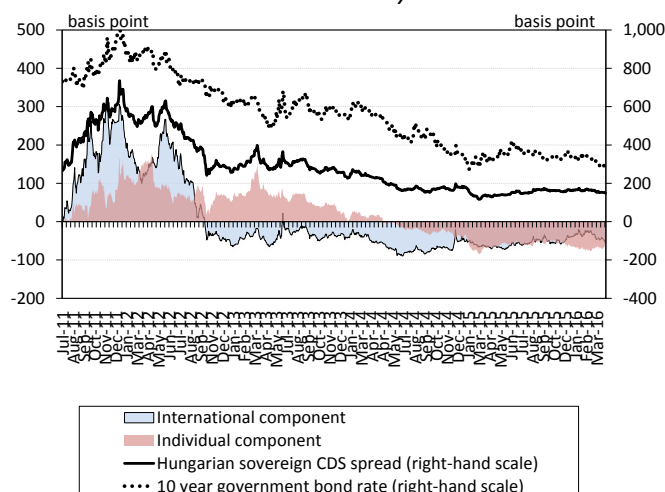
Note: Actualization of the estimated parameters' decomposition retroactively modified the time series of certain components, thus those figures may differ from the formerly estimated values.
Source: Thomson Reuters, MNB.

terest on these loans may even be negative. While the negative deposit rate erodes banks' profitability, the reduction of the base rate and the low TLTRO II interest rate may be considered favourable in this respect. With ECB's decision, the chance of 'low for long' interest rates increased in the euro area, which continues to keep banks' profitability under pressure. At the same time, the expansion of the monetary easing programme strengthens the expectations concerning the economic recovery of Europe.

The banking sector of the euro area is still burdened by a number of unsolved problems. The main sources of the problems are the heavy legacy of the crisis and the unfavourable state of the macroeconomy, coupled in several countries with weak lending activity (Chart 6), high NPL ratio (Chart 7) and low profitability. In spite of the fact that funding costs have sunk to a historically low level, no turn has taken place in corporate lending. The negative feedback between banks' weak profitability and low economic growth still could not be broken (Chart 8). The high ratio of non-performing loans hinders the growth in lending in a number of countries, especially in the southern Member States and the Central and Eastern European region. For making lending more dynamic, it is of key importance to facilitate portfolio cleaning; this is why increasing attention is being paid to this subject in Europe. Although low profitability is typical of European banks, the underlying reasons vary considerably. Therefore, the treatment of the problem also requires a country-specific approach.

1.2. Declining vulnerability and continued economic growth in Hungary

The growth of the Hungarian economy is sound and continuous, its exposure to external risks is declining. In 2015, Hungarian economic growth continued by 2.9 per cent, with a balanced structure. The Hungarian economy may expand by 2.8 per cent in 2016 and by 3.0 per cent in 2017 (Chart 9). Supported by dynamically increasing real wages resulting from improving labour market trends and low inflation, household consumption picked up significantly last year. In addition to households' consumption expenditure, transfers in kind and public consumption, increasing in line with the drawing of EU funds at the end of the year, also contributed to the growth in final consumption. The sectoral distribution of growth showed strong heterogeneity; there was significant growth in the public and quasi-fiscal sectors that use EU funds, while the performance of the corporate sector declined. The contribution of net exports to growth remained positive, which was also supported by an improvement in the terms of trade through the low oil prices. Household consumption and net exports will remain deter-

Chart 11: Changes is net external debt as a percentage of GDP in a regional comparison
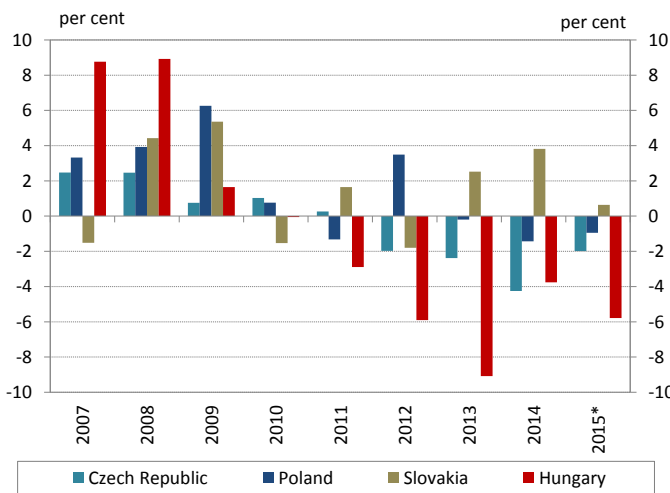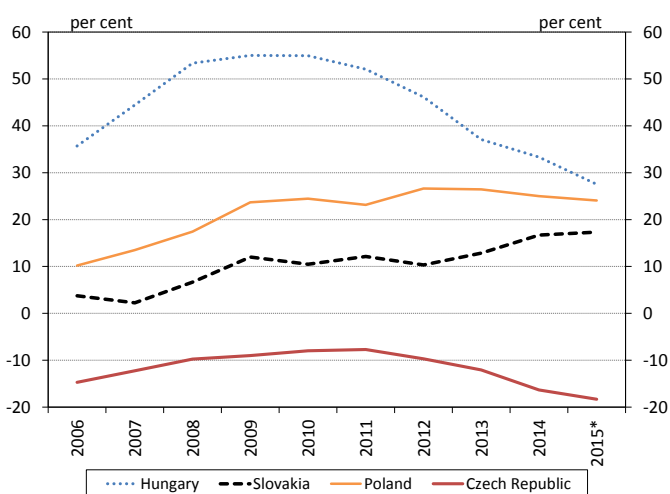
Notes: The value for 30 September 2015 is shown for 2015 debt.
Source: Eurostat.

Favourable developments in the domestic financial markets. The favourable real economy and banking sector developments of the recent period had a positive impact on Hungary's risk assessment. The conversion of FX mortgage loans into HUF played an important role in it, resulting in a material decline in Hungary's external vulnerability. In March 2016, the Hungarian CDS spreads were nearly at the same levels as at end-October 2015 (Chart 10). The exchange rate of the domestic currency against the euro seemed stable; the exchange rate of the euro against the forint continues to fluctuate around 310, i.e. the level observed in early 2015. With low volatility, the yield of long-term government securities was practically stagnant: the yield of 10-year Hungarian government bonds amounted to 3.28 per cent at end-September and to 3.25 per cent in early March. The renewal of the MNB's monetary policy instruments, the facilitating of banks' self-financing and the continuation of the global search for yield contributed to the stabilisation of yields at low levels. However, the more restrained growth of emerging market economies, the more subdued developments in whole-economy investment, and the money market turbulences as well as the possibility of a faster correction of the low oil and commodity prices can be identified as risks for the Hungarian economy.

External balance indicators continued to improve in 2015. The annual surplus of the current account increased to above 4 per cent of GDP, while, due to a rise in EU transfers, the capital balance was close to 5 per cent. Exceeding 9 per cent, the external financing capacity is significantly above the similar indicators of the countries in the region. In addition to the rising external position, banks and corporations repaid a large part of their external debt, resulting in a further decline in the external vulnerability of the Hungarian economy. In parallel with the further improvement in the external balance position, Hungary's net external debt continued to fall (Chart 11), reducing the country's external vulnerability. Hungary's net external debt as a proportion of GDP has been declining for years, approaching the regional level (Chart 12) mainly as a result of the decrease in external debt components. In addition, the increase in nominal GDP also contributed to the decline in the GDP-proportionate indicator. In addition to the decrease in the net external debt-to-GDP ratio, the gross external debt level has also been declining since 2011, and the funding requirement for the roll-over of maturing debts has also become lower. Looking ahead, gross external debt level will continue to fall, as the GDP is increasing in 2016, and at the same time the

Chart 12: Net external debt as a percentage of GDP in a regional comparison

Notes: The value for 30 September 2015 is shown for 2015 debt.
Source: Eurostat.

Chart 13: System-wide Financial Stress Index (SWFSI)
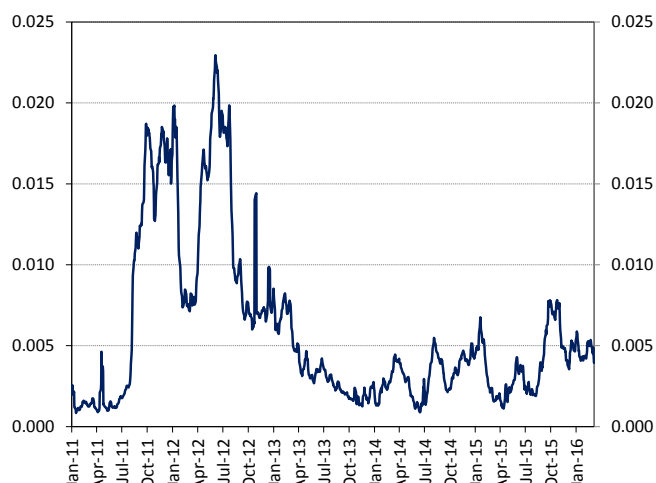
Notes: According to the new calculation method. Higher index value constitutes higher stress. Index value to 31.03.2016. Source: MNB.

Chart 14: FX swap spreads
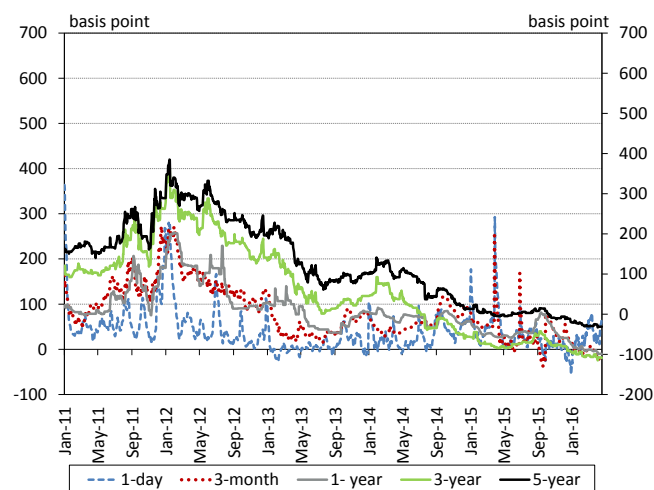
Notes: Exponential moving averages are shown in case of the spreads with maturity less than 1-year. Source: MNB, Bloomberg.

Chart 15: Central bank overnight deposits outstanding and the distance of the HUFONIA from the base rate

Source: MNB.

size of maturing debt equals that of 2015.

1.3. Low spreads and adequate liquidity in the money market

Starting from August 2015, the systemic stress level of the domestic financial markets increased slightly, but remained low. At end-Septemb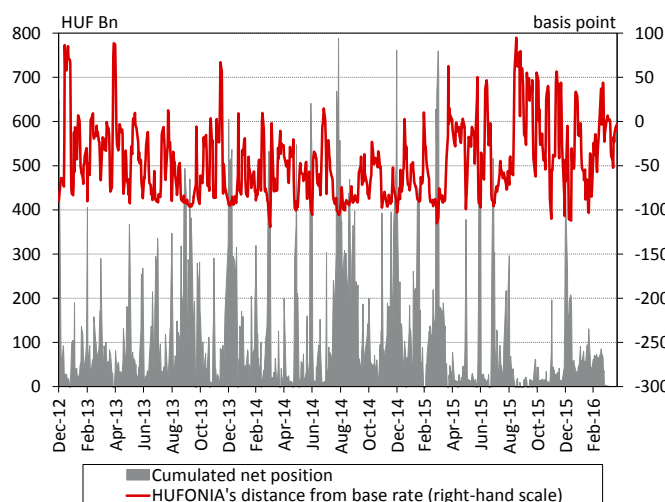er 2015, the value of the system-wide financial stress index (SWFSI) surged, before stabilising as of November at a higher level than that of the period between March and August (Chart 13). Examining the individual markets separately, between September and February the stress level of the bank segment rose to the greatest extent, which can be explained with the global market tensions at the beginning of the year. The stress level of capital markets increased to a lesser extent, which is largely attributable to the volatile performance of international stock exchanges. In December and January, bid-ask spreads in the interbank unsecured money market increased for a short time, resulting in a temporary deterioration in liquidity, but looking at the period as a whole, there was no material change in the stress level of the market. In the FX swap market, the usual end-of-year tensions caused a temporary rise in spreads, but this rise was much lower than in the previous years. The stress level of the secondary market of government bonds continued to decline as a result of strong domestic demand. As of 2016, the SWFSI values are calculated according to a renewed methodology (see Box 1).

At end-2015, FX swap spreads remained at a low level. In 2015 Q3, FX swap spreads were around zero, whereas a slight increase in spreads was observed in the case of short-term swap transactions starting from January (Chart 14). In December, long-term FX swap spreads continued to decline. Until end-February 2016, the 1-year spread decreased by 55 basis points, then the rate of decline in spreads decelerated as of the second half of January. As a result of the reduction of the reserve requirement, at the beginning of December the banking sector was characterised by elevated forint liquidity, which was also reflected in the short-term spreads. At end-2015, the overnight swap spread increased to 84 basis points.

The gradual phasing out of the two-week central bank deposit expanded the liquidity of the forint interbank market. In September, the HUFONIA approached the top of the interest rate corridor, then it fluctuated in a wide band around the base rate, which indicates banks' active liquidity management (Chart 15). At the same time, following the transformation of the main policy instrument, additional significant liquidity flowed into the overnight interbank

Chart 16: Benchmark yields of government securities and the policy rate
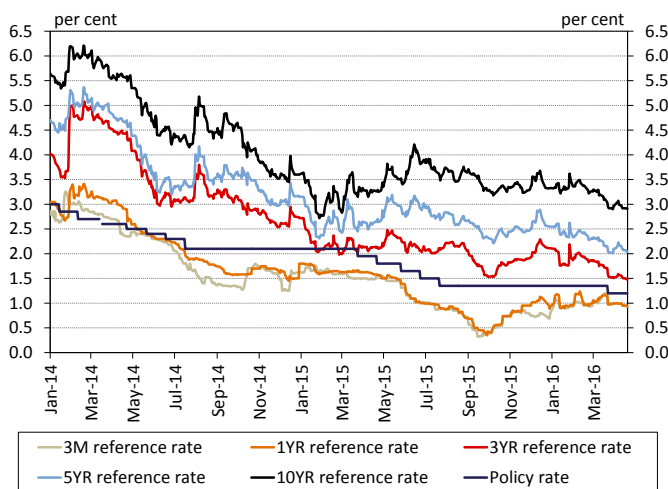
Source: MNB, ÁKK.

Chart 17: Structure of outstanding government debt by owners
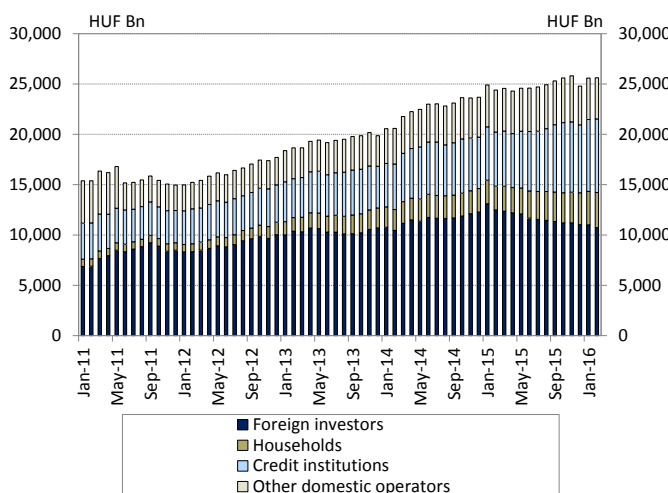
Notes: The stock of credit institutions contains the stock of money market funds. Source: MNB.

market. As a result, the O/N interbank interest rate sank slightly below the interest rate corridor on several occasions. In the period between September 2015 and February 2016, average daily recourse to the central bank O/N deposit was HUF 118 billion lower than in the same period of the previous year. During the last week of December and at the beginning of January, single treasury account outflows resulted in high systemic liquidity, prompting banks to place O/N deposits.

Government securities market yields remained practically unchanged. From October until mid-December, both short- and long-term government securities market yields increased slightly. In the case of longer-term government securities, the rise was in conformity with the developments in US long-term yields. Until 15 December, the yield of the one-year government security and that of the three-year one increased by 70 basis points and 74 basis points, respectively (Chart 16). In the subsequent period, yields on the whole yield curve declined slightly. The reduction of non-residents' government securities holdings continued as of October, but the government securities purchases implemented within the framework of the self-financing programme were able to offset it, so it did not affect government securities market yields. As a result of these developments, short-term benchmark yields got closer to the base rate, and the yield curve became flatter.

Developments in the ownership composition of government securities were favourable. As a result of the low interest rate environment, the average interest rate on retail government securities continued to be above the deposit rates, encouraging households to purchase more government securities. Therefore, their holdings grew by HUF 460 billion from August to January, reaching HUF 3340 billion, i.e. 13 per cent of the total holdings (Chart 17). In the same period, government securities holdings at credit institutions increased by HUF 877 billion to HUF 6924 billion, representing a 27 per cent share at end-January. As a result of all the above, the share of government securities held by residents increased to 57 per cent, ensuring significant stability in the market. It also reduces the vulnerability of the government securities market that in parallel with the decrease in foreign ownership, ownership concentration also declined considerably.

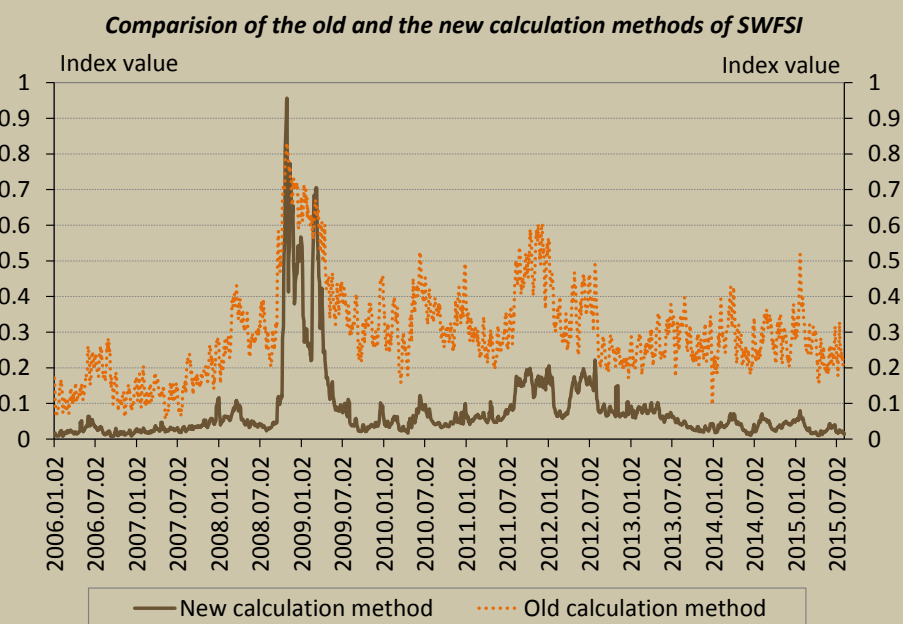**BOX 1: ABOUT THE ALTERED METHODOLOGY OF THE SWFSI**

The system-wide financial stress index (SWFSI) is a fast-reaction stress indicator that efficiently captures the fundamentals of the financial system. The indicator was designed to show the current stress level of the financial system, jointly looking at the individual market segments of the financial system and taking into account the co-movements.

The value of the SWFSI unites the indicators monitoring the risks of individual market segments into an index that reflects the level of systemic risks. This is an index without dimension, measuring the stress level of the financial system. The value of the index becomes sensible historically: a picture of the size of current systemic risks is provided by comparing the values of the time series to known crisis or stress periods.

The MNB has recently renewed the SWFSI. The necessity of the revision was primarily justified by the fact that the FX loan conversion significantly reduced the financial systemic risk stemming from the foreign currency loans, to which risk the original indicator was especially sensitive. While preserving the original content and methodological basis of the SWFSI, the objective of redesigning the index was to rethink – in accordance with the changed environment – the essential points of decision-making that influence the efficiency of the indicator. Our efforts aimed at vesting the redeveloped model with the same content, but higher sensitivity and expanded usability.

Comparision of the old and the new calculation methods of SWFSI

Source: MNB   Note: In order to compare we raised the value of new SWFSI to five times higher.

Accordingly, during the redesigning of the SWFSI the sub-indices were reweighted, and thus they show the impact of individual financial segments on the real economy more precisely. In parallel with the change in the country's exchange rate exposure, we also reduced the exchange rate sensitivity of the SWFSI. In addition, the new indicator also provides a better reflection of the co-movement of the financial sub-indices in the value of the main index. As a result, the noise level of the indicator has declined, and thus it gives a stronger signal when stress events occur.

As shown in the chart as well, the index resulting from the redesigning has become significantly more precise and faster reacting. Its main advantage is that it shows the current stress level of the financial system with a lower deviation and less noise. The signals given for shocks and stress periods are more clearly visible, thus easing the interpretation of the signals. This feature makes the SWFSI to be further suitable as a basis for macroprudential measures as well, in addition to the general monitoring of the systemic stress.

2. REAL ESTATE MARKET – SEGMENTED PICK-UP IN THE HOUSING MARKET, IMPROVING COMMERCIAL REAL ESTATE MARKET

During 2015 H2, the recovery of the domestic housing market continued, which was also indicated by the expansion in market turnover, in addition to a significant increase in housing prices. As a result of the rise in housing prices, the importance of adequately conservative and prudent evaluation of mortgage collaterals arises, which is a test of the macroprudential safety net. The pick-up in the housing market is currently in line with the improvement in the income situation, although it does not show a uniform picture from several aspects. Although the prices of new homes, similarly to those of used ones, increased significantly, in an annual comparison the number of transactions in the market of new homes declined during 2015, which, overall, may also be attributable to the low level of the new supply. Furthermore, more remarkable pick-up in the housing market is seen mainly in the capital and in larger cities. The VAT cut introduced for new homes by the Government may facilitate the implementation of investment that has been missing and thus the supply of new homes of adequate quantity and quality, while the extended family housing allowance (FHA) may drive the demand from used homes towards new ones. Continuous improvement is observed in the commercial real estate market as well. The vacancy rate of offices in the capital has already reached the pre-crisis level, which – taking account of the low interest environment as well – may make these properties an attractive investment.

Chart 18: Housing price indices and the number of housing market transactions
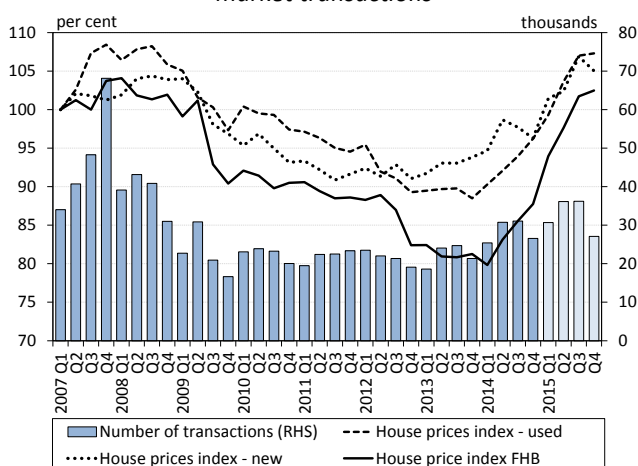
Note: In the case of the price index of new and used homes, 2015 Q1–Q4 are based on preliminary data. In the case of transactions, 2015 Q1–Q4 are based on estimated data. Source: HCSO, FHB.

Chart 19: Percentage deviation of nominal house prices/per capita nominal GDP from the long term average
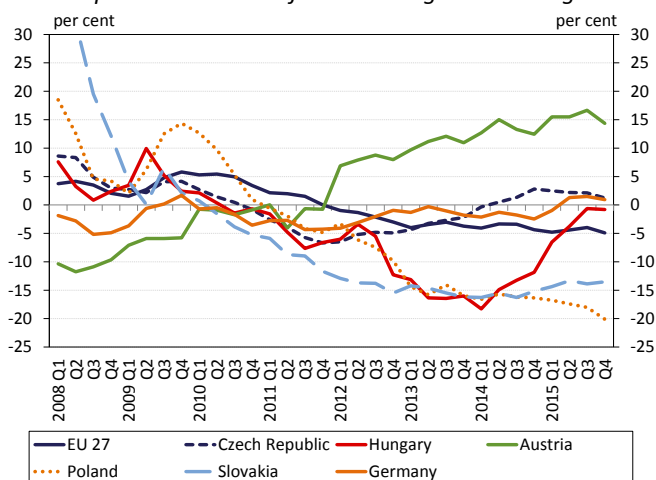
Source: Eurostat, BIS, FHB, MNB. Note: Calculating the long-term average of the housing price index/per capita GDP 2005 and 2015.

2.1. Pick-up in the housing market is heterogeneous in several aspects

The considerable increase in housing prices and transactions reflects a pick-up in the market. During 2015, the FHB housing price index for the housing market as a whole increased by some 17 per cent (Chart 18). Price increase dynamics was the fastest in Q1, when housing prices increased by 7 per cent on average. During Q2 and Q3 the growth rate of prices declined to around 4 per cent, while it slowed down to some extent at the end of the year. Based on the calculations of the Hungarian Central Statistical Office (HCSO), the prices of both new and used homes increased significantly in 2015. In the period under review, the average price of used homes and new ones rose by 11.6 per cent and 9.1 per cent, respectively. The considerable increase in housing prices shows a pick-up in demand, which is reflected in the increasing number of transactions as well.

The ratio of housing prices to the per capita GDP is still below the long-term average of the indicator. In terms of financial stability, it is especially important that housing prices should be in line with macroeconomic fundamentals. At the end of 2015, even in spite of the significant increase in housing prices, the ratio of house prices to the per capita income did not exceed the long-term average of the indicator, i.e. housing prices are relatively in harmony with the income situation (Chart 19). However, in terms of locations, changes in housing prices may show a heterogeneous picture; as a result of the relatively greater pick-up in the used homes market of the capital, the increase in housing prices in this market segment presumably also exceeded that of the national average. Accordingly, the market may be overheated in certain locations. Overall, the con-

Chart 20: Annual change in the number of housing market transactions
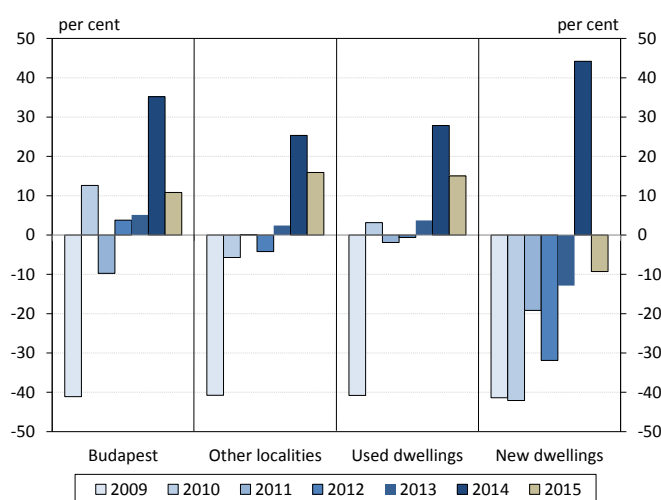
Note: 2015 Q1–Q4 based on estimated data. Source: HCSO, MNB.

Chart 21: Yield attainable by investment into housing, deposit yield and the reference yield
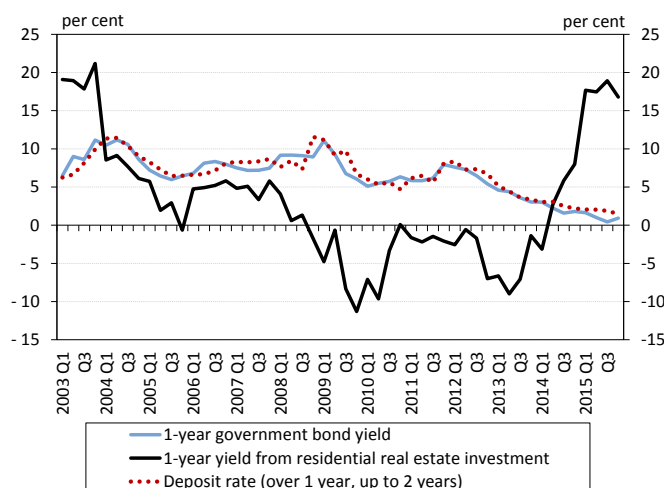
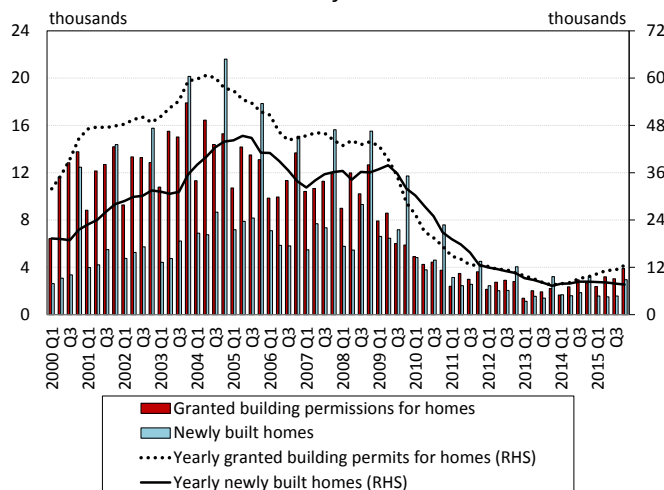Note: The yield realisable from home investment is calculated exclusively based on changes in housing prices. Source: Government Debt Management Agency (ÁKK), FHB and MNB

Chart 22: Number of building permits issued for homes and the number of homes built

Source: HCSO, MNB.

servative evaluation of collateral is of key importance in terms of the proper operation of the macroprudential instruments as well (Box 2).

The pick-up in the housing market is segmented both in terms of prices and transactions. The greatest increase in average square metre prices was observed in Budapest. During 2015, a 19 per cent increase was seen in the capital, while the average square metre prices in county seats, towns and villages rose only by 11, 5 and 8 per cent, respectively, in the same period. The pick-up in housing market transactions does not show a uniform picture either. In 2014, the number of transactions in Budapest exceeded the figure for the same period of the previous year by 35 per cent, while in other settlements this indicator amounted to 25 per cent. In 2015 this development is about to turn, however based on preliminary data. On the other hand, the housing market turnover in the used segment showed considerable expansion during the 2015, while the number of transactions fell in the market segment of new homes (Chart 20). As of 2016, the extended FHA may generate further demand in the market of new homes, thus facilitating the balancing of the housing market and the mitigation of the pressure in the market of used homes.

In parallel with the demand increasing effect of the improving real income and labour market situations, the low interest rate environment also added to the demand for homes for investment purposes. As the yield attainable through investing into housing was well above the reference yields in the past two years (Chart 21), domestic and international investment-purpose demand may have strengthened in the housing market, which may also explain the segmentation. In addition, in the low inflation environment, pay rises in the private sector improved the income position of the population, and thus the previously postponed housing investment may have also gradually appeared in the housing market.

The number of new homes put into use is at a historical low due to supply frictions. During 2015 H2, a total 4529 homes were built (put into use), whereas the figure for the whole year is 7612 (Chart 22). The number of homes built and put into use in 2015 was 8.9 per cent lower than in 2014. Constructions of new homes are at a historical low at the moment; on an annual basis, their volume of 1.3 per cent compared to the GDP is extremely low, relative to the 4.5 per cent average of the countries of the European Union. The low level of new constructions shows the lack of supply of new homes of adequate quantity and quality. The underlying reasons are mainly attributable to sectoral frictions, deterioration in the availability of suitable workforce

and base materials. The VAT cut of new homes introduced by the government in early 2016 may facilitate the implementation of postponed investment (house-building and gated communities as well). Nevertheless, the number of new building permits shows a cautious expansion during 2015 H2, indicating an improvement in the future.


BOX 2: THE IMPORTANCE OF DEBT CAP RULES AND OF THE PRUDENT EVALUATION OF MORTGAGE COLLATERALS

The pick-up in the housing market is also backed by an increase in housing loans, which is further strengthened by the significantly raised amounts of allowances to families. Competition and the dissolving of supply constraints may also be facilitated by the launching of national home creation partnerships. At the same time, ensuring the competitive neutrality and prudent operation of the shadow banking system that is outside the supervision of the financial sector requires closer attention. **Consequently, the debt cap rules – concerning the loan-to-value ratio and the payment-to-income ratio – set up by the Central Bank may become increasingly effective.** An important aspect is that the debt cap rules should be able to limit an undesired degree of the pick-up in lending, without hindering the sustainable growth of the housing loan market and the adequate functioning of the state allowance system. Therefore, looking ahead, the price changes resulting from the increase in demand compared to the equilibrium prices have to be examined, and it is necessary to monitor how 'stretched' households' income positions are. Households' interest rate risk related to mortgage loans may considerably be reduced by a stronger spreading of loans with longer interest rate periods. This is also supported by the March 2016 amendment to the debt cap regulation through the fact that the instalments of these loans can be taken into account in the payment-to-income (PTI) ratio in a preferential manner.

It is of particular importance to continuously monitor the equilibrium level of housing prices both on the basis of financial stability considerations and from the aspect of macroprudential instruments as well. The MNB launched several methodological developments in order to identify the equilibrium housing price level; the relevant findings will be made public in the later issues of its new publication entitled Housing Market Report to be published first in May 2016. While typically constituting the largest part of households' assets, residential properties serve as collateral for mortgage loans, thus the changes in their prices affect the balance sheets and profitability of financial institutions. Therefore, changes in housing prices may also have an impact on the household sector's consumption and savings decisions. At the moment of borrowing, the limits regarding loan-to-value ratios set up constraints for households to prevent them from becoming excessively indebted compared to their assets. However, excessive increases in housing prices or their over heatedness may lift households' ability to borrow to above a healthy level, whereas the correction following the over heatedness of housing prices adds to banks' expected losses by increasing the loss given default (LGD). Therefore, within the macroprudential instruments, the limits concerning the loan-to-value ratio are able to prevent excessive loan outflows only if the residential properties serving as collateral are evaluated in a prudent and conservative manner, in spite of a possible rising phase of the housing market.

For a consistent determination of the loan-to-value (LTV) ratio, reliable and less volatile evaluation of the collateral is a key issue. Decree 25/1997 of the Ministry of Finance (MF Decree) on the Methodological Principles of Determining the Collateral Security Value of Real Estates not Qualified as Arable Land regulates how mortgage credit institutions have to determine the collateral security value of properties offered to them as collateral within the framework of refinancing. The aim of the amendment to the MF Decree effective as of 21 March 2016 is that, in addition to mortgage credit institutions, now all creditors should revise, pursuant to this decree, the collateral security value of the mortgaged properties that serve as collateral for the loans and financial leases provided by them. **The significance of the MF Decree is increased by the growing importance of secured refinancing, as a result of the MNB's interventions that reduce systemic risks.** Firstly, this is reflected in the MNB Decree on the Regulation of the Forint Maturity Match of Credit Institutions. For covering household mortgage loans, the Decree requires the issue of mortgage-backed securities or refinancing with it to reach at least 15 per cent. The MNB Decree on the regulation of the payment-to-income ratio and the loan-to-value ratios is also important; its part regulating the loan-to-value ratios may actively rely upon the MF Decree. However, as last time the MF Decree was amended as of 9 November 2005, the necessity of revision arises. It is worth examining whether the three methods indicated in the MF Decree (valuation based on comparative market analysis, valuation based on yield calculation and cost-based valuation) require any fine tuning or if they are in line with international standards.

Chart 23: Office space to let and vacancy rate in the office market of Budapest
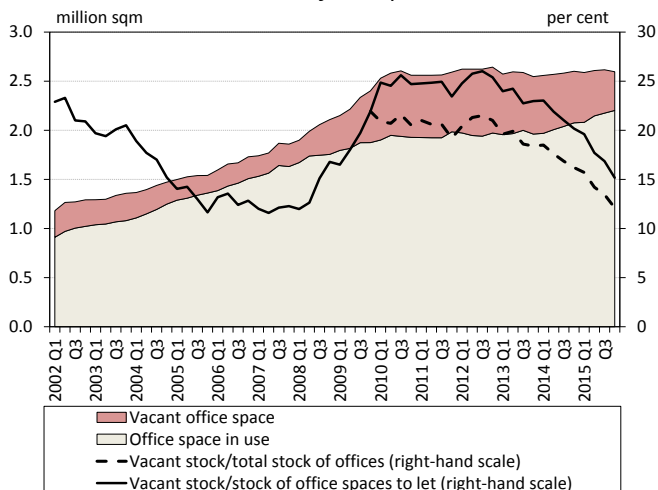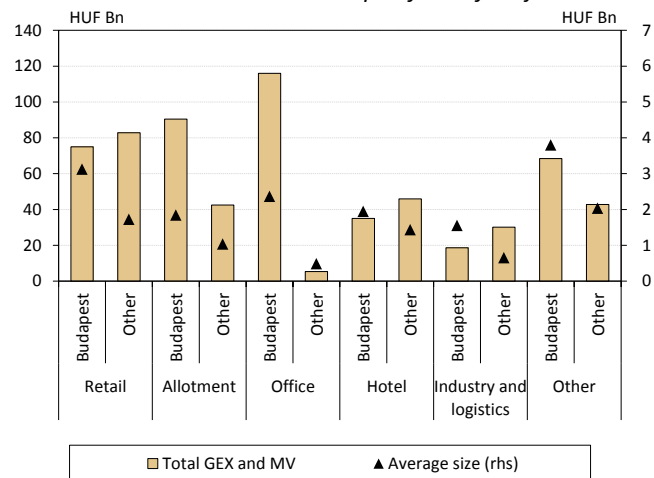

Source: Jones Lang LaSalle, MNB.

Chart 24: Vacancy rate of industrial and logistics real estate to let and new rental contracts in Budapest and its agglomeration
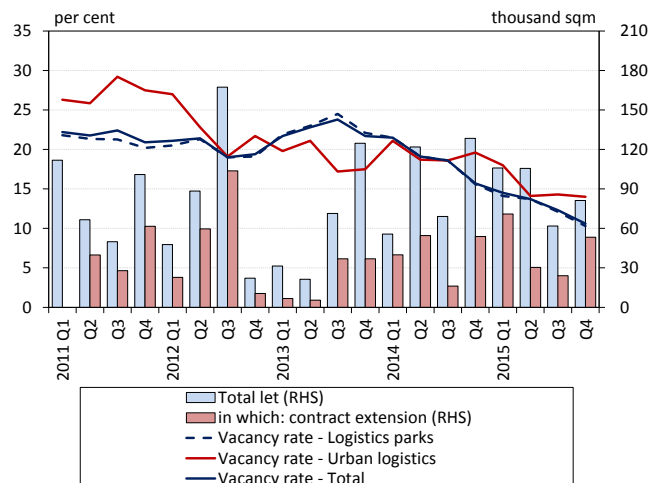
Source: Budapest Research Forum (BRF), Jones Lang LaSalle.

Chart 25: Commercial real estate receivable and repossessed commercial real estate portfolio of major banks

Note: Data of June 2015. Based on gross exposure of receivables and market value of repossessed real estates. Source: MNB.
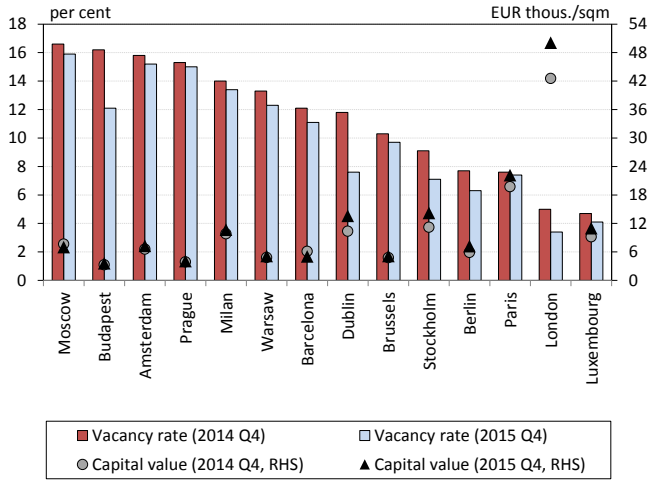
2.2. The situation of the commercial real estate market is improving

The vacancy indicators of the Budapest office market continued to improve; their values are already close to pre-crisis levels. In line with the trends observed in the previous years, the utilisation of offices in Budapest continued to improve in 2015 H2. The vacancy indicator for all the offices in the capital declined from 14.2 per cent at the end of 2015 H1 to 12.1 per cent by the end of the year, while the vacancy rate of office space to let only declined from 17.7 per cent to 15.2 per cent in the period under review (Chart 23). The improvement in the lease market is also shown by the fact that in 2015 lease agreements for some 538 thousand square metres of office space were concluded, representing a 16 per cent increase compared to 2014. Otherwise, contract extensions excluded, the expansion is nearly 45 per cent compared to 2014.

Major improvement took place in the lease market of industrial and logistics properties in the capital. During 2015 it was already nearly the third year when the vacancy rate of industrial and logistics properties offered for rent in Budapest and its vicinity declined continuously. In 2015, the vacancy rate of the latter properties decreased by nearly 5.1 percentage points, standing at 10.6 per cent at the end of the year (Chart 24). As a result, at end-2015 the utilisation of industrial and logistics properties in Budapest already exceeded the value observed for offices offered for rent. Greater improvement was observed in terms of vacancy in the case of logistics parks around the capital, which together account for 90 per cent of all industrial and logistics properties offered for rent, than in the case of logistics properties located within Budapest. Against this background, in 2015 the lease agreements that were concluded concerned a somewhat smaller area than in 2014, although net absorption was positive, i.e. the area leased for industrial and logistics purposes increased. Overall, as a result of improving real economy developments, the demand for properties to let have increased, which, coupled with the low interest rate environment, may make commercial real estates in Budapest a more attractive investment.

General improvement in the market environment may facilitate the clearing of problematic commercial real estate market exposures stuck in banks' balance sheets. At the end of 2015 H1, some 63 per cent of major banks' problematic commercial real estate market receivables and commercial properties included in the balance sheet were related to the retail sector, plots of land and the office market. In addition, nearly 62 percent of problematic real

estate market receivables and properties included in the balance sheet belonged to Budapest (Chart 25). On the one hand improving trends of the real estate market in the capital may facilitate the cleaning of the real estate market exposures stuck in banks' balance sheets, while as a result of higher collateral values, they may reduce additional losses potentially arising during the clearing.

The improvement in the domestic office market is outstanding even in international comparison. During 2015, the vacancy indicators of the office markets of all the – mainly European – cities under review followed an improving trend. However, the improvement in the market in Budapest, together with the one in Dublin, is outstanding compared to other cities. In 2015, there was a general decline in expected yields of property investments, which may partly be attributable to the low and still declining interest rate environment as well. The decline in expected yields and the increase in the best rents attainable in the majority of the cities under review pointed to a rise in the value of properties in many places (Chart 26).

Chart 26: Vacancy rate in international comparison

Source: Jones Lang LaSalle.

3. LENDING – IMPROVING DEVELOPMENTS IN LENDING TO SMES AND HOUSEHOLDS

Throughout 2015, developments in corporate lending were predominantly characterised by diverging trends according to corporate size. While lending to the SME sector increased by a total 3.6 per cent y-o-y compared to 2014, total corporate lending declined by 4.3 per cent respectively. This is mainly attributable to the fact that within the large corporate portfolio the decline was primarily because of high-amount, one-off items. However, they can be considered exogenous to the forward-looking underlying developments. As regards credit demand, banks perceived increasing willingness to borrow, long-term credit, in particular. The second phase of the Funding for Growth Scheme (FGS), which was closed at end-2015, significantly contributed to SME lending. Credit supply, on the one hand, was characterised by a continued decline in interest rates in line with the policy rate cuts, while on the other hand, banks indicated an easing in credit conditions, primarily in terms of non-price conditions. In addition, respondent banks also indicated a further considerable easing of future conditions in accordance with the improvement in the economic outlooks, in which the reduction of the bank levy for 2016 and the introduction of the central bank Market-based Lending Scheme (MLS) may have played an important role. Within the framework of the MLS, banks concluded the tenders with a value of nearly HUF 800 billion, with which, in line with the conditions of the scheme, they committed to increase SME lending by more than HUF 190 billion in 2016. Based on the above mentioned, similarly to our previous forecast, SME lending is expected to expand by a growth rate between 5 and 10 per cent in 2016 and 2017 as well.

Households remained net debt repayers vis-à-vis financial intermediaries in 2015 H2 as well. In addition to the trends in borrowings and repayments, outstanding loans declined at the end of the year also as a result of the conversi on of FX auto loans and personal loans. Nevertheless, new disbursements increased considerably; the volume of new contracts was 19 per cent higher in 2015 than in 2014. Pick-up in household lending was predominantly attributable to housing loans, where new disbursements increased by a total 36 per cent on an annual basis, however the volume of loans borrowed for purchasing new homes remained unchanged. Moreover, banks also reported an expansion in the demand for housing loans in the Lending Survey; in detail this development is supported by an increase in real wages, the decline in debt service burdens and an improvement in consumer confidence through all this. Credit conditions, however, remained unchanged in the period under review. The home creation measures of the Government are expected to have a stimulating impact on households' credit demand in 2016. Accordingly, a slight expansion in household lending is foreseen over the forecast horizon.

Chart 27: Quarterly changes in the financial intermediary system's corporate loan portfolio (transactions)
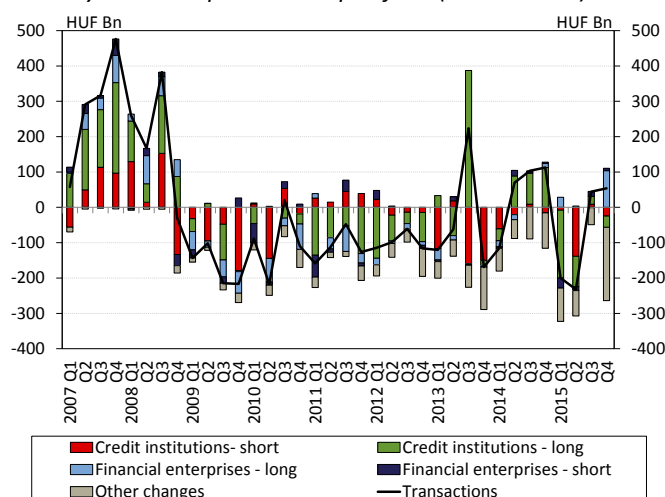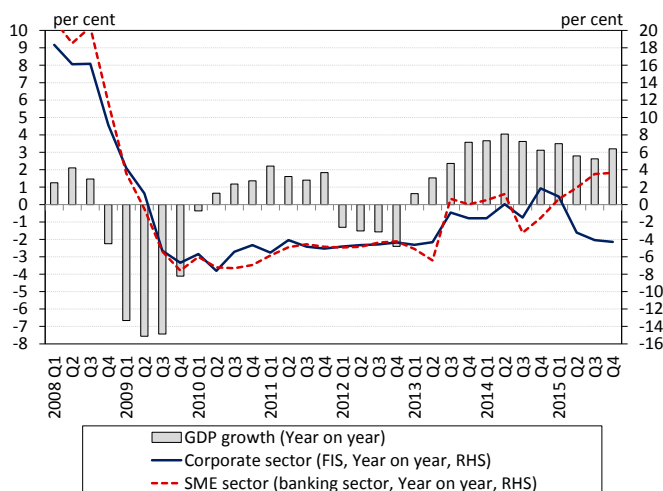

Note: Based on the data of credit institutions and financial enterprises. Source: MNB.

3.1. The Growth Supporting Programme may ensure the recovery of market-based corporate lending
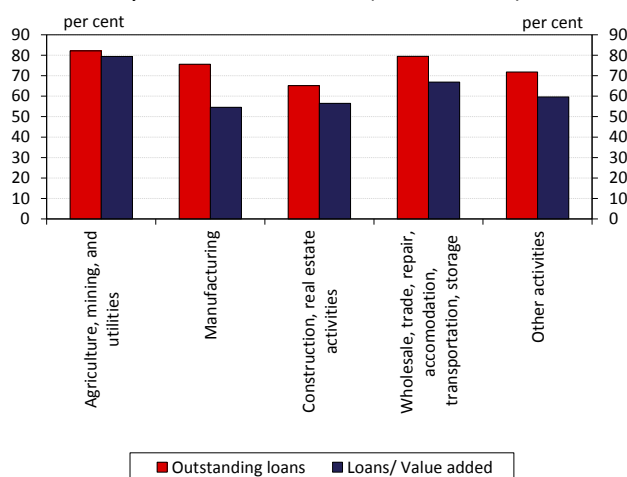
Although corporate loans outstanding increased in 2015 H2, a decline was observed on a year-on-year basis. Outstanding loans of the domestic financial intermediaries vis-à-vis non-financial corporations increased by a total HUF 98 billion in 2015 H2 (Chart 27). It was observed in spite of the fact that changes in the portfolio in last quarters are typically characterised by negative seasonality. The growth was primarily driven by an increase in the SME sector's loans outstanding, with a considerable support provided by the FGS. Borrowings concluded within the framework of the Scheme contributed to the expansion with an amount of HUF 269 billion in H2. Based on a sectoral and maturity comparison, it was the long-term loans of financial enterprises that increased to the greatest extent in H2, by a total value of around HUF 103 billion. This is mainly the result of the acceleration in banks' portfolio cleaning and selling of claims at the end of the year. In addition to the market transactions that took place, the portfolios taken over from

MKB Bank into the Resolution Fund also added to financial enterprises' loans outstanding. Besides, write-offs and reclassifications reduced corporate loans outstanding of domestic financial intermediaries by HUF 207 billion on a consolidated basis.

In 2015, SME lending was characterised by an expansion, while, in contrast, lending to large corporations declined. The corporate loan portfolio of financial intermediaries decreased by 4.3 per cent year on year (Chart 28). To a significant extent, the decline is the result of several one-off transactions that arose during 2015;[1] with their adjustment, the rate of the portfolio decline would amount to 2.1 per cent. In addition, a number of companies may have postponed their investment and stockpiling decisions in 2015 H2, as the volume of undrawn credit lines continued to increase. During H2, the amount of these credit lines rose by some HUF 430 billion; their drawing may offset the major declines seen in 2015. The diverging trends according to corporate size categories were typical in 2015 H2 as well, as shown by portfolio dynamics. In annual terms, the SME sector's loan portfolio expanded by a total 3.6 per cent (Chart 28), with significant contributions also from the disbursements implemented within the framework of the FGS. Prior to the closing of the second phase of the programme, the amount of new borrowings was especially high, and of this contracted credit line, undrawn loans carried over to 2016 amount to nearly HUF 180 billion.

Chart 28: Growth rate of loans outstanding of the whole corporate sector and the SME sector

Note: Transaction-based; from 2015 Q4 the data for the SME sector are based on new data supply. Source: HCSO, MNB.

**Lending to construction and the sectors engaged in real estate transactions fell considerably during 2015.** In the past years, corporate balance sheet adjustment was the most visible in sectors of construction and the real estate activity, which is reflected in the lending dynamics expressed as a proportion of the value added in individual sectors (Chart 29). Taking into account, that both production and borrowings of these sectors were overheated prior to the crisis, the aforementioned developments may also be interpreted as natural adjustment. However, banks' deleveraging and the efforts to improve target ratios affected other sectors as well. Thus, excluding the two sectors, the level of credit institutions' corporate loans as a proportion of their value added does not reach the end-2000 value.

Chart 29: Corporate loans as a proportion of value added, by sectors at end-2015 (2008 = 100%)

Note: Based on 4-quarter rolling value added, credit institution data, 2008 = 100%. Source: HCSO, MNB.

Project-financing loans outstanding declined considerably at the end of the year. The banking sector's high-amount portfolio cleaning at the end of the year is primarily attributable to the reduction of claims related to the bad project loans concentrated in the aforementioned sectors.

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[1] The debt consolidation of the central government and the base effect of some high-volume syndicated loans.

*Chart 30: Project loans to residents by denomination*
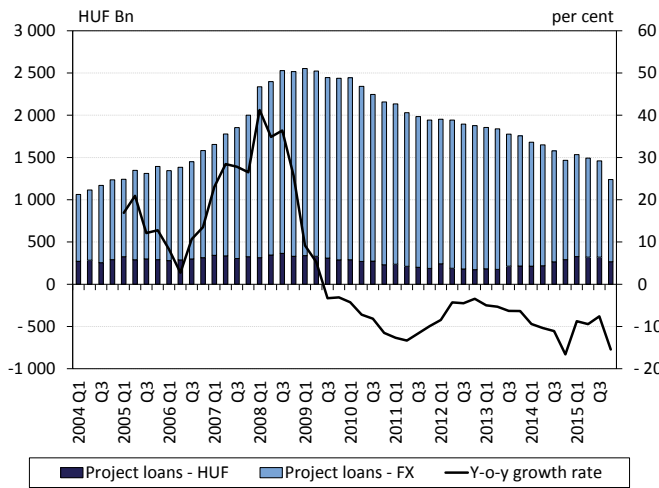
Note: Based on banking sector exchange rate adjusted data, for end-2015 exchange rates. Source: MNB.

Chart 31: Commercial real estate receivable and repossessed commercial real estate portfolio of major banks
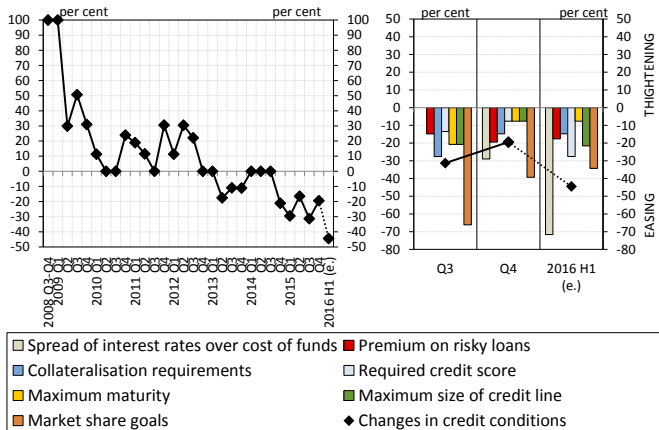
Note: Difference between the ratio of banks forecasting tightening and easing, weighted by market share. Source: MNB, based on the answers of respondent banks.

Chart 32: Average interest rate level of SME loans in a breakdown by loan purpose
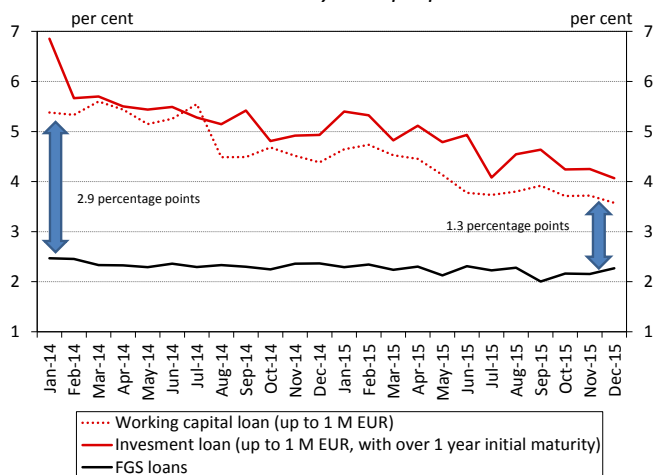
Note: Banking sector data. Source: MNB.

In 2015 H2, project loans outstanding declined by HUF 254 billion, of which the fall in loans in Q4 accounted for approximately HUF 220 billion (Chart 30). The decline in loans outstanding is primarily attributable to the portfolio separation carried out within the framework of the already mentioned resolution action plan. Looking ahead, however, as a result of the regulatory steps that support portfolio cleaning, the volume of the fall in loans outstanding may be high in 2016 as well, which will also be supported by the asset purchases by MARK starting in 2016. This may relieve banks from their non-performing project financing portfolio, which put their balance sheet under pressure, thus allowing them to spend their relieved lending and human resources on expanding their lending activity more intensively.

A considerable easing is expected in credit conditions. According to banks' responses to the Lending Survey, 31 and 19 per cent of banks in net terms[2] in Q3 and Q4, respectively, eased credit conditions of corporate loans (Chart 31). In addition to market share targets, in Q4 banks participating in the Lending Survey also emphasised improvement in economic outlooks among factors contributing to easing. According to the respondents, these factors may support an easing in 2016 H1 as well, and, in line with that, a net 45 per cent of the banks indicated that they were planning further easing in their conditions. The responding institutions primarily intend to implement it by reducing interest rate spreads, whereas in previous periods easing mainly took place in non-price conditions. This can be mainly attributable to the reduction of the bank levy for 2016 on the one hand, and the launching of the Market-based Lending Scheme (MLS) on the other. In parallel with the above, a net 28 per cent of the responding banks also indicated an improvement in risk appetite; therefore, an expanding range of potential customers may be reached by an increase in lending. Improvements in corporate portfolio quality included in the balance sheets may provide further room for the strengthening of their risk taking capacity.

Interest rates of HUF-denominated loans decreased further. Price conditions perceived by non-financial corporations also eased during the year, which was mainly due to the policy rate cuts by the central bank. In addition, while the average interest rate spread on high-amount forint loans remained unchanged in the period under review, the average spread on loan transactions with an amount of less than EUR 1 million decreased by 0.2 percentage point during the year. The decline in the interest rate environment

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[2] The difference between banks performing tightening and easing, weighted by market share.

was reflected in the fall in interest rates of market-based SME loans as well. The average interest rate of disbursed long-term, HUF investment loans amounted to 4.1 per cent, while the average interest rate of short-term HUF working capital financing loans was 3.6 per cent at end-2015 (Chart 32). With the decline in the base rate and the general interest rate environment, the interest rate advantage of loans granted within the framework of the FGS narrowed considerably, which eases the switch over to market-based lending.

Box 3: The MNB credit information system may further ease supply constraints

The adoption of the proposal initiated by the MNB to amend the relevant legislation allowed the MNB to examine together the corporate lending information stored in the central credit information system (CCIS) and the financial statements enclosed to companies' tax returns. The resulting database is suitable for examining companies' credit risk, companies' individual characteristics and the macroeconomic environment together. Therefore, using this database, the MNB prepared several models that estimate the probability of default of a company based on certain characteristics of the company and the given macro environment. In addition to the model estimates, for the corporate sector we also prepared descriptive statistics, which may be of help in obtaining a deeper knowledge of the corporate sector. The information package produced this way is made public by the MNB, and thus it is usable in banks' risk management as well. Although the scope of corporate characteristics available from the database is narrower than what a bank may know about the companies financed by the bank, the scope of companies covered by us is uniquely wide, and this is why it may produce additional information. It is especially true for small and medium-sized credit institutions, as in their case much less information is available due to the narrower clientele. In our previous surveys, we encountered lack of information in the case of large banks as well, and the corporate information database set up by the MNB may be of help in terminating this problem. The source of this kind of deficiency may be that in certain regions and counties even the largest banks do not always have adequate coverage and that the activity of certain banks in some industries is very low.

By using the database, in the case of micro, small and medium-sized companies as well we succeeded in creating a model, which, relying upon data basically obtainable from the balance sheet and the profit/loss statement, can provide an estimate for the probability of a company to be in default for more than 90 days in the coming one year. This may result in a further easing in lending conditions or easing in a wider range, and may also involve small banks in lending. While modelling, we paid attention to creating the models in a form that is the most usable for banks. Firstly, upon defining non-performance we strived to use a definition that is the most similar to the one used in banks' practice. Secondly, we avoided the use of individual characteristics that statistically fit well, but are difficult to use because of the correlations behind them. In addition, bank practices were also taken into account when determining the various segments, and in our models we only included variables that banks are able to provide regarding their corporate clients. In line with our expectations, among the explanatory variables the factors that determine corporate performance the most, such as capital adequacy, profitability, the available tangible assets, the ratio of FX debt or the changes in sales revenues, all have significant weights. The models that have been created match especially well in the case of small and medium-sized companies, and provide a relatively precise picture of the probability of default. In the case of micro enterprises, the performance of the model is less good, which is in line with banks' experiences as well. The two main underlying reasons are that the sector is very heterogeneous and that in the case of micro enterprises it is worth taking account of many 'soft' factors in the estimation that are not among the accounting data, and thus are not available for us.

In order to facilitate the use of the models created, in a separate study we present in detail what questions arose during the modelling and how we handled them. We examined, for example, what non-linear effects arise in the case of individual corporate factors. We prepared separate models for some industries (where the sample size allowed for it); thus they may provide a picture of some industry-specific correlations as well. The detailed presentation allows these experiences to be utilised in model developments in the future. In addition, more precise credit risk measurement may also allow the reduction of the risk capital weight of SME loans.

Chart 33: Changes in loan demand according to maturity and developments in business confidence
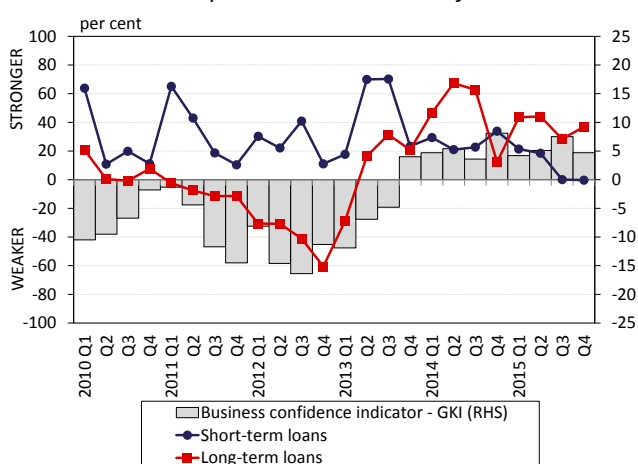
Source: MNB, based on banks' responses, and GKI Economic Research Co.

Chart 34: Cumulative changes in corporate loans as a proportion of GDP before and after the crisis in an international comparison
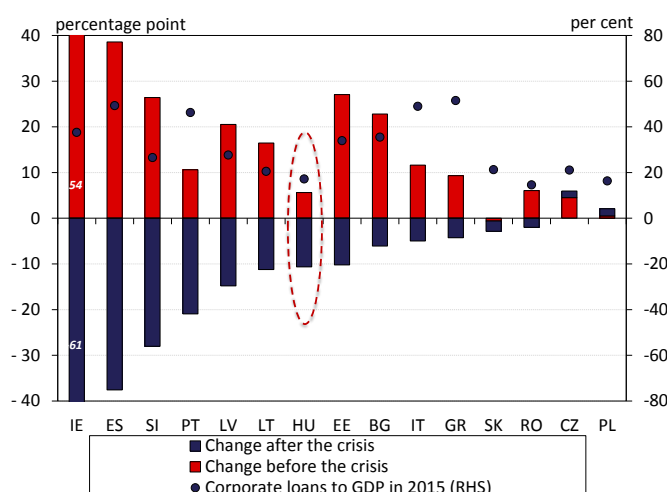

Note: Credit institution data. The red colour indicates the differences between the end-2003 and end-2008 values, while the differences between the end-2015 and end-2008 values are in blue. Source: Eurostat, MNB.

Demand for long-term loans continued to increase. Based on responses given in the Lending Survey, credit demand perceived by banks continued to increase in 2015 H2. For Q3 and Q4, a net 28 per cent and 37 per cent of banks, respectively, reported a strengthening in demand for long-term loans (Chart 33). In addition, according to respondent banks, demand for short-term credit remained unchanged in H2. Increase in demand continues to aim mainly at HUF loans, while demand for FX loans declined in the period under review. The increase in lending is supported by macroeconomic developments as well. Accordingly, with the general improvement in economic outlooks, companies' demand for investment loans may increase, thus realising their borrowing that was postponed before. In addition, with a permanent improvement in economic outlooks, a pick-up in credit demand and investment demand may commence in cyclical sectors or in ones producing for domestic use, e.g. in construction, the real estate sector or trade.

Corporate indebtedness in international comparison tends to entail the possibility of catching up to the long-term trend. Following the crisis, corporate loans outstanding fell considerably in Hungary, and this fall was significant in international comparison as well. The magnitude of the decline is comparable to the experiences of the Baltic states, but in Hungary the crisis was not preceded by an analogously extreme increase in lending (Chart 34). Taking account of the increase in the pre-crisis loan portfolio, similar contraction was observed only in Portugal. However, the indebtedness of companies is traditionally higher there, whereas in Hungary the pre-crisis expansion was coupled with increasing financial deepening, and thus with a rise in the long-term trend of the credit-to-GDP as well. Accordingly, the significant fall entailed by the protracted deleveraging is mainly explained by the distorted structure of corporate lending, which is primarily attributable to excessive lending to project financing, and not by corporate indebtedness that exceeds the assumed trend. Thus, protracted balance sheet adjustment resulted in a significant negative credit gap in international comparison, which, with the normalisation of credit conditions and economic outlooks, opens the possibility of catching up to the long-term trend.

The possibility of foreign financing is an alternative only for a narrow range of companies. Since end-2008 there has been a steady and major decline in the volume of domestic FX loans provided to companies, with its amount reaching nearly HUF 3500 billion by end-2015 (Chart 35). The decline was attributable to both demand and supply side factors (corporate deleveraging and bank balance

Chart 35: Cumulative change in domestic loans and net external funding of non-financial corporations
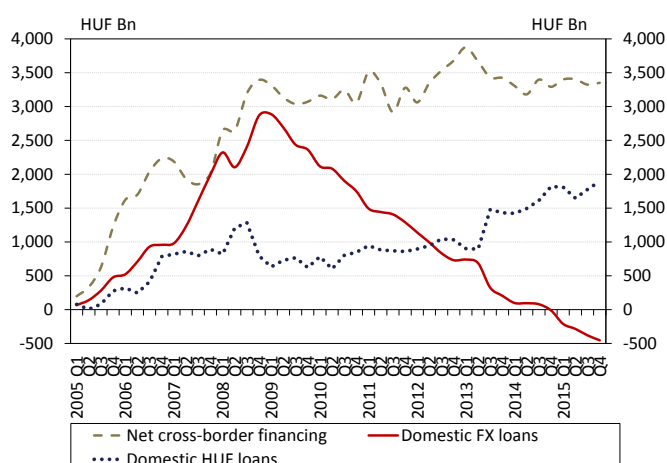
Note: Net external funding: Net balance of foreign capital and credit transactions (liabilities-assets). Source: MNB.

Chart 36: The share of SME loan portfolio covered by guarantee institutions
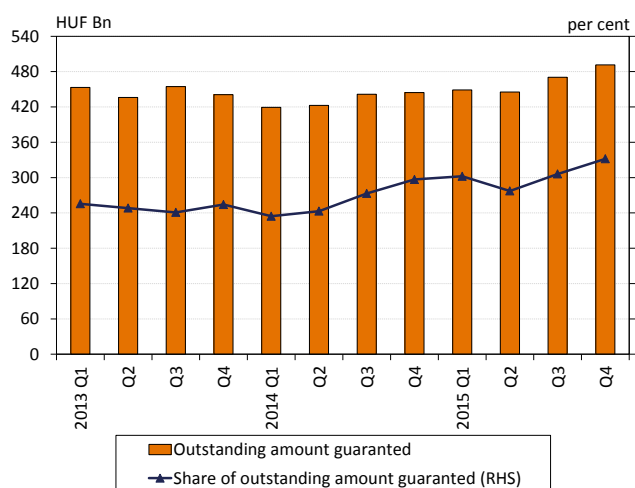
Notes: In proportion of the sum of outstanding loans to corporate SMEs and sole proprietors. Source: MNB.

sheet adjustment), but also to the replacement of FX financing with HUF financing, which was especially observed following the introduction of the FGS. Domestic forint financing expanded in addition to FX loan refinancing as well starting from 2013 H2, in line with the achievements of the FGS, i.e. by helping the forint financing of SMEs. However, there is another process as well that contributes to the fall in the FX portfolio. The net foreign financing of the corporate sector practically has not declined since the crisis; in fact, it has increased in the recent years. Namely, the companies that have access to foreign financing from banks or within their groups use it in an active manner. Moreover, exploiting the low interest rate environment of the euro area, they replace domestic FX financing as well, contributing to the decline in domestic loans outstanding. Accordingly, although a considerable portion of the decrease in domestic lending is related to them, large companies do not have any funding constraints. At the same time, an increase in credit demand is observed among clients (primarily SMEs) dependent on domestic financing. In the past years this increase was mainly supported by the FGS.

The volume of SME loans provided with mutual guarantee organization's suretyship continued to increase. In 2015, the stock of SME loans provided with mutual guarantee organizations' suretyship increased nominally as well as in relative terms (Chart 36). The institutional suretyship provided with state counter-guarantee has a key role in both market based SME lending and regarding loan disbursement under the FGS program. The constraints stemming from banks' willingness to take risks could be mitigated with the help of these guarantee schemes. The lead time in parallel with relating fees within these guarantee schemes were decreased thanks to measures taken in 2014 and 2015 to enhance efficiency. All of this moderates the administrative and other costs of SMEs as well as credit institutions thereby facilitating SMEs access to credit.
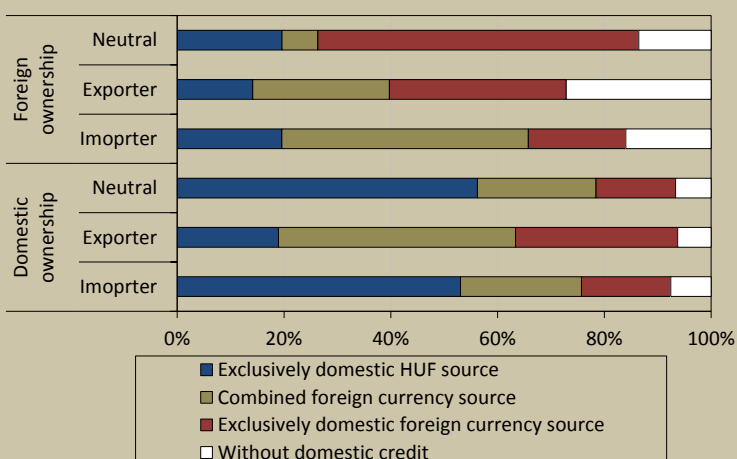

BOX 4: LOAN PENETRATION AND LOAN DEMAND OF DIFFERENT SECTORS

With the help of companies' micro level data, below we examine the financing structure of the domestic corporate sector and within that, in more detail, the features of its loan relations with domestic financial institutions (banks, in short), through an analysis of the ratio and characteristics (loan penetration) of borrowing companies. **In 2015, one third of the approximately 400 thousand active domestic non-financial corporations, i.e. some 136 thousand companies, had loans borrowed from domestic financial institutions, and 91 thousand of the companies with loans are related to the SME sector.**

In terms of activity or sector, compared to the average one third ratio of borrowing companies, in the agricultural, manufacturing and transport sectors the ratio of borrowing companies is relatively high, i.e. 50–60 per cent. Most of the borrowing companies belong to the trade, manufacturing and construction sectors. The relatively average share of manufacturing companies within the total corporate population is coupled with a high ratio within large companies. Compared to the other categories, smaller companies' share is mainly higher in construction and the trade sector.

The greater part of Hungarian companies' domestic loans, i.e. more than 60 per cent can be characterised with neutral foreign trading activity, while 18 and 19 per cent of them are net importers and net exporters, respectively. In the case of the latter, Hungarian-owned companies tend to finance themselves from domestic loans, while foreign-owned ones typically use less domestic sources of loans. Regarding the corporate sector whose foreign trading activity is neutral, forint financing and FX financing clearly dominate in the case of Hungarian-owned and foreign-owned ones, respectively. Foreign-owned importers rely upon FX funds to a greater extent than Hungarian-owned ones; in this regards, a smaller difference is ob-

Balance sheet weighted dispersion of corporations by ownership structure and foreign trade activity (HUF-foreign currency)

Forrás: CCIS, NTCA.

served in the segment of exporting companies.

In addition, it is important to emphasise that for satisfying their funding needs domestic companies rely not only upon domestic bank loans, and examining the ownership structure, a considerable difference is seen in terms of domestic credit use. Namely, the mostly Hungari-

Dispersion of credit holder corporations by industry and size

	Dispersion of credit holder corporations					Percentage of credit holder corporation
	Micro	**Small**	**Medium**	**Large**	**SUM**	
Agriculture	4%	6%	8%	3%	4%	56%
Manufacturing	9%	21%	35%	43%	13%	51%
Construction	11%	13%	7%	3%	11%	40%
Commerce and machine industry	29%	28%	22%	21%	28%	39%
Transport	7%	7%	5%	6%	7%	61%
Hotel and catering	3%	5%	3%	2%	4%	23%
Other	37%	21%	20%	22%	33%	25%
Sum	100%	100%	100%	100%	100%	33%

Source: CCIS, NTCA.

an-owned companies satisfy more than 50 per cent of their funding needs from domestic loans, while in the case of foreign-owned companies the average ratio of domestic loans is only 22 per cent. In terms of dependence on domestic financing, large companies are, of course, the most independent; both domestic and foreign-owned companies (80 and 87 per cent, respectively) tend to use mainly foreign and owner financing. The SME sector's domestic loan use is higher, but while in the case of Hungarian-owned companies this ratio is nearly 64 per cent, in the case of foreign-owned ones the distribution of the financing structure is roughly equal among the domestic and foreign as well as intercompany loans.

Liabilities structure of corporations by ownership background
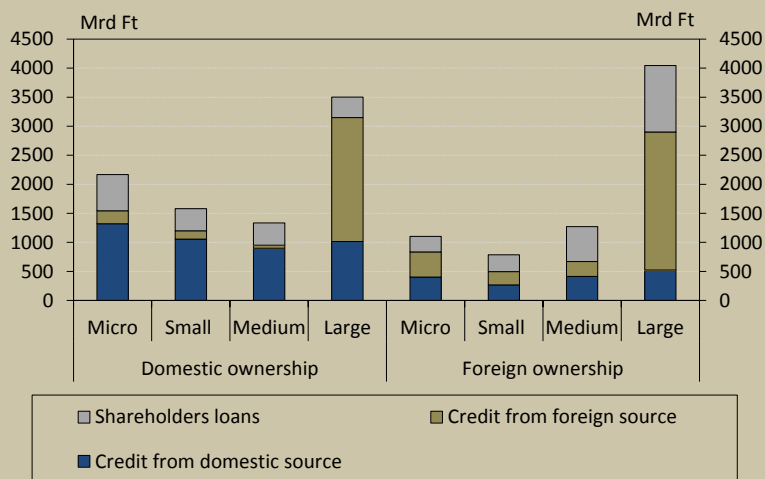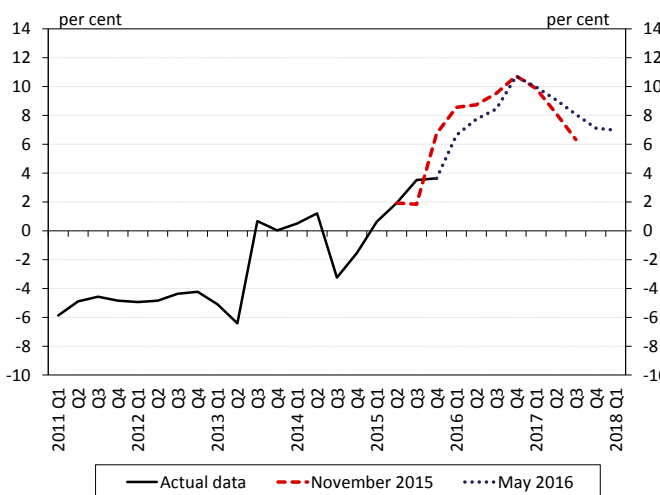

Forrás: CCIS, NTCA.

Chart 37: Forecast for lending to non-financial corporations
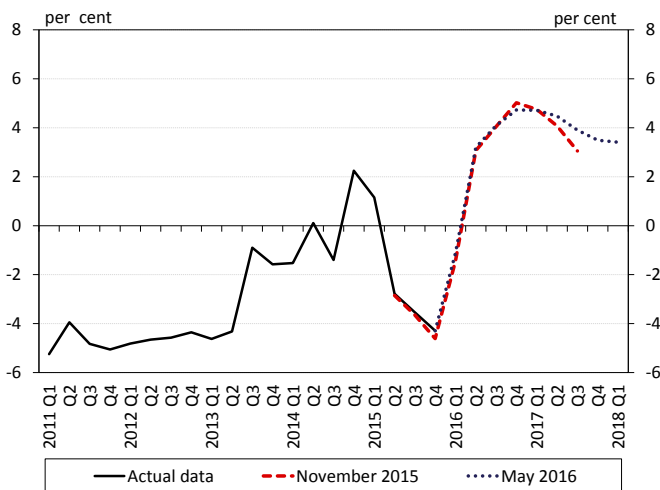
Source: MNB.
Note: Transaction based, year-on-year data.

Chart 38: Forecast for lending to SMEs

Note: Transaction based, year-on-year data. Source: MNB.

The Market-based Lending Scheme is expected to support corporate lending in 2016. While the total amount of HUF 1,000 billion was approved for the scheme by the Monetary Council, by the end of the announced LIRS tenders, a total amount of HUF 779 billion was allocated to banks, whose demand was outstanding. Following from the conditions of this facility, institutions participating in the programme committed to an increase in SME lending by more than HUF 190 billion; furthermore, the MLS is expected to contribute to the expansion of SME lending in 2017 and 2018 as well. Namely, if credit institutions rollover their existing LIRS positions at the beginning of 2017 and 2018, by that they undertake a continuous and repeated obligation for the next calendar year to expand SME lending. Accordingly, the conditions of the MLS ensure a market-based and balanced expansion of the corporate loan portfolio, which, over the medium term, supports the lending dynamics necessary for sustainable growth.

In parallel with an improvement in economic outlooks, major increase in corporate lending is expected over the forecast horizon. Although in annual terms a decline was observed in total corporate lending, it is mainly attributable to one-off large-company transactions, while a gradual expansion was observed in SME lending. Therefore, excluding exceptional movements in the portfolio, improvement was observed in the underlying developments both on the demand and supply sides. Looking ahead, banks indicated a remarkable easing in line with the perceived improvement in the economic outlooks, which is also attributable to the central bank's lending schemes that support growth (FGS, MLS). Compared to the previous forecast, there has been a slight upward revision of our previous assumptions for the MLS, reflecting the results of the LIRS tenders that have taken place. Considering the above-mentioned, similarly to our previous forecast, SME lending is projected to increase by a growth rate between 5 and 10 per cent in 2016 and 2017 as well (Chart 37 and Chart 38).

BOX 5: EXPERIENCES OF THE LIRS TENDERS AND BANK'S COMMITMENTS TO LEND

Following an announcement in November 2015, in January 2016 the MNB launched the Growth Supporting Programme (GSP), which facilitates banks' return to market-based lending with a gradual phasing out of the Funding for Growth Scheme (FGS) and the announcement of the new Market-Based Lending Scheme (MLS), which works as a positive incentive. By having recourse to the interest rate swap conditional on lending activity (LIRS) introduced as part of the MLS, in an implicit manner, in order to increase net lending to small and medium-sized enterprises, banks undertake to lend an amount equalling one fourth of the allocated LIRS amount. Complemented with other central bank and government programmes, already in 2016 it may result in an increase in the dynamics of corporate lending into the 5–10 per cent band, which supports sustainable economic growth.

At the LIRS tenders announced in order to increase credit institutions' market-based SME lending, the MNB assumes credit institutions' interest rate risk, thus allowing the granting of longer-term, fixed-rate SME loans as well. The assumption

of risk and costs by the Central Bank is limited compared to the size of the Central Bank's balance sheet: firstly, due to the low interbank yields resulting from loose monetary conditions, and secondly, due to the fixed 3-year maturity of the LIRS. At macroeconomic level, the advantages of the programme exceed the costs and risks arising at the Central Bank.

The MNB undertook to announce a total of 5 LIRS tenders, which were held on 28 January, 11 February, 25 February, 10 March and 24 March 2016. For the HUF 200 billion announced in the first tender, 11 banks submitted offers with a total amount of HUF 618 billion, which was accepted by the MNB in full. Oversubscription took place in the second tender as well: for the announced HUF 100 billion, the total amount of offers received was HUF 110 billion, and another 3 credit institutions joined the programme. At the third tender, held at end-February, an additional two credit institutions joined the circle of banks undertaking to increase their SME loans outstanding, and the MNB concluded LIRS transactions amounting to HUF 31 billion. A further HUF 14 billion was subscribed in the fourth tender. HUF 7 billion was subscribed in the fifth tender, and another bank joined the bidders. Accordingly, at the LIRS tenders the MNB concluded LIRS transactions amounting to a total HUF 779 billion with 17 credit institutions, which means the undertaking of an SME loan expansion of nearly HUF 200 billion by the banks participating in the programme.

Although in terms of its important parameters, stemming from its conditional nature, the LIRS is different from market products, it allows the management of the interest rate risk, and thus it is able to influence interest rate swap market prices and through that, potentially, other, longer-term money market yields. In addition to its lending incentive potential, due to its possible impact on money market conditions, the LIRS facility can also be considered as part of the unconventional monetary policy instruments. The LIRS tenders had a perceptible effect on IRS market prices: on the day of the first tender at end-January, 3-year market IRS yields stayed around the level of 1.4 per cent, before sinking to levels close to 1.0–1.1 per cent by end-March, following a gradual decline.

Chart 39: Quarterly changes in the financial intermediary system's household loan portfolio
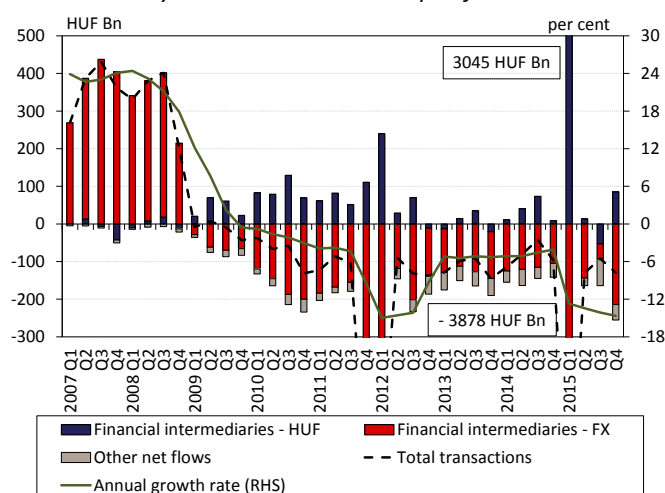
Note: Seasonally unadjusted data with rolling exchange rate adjustment. Source: MNB.

3.2. Pick-up in demand entails an expansion in new household lending

Excluding the impact of settlements, household sector was still a net repayer in 2015. In 2015 H2, the household loans of domestic financial intermediaries declined by a total HUF 221 billion as a result of transactions as well as of the one-off effect of the conversion of FX-denominated personal and car purchase loans (Chart 39). The amount of HUF loans increased by HUF 33 billion, whereas that of FX loans decreased by HUF 253 billion during the second half of the year. The FX-conversion removed a significant systemic risk from households' balance sheets. Following the FX-conversions and the settlements implemented during the year, a mere 1.4 per cent of the HUF 7,000 billion total, i.e. HUF 99 billion, remained in foreign currencies, of which the claims of credit institutions and financial corporations amounted to HUF 53 billion and HUF 46 billion, respectively. The annual dynamics of household loans outstanding is significantly affected by the one-off effects of the settlements and FX-conversions: the total amount of household loans outstanding of financial intermediaries declined by 14.6 per cent in a year, but the underlying developments following from the adjustment of the above explained is only a 5.75 per cent year-on-year decline of the portfolio.

The volume of new household lending grew considerably in the housing segment, in particular. The volume of new

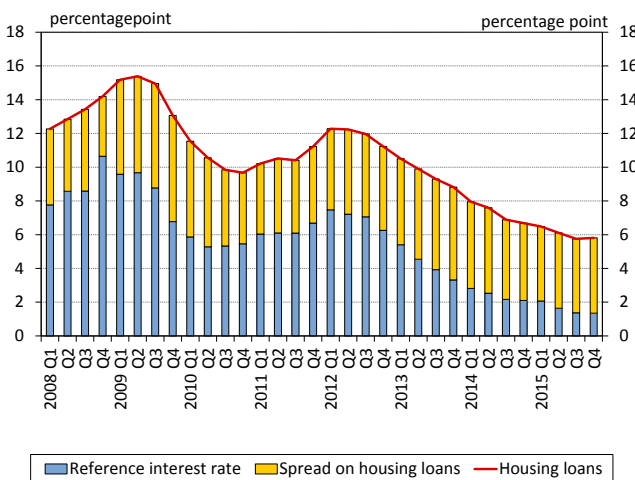*Chart 40: New household loans in the credit institution sector*
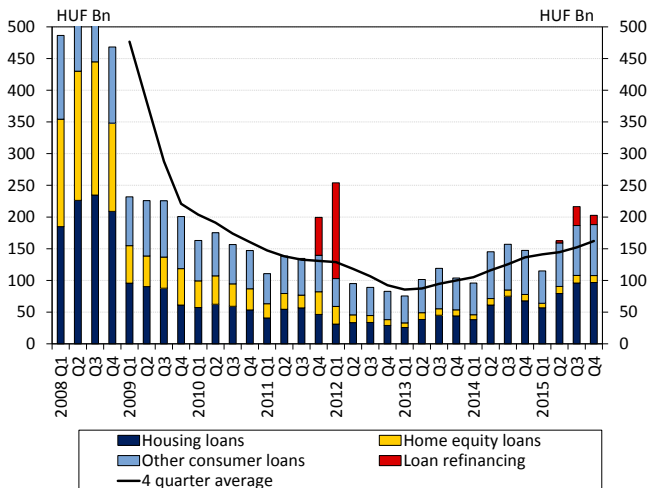
Note: Loan refinancing denotes only refinancing related to the early repayment scheme and the FX-conversion. Source: MNB.

Chart 41: Changes in the volume of new household loan contracts cumulated within the year
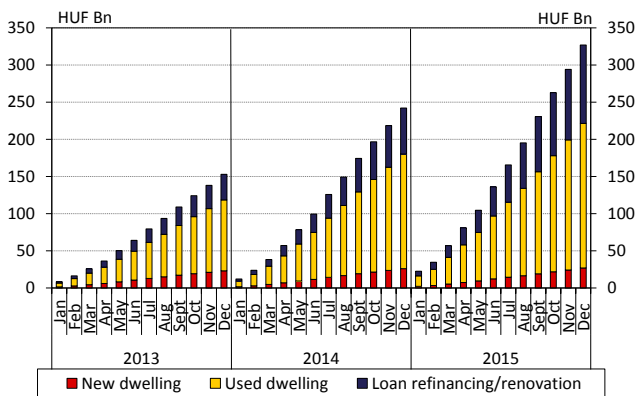
Note: The volume of loans borrowed for refinancing/renovation purposes does not include loan refinancing related to the loans converted into forints. Source: MNB.

Chart 42: Interest rates on housing loans

Note: The reference rate is the BUBOR3M, whereas the quarterly average of interest rate spreads above that is APR-based. Source: MNB.

household loans of the credit institutions sector amounted to HUF 375 billion in 2015 H2. Accordingly, in the year as a whole, the value of new contracts amounted to HUF 649 billion, i.e. new lending in 2015 exceeded that of the previous year by 19 per cent (Chart 40). The pick-up in lending was primarily attributable to housing loans; lending in this segment increased by a total 36 per cent compared to the previous year. In 2015 as a whole, home equity loans and other consumer credit were up by 8 per cent and 5 per cent, respectively. During the year, much lesser than expected debtors took the opportunity of the free of charge loan refinancing that followed the settlement and the FX-conversion. As a result, borrowers concerned refinanced loans in a total value of HUF 48 billion until the end of December.

Despite the general increase in housing loans, lending for purchasing new homes remained unchanged. In line with the developments observed in the housing market, primarily the amount of loans borrowed for purchasing used homes grew in the period under review (Chart 41). The increase in the amount of loans for renovation (or loan refinancing) was also relatively high. However, the amount of loans borrowed for purchasing new homes remained unchanged in 2015, and these loans constitute the smallest segment within housing loans: they accounted for a mere 8 per cent of new loans at end-2015. The low level of loans granted for purchasing new homes is partly attributable to the restrained supply of new homes available in the housing market.

Interest rates on new disbursements declined further in 2015. As a result of the cuts in the central bank base rate, the interbank reference rate (BUBOR) decreased by 0.7 percentage points, which had a reducing effect on the interest rates on new disbursements as well. Interest rates declined in both segments during the year: the interest rate on housing loans decreased by a total 0.9 percentage point to 5.8 per cent, while that on home equity loans fell by 1.6 percentage points to 7.3 per cent. The decline in lending rates exceeded the fall in the reference rate, thus a decrease took place in the average credit spreads as well in the period under review (Chart 42). The interest rate spread on housing loans declined by a total 0.2 percentage points, and it amounts to 4.4 percentage points at end-December. The spread on home equity loans moderated by 0.9 percentage point to 6 percentage points. Nevertheless, interest rates and spreads in Hungary are still considered high in an international comparison.

Debt cap rules facilitate expansion in lending within a sound framework. The MNB Decree on the debt cap regu-

**Chart 43: Distribution of the PTI ratios of new loans in 2015**

- loan applications accepted before 1 Jan 2015,
- contracts not exceeding 200 thousand HUF,
- refinanced transactions,
- other exceptions

Payment-to-income

■ Volume of contracts   ■ Number of contracts
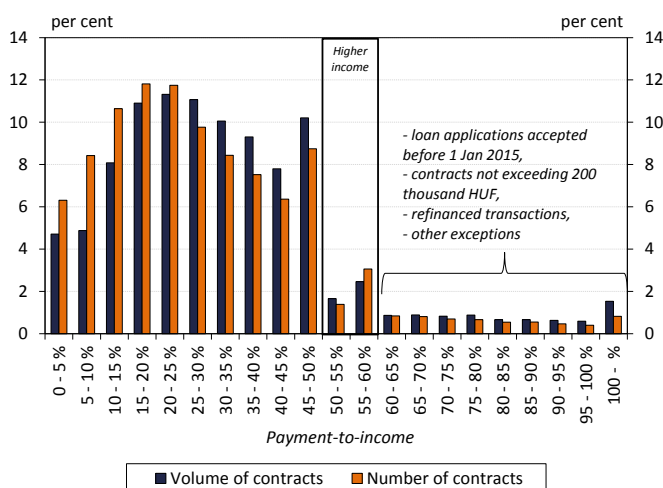
Source: MNB.

Chart 44: Credit demand, consumer confidence and changes in credit terms in the household lending segment

■ GKI consumer confidence index ◆ Lending conditions ■ Credit demand
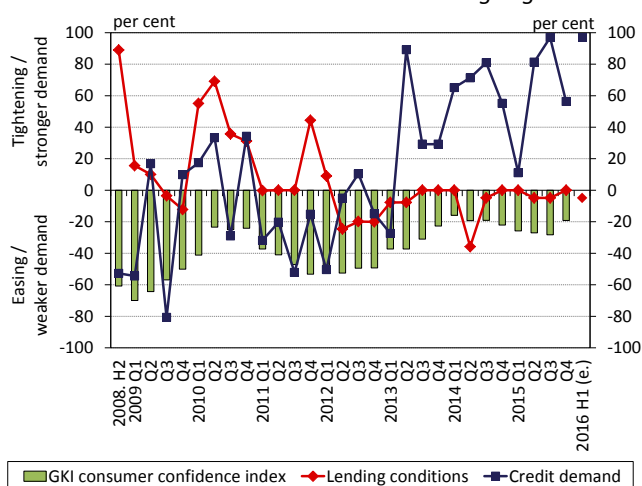
Note: The net ratio in conditions is the difference between tightening and easing banks, weighted by the market share. Source: GKI, MNB – based on banks' responses.

Chart 45: One-year forward-looking willingness to borrow by product categories

Housing   Personal   Vehicle   Overdraft   Commercial
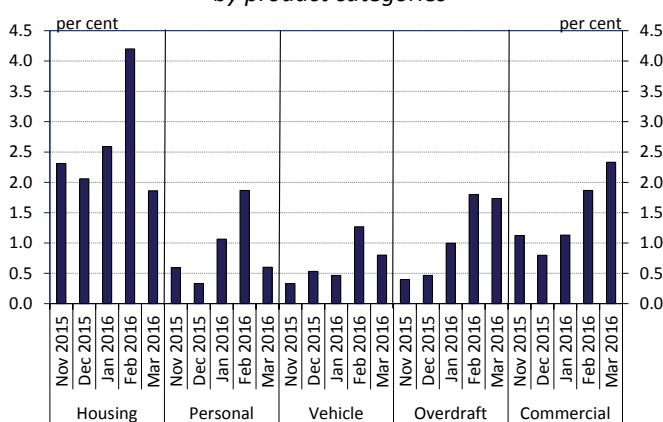
Note: Country-wide representative survey; the ratio of those who plan to take out any loan in the coming 1 year. Source: MNB questionnaire survey.

lation entered into force in early 2015, setting out the prudent requirements of the loan-to-value (LTV) and the payment-to-income (PTI) limits. In line with its prevention objective, the regulation does not hinder the growth in the volume of new disbursements, as many of the contracts have a lower indicator than the regulatory threshold (Chart 43). Although the average coverage of new loans by real estate collateral increased during the year, it was mainly the result of loan refinancing, while the average maturity increased by 2.5 months on average.

Demand for housing loans strongly increases, while credit constraints remained unchanged. In net terms, 21 per cent of the banks participating in the Lending Survey[3] eased credit conditions of unsecured consumer loans, while conditions of housing loans remained basically unchanged in 2015 H2. In contrast, a smaller number of banks perceived a pick-up in demand for consumer credit during the period under review, while a wide range of banks perceived a rise in demand for housing loans, especially in Q3. Looking ahead, almost with no exception, respondent banks have similar expectations for 2016 H1 as well (Chart 44). Accordingly, the pick-up seen in the market of housing loans is primarily induced by the growing demand. The more restrained pick-up in demand observed at the end of the year and perceived by 56 per cent of banks is partly attributable to the wait-and-see strategy related to the conditions of the family housing allowance (FHA).

Improvement in consumer confidence is supported by an increase in real wages and a decline in debt service burdens. At end of 2015, households' perception of economic outlooks increased throughout Europe; in Hungary, the rise in real wages and the decline in debt service burdens following the settlement were also contributing factors. The pick-up in economic outlooks is mainly reflected in the growth of consumption, accompanied by an increase in credit demand and willingness to borrow. Based on questionnaire surveys, willingness to borrow within a year increased considerably related to car purchase, hire purchase loans and overdrafts in early 2016. The forward-looking willingness to borrow for housing loans remained at 2 per cent, i.e. 80 thousands of households, with the exception of the outstanding interest related to the HPS measured in February. (Chart 45).

Increasing demand and the home purchase subsidies together may stabilise lending to households. In line with our earlier expectation, household loans outstanding con-

[3]https://www.mnb.hu/penzugyi-stabilitas/publikaciok-tanulmanyok/hitelezesi-felmeres/hitelezesi-felmeres-2016-februar

Chart 46: Household lending forecast
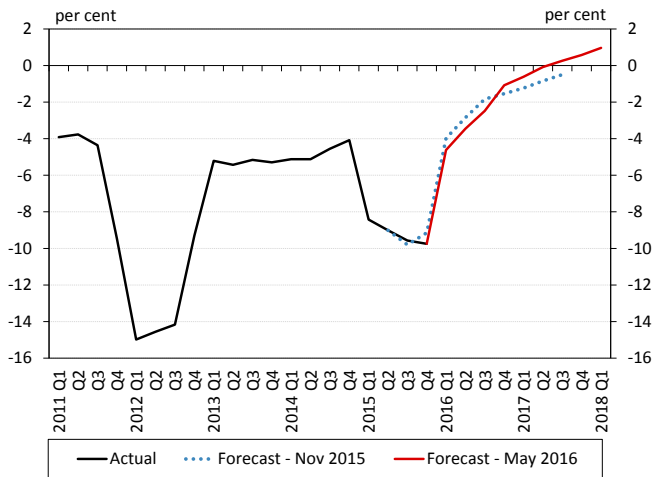
Note: Transaction based, year-on-year data per cent. Source: MNB.

tinued to decline in 2015 Q4, mainly as a result of the conversion of FX-denominated car purchase loans. Clear signs of a pick-up can be seen on the demand side, on the basis of both new disbursements and banks' perceptions. Nevertheless, credit conditions are expected to remain basically unchanged, both in terms of price and non-price conditions. Pick-up in demand is mainly affected by the government's home creation package; while looking ahead, it is expected to contribute to a further increase in new disbursements of housing loans and the stabilisation of loans outstanding. Accordingly, we expect a slower decline in household lending on the short term, followed by a slight expansion at the end of the forecast horizon (Chart 46).

4. PORTFOLIO QUALITY – CLEANING OF PROJECT LOANS AND MORTGAGE LOANS REQUIRES FURTHER STIMULUS

In 2015 H2, the ratio of non-performing corporate loans declined, standing at 18.4 per cent at the end of the year. Within non-performing corporate loans, the ones over 90 days past due have the highest share. Their ratio to total corporate loans outstanding declined from 13.4 per cent in June to 9.8 per cent at end-December. This 3.6 percentage point decline is attributable to a great extent to the selling of the non-performing commercial real estate loan portfolio between MKB Bank and the Resolution Asset Management Vehicle at the end of the year. As a result of this transaction, the segmentation of corporate loans also declined during H2, but the 20.2 per cent ratio of project loans over 90 days past due still considerably exceeds the 6.6 per cent ratio of other corporate loans over 90 days past due. At end-December, loan losses on corporate loans outstanding amounted to 1.7 per cent, representing an increase of 0.4 percentage point compared to the June value. At systemic level, loan loss coverage of loans over 90 days past due increased to 77 per cent, and the coverage of project loans already exceeds that of other loans.

Although to a small extent, but the ratio of non-performing household loans of the banking sector declined during 2015 H2. The decline is primarily attributable to portfolio cleaning, i.e. the selling and write-off of claims. Nevertheless, the ratio of loans 90 day past due continues to be extremely high, amounting to nearly 18 per cent in the banking sector as a whole at end-2015. Within the non-performing household portfolio, mortgage loans continue to represent the highest risk. The total coverage of this portfolio is high, i.e. banks mainly trust in collateral based return or in the selling of the portfolio. As of 1 March 2016, with the expiry of the winter eviction moratorium, creditors may enforce the collaterals again, while the capacities of the National Asset Management Agency may become depleted during 2016 H1. However, considering the high number of non-performing mortgage loans, a mass enforcement of collateral could have an adverse impact on both the creditor and the debtors. The MNB's research findings suggest that there are significant restructuring reserves in the portfolio. The MNB's recommendation made public in March may help in exploiting them. The recommendation provides a single framework for the permanent restoration of delinquent mortgage loans.

Chart 47: Share of non-performing corporate loans of the banking sector by contract
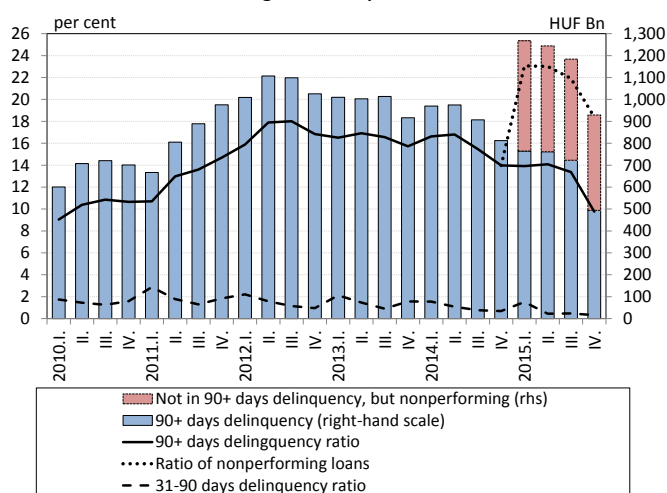
Note: Banking system data. Source: MNB.

4.1. The cleaning of project loans continues to be slow, but segmentation and the non-performing portfolio declined

Corporate portfolio quality improved mostly as a result of a regulatory step in 2015 H2. Compared to 2015 H1, the ratio of the banking sector's non-performing corporate loans within the portfolio declined significantly, from 23 per cent to 18.4 per cent (Chart 47). Within non-performing loans, the share of the ones over 90 days past due declined from 13.4 per cent to 9.8 per cent during H2. At the end of the year, non-performing corporate loans outstanding amounted to HUF 929 billion, of which some HUF 494 billion is over 90 days past due. Decomposing the change into factors, the decline in the NPL ratio was explained by the high cleaning at the end of the year (Chart 48). To a considerable extent, the high cleaning component is the result of the transaction between MKB Bank and the Resolution Asset Manager, during which some HUF 210 billion of non-performing receivables in gross terms was removed from the bank's balance sheet in December. During H2, improvement in the portfolio also facilitated the cleaning, which could only be partly offset by the portfolio impact.

Corporate loans became less segmented, but project loans continue to be a problem. The breakdown of non-

Chart 48: Factors affecting changes in the ratio of non-performing corporate loans in the banking sector
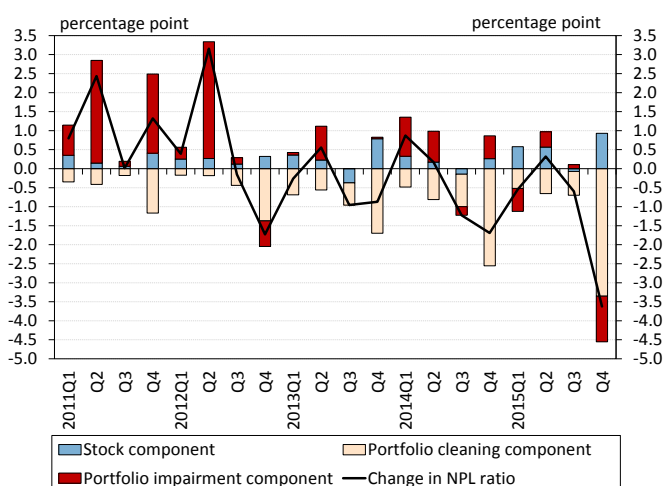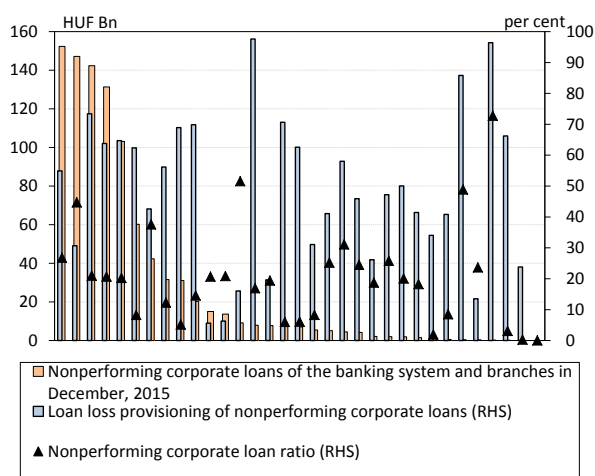

Source: MNB.

Chart 49: Non-performing and restructured project and other corporate loans in the banking system
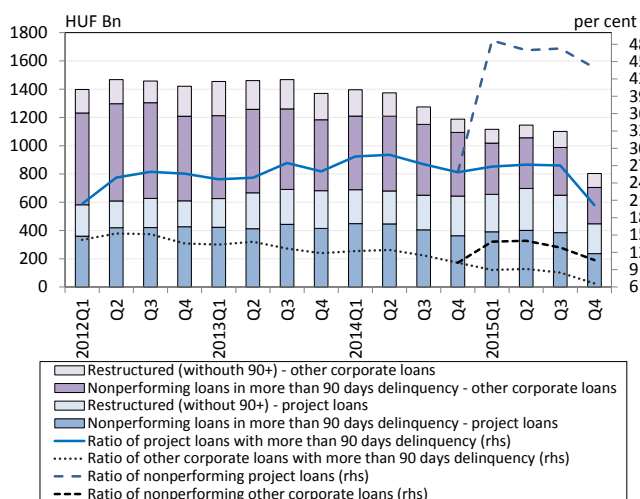
Source: MNB.

*Chart 50: Non-performing corporate loans, ratio and loan loss coverage by banks and branches in December, 2015*

Source: MNB.

performing loans by products reveals that a considerable portion, i.e. more than half, of the problematic portfolio (loans over 90 days past due and restructured loans) is still traceable to project loans in the corporate segment, and a major part of these project loans is related to commercial properties (office building, commercial centre, hotel, industrial properties, plots). At the same time, in the last quarter of 2015, as a result of the regulatory steps taken during the resolution of MKB, the purifying process started in the case of problematic project loans as well. As a result, project loans over 90 days past due declined by some HUF 100 billion during 2015 H2. With that, at end-2015, 20.2 per cent of the total project loan portfolio was over 90 days past due, while in the case of other loans this ratio amounted to a mere 6.6 per cent (Chart 49). The difference is even more striking if the corporate loan portfolio is examined according to the new definition of non-performing loans. Based on that, 43.9 per cent of project loans and 10.7 per cent of other corporate loans are non-performing.

The corporate non-performing portfolio of the banking sector is concentrated, while loan loss coverage shows a heterogeneous picture. Nearly three quarters of the banking sector's non-performing corporate loans are in the balance sheets of five banks (Chart 50), and these receivables are mostly related to commercial properties. As a result of this concentration, further regulatory support to portfolio cleaning is possible with the help of targeted means, whose role is played by the asset management company established by the Magyar Nemzeti Bank. From a macroeconomic aspect, the advantage of the asset manager is that, without selecting, it purchases non-performing portfolios whose weight is perceptible at banking sector level as well at market price, ensuring at the same time the removal of non-performing assets from the banking sector's portfolio, irrespective of their quality. This is especially important in respect of the assets that represent the worst quality, as in the past years there was practically no demand for them. The range of individual loan loss coverage of corporate non-performing loans is between 6 per cent and 98 per cent. Accordingly, still there are banks that have not implemented adequate loan loss provisioning concerning their non-performing corporate exposure.

Supported by regulatory steps, significant non-performing portfolio was eliminated from the portfolio of the banking sector. During 2015, 33.1 per cent of the total non-performing portfolio of the banking sector was cleaned from banks' balance sheets (Chart 50). More than half of the cleaned portfolio is related to MKB Bank. During the implementation of the resolution action plan of MKB Bank, at gross value some HUF 70 billion of non-performing re-

Chart 51: Cleaning of the non-performing corporate portfolio in the banking system
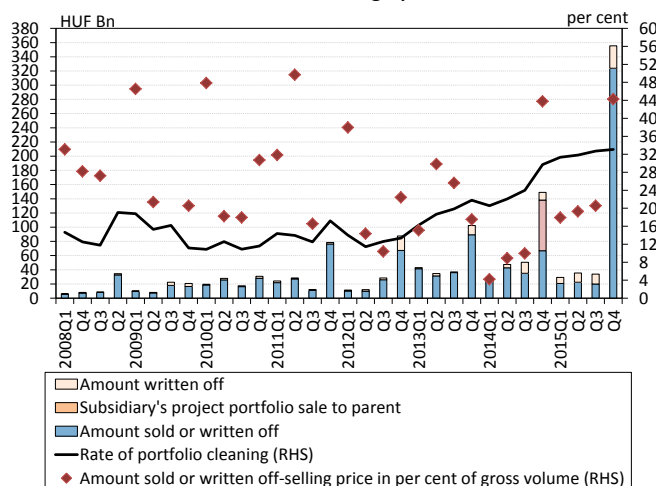
Note: The denominator of the rate of portfolio cleaning changed to nonperforming loans from loans in 90+ days delinquency in 2015 Q4. Source: MNB.

Chart 52: Cost of provisioning to total loans in the corporate segment
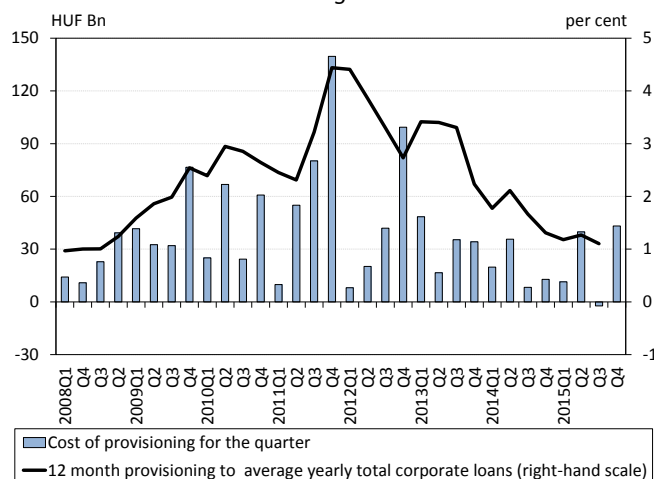
Source: MNB.

Chart 53: Loan loss coverage of corporate loans over 90 days past due
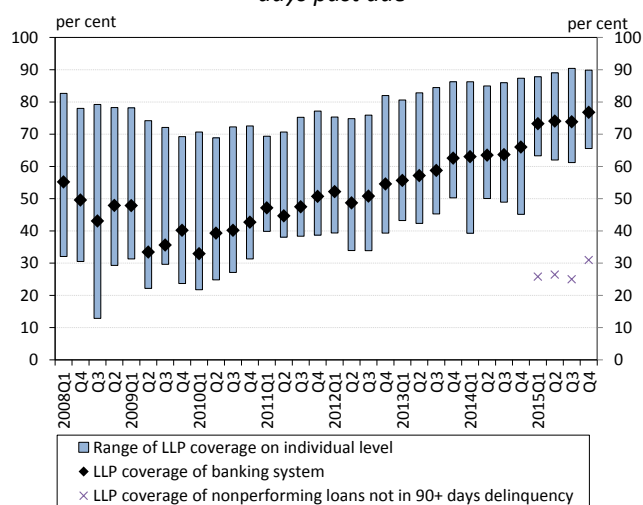
Note: Banks with at least 2 percent share in corporate lending. Calculated on the level of the contracts from 2015. Source: MNB.

ceivables were sold to market participants in H2. The problematic assets that were inseparable by selling in the market until November 2015 were transferred to the Hungarian Resolution Asset Management Plc. (Magyar Szanálási Vagyonkezelő Zrt. – MSZVK) by using another resolution tool, the so-called asset separation in December 2015. 104 claims with a gross value of HUF 210 billion were separated during the transaction (Chart 51).

The asset management company set up by the Central Bank received the approval of the European Commission in February 2016, and may commence its portfolio purchases. MARK Zrt., the asset management company of the Central Bank already provided stimulus to the debt market of non-performing loans. Following the successful conclusion of long negotiations with the European Commission and with the approval of the market pricing method, the domestic commercial real estate market became more transparent. All of this contributed to the increasing demand, because the improving Hungarian commercial real estate market drew attention of international investors. Besides, other regulatory steps of MNB provided stimulus to the supply of banks, which was evidenced during the discussions regarding the sale of non-performing portfolios.

The 12-month cost of provisioning increased considerably in H2. Following the 1.3 per cent in June 2015, loan loss on portfolio amounted to 1.7 per cent in December. The rise in the annual indicator was mainly attributable to high loan loss provisioning in Q4. The current level of the indicator, which can also be considered as risk cost, is still well below the levels observed during the crisis (Chart 52).

Loan loss coverage increased in 2015 H2. Loan loss coverage of loans over 90 days past due rose to 76.8 per cent at the end of the year (Chart 53). In parallel with the increase in coverage, the deviation across banks also continued to decline: even the bank with the worst indicator has a coverage of over 65 per cent, while that of the best is 90 per cent. The 78 per cent loan loss coverage of project loans at the end of the year already exceeds the coverage level of 75.7 per cent of other corporate loans. At the end of the year, loan loss coverage of non-performing loans amounted to 55 per cent, spoiled by the 30.9 per cent coverage of loans that are not 90 days past due, but are classified by banks as non-performing. In the case of these receivables, the average net value may continue to exceed the market value of the collaterals.

4.2. Permanent restoration of non-performing mortgage loans is a priority objective of the Central Bank

The ratio of non-performing household loans remained

Chart 54: Ratio of the banking sector's household loans 90 days past due by contracts
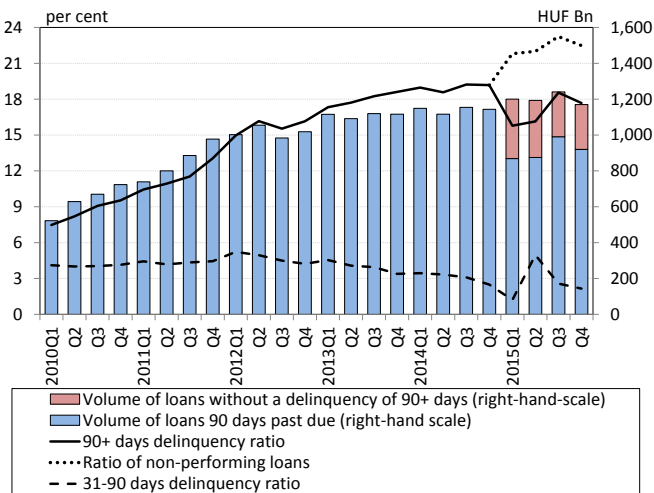
Source: MNB.

Chart 55: Volume and ratio of household loans 90 days past due in the banking sector by product type
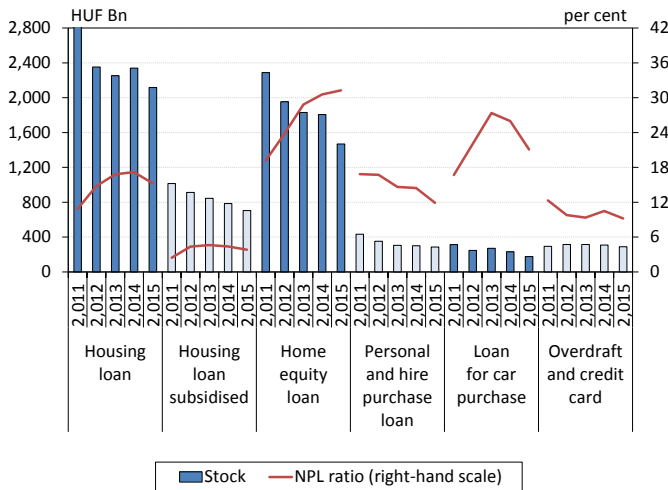
Source: MNB.

Chart 56: Factors affecting changes in the ratio of non-performing household loans in the banking sector
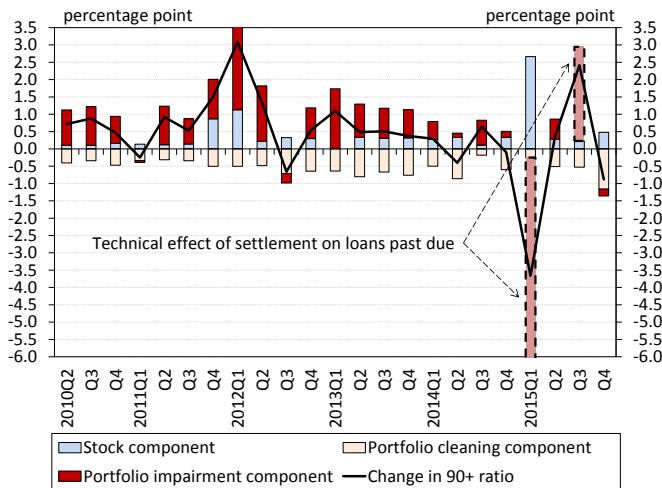
Source: MNB.

practically unchanged. By end-2015, the ratio of non-performing loans in the banking sector increased slightly, by some half percentage point, from 22 per cent at end-H1 to 22.5 per cent, which still can be considered extremely high (Chart 54). Within non-performing loans, following the fading out of the technical effect of the settlement, the ratio of contracts at least 90 days past due to the total household loan portfolio increased in Q3, followed by a slight decline in the last quarter. Accordingly, the ratio of household loans over 90 days past due amounted to 17.7 per cent at end-2015. The ratio of loans not 90 days past due but classified by banks as non-performing declined by somewhat more than one percentage point during H2, which was partly attributable to the contracts that first became delinquent technically as a result of the settlement and then became 90 days past due again as of Q3. The ratio of household loans 31–90 days past due was at a low level of nearly 2 per cent, which may indicate a moderate amount of new defaults for the future.

The weak portfolio quality of mortgage loans continues to pose the highest risk. At end-2015, within home equity loans the share of loans over 90 days past due amounted to 31.2 per cent, representing around a half percentage point increase compared to end-2014. At the end of the year, in the case of market-based housing loans the ratio of loans 90 days past due was also high, some 15.3 per cent. However, it is almost 2 percentage points lower compared to the same period of the previous year. In terms of house-hold loans not covered by mortgage, banks' portfolio quali-ty improved in the case of personal, car and overdraft loans as well in 2015 as a whole (Chart 55).

At end-2015, portfolio cleaning resulted in a slight decline in the ratio of delinquent household loans. Decomposing the change in the ratio of household loans over 90 days past due reveals that at end-2015 the cleaning of the port-folio alone, i.e. the selling and writing off of non-performing receivables, reduced the aforementioned ratio by nearly one percentage point. The continuous amortisa-tion of the performing portfolio continued to contribute to the increase in the ratio of delinquent loans, whereas dur-ing Q4 a slight improvement in the portfolio was observed (Chart 56).

The rate of household loan portfolio cleaning increased considerably at end-2015. During 2015 H2, the volume of sold and written off gross household debt amounted to some HUF 89.3 billion at banking sector level. However, the volume cleaned during Q4 was almost twice as much as the one in Q3, which is attributable to various factors: it is explained partly by the ceasing of the uncertainty around

Chart 57: Cleaning of household loans in the banking sector
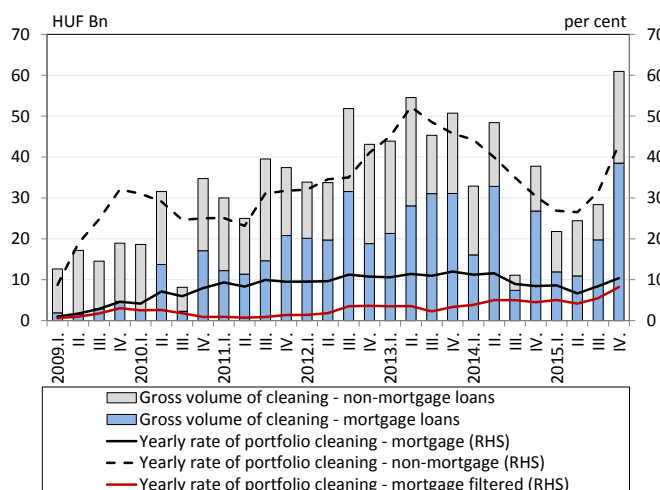
Note: The filtered time series does not include transfers within groups. Source: MNB.

Chart 58: Total coverage of the banking sector's household loans 90 days past due
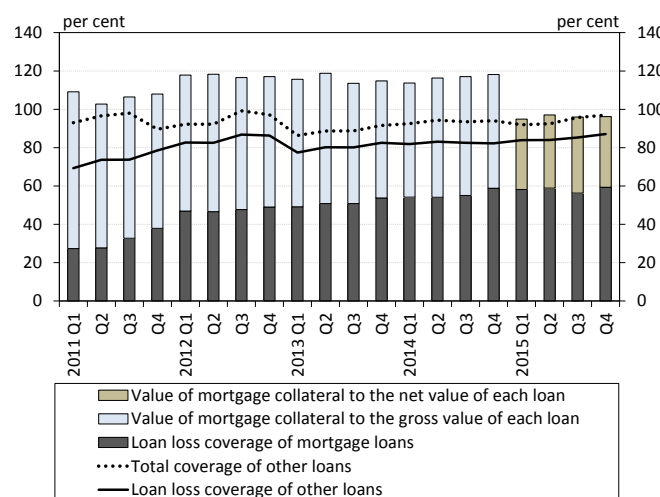
Source: MNB.

Chart 59: Cost of provisioning to total loans and coverage in the household segment
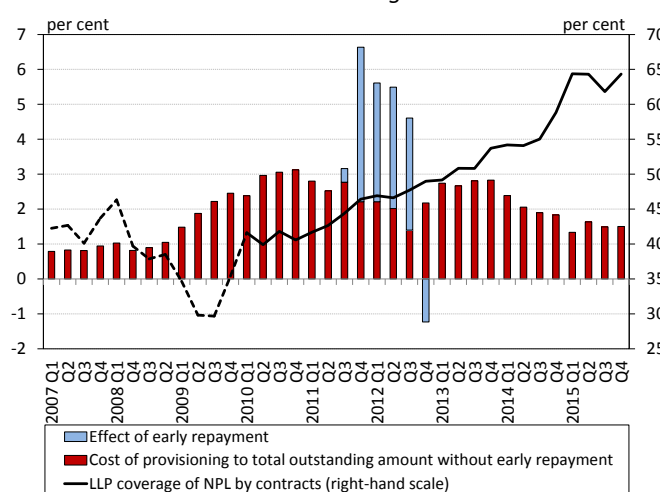
Note: Loan loss coverage calculated by clients prior to 2010, then by contracts. Source: MNB.

the settlement and partly by the FX conversion of car loans. Nevertheless, the cleaning ratios continue to be different for secured and unsecured loans. In 2015 Q4, the banking sector sold or wrote off nearly 20 per cent of its gross outstanding loans over 90 days past due and not covered by mortgage, while in the same quarter a mere 5 per cent of the mortgage loans over 90 days past due were cleaned out. Additionally, the portfolio cleaned in a year accounted for 43 per cent of the loans over 90 days past due in the case of unsecured loans, and a mere 10 per cent in the case of mortgage loans (Chart 57). The cleaning of mortgage loans was even slower if we disregard that a considerable portion of the sales took place within the scope of consolidation.

The National Asset Management Agency (NET) plays a determining role in the cleaning of non-performing mortgage loans. Between the summer 2012 and February 2016, the NET took over some 22 thousand collateral properties from financial institutions. By that, until 2015 H1 the NET relieved the banking sector of gross non-performing mortgage-based receivables amounting to HUF 90 billion, while also providing housing for socially needy debtors. The removal of non-performing mortgage loans from portfolios could be even slower without the asset management agency. Based on data of February 2016 there are some 7000 residential properties offered to NET under evaluation, thus free capacity of the asset management agency could be around 6000 properties. Based on that the NET's current total limit for 35 thousand properties serving as collateral may be depleted in summer of 2016, making further expansion of the asset management agency necessary.

The household portfolio is characterised by high coverage and low new loan loss coverage requirement. During 2015 H2 there was no major change in the loan loss coverage of household loans over 90 days past due, standing at 59.4 per cent at the end of the year (Chart 58). Taking into account the value of collaterals up to the book value of individual claims, the total coverage of this portfolio amounted to 96.2 per cent at the same point in time, indicating that in the case of these delinquent mortgage loans banks already expect return mostly on the basis of the collateral. Overall, during the half year under review, loan loss coverage of the total household portfolio over 90 days past due remained practically unchanged, while the impact of the cost of provisioning and sales, which can also be interpreted as a risk cost of the portfolio, amounted to 1.5 per cent of household loans outstanding at annual level at end-2015, which can be considered relatively low (Chart 59).

There are restructuring reserves in the non-performing

Chart 60: Restructured mortgage loans in the banking sector
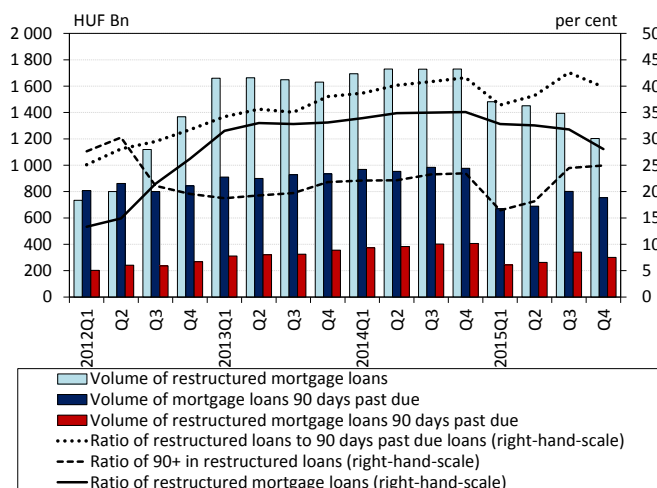
Source: MNB.

Chart 61: Distribution of debtors with 90+ days delinquency by the ability and willingness to pay

Source: MNB.

household mortgage loan portfolio. Some kind of restructuring took place in the case of around 28 per cent of the banking sector's mortgage loan portfolio at end-2015; this ratio increases to nearly 40 per cent if we look at only the mortgage loans 90 days past due. Within restructured mortgage loans, the ratio of loans over 90 days past due increased continuously in the past years; this phenomenon may be attributable to the low efficiency and lack of success of restructurings (Chart 60). Based on the information retrievable from the mortgage loan database[4] built up by the MNB, even at present nearly 22 per cent of debtors have sufficient income to be able to settle their debts in a sustainable manner. In the case of 12 per cent of them the loan transaction may be restructured so that the creditor should not suffer additional loss, while according to the database nearly 14 per cent of them meet their debt servicing liabilities at least partially in spite of having no declared income (Chart 61). Accordingly, this way some 45–50 per cent of debtors may be restructured in a sustainable manner. The restoration of non-performing mortgage loans requires efforts from both banks and debtors, and cooperation between the two parties is also essential. This whole process is driven into an adequate framework by the MNB's recommendation published on 11 March 2016 (see Box 6).

BOX 6: MNB RECOMMENDATION CONCERNING THE SUSTAINABLE RESTRUCTURING OF MORTGAGE NPLS

With the ceasing of the forced sale and execution moratorium that was temporarily extended until the arrangement of the situation of FX loans and with the ceasing of the regular winter eviction moratorium, since 1 March 2016 it has been possible again for creditors to enforce their mortgage. While asserting this right is a fundamental condition of the stable functioning of the financial system, in the MNB's opinion the current legislative environment does not provide adequate guarantee that prior to starting an enforcement procedure creditors will consider the situation and try to restore debtors' solvency through alternative solutions.

In order to fill this regulatory gap, on 11 March the MNB issued a recommendation[5] with the objective to drive the process of cooperation between bank and debtor into a single framework after the latter became defaulting. The recommendation is not a binding regulatory tool, although the MNB expects banks to comply with it. The provisions cover both future and already defaulting debtors.

The recommendation provides guidance regarding the minimum exemplary content of efficient establishment of relations and communication between defaulting debtors and financial institutions. Financial institutions' procedures are deter-

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[4] More details about the database: Dancsik, B. – Fábián, G. – Fellner, Z. – Horváth, G. – Lang, P. – Nagy, G. – Oláh, Zs. – Winkler, S. (2015): Comprehensive analysis of the non-performing household mortgage portfolio using micro-level data. MNB Occasional Papers Special Issue. Magyar Nemzeti Bank.

[5] 1/2016. (III.11.) recommendation of Magyar Nemzeti Bank about the restoration of household mortgage loans with a payment delinquency.

mined in different ways for valid and terminated contracts. Financial institutions are expected to attempt to contact the debtor, the guarantor and the mortgager at least on three occasions in the case of valid contracts and at least twice in the case of terminated contracts.

According to the recommendation, following the successful establishment of contacts the financial institution provides for the collection of relevant information necessary for the assessment of the situation and making the decisions regarding the proposed solutions, i.e. information that contains data needed for making the decision and is not available for the financial institution. At the same time, the recommendation defines the maximum scope of information that a financial institution may require of a debtor.

The recommendation sets out the so-called resolution process, which aims at the restoration of the solvency of household mortgage loan debtors with payment delinquency. Stricter requirements were drawn up for loans disbursed prior to 1 January 2015, recorded earlier in foreign currency and currently at least 180 days past due. In this case, the stricter regulation is justified by two factors. Firstly, these loans were issued in a more permissive regulatory environment, which allowed the disbursement of loans where it was not ensured that debt servicing would always be proportionate to the debtor's capacity to repay his debt with high chance. Secondly, the increase in the burden stemming from the exchange rate risk – although based on the Curia's legal uniformity decision it clearly burdens the debtor – in many cases created life situations from which the debtor was unable to get out on his own.

The recommendation emphasises: the debtor's cooperation is also needed for the solution of the situation. If the debtor fails to comply with the cooperation criteria set out in the recommendation, the MNB does not expect the financial institution to take further steps for the avoidance of selling the claim or the real estate. The MNB's proposal that the financial institution should apply the advantages offered to the debtor only conditionally, i.e. tied to the debtor's performance, also serves the strengthening of the debtor's cooperation.

Diagram of the resolution process included in the recommendation, source: MNB.
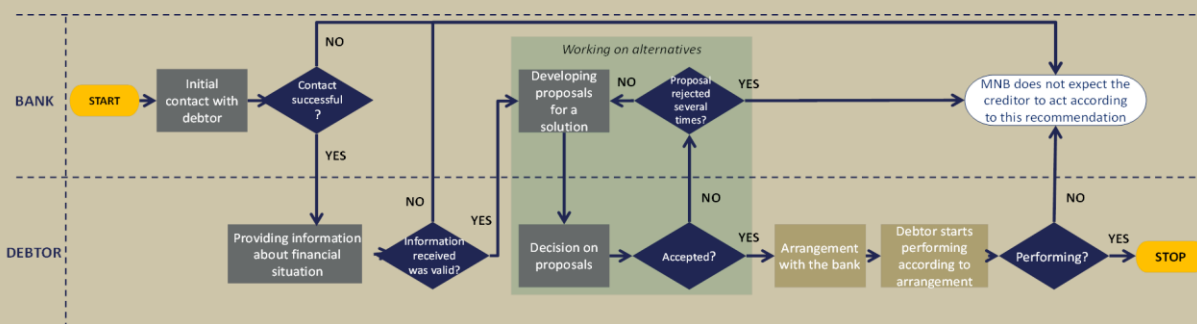
Chart 62: Ratio of loans 90 days past due and the cost of provisioning in the corporate segment
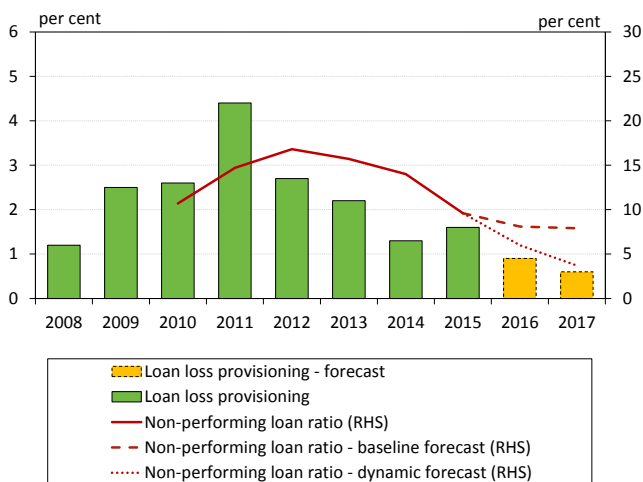
Note: On dynamic trajectory portfolio transfers are assumed. Source: MNB.

4.3. Banking sector portfolio quality is expected to improve only slowly, with external help

Asset purchases by the central bank debt manager may significantly accelerate improvement in the corporate portfolio. The major portfolio improvement seen in the corporate segment during 2015 is attributable to the resolution of MKB Bank, during which a considerable portion of the bank's non-performing commercial real estate portfolio was separated. Nevertheless, at end-2015 corporate loans covered by commercial real estate ac-counted for about half of the corporate loans over 90 days past due. The degree of further improvement in corporate portfolio quality is determined over the forecast horizon by the rate of cleaning the corporate non-performing loans covered by commercial real estate. Starting from 2016 Q2, it will be possible for banks to sell their non-performing commercial

Chart 63: Ratio of loans 90 days past due and the cost of provisioning in the household segment

Legend:
- Loan loss provisioning - forecast
- Loan losses related to the early repayment scheme
- Loan loss provisioning
- Non-performing loan ratio (RHS)
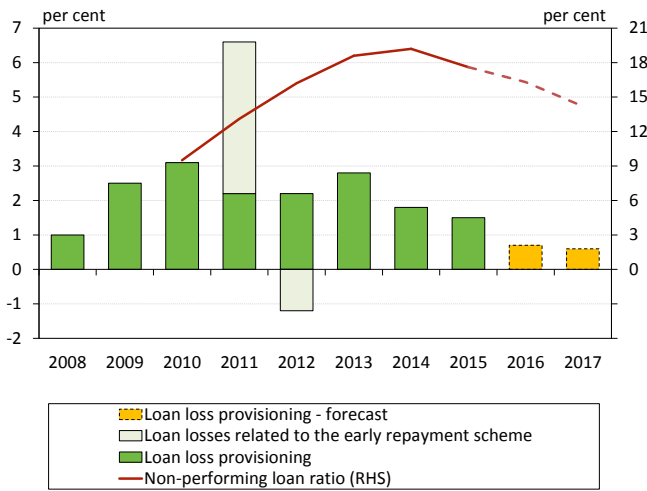
Source: MNB.

Chart 64: Loans over 90 days past due at financial enterprises by products

Legend: Financial leasing — Loans — Factoring — Workout — NPL ratio
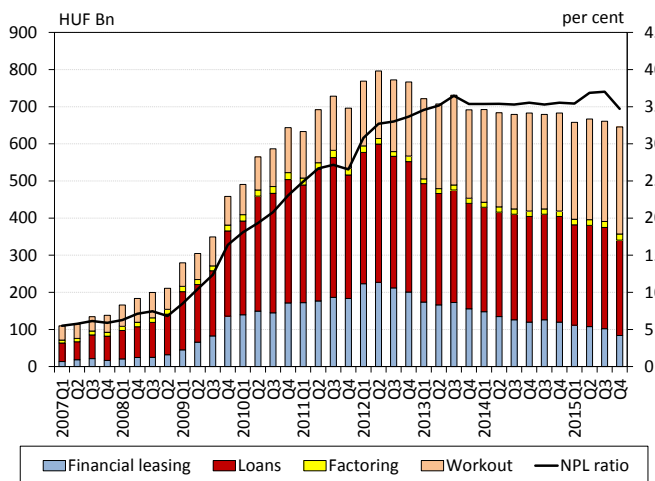
Source: MNB.

Chart 65: LLP coverage of loans more than 90 days past due at financial enterprises

Legend: Total — Financial leasing — Loans — Factoring — Workout
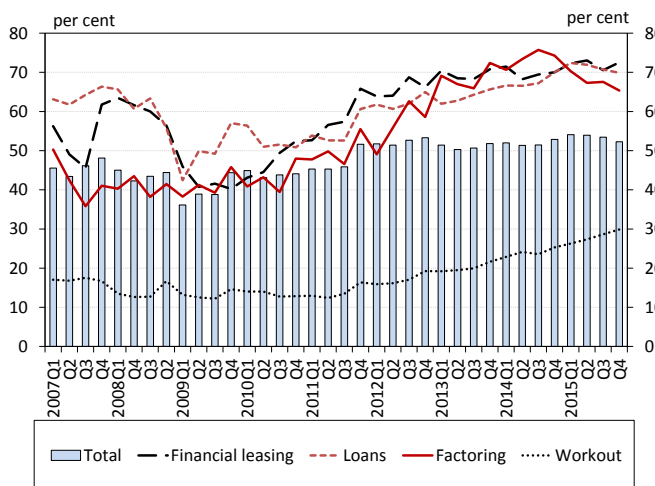
Source: MNB.

property portfolios to MARK Zrt. at market prices. Successful transactions may even result in a decline to below 5 per cent in the ratio of corporate loans over 90 days past due by end-2017 (Chart 62), which would significantly contribute to the building of a profitable banking sector that efficiently supports sustainable economic growth.

Major improvement may start in the household portfolio over the forecast horizon. Firstly, by end-2015, following the fading out of the impact of the settlement a clear picture evolved regarding the household portfolio of the banking sector. Secondly, the expiry in March of the moratoria concerning the selling of collateral may also be conducive to the cleaning of the household portfolio. In 2015 Q4, the volume of the sold non-performing household portfolio increased again at banking sector level. On a quarterly basis, banks sold nearly 5 per cent of their gross non-performing household loans outstanding. As a result, compared to 2014 the ratio of household loans over 90 days past due declined by some 1.6 percentage points by end-2015. According to our forecast, the latter cleaning ratio may slightly improve in the next two years, which, coupled with the low new loan loss provisioning requirement of the household loan portfolio, may entail a perceptible decline in the ratio of loans over 90 days past due. Our forecast suggests that this latter ratio may decline to 14.2 per cent by end-2017 (Chart 63). The MNB's recommendation concerning delinquent household mortgage loans may provide considerable support to the improvement in portfolio quality.

4.4. Portfolio quality of co-operative credit institutions improved

Financial enterprises' portfolio quality improved in 2015 H2. At end-2015, the ratio of receivables over 90 days past due declined to 34.7 per cent, which is the lowest value in the past two years (Chart 64). The corporate loan portfolio that was included in the balance sheet of the MSZVK at the end of the year adds to the portfolio of debt collectors, but only less than one quarter of the total portfolio that was handed over is 90 days past due. More than 60 per cent of all the receivables over 90 days past due are related to households, debts mostly covered by housing property, or consumer credit. Accordingly, more than half of the household debt at financial enterprises is over 90 days past due. This ratio considerably exceeds the banking sector value, which may be regarded as a natural phenomenon, since some of these institutions specialise in the purchase and management of overdue receivables. In the case of financial enterprises, loan loss coverage declined slightly during H2, amounting to 52.3 per cent at end-December (Chart

65). In the case of debt collectors, the purchase price already includes the expected losses; therefore, the lower, 30 per cent coverage at end-2015 does not necessarily mean a risk.

Table 2: Key indicators of corporate portfolio quality at the cooperative credit institutions

per cent	2012 H1	2012 H2	2013 H1	2013 H2	2014 H1	2014 H2	2015 H1	2015 H2
90+ days deliquency ratio	24,9	26,0	26,5	20,9	21,1	20,2	20,6	19,6
Loan loss coverage of NPL	37,9	39,0	39,1	44,0	51,0	59,6	59,6	65,3
Cost of provisioning to total loans	1,9	1,9	1,8	1,3	1,0	0,8	0,6	1,3

Note: The ratio of overdue loans calculated by contracts. Source: MNB.

The portfolio quality of corporate loans outstanding of the co-operative credit institutions sector improved slightly. During 2015 H2, the ratio of corporate loans over 90 days past due within the total corporate loan portfolio of co-operative credit institutions declined from 20.6 per cent at end-H1 by one percentage point to 19.6 per cent, which is still considered as a high level. The volume of loans over 90 days past due was down from HUF 42 billion to HUF 38 billion during H2, while loan loss provisioning for this portfolio was left nearly unchanged by the institutions. As a result, the loan loss coverage of corporate loans over 90 days past due increased considerably, from 68 per cent to nearly 72 per cent. During H2, the new loan loss coverage requirement also grew; the cost of provisioning rose from 0.6 per cent in H1 to 1.3 per cent (Table 2).

Table 3: Key indicators of household portfolio quality at the cooperative credit institutions

per cent	2012 H1	2012 H2	2013 H1	2013 H2	2014 H1	2014 H2	2015 H1	2015 H2
90+ days deliquency ratio	14,6	15,3	15,4	14,6	12,8	12,4	12,4	11,6
Loan loss coverage of NPL	49,8	50,4	53,4	56,8	64,6	67,7	68,2	71,9
Cost of provisioning to total loans	1,3	1,6	0,9	-0,1	-0,4	-0,3	-0,3	0,0

Note: The ratio of overdue loans calculated by contracts. Source: MNB.

Improvement was experienced in the household loan portfolio as well. In 2015 H2, the share of household loans over 90 days past due within the total household loan portfolio of co-operative credit institutions declined by some 0.8 percentage point to 11.6 per cent. Similarly to corporate loans, the loan loss coverage of household loans over 90 days past due increased during H2, standing at nearly 72 per cent at end-2015. In the case of the household loan portfolio the new loan loss coverage requirement again did not exceed the volume of the reversed loan loss provisions, and thus, overall, the cost of provisioning stood at 0 per cent at end-2015. All this continues to indicate rather low risk costs (Table 3).

5. THE BANKING SECTOR'S CAPITAL AND INCOME POSITION – THE BANKING SECTOR IS CHARACTERISED BY POSITIVE OUTLOOK IN INCOME, WHILE CAPITAL POSITION IS ROBUST

The banking sector and the branches closed 2015 with a positive result, i.e. a profit of HUF 30 billion; however the distribution of income is characterized by significant heterogeneity. The trends observed until the middle of the year continued in H2: 12-month rolling loan loss and other provisioning requirements continued to decline, while interest income also continued its gradual decrease. Operating costs as a proportion of assets did not become lower, but several institutions took steps to increase cost-efficiency; as a result, the number of bank branches was down by nearly 15 per cent at sector level. According to our expectations profitability will improve in coming years along the decline in fiscal burdens, the growth in lending and increase in cost efficiency. We expect a pre-tax return on equity of 6-8 per cent in the banking sector in 2016 and 2017.

The capital position of the sector is robust, with the capital adequacy ratio standing at 20 per cent at end-2015. However, there is major asymmetry behind the capital position, which is satisfactory at system level; the capital adequacy ratios of the major banks are between 11 and 27 per cent. Several institutions have relatively high non-performing portfolios and low profitability, which, looking ahead, may indicate weak capital accumulation capacity and missing foundations for long-term sustainable operation.

Chart 66: Pre-tax profit and loss of banks and branches at individual level (data from December 2015)
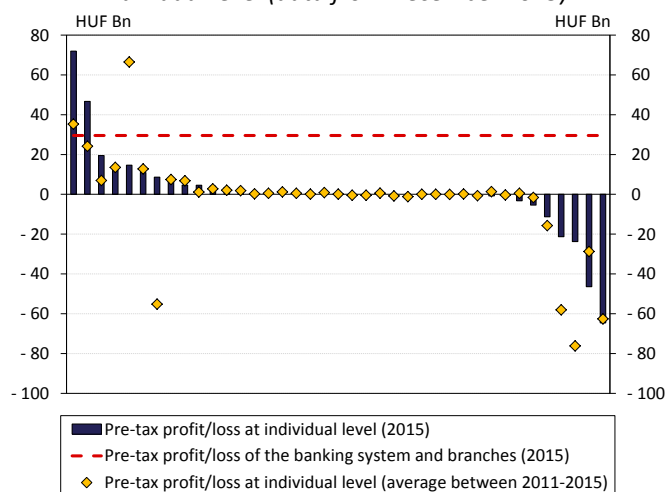
Note: The pre-tax profit/loss of credit institutions belonging to the same group is shown in the chart in an aggregate manner. Source: MNB.

Chart 67: Aggregate 12-month rolling RoE and RoA indexes of the banking sector and the branches
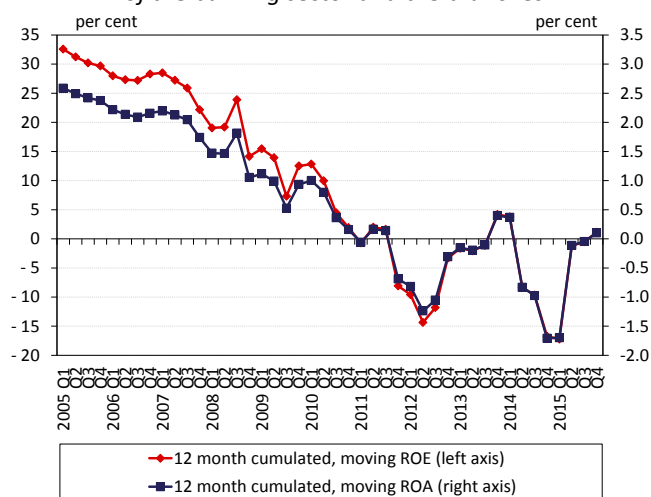
Source: MNB.

5.1. Banking sector profitability improved, but a dual trend is seen in banks' net income

The banking sector and the branches closed H2 with losses, but the year as a whole with profit. The pre-tax loss of the banking sector and the branches amounted to HUF 122 billion in 2015 H2. Nevertheless, in spite of the significant loss made between July and December, the sector closed 2015 with a pre-tax profit of some HUF 30 billion. This amount is the sum of the profit of HUF 291 billion of 28 profit-making institutions and the loss of HUF 261 billion of 17 loss-making institutions (Chart 66). Accordingly, the return on equity amounts to 1.1 per cent, while the return on assets stood at 0.1 per cent at the end of the year (Chart 67). The impact of cost of provisioning carried out because of the settlement on net income is no longer included in the annual profitability at end-2015, in the real profitability of the sector can be shown with less distortion. The loss in H2, however, was considerably affected by the provisioning and portfolio cleaning of several major institutions, in a total amount of some HUF 95 billion.

Lower loan loss provisioning requirement and the ceasing of the impact of the settlement play a role in the improvement of profitability. Decomposing the change in the banking sector's 12-month rolling profit/loss makes the continuation of earlier trends perceptible. Compared to the June value, the ratio of loan loss provisioning to assets continued to decline, and other losses, which, inter alia, also include the effects of provisioning due to the settlement, also decreased. These items together improved the profit of the sector by some 0.4 percentage points, thus offsetting the around 0.2 percentage point decline in interest incomes as a proportion of assets, which continued in H2 as well. Operating costs somewhat increased in H2; their ratio to

Chart 68: Aggregate 12-month main rolling profit items of the banking sector and branches as a proportion of the 12-month average balance sheet total
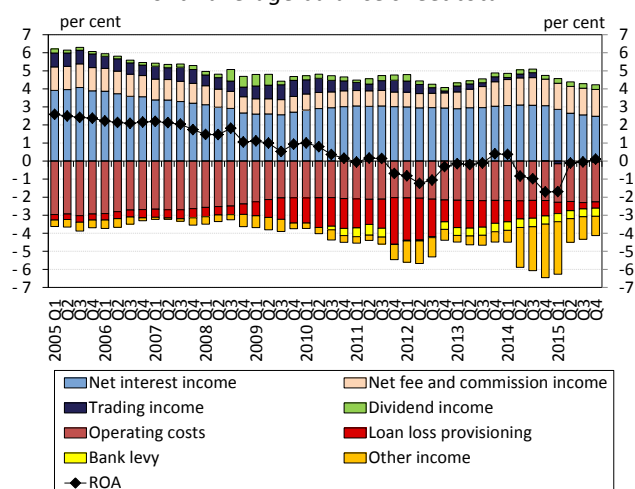
Source: MNB.

Chart 69: Net interest income and its components compared to 12-month average of gross and net interest-bearing assets
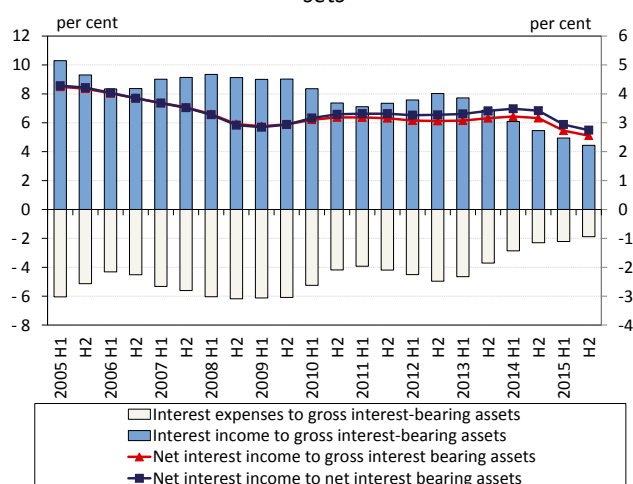
Source: MNB.

Chart 70: The banking sector's costs to asset ratio, selected cost factors and annual changes in total assets
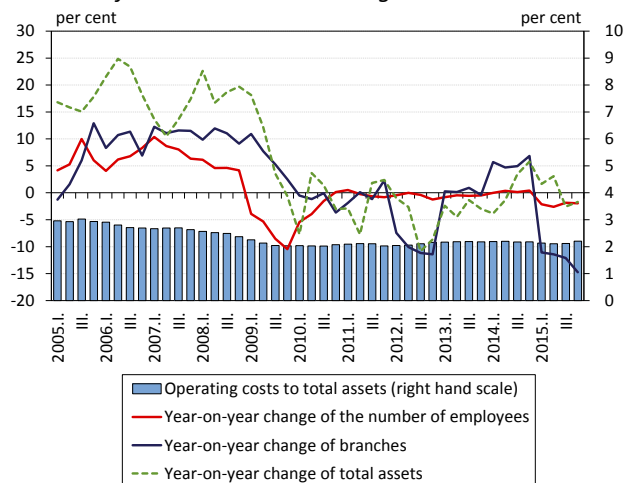
Source: MNB.

the assets was 2.2 per cent at the end of the year (Chart 68).

Both interest incomes and expenditures declined in 2015 H2. In addition to a one-off reduction of interest rates, the future interest rates on the loan contracts concerned were also changed by the settlement and the conversion into forints by tying their movements to the three-month inter-bank rate. The cutting of the base rate also influences the margin attainable on the nearly non-interest-bearing sight and current account deposits. Although the higher ratio of these deposits adds to banks' interest income, it makes the latter more sensitive to the changes in the interest rate environment. At an annual level – looking ahead – the interest rate cuts in 2015 reduced the margin attainable on these deposits by nearly HUF 40–45 billion. However, through the composition effect, the increase in the ratio of sight deposits observed in 2015 has a favourable impact on the size of interest expenditures, reducing it by an estimated HUF 10 billion at an annual level. As a result of regulatory measures and the decline in the base rate, interest incomes fell by an annual HUF 141 billion compared to 2014 (Chart 69).

During 2015, banks took major steps to improve cost-efficiency. It happened on several occasions following the outbreak of the crisis that financial institutions took cost reducing measures, but these steps were typically accompanied by a decline in the balance sheet total as well. In 2015, however, with all the assets remaining nearly unchanged, several banks carried out a major reduction of the number of their branches. At sectoral level, the number of branches declined by some 15 per cent between 2014 and December 2015 (Chart 70). The decline in the number of branches partly reflects the spreading of digital sales channels and the impact of the change in banks' business models. Nevertheless, the measures aiming at cost-efficiency are not yet reflected in a decline in operating costs, whose ratio to total assets even increased in H2. The level of 2.2 per cent can still be considered high; a lower indicator would be necessary in the medium term for the restoration of sound bank profitability.

Major differences are present in banks' core profitability; certain institutions will need to adjust themselves. Banks were affected by the decline in interest income as a result of the settlement in different ways. The institutions that – relying upon the possibility of a later interest rate hike – had disbursed their loans at a too low interest rate prior to the crisis, and then increased the cost of credit, found themselves in the most difficult situation. These banks experienced relatively greater falls in the portfolio concerned

Chart 71: Net interest income, profits from fees and com-missions, and operating costs by institutions
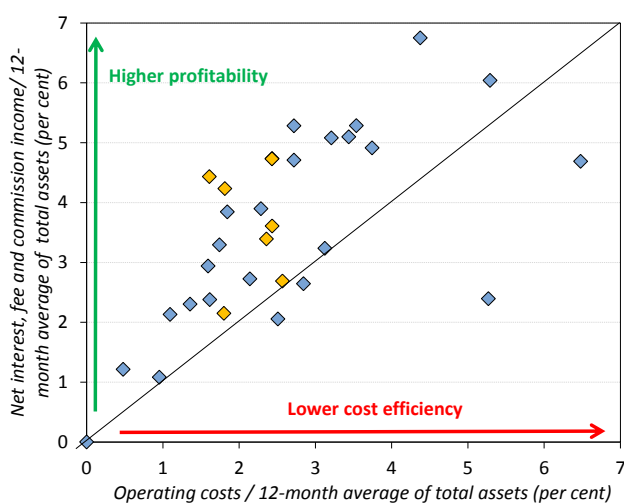
Note: Large banks are indicated with yellow colour. Source: MNB.

Chart 72: Distribution of return on equity in the banking systems of the European Union
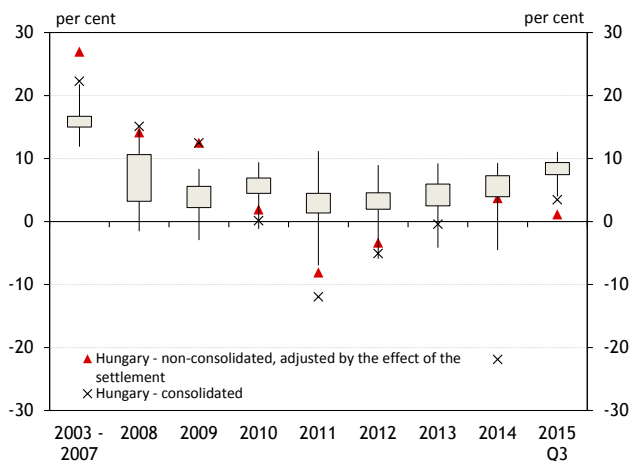
Note: The chart depicts the 46–60, 20–80 percentile value of the member states' banking systems together with the Hungarian banking systems' ROE. Source: ECB CBD, World Bank Database.

Chart 73: Distribution of the large banks' CARs and the average banking sector CAR
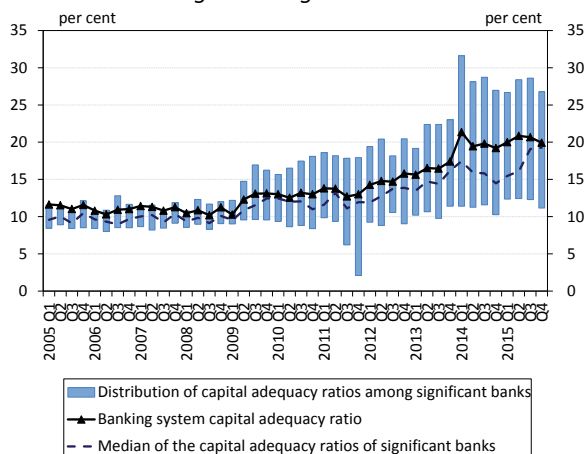
Note: Large bank means that based on balance sheet total it has an at least 3 per cent market share in the given quarter. Source: MNB.

and in interest rates. As a result, it is true for several institutions that profits from interest, fees and commissions, which are the most important sources of income, hardly exceed operating costs. For their future sustainability, these banks will need to adjust themselves, which they can achieve either by expanding their activity and seeking out relatively more profitable activities or by rationalising their costs and cleaning the bad portfolio that produces negative interest income. Nevertheless, only two of the major institutions are characterised by the above problem (Chart 71), so one cannot consider this risk as systemic.

The profitability of the Hungarian banking sector is still below that of the sectors of the region. Hungarian credit institutions' consolidated return on equity annualised within the year amounted to 2.6 per cent in 2015 Q3. Although this value is a major step forward compared to the previous years' losses, it is still below the average 8.9 per cent typical of the countries in the CEE region (Chart 72). Looking ahead, the catching up of the profitability of the sector is facilitated by the reduction of the surtax paid by financial organisations. Based on the amendment of law adopted in December 2015, it will improve the profitability of the sector by some HUF 73 billion, i.e. ceteris paribus by 2.8 percentage points in terms of return on equity (see Box 7). According to the final proposal, the bank levy will continue to be based on the 2009 adjusted balance sheet total, while the upper rate of the tax will decline from the current 0.53 per cent to 0.24 per cent. The launching of the operation of MARK Zrt. may also have a material impact on banks' incomes in 2016: depending on the pricing principles of the institution, during the transactions banks may even be compelled to addition loan loss provisioning.

5.2. The capital position of the banking sector is stable, but capital buffers and the ability to accumulate capital are asymmetrical

The banking sector's capital adequacy declined slightly, but continues to be at a stable level. The capital adequacy ratio of the banking sector declined to 20 per cent from the 20.9 per cent observed in June. The decline is partly temporary, as the indicator does not include the capital increasing effect of profit-making banks' 2015 profit until the audited financial statements are approved by the owners. Considering this, and assuming that at least a part of the profit will serve the increasing of the equity, capital adequacy may be between 20 and 20.8 per cent (Chart 73). At the end of the year, unconsolidated capital adequacy ratios of the major institutions ranged between 11 and 27 per cent, while consolidated ratios between 11 and 32 per cent. Accordingly, all banks met the 8 per cent regulatory minimum require-

Chart 74: Decomposition of the change in the banking sector CAR
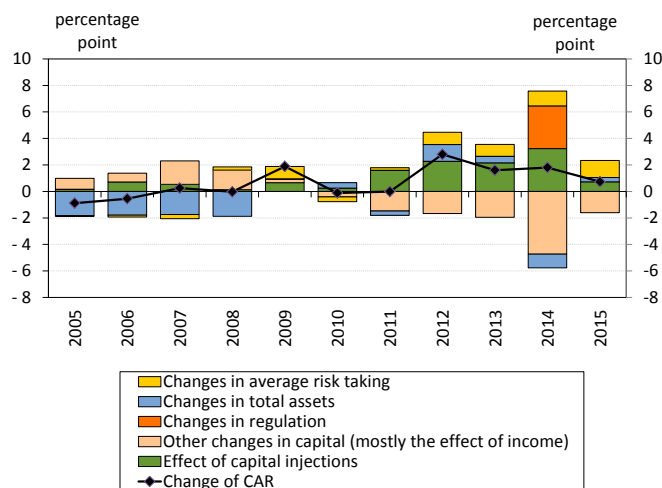
Note: Yearly sum of quarterly decompositions. The change in the CAR beyond the effect of capital injections in 2014 Q1 was completely identified with the technical impact of the changing regulation. Source: MNB.

Chart 75: Return on equity and the net non-performing portfolio as a proportion of the CET1 capital
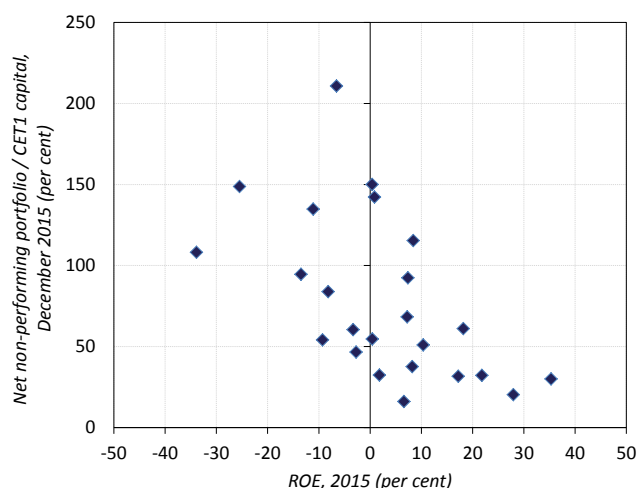
Note: The chart does not include home savings and loan associations as well as institutions whose profit/loss was distorted by extraordinary items. Source: MNB.

ment, but one institution failed to comply with the Pillar II supervisory capital requirement. Capital buffers above the regulatory minimum continue to be concentrated; three quarters of them are in the balance sheets of three institutions. Looking ahead, capital requirements will increase, because banks have to build capital conservation buffers, equalling 0.625 per cent of the total risk exposure in 2016.

The change in the risk per unit of asset improved capital adequacy, while profit/loss reduced it. In addition to capital increases, the decline in average risk assumption has contributed to the improvement in the capital adequacy ratio to the greatest extent since the outbreak of the crisis. This trend continued in 2015 H2: the decline in average risk per unit of asset improved banks' capital adequacy by some 1 percentage point (Chart 74). This was largely attributable to the transaction between MKB and the Resolution Fund, as a result of which high-amount and high-risk receivables were eliminated from the sector. In the same period, the increase in total assets resulted in a deterioration of the indicator, similarly to the loss of loss-making banks. This impact will decline following the approval of the audited financial statements of profit-making institutions, provided that profits will not be disbursed as dividend.

Considerable heterogeneity is observed in banks' capital accumulation capacity. The operation of individual banks can be sustained over the long term if they accumulate sufficient capital during their activity to create the basis for their future activities. In the assessment of this capital accumulation capacity it is a primary aspect what ratio is represented by the assets of doubtful quality compared to the regulatory capital, and what size of income the institution is able to produce during its operation (Chart 75). In 2015, the majority of banks were profit-making, however several institutions with negative income and continued relatively high net non-performing exposure can also be identified. The respective capital positions of these institutions rest on less safe bases, and for them it may be a challenge to create the foundations for operations that can be sustained over the long term as well.

Parent banks' financial positions are gradually getting stronger. The financial situation of banks active in Hungary is not independent of the current positions of their respective foreign owners. Since the outbreak of the crisis, the owners of the largest Hungarian banks have taken significant steps in order to strengthen their respective capital positions: at end-2015, their average capital adequacy ratio and CET1 ratio amounted to 16.2 per cent and 12.7 per cent, respectively (Chart 76). In 2015, parent banks already reached significant profits, i.e. an average ROE of some 8.6

Chart 76: Capital position and profitability of the parent banks of sizeable subsidiaries active in Hungary
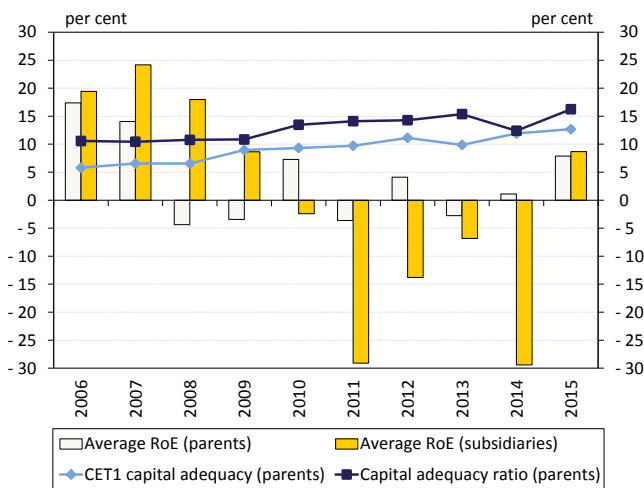
Note: Only larger institutions with a foreign parent in the given year are shown on the figure. Source: MNB.

Table 4: Pre-tax profit/loss of financial enterprises

HUF Bn	Financial enterprises owned by banks	Financial enterprises without bank ownership	Sector total
2008	31.9	11.6	43.5
2009	-17.8	7.9	-9.9
2010	-47.7	5.2	-42.5
2011	-51.0	-3.1	-54.1
2012	-53.5	6.0	-47.5
2013	-14.9	15.7	0.8
2014	-83.4	-4.4	-87.8
2015	4.7	1.8	6.6

Source: MNB.

Chart 77: CAR and ROE indicators and pre-tax profit of co-operative credit institutions
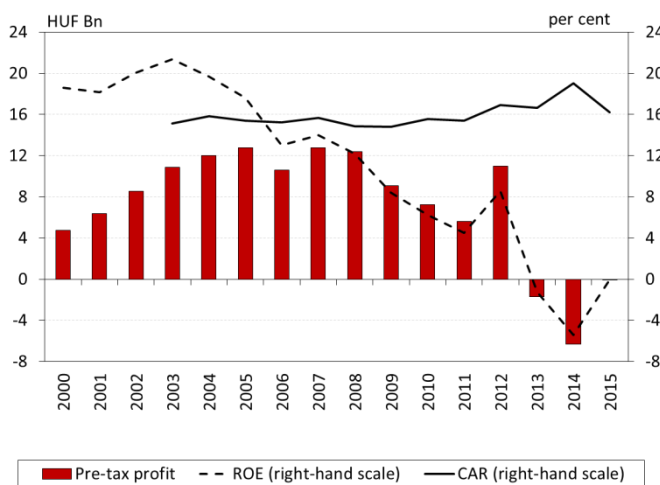
Source: MNB.

per cent. Parent banks' solid capital position and profitability ensure that subsidiaries continue to have the necessary capital at their disposal for expanding their activity and covering future losses, if any. However, the increase in profitability of subsidiaries owned by foreign institutions decreases the probability of needing additional capital, moreover some subsidiaries are ready to grant dividend to their parent.

Financial enterprises closed 2015 with profits. Financial enterprises made a loss in H2, however they closed the year as a whole with a pre-tax profit of some HUF 7 billion. After 2008 this was the first year when the sector had any reasonable profit. Both bank-owned and non-bank owned financial enterprises were profitable (Table 4). The decline in provisioning requirements and the increase in non-recurring receipts contributed to the favourable result considerably.

The number of co-operative credit institutions decreased, while their capital adequacy deteriorated to some extent. Between January 2015 and January 2016 there was a major decline – from 110 to 82 – in the number of co-operative credit institutions, mainly as a result of the mergers of some institutions. The mergers of the players of the sector as well as the deepening of integration may facilitate the efficient functioning and competitiveness of co-operative credit institutions. Compared to end-2014, as a proportion of assets, operating costs declined by 0.2 percentage points, standing at 3.4 per cent at the end of the year. The profit/loss of the sector was practically neutral, consisting of 51 institutions' profit of HUF 4.3 billion and a similar amount of loss of 36 institutions. The capital adequacy ratio of the sector somewhat declined, amounting to 16 per cent at the end of the year (Chart 77). The decline was mainly attributable to an increase in total risk exposure value, while the value of regulatory capital declined only slightly.

Box 7: About changes in the level and structure of the banking sector's income

Compared to the early 2000s, the 2007–2008 financial crisis and its consequences drastically changed the income structure of the banking sector. The economic and institutional environment that determines the financial sector went through a set of radical changes: (1) the downturn in the real economy made masses of debtors non-performing, (2) central banks reduced their policy rate to historically low levels, (3) many governments increased banks' tax burdens, while (4) regulatory authorities established stricter requirements for liquidity and capital positions than before. In addition to the trends that were uniform at international level, one-off government measures related to FX loan debtors (early repayment, exchange rate cap, settlement) also reduced banks' income in Hungary. Below we describe how the profitability of the Hungarian banking sector is expected to change in the light of the above trends, domestic characteristics and the experiences of the 'Market Intelligence' survey.[6]

Loan losses. Since 2008 the Hungarian banking sector has recorded annual average losses of HUF 371 billion due to the increasing of loan loss provisioning and the selling of loans below net value. The level of loan losses strongly depends on the macroeconomic variables that determine the financial position of debtors. Accordingly, the pick-up in the Hungarian economy, which has been lasting since 2013, has improved banks' prospects considerably. Through lower probability of default, the outstanding quality of new loans also has an attenuating impact on expected losses. In line with these trends, the loan losses recorded in 2014 and 2015 were much lower (HUF 240 billion and HUF 102 billion, respectively) than before, and the MNB forecasts further declines to HUF 81 billion and HUF 63 billion in 2016 and 2017, respectively. However, if the pace of cleaning of the existing non-performing portfolio accelerates, banks may be compelled to additional loan loss recording, considering that overall, for all the portfolios, the current market price is still below the loan loss recorded in the case of the majority of banks. This may reduce their profits as a one-off loss. However, in the medium term it improves profitability through an increase in interest income and a reduction of costs.

Changes in interest incomes, permanently low interest rate environment. The magnitude of interest incomes is determined by three main factors: the size of the performing interest-bearing assets, the composition of the interest-bearing assets and the cost of the funds that finance the assets. With the expected pick-up in the banking sector's lending activity, the portfolio of interest-bearing assets may increase, and within that the share of loans with relatively higher interest rates may also grow. The latter has a positive effect not only on the absolute size of interest incomes, but also on their value as a proportion of assets (net interest margin). The removal of non-performing loans from the balance sheet points to the same direction, which would allow the collection of interest incomes in the case of a portfolio that produces negative income at present. A continued increase in the share of nearly non-interest-bearing sight deposits within household deposits may result in a further improvement in the interest income. An effect contrary to the above may be triggered if the Monetary Council decides on a further reduction of the base rate: a potential interest rate cut causes greater repricing on the assets side than on the liabilities side, resulting – in addition to other effects – in a narrowing of the interest margin achievable by the bank.[7] According to our expectations, profits from interest, fees and commissions reached their low in 2015, and will already slightly increase in 2016. This seems to be corroborated by the fact that in Q1 the banking sector had some HUF 275 billion of profits from these items, exceeding the previous year's aggregate value by 3 per cent in annualised terms.

Fiscal burdens, government measures. In 2015, the levy paid by banks to the budget amounted to some HUF 133 billion, which will decline considerably – by around HUF 73 billion – in 2016 as a result of amendment to the relevant legislation in December 2015. The above impact is attenuated by the increase in the fees related to the insurances of deposits and investments (NDIF and IPF fees). In 2016, the sum of these fees increased by some HUF 8 billion compared to the previous

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[6] Within the framework of this year's 'Market Intelligence' survey the MNB visited nine major domestic commercial banks and one branch office in order to thoroughly study credit institutions' business ideas for this year and their views on the sector, the macroeconomic environment and the money market as well as the risks they consider as most important.

[7] According to our estimate, in 2013 the impact of a 1 percentage point cut in the base rate on banks' income amounted to an annual HUF 13.4 billion. This result, however, is not independent of the level of the policy rate, the current macroeconomic environment and bank balance sheet structure; therefore, in the current situation it may at most provide an indication in terms of its magnitude and direction (Banai, Á. – Hosszú, Zs. – Mérő, B. and Körmendi, Gy.: Impact of base rate cuts on bank profitability, MNB Bulletin, July 2014, Magyar Nemzeti Bank).

Actual value of return on equity, and RoE adjusted by fiscal measures and one-off effects

Source: MNB.
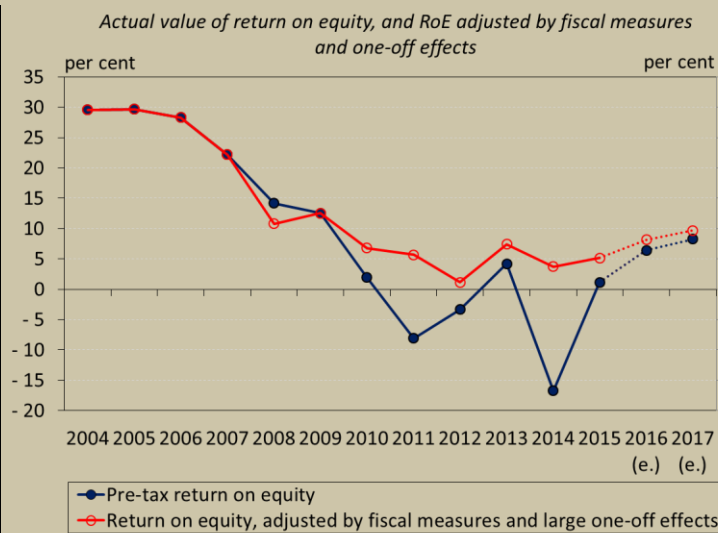
year. For 2017, the Government communicated a further reduction of around HUF 20 billion of the bank levy. Based on the submitted amendment proposal the tax base will change from the adjusted balance sheet total of 2009 to the adjusted balance sheet total of 2015, while the higher rate of the tax will decrease from 0.24 per cent to 0.21 per cent.

Stricter regulatory environment. The regulatory provisions regarding the composition of assets and liabilities partly determine the income that banks can achieve. The higher than earlier weight of liquid assets typically means the accumulation of assets with lower interests, which has a reducing effect on the interest margin. Through the increase in the costs of funds, the raising of longer-term funds also has a reducing impact on income. Meanwhile, the stricter capital requirements, especially the minimum requirement regarding the elements of the CET1 capital, are reflected in a decline in the return on equity even if the profit level is unchanged.

The above trends amend the size of income that can be expected of the banking sector in the long run, even beyond the cyclical losses caused by the crisis. Operating in an environment of stricter than before capital, liquidity and consumer protection rules, and working with lower risk and volatility, it cannot be expected of the sector to return to the income level observed prior to the crisis. Accordingly, in 2016, at sector level, excluding the impact of larger one-off effects, the MNB expects an around 6 per cent return on equity (pre-tax profit of HUF 155–165 billion), which may increase to above 8 per cent in 2017, in parallel with an expansion in lending activity and a further decrease in the bank levy. It is an important development that the lower bank levy will also result in a decline in the distance between the sector's actual earning power and structural earning power. Based on discussions with the largest actors in the sector during the 'Market Intelligence' survey, banks' expectations are basically similar, but slightly more optimistic: the average of the interviewed large banks' expectations concerning return on equity in 2016 was 6.6–7 per cent. Therefore, overall, even in spite of a negative impact of possible portfolio cleanings on profits, the sector may close 2016 with a profitability that exceeds the previous year.

The majority of the market participants that were contacted confirmed our picture of the changes in the income structure of the sector. Banks emphasised that the increasing of productivity and efficiency had become the central element of new bank strategies. Its essential parts, in addition to portfolio cleaning and the increasing of lending activity, include the reduction of operating costs, continuous product development, multi-channel sales and, not independently of this, the strengthening of digitalisation and e-banking. Finding the adequate business size and business profile is an essential step towards the improvement of profitability; without that, the crowding out of certain players from the market or their acquisition by other participants may result in an improvement in the sector's efficiency. Accordingly, expansion in basic profitability may be facilitated not only by a pick-up in lending activity but also by a lower ratio of operating costs.

6. BANKING SECTOR LIQUIDITY – THE LIQUIDITY OF THE BANKING SECTOR REMAINS AMPLE EVEN AFTER THE RESTRUCTURING OF THE CENTRAL BANK POLICY INSTRUMENTS

The liquidity of the banking sector continues to be ample, and neither the expiry in March of the central bank instrument used for the conversion into HUF nor the phasing out in April of the two-week deposit will have material impact on it. Taking account of the past 1–1.5 years it can be established that the liquidity reducing impact of the restructuring of the central bank policy instruments was adequately offset by the expansion in banks' government securities holdings, which also reduced the external vulnerability of the country through the increase in domestic financing of the government debt. From this latter point of view it is also a favourable development that by end-January 2016 the holding of the banking sector's short-term external liabilities sank to a low unseen for a decade.

Chart 78: Impact of the phasing out of the two-week deposit on the LCR
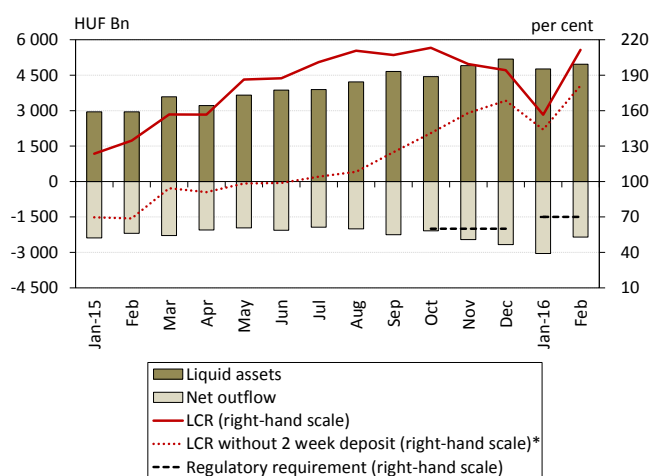
Note: Note: assuming that the whole two-week deposit portfolio will be placed in three-month deposits. Source: MNB.

Chart 79: Liquid assets in the banking sector
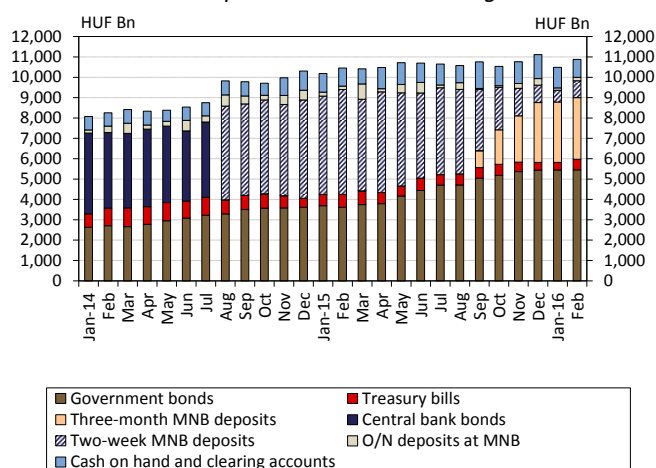
Source: MNB.

6.1. The phasing out of the two-week deposit will not have any major impact on the liquidity of the banking sector

The banking sector adjusted itself to the April phasing out of the two-week deposit already months earlier. At end-January 2016, the two-week deposit holdings of banks falling under the LCR[8] amounted to only HUF 470 billion. If at this point in time the two-week deposit holding had turned into three-month deposits, the banking sector's 155 per cent LCR would have declined to 144 per cent, and only five institutions would have been just a little below the 100 per cent level valid as of April (Chart 78). For complying with this level, the aforementioned banks would have needed to purchase government securities amounting to a mere HUF 40 billion, which cannot be considered a significant adjustment requirement.

Banks offset the liquidity reducing effect of the restructuring of central bank policy instruments by purchasing government securities. Starting from the announcement of the MNB's self-financing programme in April 2014 until end-January 2016 banks' government securities holdings increased by some HUF 2175 billion, which added to the liquid assets portfolio of the banking sector (Chart 79). Until end-January 2016, banks placed nearly HUF 3000 billion in the 3-month central bank deposit introduced as of September 2015, which narrowed their liquid inflows that can be taken into account within 30 days by roughly HUF 2000 billion. Accordingly, the liquidity reducing effect of the restructuring of the instruments was adequately offset by the increase in government securities holdings; the banking sector preserved its high liquidity level typical of the previous years, while significantly reducing the external vulnerability of the country by undertaking an increasing role in the financing of the government debt.

The loan-to-deposit ratio has declined further since Au-

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[8] Liquidity Coverage Ratio

Chart 80: Decomposition of the change in the loan-to-deposit ratio
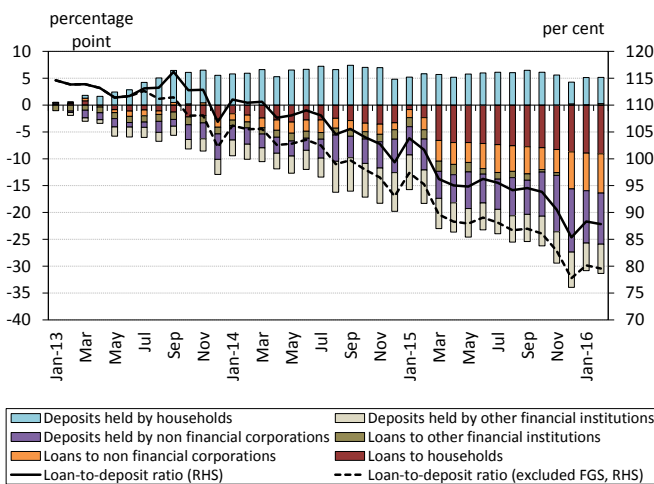
Source: MNB.

Chart 81: Changes in the distribution of the loan-to-deposit ratio
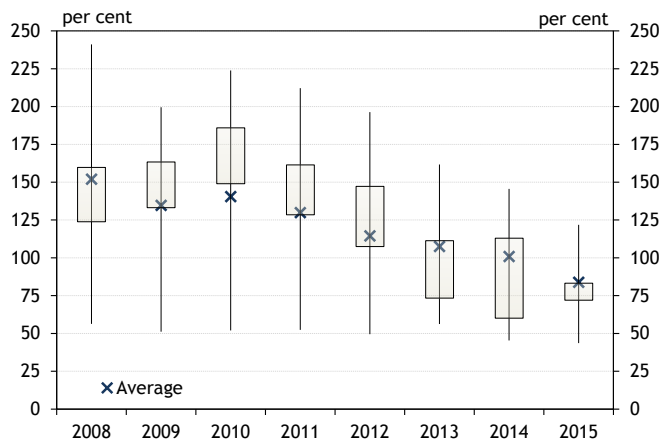
Note: rectangles indicate the 40–60 percentile values of the loan-to-deposit ratio, while the lines show its 20–80 percentile values in the Hungarian banking sector. Source: MNB.

Chart 82: Cumulated transactions of households' financial accounts as well as interest rates on household deposits and Treasury bills
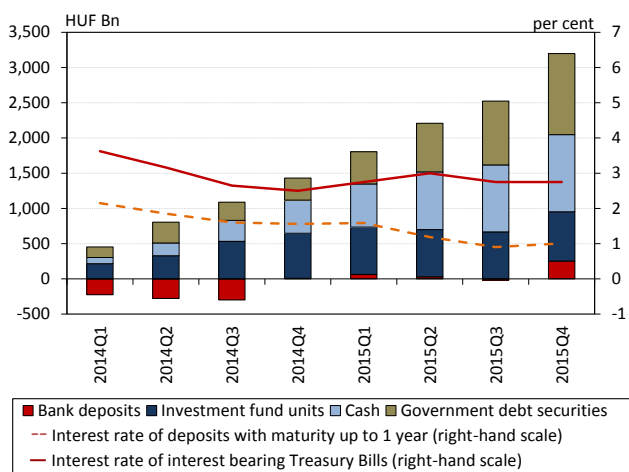
Source: MNB.

gust 2015. In terms of financing, it is favourable that the ratio has been below the 100 per cent level for a year, as by now the loan portfolio is backed entirely by client deposits (Chart 80). However, in addition to the increase in deposits, the shrinking of the loan portfolio also contributed to the decline in the ratio. Since August 2015, deposit holdings have grown by 4.6 per cent, while loans outstanding have declined by 2.3 per cent. Around two thirds of the changes were determined by the developments in the corporate sector (decline in loans outstanding as well as placement of deposits). As a result of all this, by end-January 2016 the loan-to-deposit ratio decreased by 6.1 percentage points to 86.4 per cent.

In parallel with the fall in the loan-to-deposit ratio, the deviation of the indicator across banks also declined. While in 2008 20 per cent of the banking sector had a 160–240 per cent loan-to-deposit ratio, which exceeded the otherwise high sectoral average, at end-2015 even the indicator of these riskier than average institutions was in the much more moderate range of 80–120 per cent (Chart 81).

In 2015, households' bank deposits rose in spite of the significantly higher government securities yields. Households' strong ability to save is shown by the fact that bank deposits in 2015 were up in spite of the increasing yield advantage of government securities (Chart 82). Moreover, this increase took place while the growth in the volume of both government securities and cash holdings exceeded that of the previous year. Nevertheless, in the low yield environment, current account deposits continued to increase, while time deposits continued to decline, which may result in an increase in roll-over risks. It is also well visible that the favourable pricing of retail government securities creates serious competition not only vis-à-vis bank deposits but also vis-à-vis investment funds: household savings flowing into the latter almost completely dried up in 2015. However, in addition to the high yield of government securities, the weak performance of foreign capital markets also contributed to this.

6.2. The portfolio of short-term external liabilities is at a low unseen for a decade, and the maturity of the central bank policy instrument used for the conversion into forint also does not significantly affect adequacies

By end-January 2016, the portfolio of short term external liabilities fell to a low unseen for a decade. While the banking sector's external liabilities portfolio as a whole hardly changed between September 2015 and January

Chart 83: Maturity structure of external funds according to residual maturity
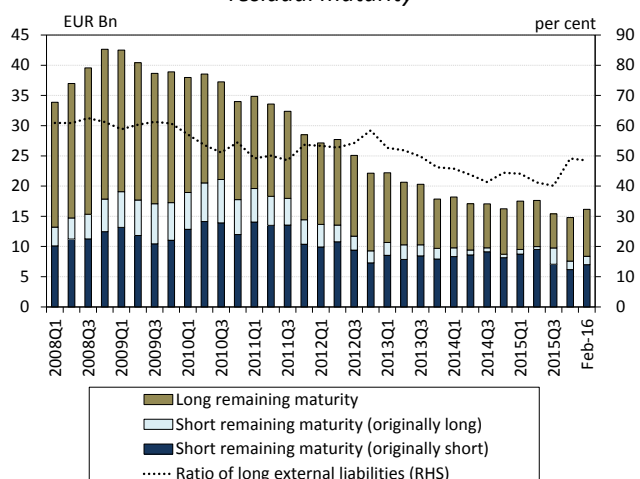
Source: MNB.

Chart 84: 2016 Q1 maturities of the MNB instrument used for the conversion into forint and the alternatives of using the received foreign currency at individual institutions
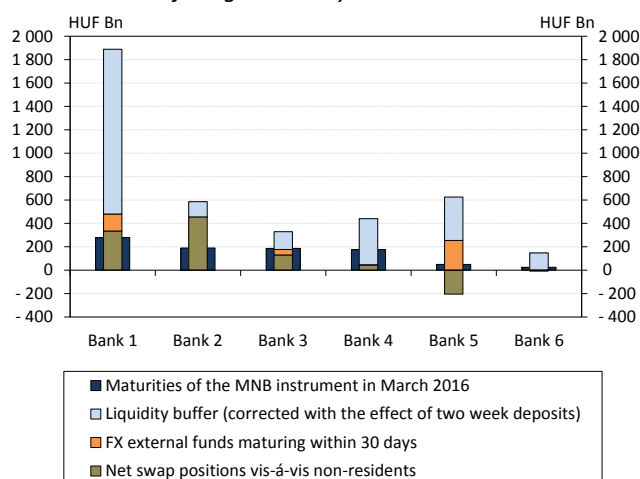
Source: MNB.

2016 (a decline of EUR 0.3 billion), the short-term external debt of institutions decreased by some EUR 2.3 billion (Chart 83). The roll-over of long-term liabilities accounted for the larger part (some EUR 1.3 billion) of the decline. The remaining EUR 1 billion was explained by the replacement of originally short-term liabilities with long-term ones or the repayment of short-term debt. The tightening of the FFAR[9] also played a role in the roll-over of the short-term and shortening liabilities, while the repayment of the short-term liabilities was partly the result of the introduction of the FECR.[10] The impact of the former is estimated to have amounted to EUR 0.7 billion, while that of the latter to EUR 0.3 billion in the period under review.

The expiry in March 2016 of the MNB instruments used for the settlement and the conversion into HUF does not cause liquidity tensions in the banking sector. Although in 2016 Q1 significant maturing amounting to nearly EUR 3 billion is expected in the case of the aforementioned central bank instruments as well, taking account of banks' foreign swap and FX liability maturity structure, its impact on liquidity may be negligible. Examining the banks that have major positions in the MNB instrument reveals that at the majority of the institutions the sum of short net swap holdings and external FX liabilities maturing within 30 days exceeds the amount expiring in the MNB instrument, which means that if the bank repays these latter items from the foreign currency received from the MNB, it will not affect its liquidity position any longer (Chart 84). Although the portion exceeding this reduces banks' free liquidity, the institutions concerned have a much greater liquidity buffer.

From the foreign currency purchased from the MNB, in March 2016 banks may mainly close short-term swap positions vis-à-vis non-residents. The role of long-term swap transactions in FX financing has been declining rapidly since the middle of 2014. This is primarily attributable to the ceasing of the demand for foreign currency with the conversion into HUF and to the decline in long-term corporate FX loans, which has been observed for years. Long-term net FX swap holdings vis-à-vis non-residents amounted to a mere EUR 2.4 billion at end-January 2016, while net holdings of short-term swaps amounted to nearly EUR 4 billion (Chart 85). Based on banks' foreign swap and FX liability maturity structure, in March 2016 banks will probably use the EUR 3 billion purchased from the MNB mostly

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[9] As of January 2016, long-term swap transactions were removed from the numerator of the banking sector's foreign exchange funding adequacy ratio (FFAR), and the required level of the indicator increased from the earlier 80 per cent to 100 per cent.

[10] The foreign exchange coverage ratio (FECR) was introduced as of January 2016, maximising banks' on-balance-sheet open FX positions as 15 per cent of the balance sheet total.

Chart 85: Net swap position of non-residents and long-term corporate FX loans

Net swap position of non-residents, short-term
Net swap position of non-residents, long-term
Long-term corporate FX loans
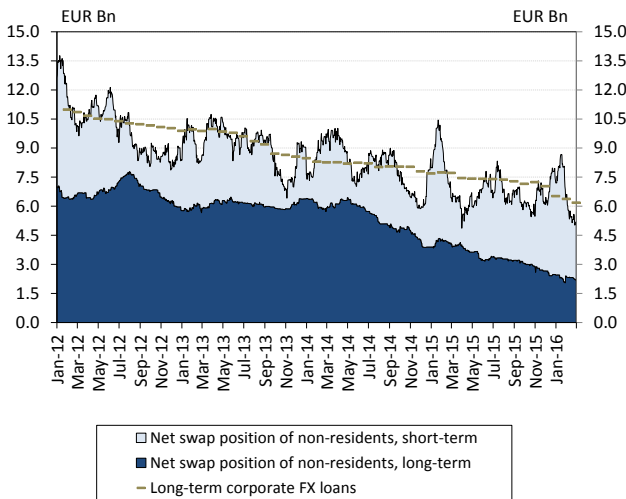
Source: MNB.

Chart 86: Distribution of the on-balance-sheet open FX position as a proportion of the balance sheet total according to market share

Open FX position (29.02.2016)
Open FX position (31.12.2014)
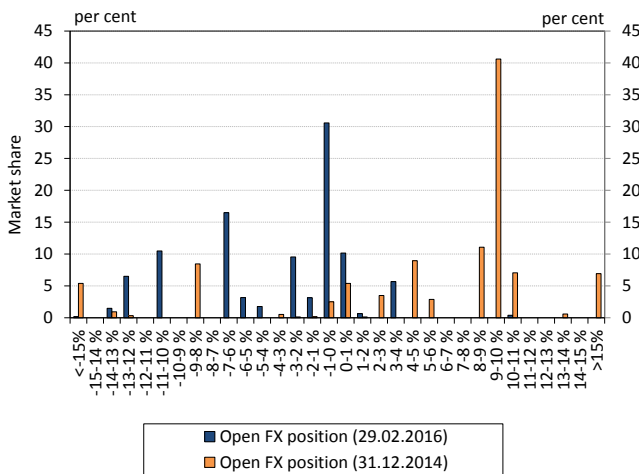
Source: MNB.

Chart 87: The foreign exchange funding adequacy ratio (FFAR)

Stable FX funds
Long-term net FX swap position
Stable FX assets*
FFAR (right-hand scale)
Regulatory limit (right-hand scale)
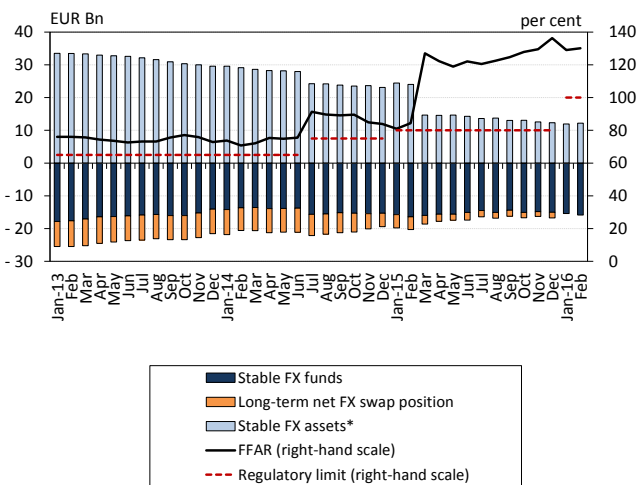
Note: Stable FX assets contain the off-balance-sheet FX liabilities as well. Source: MNB.

for closing these short-term swap positions.

Following the conversion into HUF, the banking sector's on-balance-sheet open position closed to a significant degree. While prior to the conversion a major portion of the institutions (60 per cent of the sector on the basis of market shares) was characterised by a shortage of FX funds between 8 and 11 per cent, following the conversion, a below 1 per cent shortage or excess of FX funds was observed at the vast majority of banks (Chart 86). In addition to the impact of the conversion, minimum adjustment was also triggered by the foreign exchange coverage ratio, which has been effective since 1 January 2016, and which affected the institutions whose FX surplus exceeds 15 per cent. These institutions accounted for 5 per cent of the sector.

Longer-term FX financing of the banking sector continues to be stable. As it is known, the calculation of the foreign exchange funding adequacy ratio (FFAR) became stricter as of 1 January 2016: long-term swap transactions were removed from the numerator, and the required level of the indicator increased from the earlier 80 per cent to 100 per cent. Considering that as a result of the conversion the funded FX assets also declined considerably, this tightening did not result in a significant need for adjustment. For this, at individual institutions' level the banks concerned had to swap short-term FX funds amounting to EUR 0.7 billion for long-term ones. As a result, the sector-level FFAR stood at 129 per cent at end-January 2016 (Chart 87).

BOX 8: THE IRS OF MNB AND THE INTEREST RATE RISK ASSOCIATED WITH THE INCREASING GOVERNMENT BOND HOLDINGS OF THE HUNGARIAN BANKING SYSTEM

From the start of the self-financing programme until end-December 2015 we examined in detail how the interest rate risk of the institutions participating in the programme was modified by the considerable increase in the fixed-rate government securities portfolio and the central bank interest rate swap (IRS) facility used for the management of the interest rate risk. Although the primary objective of the central bank IRS is to neutralize the interest rate risk stemming from the fixed-rate government securities position, perfect hedging of the interest rate risk is not possible with this facility either – not even in the ideal case when the maturities of the IRS and of the government bond purchased coincide. During our investigation we experienced that there were two important sources of the remaining risks:

• Base risk: One of the risks that the interest rate swap facility is unable to manage is the base risk arising during the changing in the steepness of the yield curve. Based on our estimates, if the increase in long-term (3-, 5- and 10-year) yields exceeded the increase in short-term (6-month) yields by 1 percentage point, it would result in a loss of nearly HUF 70 billion for the banks under review through the revaluation of the government bond portfolio (see the chart).

• Maturity mismatch risk: The other risk, however, stems from banks' own decisions if they hedge their fixed-rate instruments with interest rate swap instruments that have shorter average residual maturity. According to our estimates, this additional risk stemming from the maturity mismatch adds another HUF 15 billion to the loss arising during the above shift in the yield curve.

Expected losses beside one percentage point rise in returns over three years (31.12.2015)*

Expected loss
Adjusted expected loss
Expected loss to liquid assets (right-hand scale)
Adjusted expected loss to liquid assets (right-hand scale)
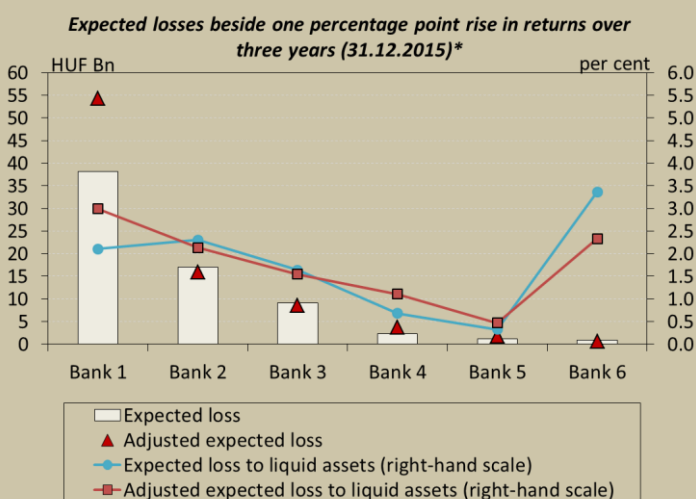
Note: Referring to the portfolio of fixed-income government bonds and central bank issued

Source: MNB.

Although in the above calculations we only examined the immediate effects of a surge in long-term yields, in the course of time they may affect banks' profit/loss and capital positions as well. In the event that the bank holds the government security and the IRS until maturity, the loss arising upon the increase in the steepness of the yield curve will only be temporary, because drawing close to maturity, the price of the bond returns to 100 per cent, and the value of the IRS will also become corrected. A shift in the yield curve, however, has an immediate impact on the bank's liquidity through the revaluation of the government securities and the IRS portfolios.

At the same time, the liquidity absorbing effect of the expected losses cannot be considered significant: in the case of the banks under review it was around 2 per cent of the liquid assets on average, and even the worst value did not exceed 3.5 per cent. Looking ahead, it is also worth mentioning that the Mortgage Funding Adequacy Ratio (MFAR) to be effective as of April 2017 may reduce both aforementioned risks through the issue of fixed-rate mortgage bonds.

7. BANKING SECTOR STRESS TESTS –THERE IS NO ADDITIONAL CAPITAL NEED IN STRESS

Starting from 2016, instead of the former balance sheet and deposit coverage ratios, banks have to comply with the regulation regarding the liquidity coverage ratio (LCR). Accordingly, the LCR has become the target variable of our renewed liquidity stress test as well. The LCR is more complex than the previous regulation, taking a stress scenario as a basis in itself. In addition, the stress scenario applied by us has also become stricter. The liquidity reserves of the institutions under review still prove to be sufficient to preserve their solvency even following such a serious stress. However, some banks move away from the regulatory minimum after the shock. Reaching the 70 per cent LCR level valid at the reference time of the current stress test would require liquid assets amounting to nearly HUF 300 billion on the stress path, and more than HUF 600 billion for complying with the 100 per cent LCR level valid as of April.

Overall, the decline in expected losses, the decrease in the burdens affecting the banking sector and the slow increase in earning power improved the banking sector's profitability expected in a stress situation. Banks' high initial capital levels prove to be sufficient even on a stress path for all banks to meet the 9.25 per cent regulatory requirement at the end of the time horizon in spite of the losses that arise during the two years. Accordingly, like in the previous half year, the solvency stress index is at its conceptual minimum level at present as well, i.e. no bank needs capital injection even during the stress.

Chart 88: Distribution of the LCR before and after stress, based on number of banks
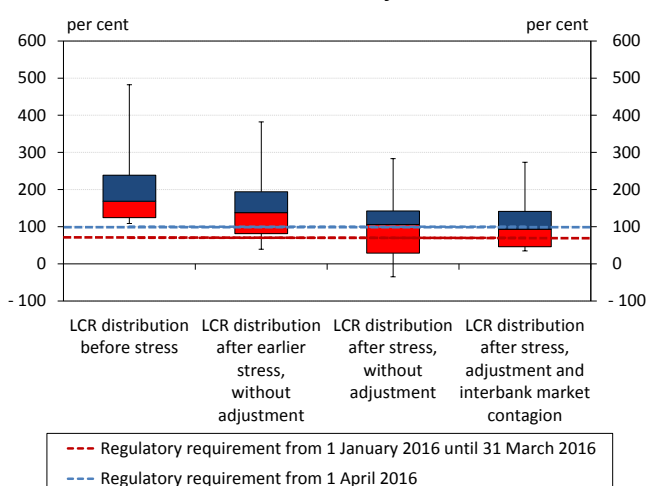
Note: The edges of the box of the box plot mean the lower and upper quartile of the distribution; the horizontal line in the box means its median. Source: MNB.

7.1. Due to the stricter scenario and regulation, under stress not every bank would be able to meet the regulatory minimum of the LCR

In line with the introduction of the liquidity coverage ratio (LCR) we updated the methodology of our short-term, complex liquidity stress test. Instead of maintaining their 30-day forward-looking liquidity surplus above the former 10 per cent regulatory minimum as a proportion of the balance sheet total, as of 1 January 2016 and 1 April 2016 banks have to comply with 70 per cent and 100 per cent LCR levels, respectively. In accordance with this regulatory change, we have renewed the methodology of our liquidity stress test, in which the liquidity adequacy of banks is already measured with the LCR. In addition, unlike in the previous version of the stress test, more sources of liquidity risk are taken into account: the impact of an assumed low-probability simultaneous occurrence of financial market turmoils, exchange rate shock, deposit withdrawals, drawing down credit lines and withdrawal of owner's funds is measured. For the detailed methodology of the liquidity stress test[11] and the applied stress assumptions see Box 9. In addition, upon determining the outcome of the stress test, banks' short-term adjustment possibilities as well as the contagion effects of these adjustment channels and interbank market non-performance are also taken into account. The methodology of the applied contagion model is described in Box 10.

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[11] Our stress test differs from the liquidity stress test of internal capital and liquidity adequacy assessment process (ILAAP) of the supervisory framework in its logic, purpose and applied principles, thus their results cannot be directly compared.

Box 9: About the methodology of new, LCR based central bank liquidity stress test

In order to strengthen the shock absorbing capacity of the banking sector, using national discretion, as of 1 April 2016 the Magyar Nemzeti Bank increased the minimum required level of the so-called liquidity coverage ratio (LCR) introduced by the European Commission as of 1 October 2015 from 60 per cent to 100 per cent. In parallel with this measure, the 20 per cent deposit and the 10 per cent balance sheet coverage ratios required earlier were phased out as of 1 January 2016. Accordingly, the previously applied liquidity stress test, in which the post-stress 30-day forward-looking liquidity surplus was compared to the required level based on the balance sheet coverage ratio, is replaced by a liquidity stress test that uses the LCR as target variable. By this we not only aimed at constructing a liquidity indicator that is required by the current legal environment and complies with international practices, but we also have much stricter requirements vis-à-vis banks than the former liquidity requirements.[12] In parallel with the shift to the new target variable, in addition to the ones taken into account before, further possible sources of liquidity risk were also included in the liquidity stress test.

During this revised stress test we examine how banks' LCR would change in the case of an assumed simultaneous occurrence of financial market turmoils, deposit withdrawals, drawing of credit lines and withdrawal of owner's funds. In addition, we also quantify what would be the size of a possible shortfall from the regulatory minimum at individual bank level and banking sector level. Our stress test calculation is based on the LCR and its components reported by banks with a monthly frequency. We examine the simultaneous impact of the following low-probability shock events:

1. revaluation of items – that are sensitive to the interest rate from a liquidity aspect – as a result of a significant rise in the policy rate;

2. revaluation of the derivative holdings as a result of a considerable exchange rate depreciation;

3. withdrawal of household and corporate deposits;

4. drawing down of household and corporate credit lines;

5. withdrawal of owner's funds to a degree that exceeds plans significantly;

6. non-performance of interbank placements as a result of the above shocks.

For the quantification of the size of individual shocks we took the so-called value-at-risk (VaR) indicator, which is based on historical data, as well as previous crisis experiences and the stress measures of previous liquidity stress tests as a basis. The stress measures determined this way are shown in the table.

Main parameters of the new liquidity stress test

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

Source: MNB.

Individual shock events influence the liquidity position of a bank as follows. A shock-like rise in the policy rate significantly reduces the value of the liquid assets of the bank. In addition, it has an impact on other, interest-sensitive items (e.g. the margin requirements of interest rate derivatives) as well, thus reducing the liquidity reserves of the bank. If the bank's net holdings of FX swap transactions and other non-swap derivative transactions entailing margin requirements against the forint are positive, the depreciation of the foreign-exchange rate makes the liquidity position of the bank worse as the margin requirements of transactions increase, and maturing transactions can be renewed only with higher forint liquidity needs.

If confidence in the stable operation and solvency of the bank is shaken, in an extreme case, a rush on the bank, i.e. a shock-like deposit withdrawal may take place, which may reduce the bank's liquid asset holdings significantly. Similarly, a significantly higher than planned shock-like drawing of the not yet utilised credit lines provided by the bank may cause major liquidity problems through the decline in liquid assets. Taking into account the different magnitude and speed of

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[12] Although – considering that the forward-looking maturity gap does not include bank adjustment – the balance sheet coverage ratio also took into account some kind of stress, the rule basically expected banks to have adequate liquidity under normal business conditions. In contrast, the LCR is expressly a stress indicator: its objective is that even in stress situations banks should have adequate liquidity for 30 days to be able to meet their obligations.

reaction of household and non-financial corporation clients observed in the case of a shock, we estimated for these segments a separate stress measure for both the deposit withdrawal and the credit line drawing shock.

With the introduction of the shock of owner's funds withdrawal, we control for the risks hidden in domestic affiliate banks' dependence on their parent banks in terms of funds and capital. Namely, due to its own liquidity or credit risk shock the parent bank may be compelled to withdraw more funds than planned from its affiliate bank, impairing the latter's liquidity position.

If, as a result of the above shock events, an institution becomes unable to meet its interbank obligations, its liquidity problems may spread to other banks as well. Instead of our previous 20 per cent assumption regarding the non-performance of interbank assets we use the method presented in Box 10 to capture the spreading of the contagion and to identify its effects more precisely.

Differently from the previous version of the liquidity stress test, in addition to our stress assumptions we also took account of the adjustment channels with the help of which institutions can improve their LCR adequacy in the short run. Upon identifying these adjustment channels we primarily focused on possible operations that are part of the normal course of business, and thus, e.g. do not represent reputational risks, and are easily available in a stress situation, i.e., for example, converting them into liquid assets does not entail any price losses. Meeting these requirements, according to our assumptions, in case of a failure to comply with the liquidity requirement, banks first 1) may draw their nostro deposits, and 2) do not necessarily tie up again their three-month MNB deposits that mature within thirty days.[13]

If the utilisation of these adjustment channels does not prove sufficient for meeting the liquidity requirement, as a next step, already with a low reputational risk, the institution may let expire 100 per cent and 50 per cent of the parts maturing within thirty days on a cash flow basis of its household and non-financial corporation loan portfolios, respectively. If the bank fails to meet the liquidity requirement even following these corrective steps, it will be compelled to sell assets, which will trigger a price change and thus contagion effects, as described in Box 10.

Chart 89: Aggregate impact of stress components
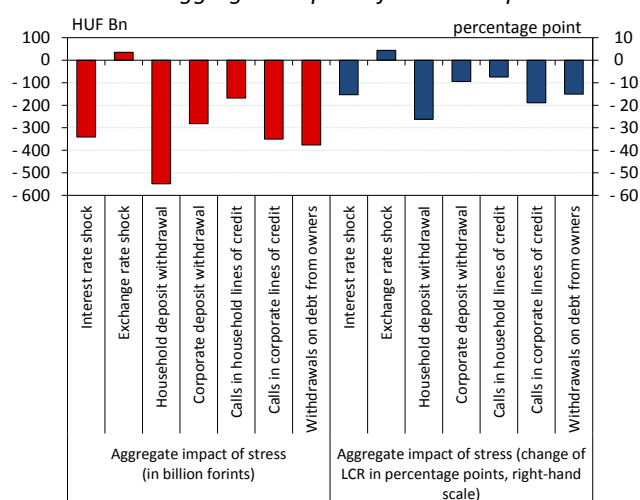
Note: For calculating the impact of each shock we applied the assumption that the given shock occurs solely. Therefore, the sum of the impacts of the shocks does not necessarily reflect the impact of the shocks taken together. Source: MNB.

If a stricter stress scenario took place than the previous ones, although all the institutions under review would remain liquid, several banks would not comply with the 70 per cent level of the LCR. Our current stress test is clearly stricter than the previous ones not only because of the scenario applied (see the table in Box 9), but also because the LCR itself is specified on the basis of a short-term liquidity stress situation. Accordingly, the stress test prepared for the LCR as at 31 December 2015 of the 9 largest financial institutions, which account for 80 per cent of the banking sector (as a proportion of balance sheet total), shows a more serious outcome than before. Although prior to the occurrence of the stress the LCR of each bank under review exceeded 100 per cent, if the whole stress scenario was realised, not only several institutions would breach the regulatory minimum, but the LCR of one bank would sink below the 0 per cent illiquidity limit (Chart 88). Although taking account of the adjustment possibilities already all the institutions under review could preserve their solvency, several banks would still be unable to meet the 70 per cent regulatory requirement valid between 1 January and 31 March 2016. Nevertheless, due to the stricter methodology of the stress test, our above findings do not necessarily

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[13] If complete exploitation of the aforementioned adjustment channels is not needed for meeting the LCR requirement, the bank adjusts itself only until the requirement is met. In these cases the channels belonging to the same step are taken into account in a proportionate manner.

Chart 90: GDP growth rate in the scenarios (compared to the corresponding period of the previous year)
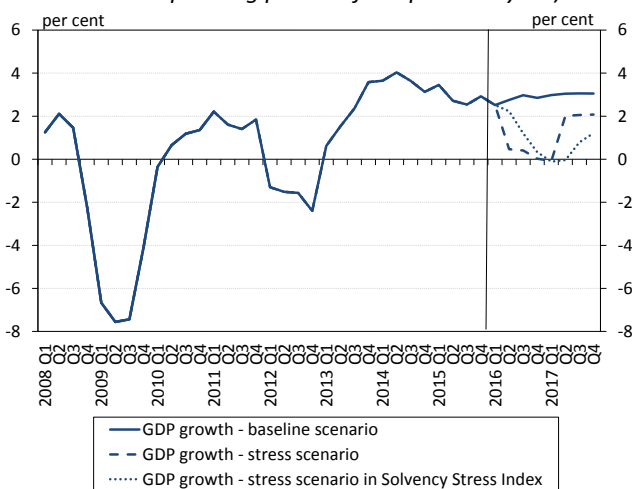
Source: MNB.

Chart 91: Loan loss rate for the corporate portfolio in the stress scenario
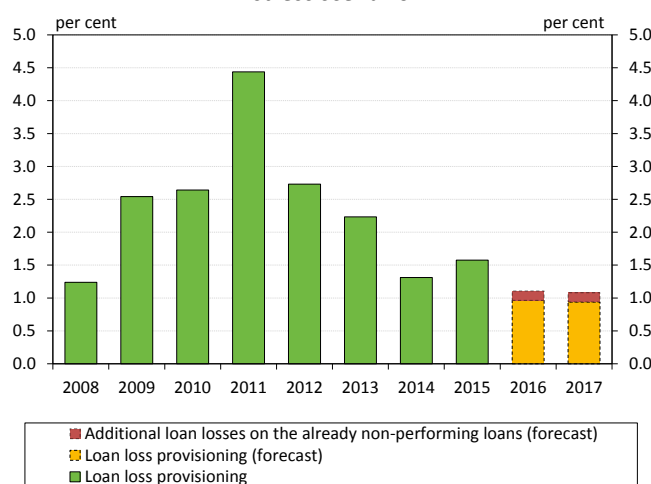
Source: MNB.

indicate deterioration in the liquidity position of the institutions under review. To illustrate this, we are also presenting the impact of our stress scenario applied earlier on the LCRs of the institutions under review. Although in this case as well there would be an institution that would not meet the regulatory minimum, the impact of the previous stress scenario is clearly more moderate than that of the current one.

Of the stress components, the shocks of households' deposit withdrawals, drawing of corporate credit lines and the withdrawal of funds by owners have the most significant LCR-reducing impact. Chart 89 presents the aggregate impact of stress components, i.e. of the individual risk factors on the LCR in HUF billion and in percentage point change in the LCR. It is revealed that due to the dominance of positions against the forint, the exchange rate shock to the bank's derivative holdings has a liquidity improving effect. At aggregate level, both on the basis of the impact expressed in forints and on the basis of the LCR reducing effect, the shocks of households' deposit withdrawals, drawing of corporate credit lines and the withdrawal of funds by owners can be considered the sources of risk that have the greatest impact. In addition, from the summing up of the individually calculated shocks it is also obvious that the risk sources of the previous liquidity stress test, which was based on the balance sheet coverage ratio, account for only slightly more than half of the aggregate impact of the current stress (52.9 per cent according to the LCR reducing effect and 55.9 per cent according to the impact expressed in forints).

The distribution of post-stress LCRs across banks under review shows significant heterogeneity. As it is already seen from the distributions presented above, similarly to the pre-stress LCRs, significant heterogeneity is observed in the LCR distribution across institutions following the stress, adjustment possibilities and contagion effects: if 100 per cent of the LCR is considered as regulatory requirement, banks' liquidity surplus exceeding the regulatory limit amounts to HUF 357.7 billion, while their liquidity need for meeting the regulatory requirement amounts to HUF 634.6 billion. This liquidity need concerns 17.36 per cent of the banking sector.[14]

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[14] It was determined in an analogous manner to the Liquidity Stress Index described in Banai et al. (2013) and used in the presentation of previous liquidity stress tests, by weighting the individual bank index values by the market share interpreted on the basis of the balance sheet total. The result is equivalent to the case when a bank with a 17.36 per cent market share becomes illiquid, while all other banks meet the regulatory minimum, or to the case when all banks fall 17.36 percentage points short of the 100 per cent LCR level following the stress.

Chart 92: Loan loss rate for the household portfolio in the stress scenario

Additional loan losses on the already non-performing loans (forecast)
Loan loss provisioning (forecast)
Losses of the early repayment scheme
Loan loss provisioning
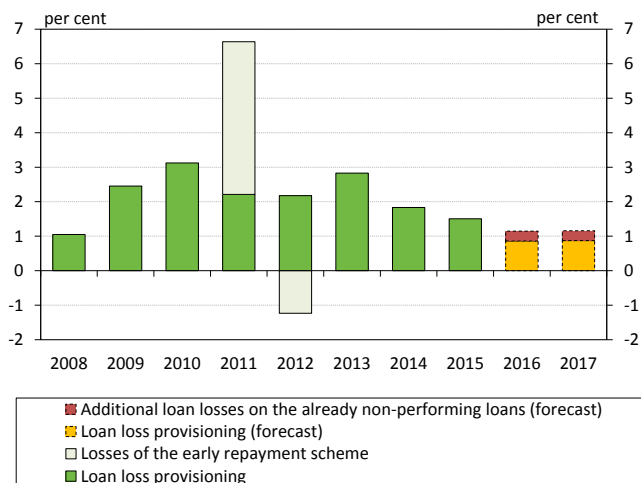
Source: MNB.

Table 5: Impact of main risks on the profit of the banking sector in the stress test, over a two-year time horizon

	Main components of losses of banking system in eight quarter horizon (HUF Bn)	
	Baseline scenario	Stress scenario
Loan losses on corporate and household portfolio	**163**	**262**
Loan losses on new non-performing corporate loans	83	110
Loan losses on new non-performing household loans	80	105
Additional loan losses on the already non-performing loans		48
Exchange rate risk of open position		1
Interest rate risk		-19
Bank levy and increase of the insurance fees	143	143

Source: MNB.

Chart 93: Market risk stress test impacts

Banks with profit   Banks with loss   Net effect
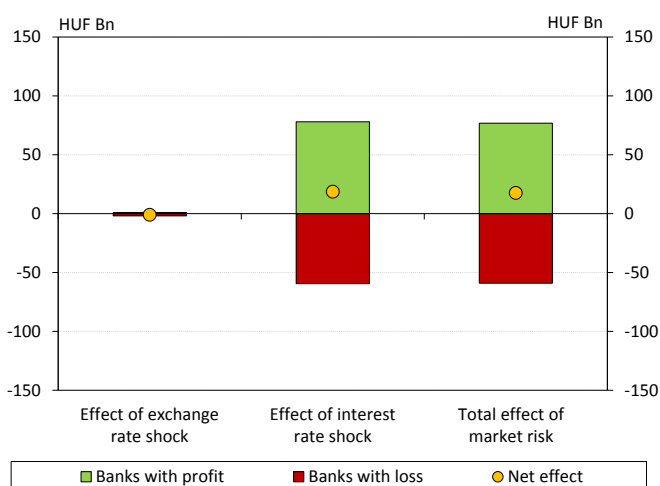
Source: MNB.

7.2. The solvency position of the banking sector continues to be strong

Our stress scenario is based on the assumption of weaker exchange rate, higher interest rate level and considerably lower economic growth as a result of the combined effects of unfavourable external and internal shocks. The macroeconomic baseline scenario corresponds to the forecast published in the March Inflation Report. While the baseline scenario outlines the most probable outcome, the stress scenario examines the impact of a low-probability, severe, but still conceivable series of events. The stress scenario assumes the simultaneous occurrence of several external and internal risks that surround the baseline scenario. Compared to the baseline scenario, the demand for Hungarian exports may be more subdued, which may decelerate the economic growth of Hungary through the absorption side of the GDP. Deterioration in the growth prospects of emerging market economies and an exacerbation of geopolitical conflicts in the Middle East may result in turbulences in the money and capital markets of emerging countries. In parallel with a sudden, significant rise in risk indices, the Hungarian yield level and risk premium also increase, leading to the weakening of the forint and a decline in lending, consumption and investment. In addition, investment weakens due to internal factors as well. As a result of all this, in two years, growth falls nearly 4 percentage points short of the rate expected in the baseline scenario (Chart 90). Following the first year's gradual exchange rate depreciation and interest rate increase, compared to the baseline scenario, we assumed a 12 per cent weaker exchange rate and 174 basis points higher interest rate level on average.

Due to the low willingness to take risks, improving risk parameters are expected together with an initial loan portfolio that is lower compared to previous periods in the case of the corporate loan portfolio, which altogether means significantly declining loan losses in the stress scenario. As a result of the low willingness to take risks, 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 improved. Consequently, the cost of provisioning is relatively low even in a stress situation (Chart 91). For 2016–2017, corporate loan losses in the stress scenario may be even lower than the actual value observed in 2015, because last year there was significant write-off and loan loss provisioning related to portfolio sales, which is not expected to be repeated. This, together with an initial loan portfolio that is lower than in the previous periods, results in a major decline in loan losses

Table 6: Stress test results with the 9,25 per cent regulatory capital adequacy ratio

	Baseline scenario		Stress scenario	
	End of first year	End of second year	End of first year	End of second year
Capital need of banks (HUF Bn)	0	0	0	0
Capital buffer of banks above 8 percent CAR (HUF Bn)	1 554	1 889	1 414	1 603
Total capital buffer (HUF Bn)	**1 554**	**1 889**	**1 414**	**1 603**

Source: MNB.

Chart 94: Distribution of the capital adequacy ratio based on number of banks
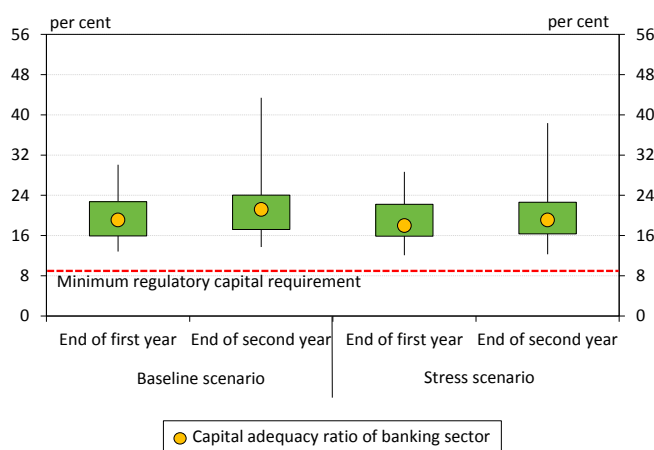
Note: Vertical line: 10-90 per cent range, rectangle: 25-75 per cent range. Source: MNB.

Chart 95: Solvency Stress Index
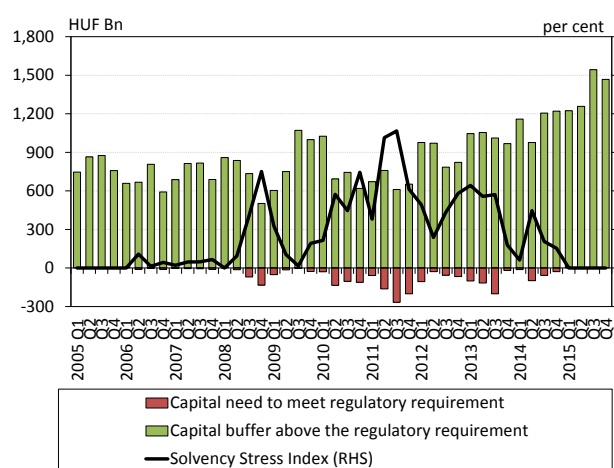
Note: The indicator is the sum of normalised capital shortages relative to the regulatory minimum level, weighted by the capital requirement in a common stress scenario calculated with fixed shock. The higher the value of the index, the higher the solvency risk. Source: MNB.

calculated for the stress scenario (Table 5).

Due to the further decreasing loan portfolio and the conversion into HUF the expected loss on the household loan portfolio is moderate over the time horizon of the stress test. In 2015, in the household portfolio, the settlement of FX loans in several rounds and their conversion into HUF considerably reduced the probability of default (PD), the loss given default (LGD) and the exposure at default (EAD) itself as well. Similarly to the 2015 stress tests, this continues to determine our results. Not only in the baseline scenario, but also along the stress path we assumed lower loan losses than the actual figures observed in previous years. The cost of provisioning is around the end-2008 level in the stress scenario as well (Chart 92).

Gradually improving profitability is assumed in the stress test. Last year, profitability net of loan losses and one-off items improved in the banking sector. The slowly declining ratio of non-performing loans contributes to it, although the decreasing interest margin of mortgage loans somewhat offsets it. For a major positive change, strong pick-up in lending activity is needed, which allows the development of a well-performing portfolio with higher profitability. Therefore, the moderately increasing lending expected for the next two years allows only a gradual improvement in profitability. Accordingly, income before loan losses is expected to slightly exceed the average of the 5-year period between 2011 and 2015 in the baseline scenario, while in the stress scenario it may reach roughly 80 per cent of the last five years' average at systemic level. Compared to our previous stress tests, the result is improved by the decline in the bank levy, the change in the fee base of the NDIF and the amendment to the rules of payment into the Quaestor fund. The shift in the time horizon resulted in an overall rise in the items that increase over time (e.g. IPF fees), while in the case of declining items, such as the bank levy, it resulted in a decrease for the two-year time horizon as a whole. In the case of the financing obligation for the resolution fund only our previous estimates were made more precise; therefore, compared to the results half a year ago, this item was amended only to a minimum extent.

The importance of the profit/loss stemming from market risk is low at systemic level, but in the case of the interest rate shock there may be major impacts at the level of individual institutions. In the framework of the market stress test we examine the impact of interest rate and exchange rate shocks via the immediate revaluation of market exposures. In the case of the interest and exchange rate shocks we took the second year average of the difference between the baseline and stress scenarios as the rate

of the shock. We distributed the calculated profit impact evenly over the two years of the forecast horizon. The impact of the exchange rate shock is negligible both at institutional and systemic levels, since the exchange rate position of the banking sector – excluding the strategic open positions – is almost completely closed. Although the profit impact of the interest rate shock is also minor at systemic level, when examining it by institutions, we find some banks that realise significant profits, while others suffer considerable losses (Chart 93).

Both in the baseline and stress scenarios, all banks meet the regulatory requirement, but the significant heterogeneity observed in the size of capital buffers remains. Banks' high initial capital levels prove to be sufficient both in the baseline and stress scenarios for all banks to meet the examined 9.25 per cent[15] capital adequacy level at the end of the time horizon in spite of the losses that arise continuously during the two years (Table 6). The banking sector is characterised by a high average capital adequacy ratio of 19.1 per cent even at the end of the stress path, but this conceals considerable differences across institutions. As a result of the stress, the size of the capital buffer above the regulatory limit declines considerably at several institutions; the long, extended shape of the distribution curve of capital adequacy indicators on the basis of the number of banks in the upper range is caused by smaller institutions (Chart 94).

Based on the Solvency Stress Index, the shock-absorbing capacity of the banking sector continued to strengthen in the past six months. Overall, the decline in expected losses, the decrease in the burdens affecting the banking sector and the slow increase in earning power improved the banking sector's profitability expected in a stress situation. High capital adequacy ratios also help credit institutions to be able to absorb the impacts of a shock as well. As a result of the above, the Solvency Stress Index remained at its conceptual minimum, i.e. there is no institution that needs capital injection either along the stress path used here (Chart 95).

BOX 10: MODELLING CHANNELS OF CONTAGION IN THE BANKING SECTOR

The crisis that broke out in 2008 revealed the significance of the contagion mechanisms within the banking sector, and thus became the main subject of attention on the part of both the regulatory authorities and market participants. Although interbank contagion channels have not caused any major problems in Hungary to date, similarly to other central banks, a framework suitable for the analysis of such effects has been set up in the Magyar Nemzeti Bank as well. First we included the modelling of interbank contagion in our set of instruments by complementing the stress test framework, but the possibilities to use the model also cover the identification of systemically important financial institutions (SIFIs) and

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[15] The capital requirement will be 9.25 per cent in the banking sector at the end of the stress test horizon, in 2017.

Structure of the contagion model
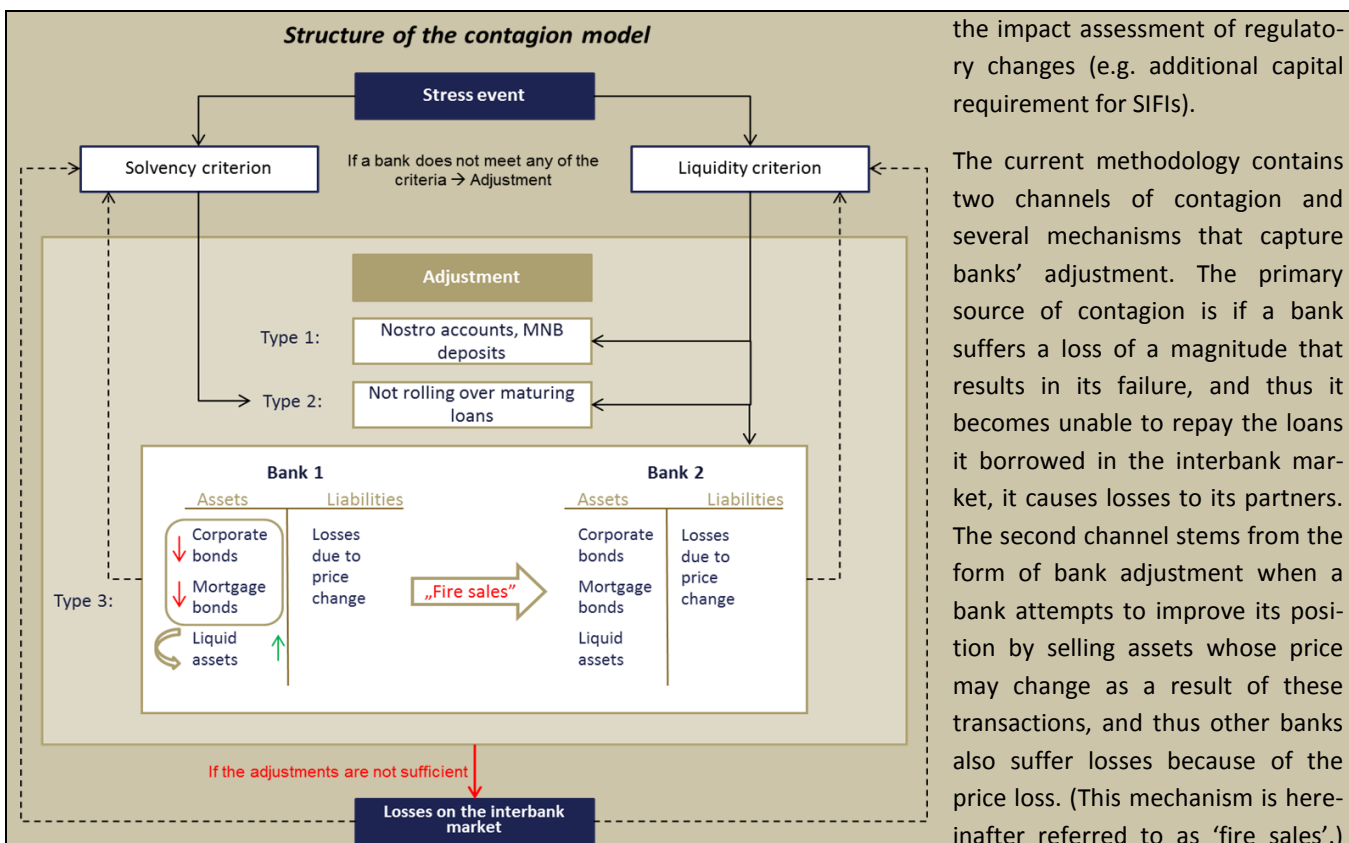
Source: MNB.

the impact assessment of regulatory changes (e.g. additional capital requirement for SIFIs).

The current methodology contains two channels of contagion and several mechanisms that capture banks' adjustment. The primary source of contagion is if a bank suffers a loss of a magnitude that results in its failure, and thus it becomes unable to repay the loans it borrowed in the interbank market, it causes losses to its partners. The second channel stems from the form of bank adjustment when a bank attempts to improve its position by selling assets whose price may change as a result of these transactions, and thus other banks also suffer losses because of the price loss. (This mechanism is hereinafter referred to as 'fire sales'.) According to the logic of the model, contagion and adjustment mechanisms follow one another cyclically until the fixed point of the system is reached.[16]

During running the model, first we examine whether the given bank meets the levels of the liquidity (LCR) and solvency (CAR) indicators required by the regulatory authority. If not, to avoid bankruptcy, banks first try to adjust themselves until the required LCR and CAR levels are reached, in order to offset the impact of stress events.

In order to improve the liquidity situation, according to the model banks first attempt to increase their liquid assets by liquidating their assets that cannot be taken into account in the LCR calculation or can only be taken into account with a high discount. This adjustment may take place in three stages, where the first step is that the bank carries out operations that are feasible in a stress situation as well, do not cause a decline in reputation, do not entail losses, and do not generate further contagion in the banking sector. Adjustment possibilities like this may include the drawing of nostro accounts and the non-renewal of just maturing MNB deposits. If no further adjustment is necessary, bank reaction is evenly distributed across the above listed instruments. If carrying out the first level is not sufficient, the bank makes the household and corporate loan portfolios just maturing on a cash flow basis expire.[17] Finally, if necessary, even those assets are liquidated (corporate bonds and mortgage bonds) whose selling may result in a fire sales effect as other banks whose balance sheet also contains the given security also suffer losses through the price change.

Improving the solvency position takes place along similar logic, with the difference that in order to improve the bank's position, asset restructuring is possible on the basis of the risk weights taken into account during the calculation of the risk-weighted asset value, instead of the LCR discount rate. Accordingly, in this case the bank transforms the assets with high risk weight into assets with risk-free rating (e.g. into cash when making assets mature). According to our model specification, in the case of a solvency problem, banks can only adjust themselves through the reduction of household and

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[16] Eisenberg, L., Noe, T.H., 2001. Systemic risk in financial systems. Management Science 47 (2), 236–249 showed that a unique fixed point exists in the system.

[17] The liquidity stress test is based on the assumption that banks have 30 days to adjust themselves, and thus they have the possibility to use the total nostro deposit portfolio as well as the MNB deposits maturing within 30 days, and to make 100 per cent of the household loans maturing within 30 days and 50 per cent of the corporate loans maturing within 30 days expire.

corporate loans outstanding, and only to the extent allowed by contractual maturities.

If even the adjustment does not make it possible to meet the requirements, the given bank goes bankrupt, and its inter-bank loans become non-performing. It is important to emphasise that in the case of the LCR 50 per cent was set as the level below which the given institution already does not perform in the interbank market, and in this case the LGD[18] parameter was determined as 100 per cent. After examining the meeting of the regulatory conditions and the process of adjustment in the case of each bank, we account simultaneously for the losses stemming from the interbank exposures vis-à-vis the banks that failed and the fire sales type price losses stemming from the asset sales. If no change has taken place compared to the starting point, the process stops. Otherwise, if further loss occurred because of the contagion, some banks may have gone below the regulatory limit again, and the process restarts.

Losses due to contagion channels

Contagion channel	Loss (HUF Bn)
Asset fire sales	143.61
Interbank market	75.08

Source: MNB.

In the case of the stress scenario used during the liquidity stress test (see the box on the renewed liquidity stress test above), a total loss of nearly HUF 219 billion is made in the banking sector through the two channels of contagion. The price change due to asset sales taking place during the adjustment results in a loss of HUF 143.61 billion, while the non-performance in the interbank market of the banks that remained below the regulatory liquidity level in spite of the adjustment causes a loss of HUF 75.08 billion. This additional capital loss is significant, but at the same time it is worth taking into account that it would take place in the case of an extremely strong liquidity stress. In addition, it is important to emphasise that the 50 per cent LCR threshold is very strict; in practice, in the case of an indicator like this the given institution is still able to repay interbank loans.

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[18] In the model, the LGD (loss given default) parameter determines the percentage of loss suffered by the creditor bank on its exposures if the borrowing counterpart becomes non-performing.

8. INSTITUTIONAL INVESTORS – INSURANCE CORPORATIONS AND PENSION FUNDS PLAY A ROLE IN FUNDING THE ECONOMY; THE CONSOLIDATION OF CAPITAL MARKET PARTICIPANTS STARTED

In 2015, the Solvency I capital adequacy of insurance corporations declined, but was stable, similarly to previous years. As a result of the Solvency II regulation, which entered into force on 1 January 2016, the capital adequacy ratio may increase as of this year, but together with its volatility, which means a real risk mainly for market participants with low capital adequacy. Primarily due to their significant government securities holdings, insurance corporations continue to play a significant funding role for the economy, but the ratio of riskier assets may increase in the future.

Within pension fund portfolios, the maturity structure shifted towards longer-term instruments; in spite of the low yield environment, the sector-level average annual estimated net yield rate of coverage reserves was 4.4 per cent. Each private pension fund complied with the statutory condition concerning the minimum ratio of those who pay membership fees, but the total number of institutions' members continued to decline. As a consequence of the broker scandals, investment rules concerning health and mutual aid funds became stricter as of 2016. The objective of the changes is to reduce the concentration of exposures existing at individual groups of credit institutions.

Most of the investment firms were characterised by declining profits in 2015, as a result of the CHF exchange rate shock and the corrupt practices affecting investment firms. Due to the tightening of the regulation and the additional burdens related to the compensation becoming necessary because of the exposed corrupt practices, in 2015 H2 three smaller investment firms stopped operating, i.e. the consolidation of the investment enterprise sector began. The increase in assets managed in investment funds continued to decelerate in 2015 H2; the growth in holdings is basically attributable to capital inflows into real estate funds.

Chart 96: Capital adequacy of the insurance sector
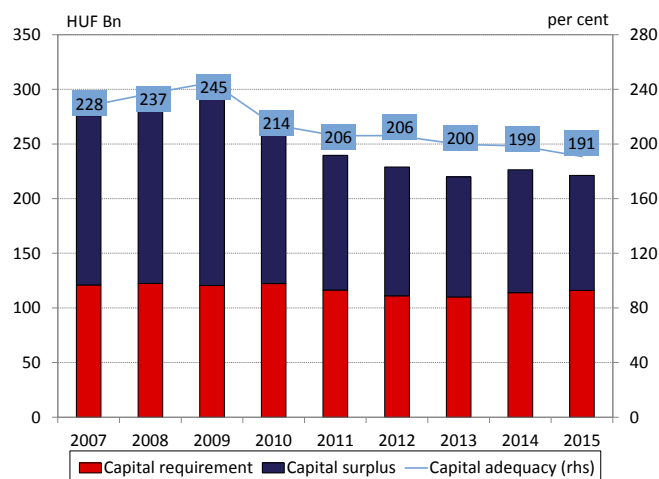
Source: MNB (2015 data is not audited yet).

Chart 97: Composition of asset securities of the technical provisions
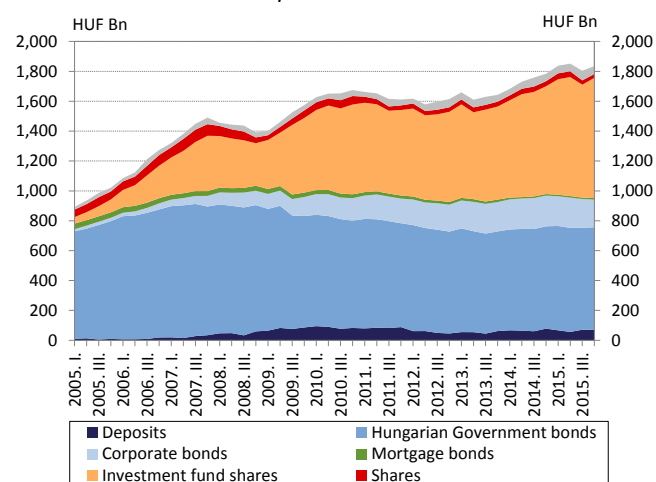
Source: MNB.

8.1. Insurance corporations play a significant role in funding the economy; their capital adequacy is stable

Capital adequacy of the Hungarian insurance sector was stable last year. In 2015, the capital adequacy of insurance corporations declined slightly (Chart 96), which was caused by an increase in the capital requirement and a slight decrease in the regulatory capital. This process is rather concentrated, since in 2015 the four insurers holding the largest capital buffers accounted for 45 per cent of the entire sector's capital surplus. At the same time, similarly to the previous period, the capital adequacy of the insurance sector continues to stand around a stable level of 200 per cent.

The Solvency II system, which entered into force on 1 January 2016, has a significant impact on the capital position of the sector. Firstly, the decline in insurance technical reserves will result in a growth in surplus capital. Secondly, following the entry into force of the new regime, the volatility of the capital adequacy ratio may increase. The expected increase in volatility stemming primarily from market valuation and a greater variability of market prices is corroborated by the findings of the Solvency II quantitative impact analyses. This phenomenon mainly means a real risk for market participants whose capital adequacy is lower, where higher volatility may result in an unexpected shortage of capital.

Insurance corporations continue to undertake a strong role in the financing of the economy. Life insurance liabilities are essentially long-term liabilities, and thus institu-

Chart 98: Voluntary pension fund's coverage reserve and coverage return
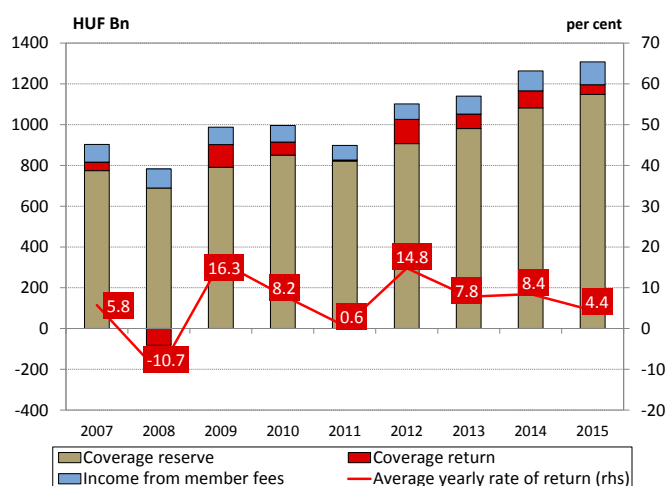
Source: MNB.

Chart 99: Assets of voluntary pension funds and private pension funds
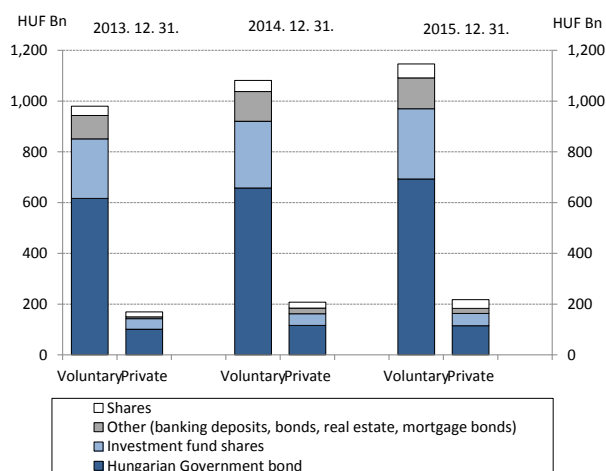
Source: MNB.

tions also adjust the average maturity of the underlying portfolio to this (Chart 97). Therefore, long-term government securities accounted for the largest part of the asset coverage of insurance technical reserves (35 per cent directly, nearly 65 per cent also taking into account the portfolio behind the mutual fund shares), while insurance corporations' direct exposure to shares amounted to 22 per cent at end-2015.[19] In addition, corporate bonds also represent a significant portfolio (10 per cent). According to the relevant data available for us, the sector mostly places these bonds behind unit-linked reserves. Compared to the previous years, government securities holdings were stable as a result of high-yield instruments purchased earlier. In parallel with that, the ratio of mutual fund shares increased (by 21 percentage points compared to the average of 2009) following the crisis. As a result of the moderate yields, in the future the ratio of government securities may slightly decline, while that of shares and, with an increase in unit-linked contracts, corporate bonds may grow.

8.2. Voluntary pension funds continue to perform well

Coverage reserves of voluntary pension funds increased to HUF 1150 billion, while private pension funds' assets amount to HUF 218 billion, mostly consisting of government securities. Voluntary pension funds' coverage reserves rose by HUF 65 billion during the year, standing at HUF 1148 billion on 31 December 2015. In 2015, institutions attained an average annual net yield of 4.4 per cent on the covers. This yield equalled HUF 48 billion (Chart 98), which can be considered a good result in the low yield environment. The ratio of membership fee payments reached the 70 per cent statutory limit in the case of all the four private pension funds, although the total number of members declined by 3.8 per cent in a year. On 31 December 2015, the assets of private pension funds amounted to HUF 218 billion. Between 2013 and 2015, the percentage share of Hungarian government securities within the investments of private pension funds declined from 59.6 per cent to 51.4 per cent, while government securities holdings of voluntary pension funds increased steadily (Chart 99). Private pension funds' investment regulation effective as of 2016 allows the purchasing of shares of banks that have their seat in Hungary issued through private offering up to 10 per cent of the fund's portfolio. In terms of the distribution of members' investment risks it is to be emphasised that stemming from the change in legislation, voluntary

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[19] According to the MNB QIS2013 impact analysis, 58 per cent of mutual fund shares represent bond-type investments, the vast majority of which is government securities, while equities accounted for 42 per cent in 2013. Setting out from this, we assumed that the composition of the underlying portfolio of mutual fund shares remained unchanged in 2015 as well.

Chart 100: Client securities and managed client accounts

HUF Bn   Thousands

- Client securities - banks
- Client securities - brokers
- Managed accounts - banks (RHS)
- Managed accounts - brokers (RHS)
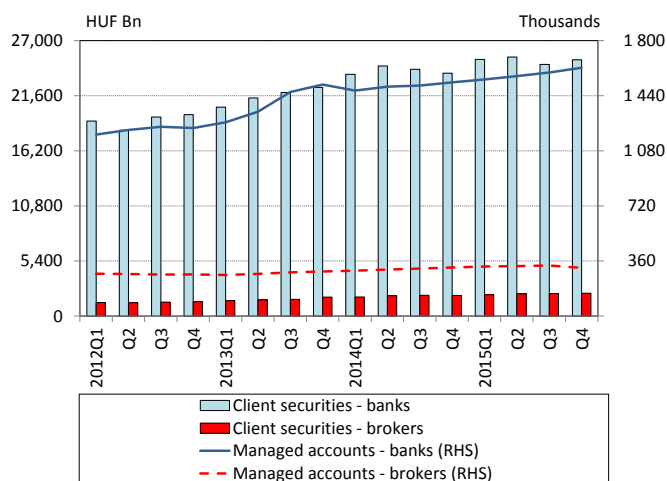
Source: MNB.

Chart 101: Profit/loss after tax of brokerage firms

HUF Bn   HUF Mn

- Profit/loss investment services
- Profit/loss after tax
- Median profit/loss after tax (right-hand scale)
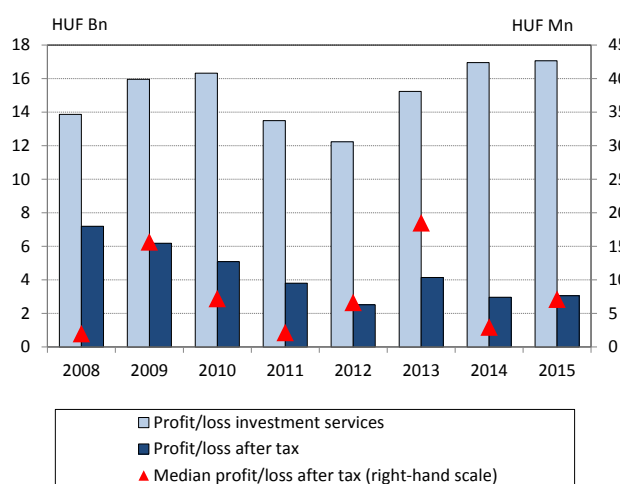
Source: MNB.

Chart 102: Changes of managed assets and of investment fund managers

HUF Bn   Piece

- Investment fund
- Pension portfolio
- Other portfolio
- Number of fund managers (RHS)

Source: MNB.

[20] Data for 2015 have not been audited yet.
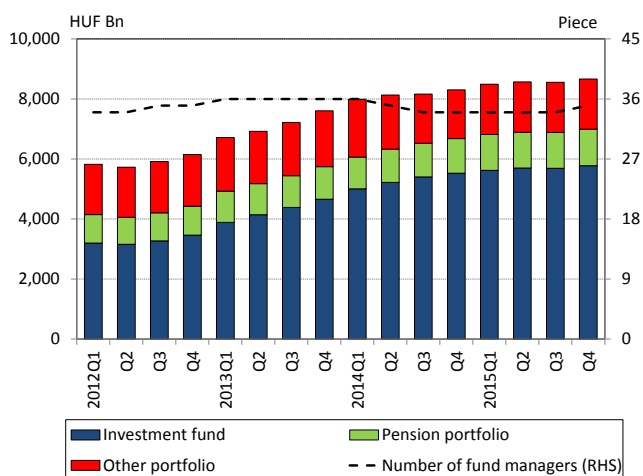
funds that operate the optional portfolio system may offer the division of the amounts on the individual account between two portfolios, although institutions are waiting with the introduction of this system. The total assets of health and mutual aid funds amounted to HUF 56.7 billion at end-2015. The investment rules of health and mutual aid funds became stricter as of 1 January 2016, which may result in a further increase in the current government securities holdings (65.8 per cent) in the future, at the expense of bank accounts and time deposits (23.6 per cent).

8.3. Consolidation of the investment enterprise sector started

The customer securities portfolio of investment firms continued to grow. In 2015 H2, the customer securities portfolio of investment firms continued to increase: the holding of HUF 2246 billion evaluated at market prices in December 2015 was 3.1 per cent higher than the end-June value, and 10.7 per cent higher compared to December of the previous year. In contrast, a decline was observed in the case of credit institutions in 2015 H2: the December 2015 customer securities portfolio of HUF 25,112 billion is 1.1 per cent lower than the end-June value, showing an annual 5.5 per cent growth at the same time. Customer accounts managed increased by a total 2.3 per cent in 2015 H2. Customer accounts managed rose by 3.5 per cent in the case of credit institutions, while declining by 3.7 per cent in the case of investment firms. The underlying reason is that following the screening of their clients some large investment enterprises terminated the contracts of inactive clients that had not made any transactions for a long time (Chart 100).

Stable profit at sector level, but strong differences across institutions. The profit of the investment enterprises sector as a whole – investment firms and branch offices of investment firms together – remained practically at the same level (Chart 101), around HUF 3 billion.[20] At end-2015 three investment firms stopped operating; as a result, the number of investment firms declined from 21 in early 2015 to 18 by early 2016. Of the 18 investment firms that operated at the beginning of 2016, 8 were loss-making in 2015, and the after-tax profit of 11 declined compared to 2014, i.e. decline in income was basically typical for the majority of the sector. The distribution of after-tax profit continues to be strongly differentiated: the 2015 after-tax profit of the first three market participants that have the highest profits cover 112.6 per cent of the total after-tax profit/loss.

The increase in assets of investment funds is basically attributable to capital inflows to real estate funds. The assets managed in investment funds continued to increase, reaching HUF 5777 billion, a new historical record, by end-2015. The rate of growth continued to decelerate: while quarterly growth was 1.8 and 1.1 per cent in 2015 Q1 and Q2, respectively, managed assets declined by 0.1 per cent in 2015 Q3, before increasing by 1.5 per cent in Q4. The increase of HUF 11 billion in the assets managed in securities funds in H2 (+0.2 per cent) is dwarfed by the portfolio of HUF 5125 billion. In contrast, the assets managed in real estate funds increased by HUF 68.7 billion (11.8 per cent) in 2015 H2 as a result of capital inflows, and thus the assets managed in real estate funds reached a historical high of HUF 652 billion (Chart 102).

LIST OF CHARTS

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APPENDIX: MACROPRUDENTIAL INDICATORS

1. Risk appetite

Chart 1: Primary risk indicators

Source: Datastream.

Chart 2: Implied volatility of the primary markets
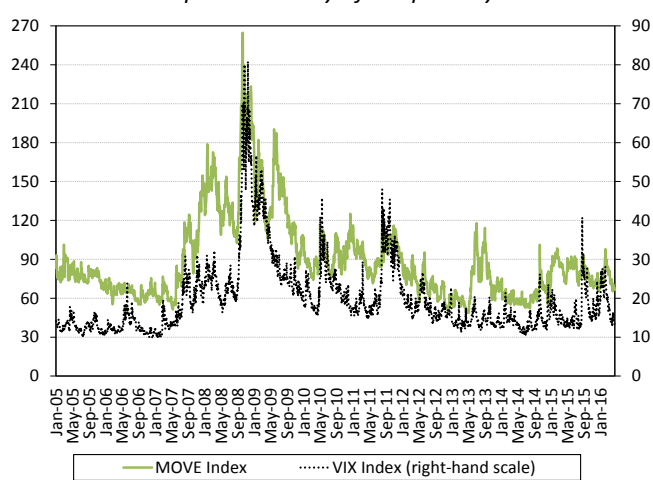
Source: Bloomberg.

Chart 3: Dresdner Kleinwort indicator
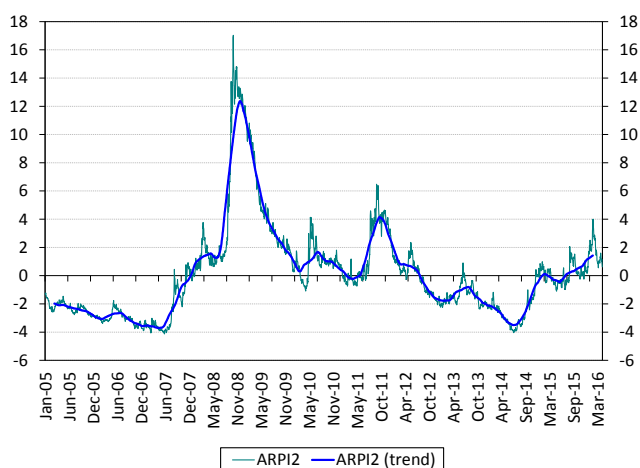
Source: DrKW.

2. External balance and vulnerability

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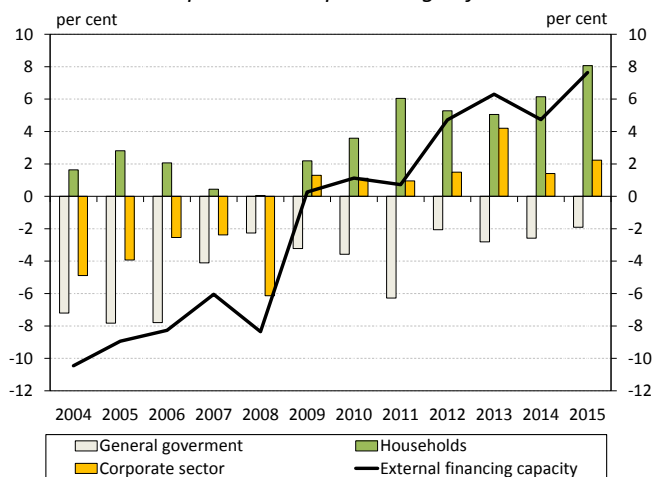
Source: MNB.

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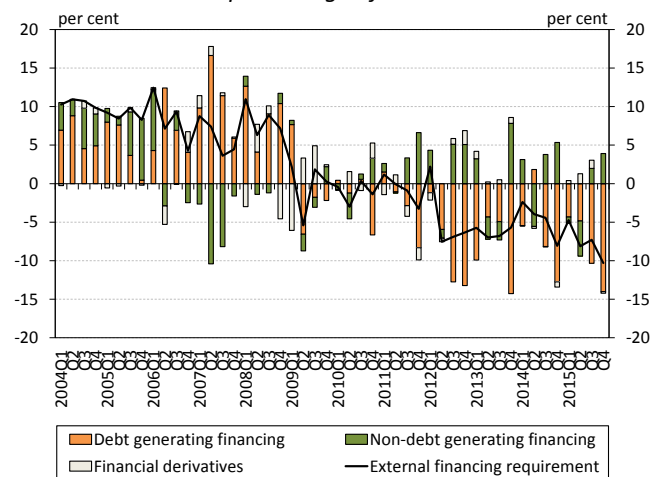
Source: MNB.

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
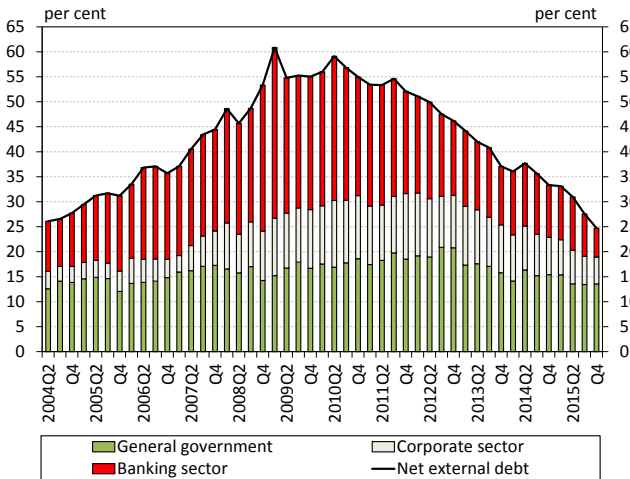
Source: MNB.

3. Macroeconomic performance
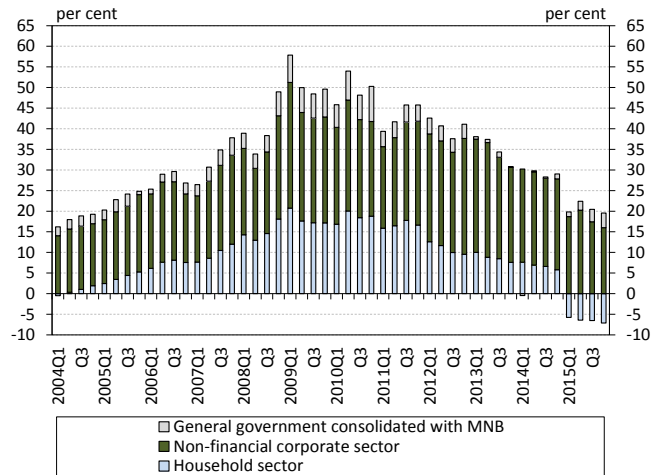
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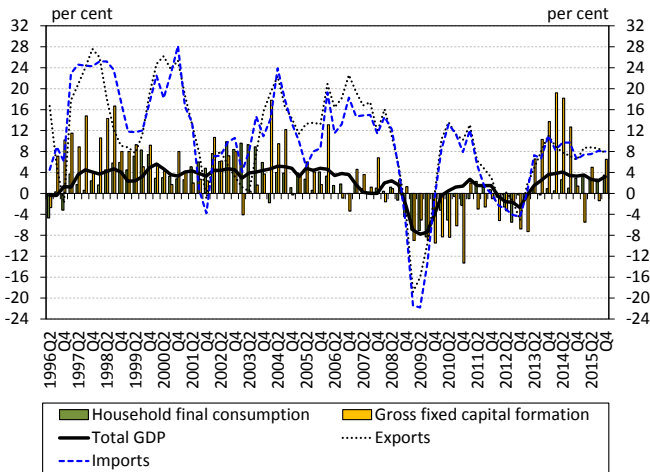
Source: KSH.

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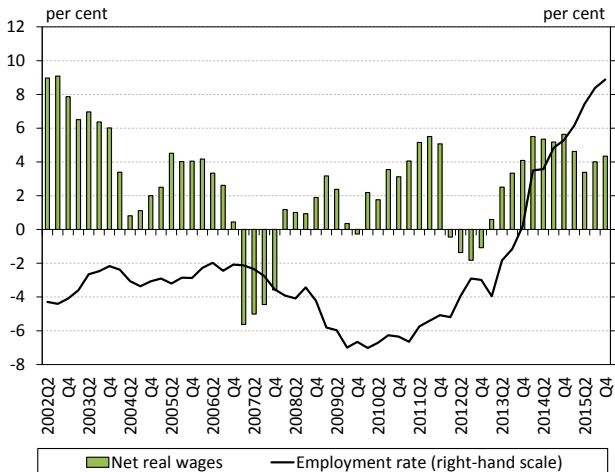
Source: KSH.

Chart 10: Use of household income as a ratio of disposable income
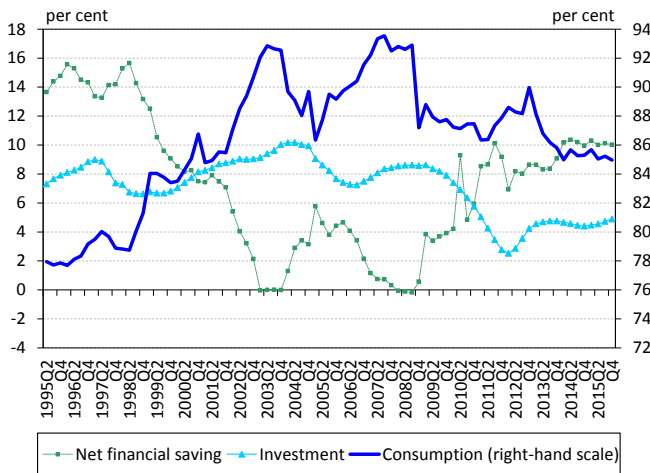
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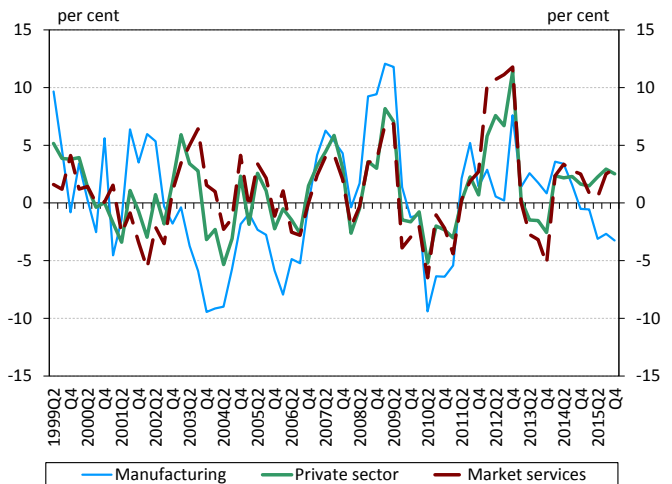
Source: KSH, MNB.

Chart 12: Sectoral bankruptcy rates
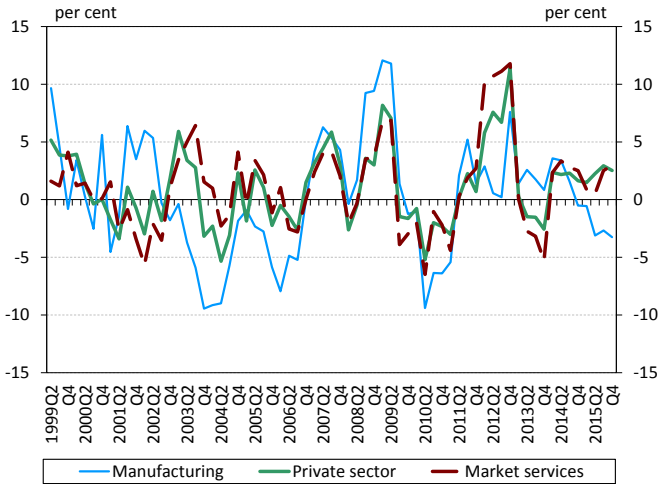
Source: Opten, KSH, MNB.

4. Monetary and financial conditions

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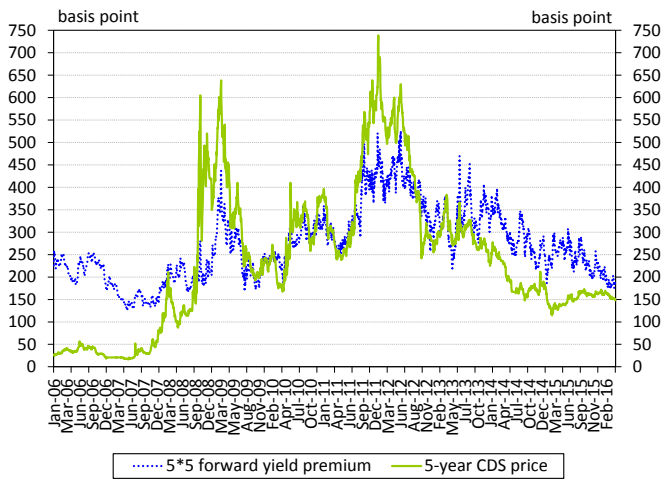
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Source: Reuters.

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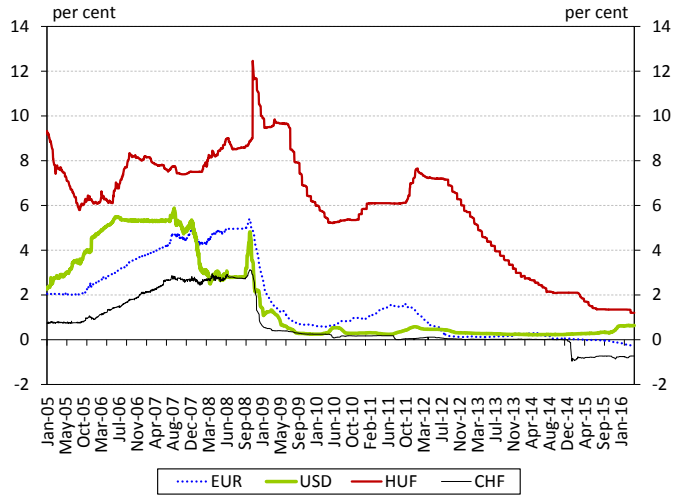
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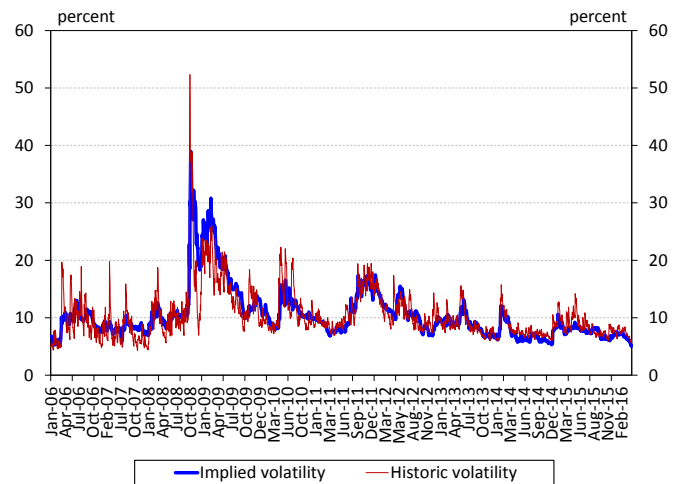
Source: Reuters, MNB.

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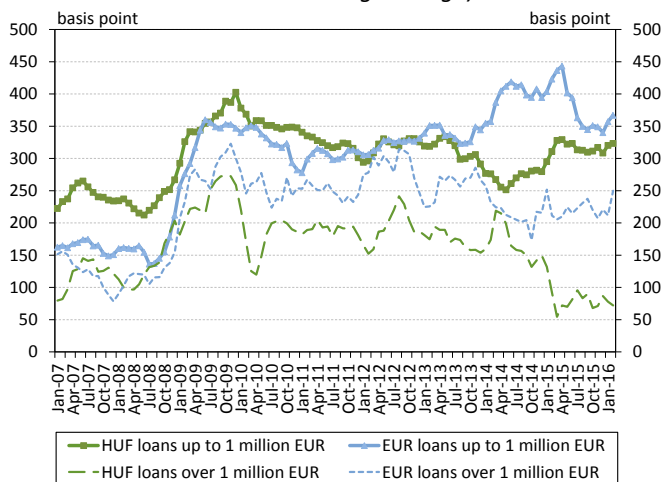
Source: Euribor, MNB.

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Source: MNB.

5. Prices of instruments

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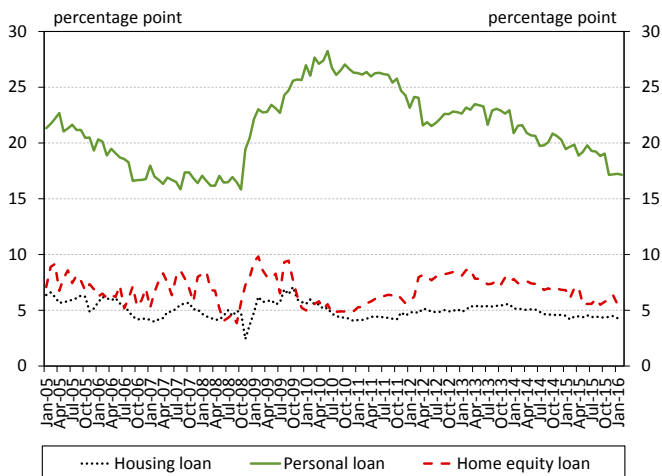
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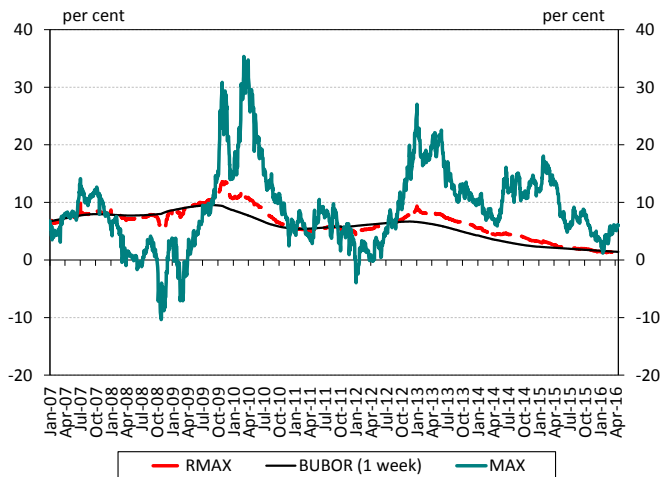
Source: ÁKK, MNB, portfolio.hu.

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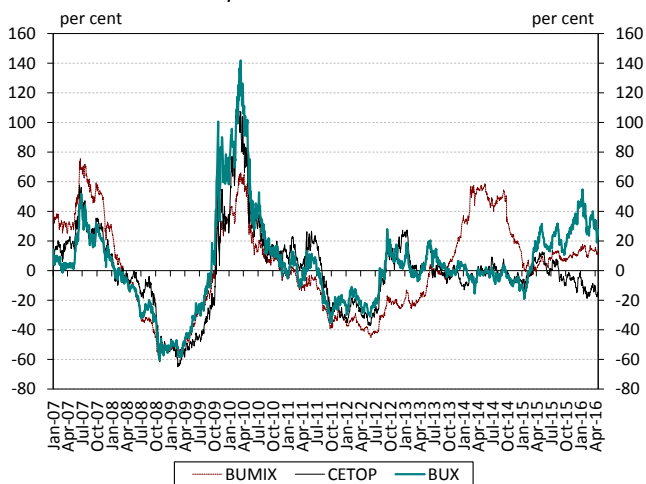
Source: BÉT/BSE, portfolio.hu.

6. Risks of the financial intermediary system

Chart 22: Indebtedness of non-financial enterprises as a percentage of GDP
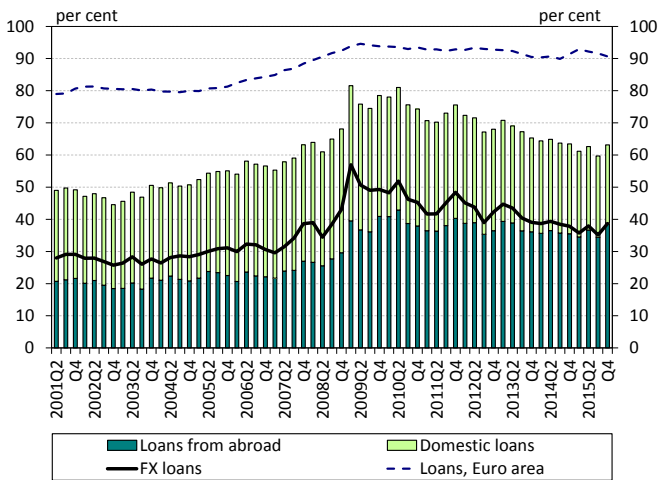
Source: Eurostat, ECB, MNB.

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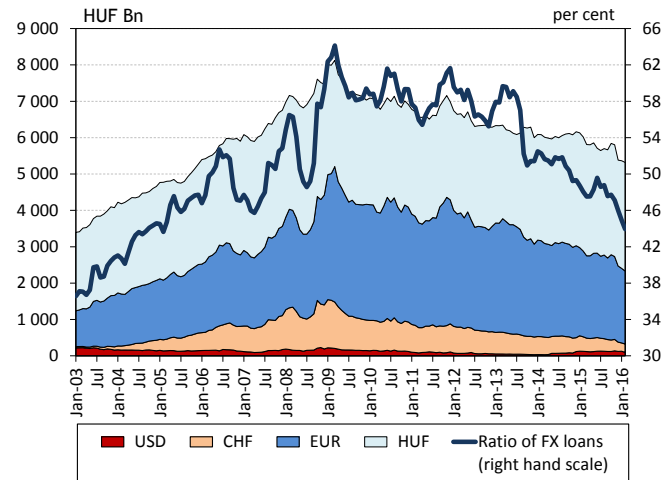
Source: MNB.

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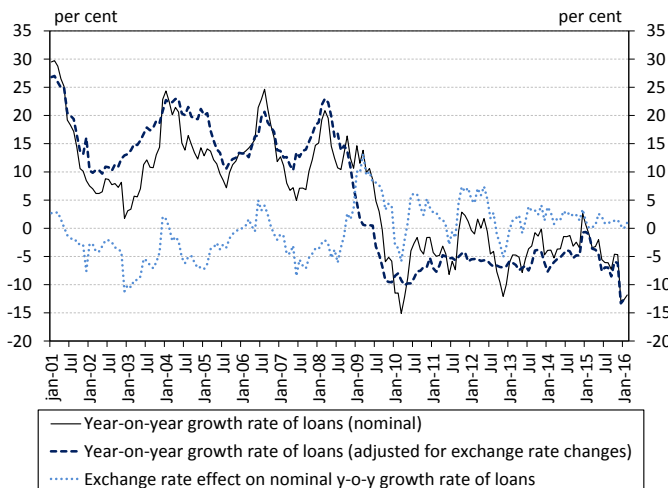
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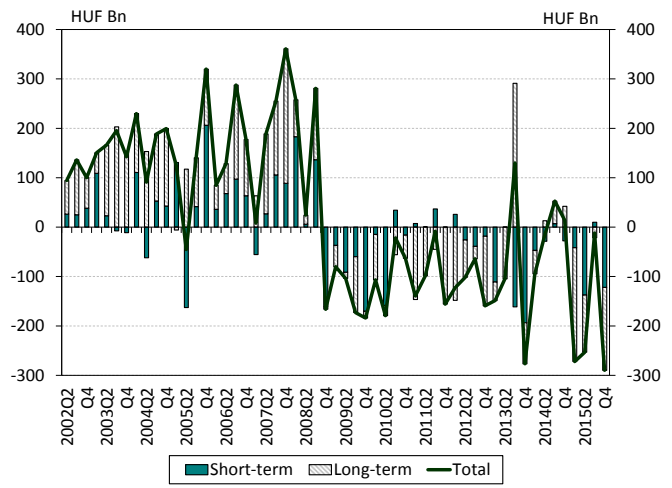
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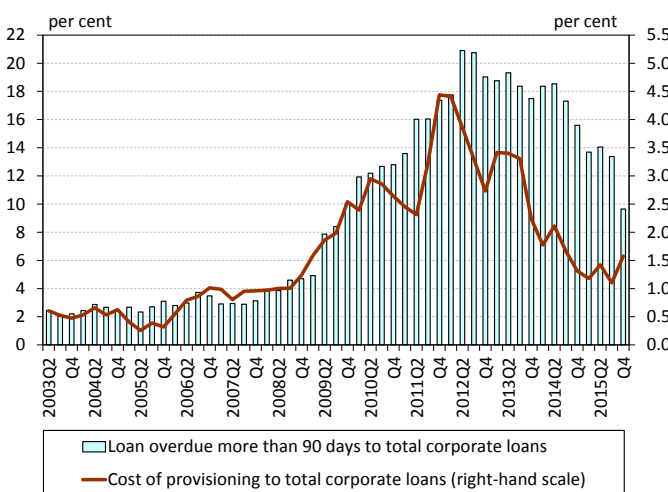
Source: MNB.

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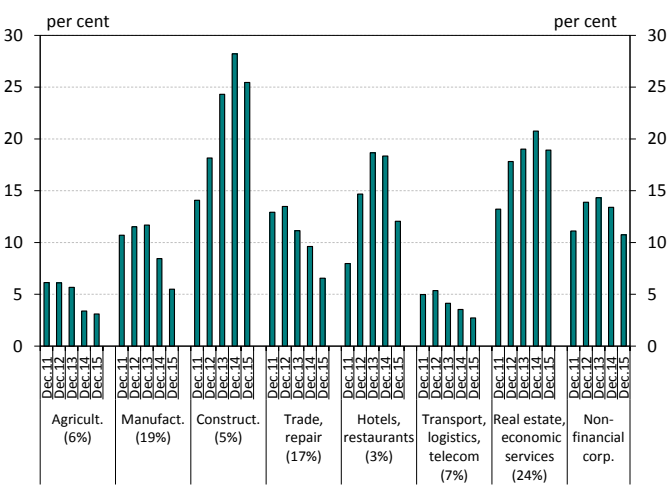
Source: MNB.

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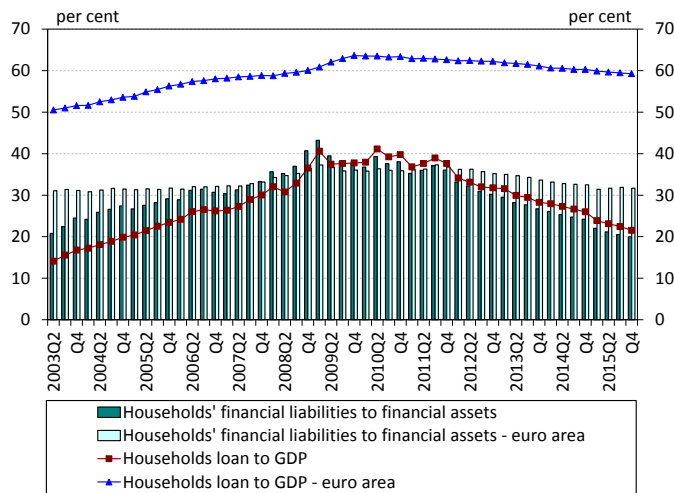
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Source: MNB.

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Source: MNB.

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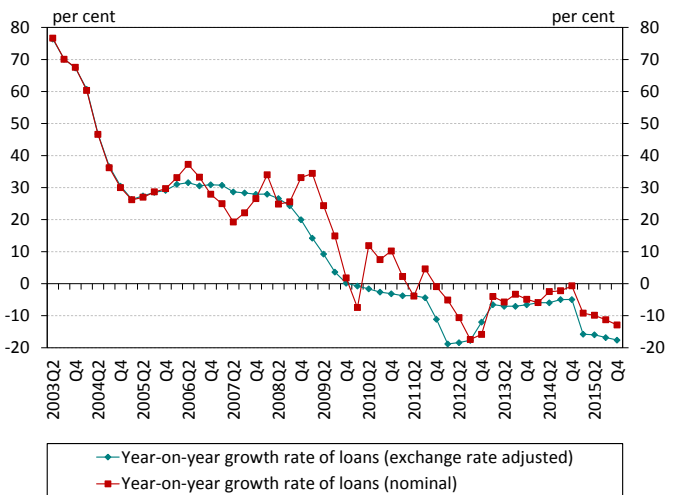
Source: MNB.

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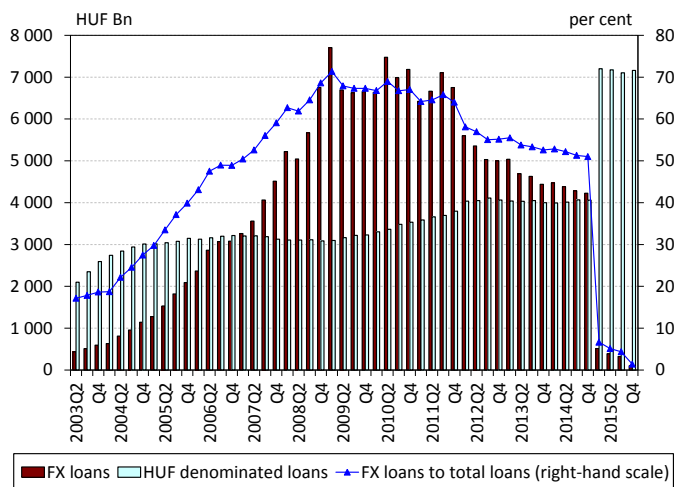
Source: MNB.

Chart 33: Household loans distribution by collateral
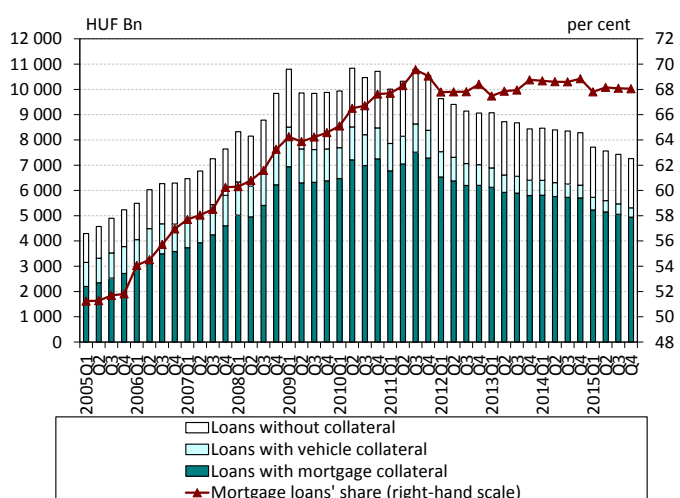
Source: MNB.

Chart 34: Distribution of new housing loans by LTV
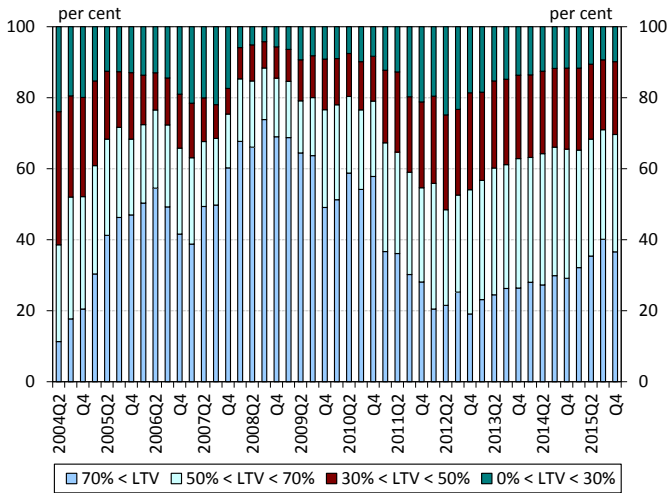
Source: MNB.

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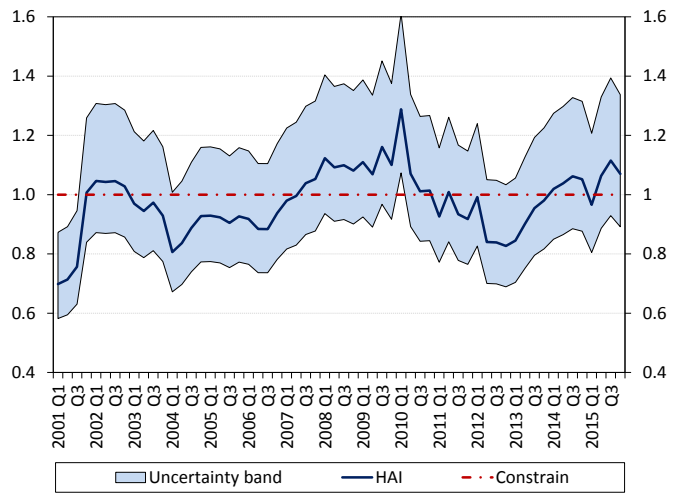
Source: MNB.

Chart 36: Quality of the household loan portfolio
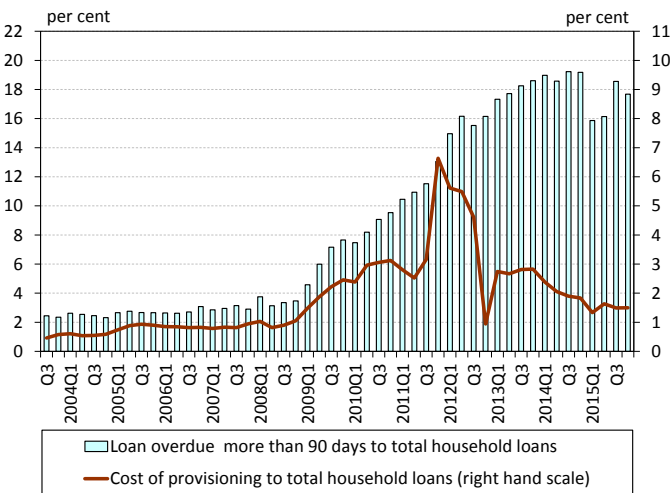
Source: MNB.

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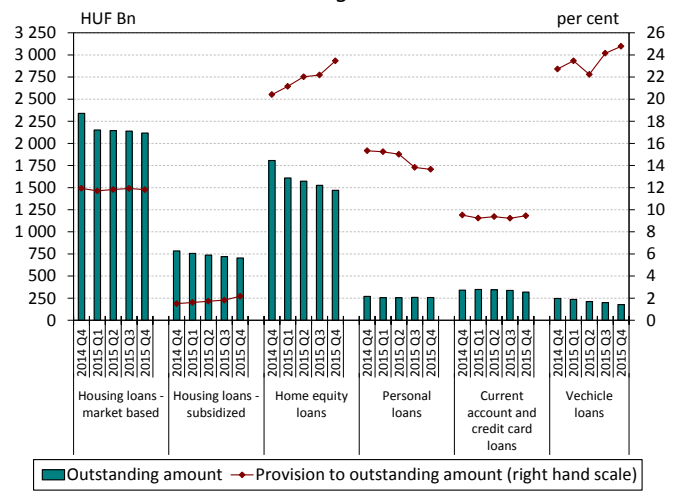
Source: MNB.

Chart 38: Open FX position of the domestic banking system
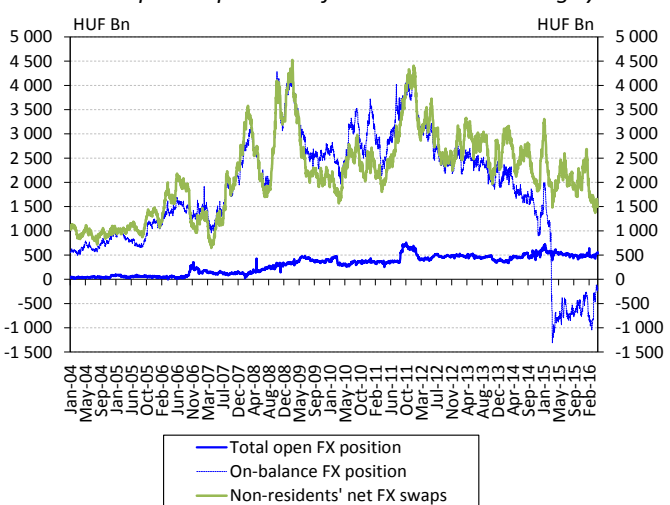
Source: MNB.

Chart 39: The exchange rate exposure of the banking sector
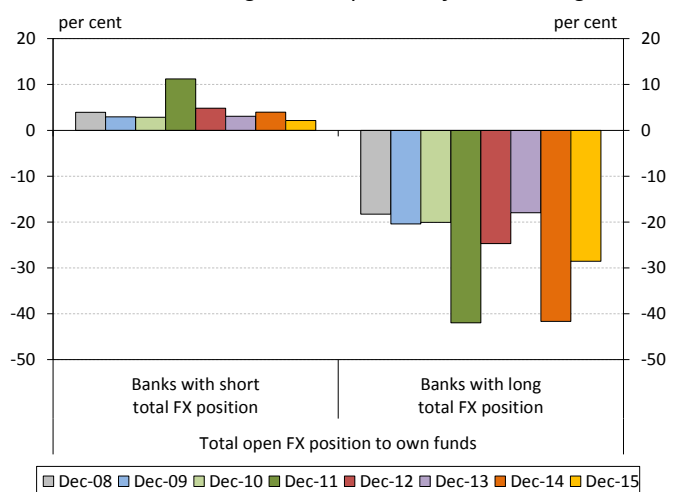
Source: MNB.

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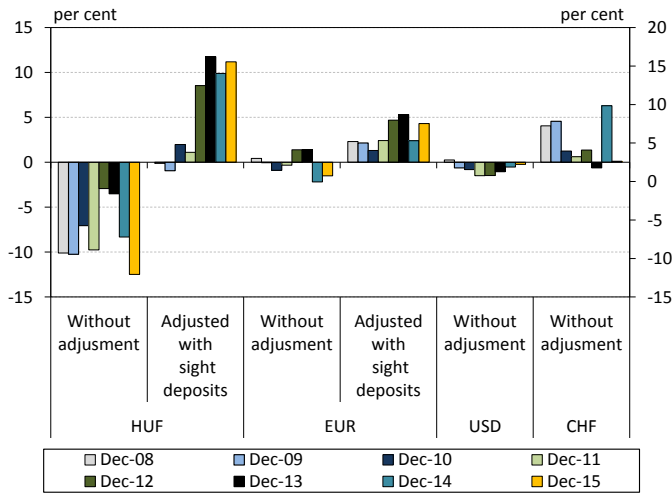
Source: MNB.

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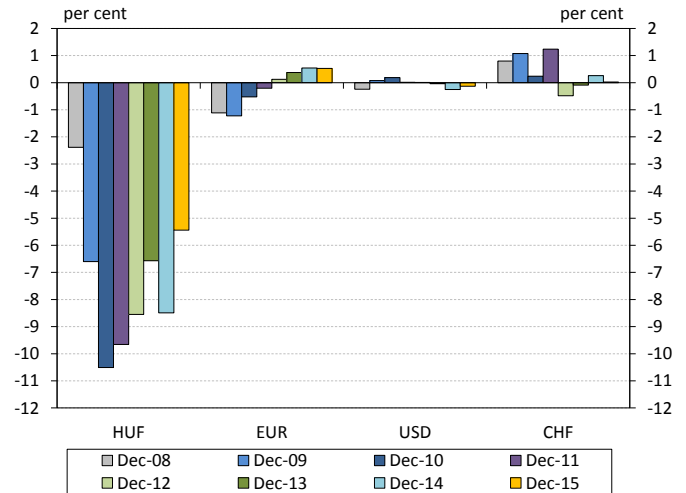
Source: MNB.

Chart 42: Liquidity index (exponentially weighted moving average)
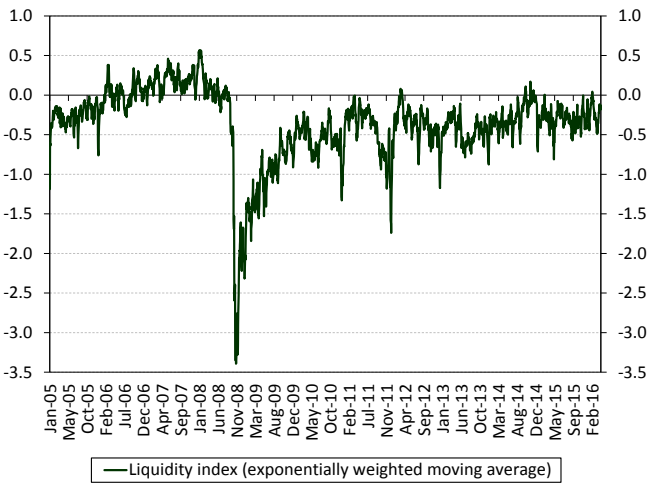
Source: MNB, KELER, Reuters, DrKW.

Chart 43: Liquidity sub-indices (exponentially weighted moving average)
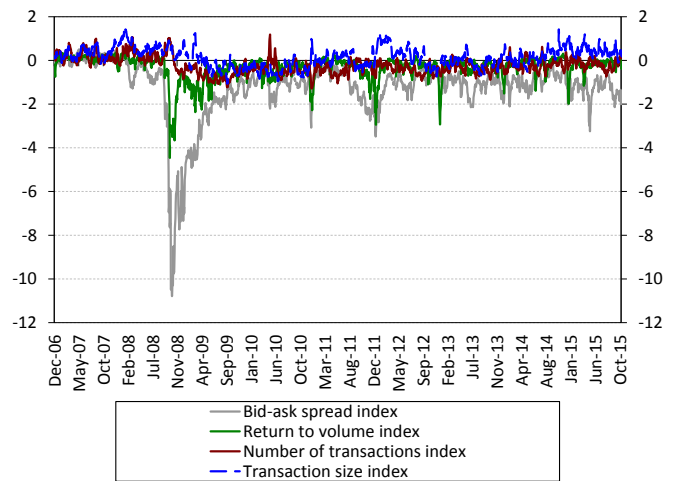
Source: MNB, KELER, Reuters, DrKW.

Chart 44: Bid-ask spread indices of the major domestic financial markets (exponentially weighted moving average)
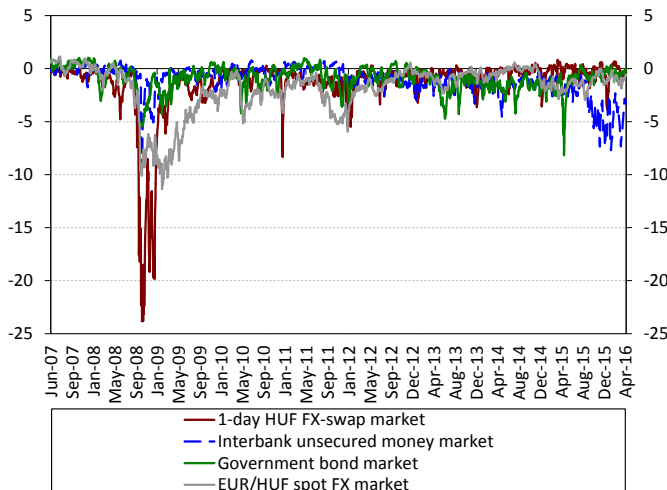
Source: MNB, KELER, Reuters, DrKW.

Chart 45: Credit to deposit ratio of the banking sector

Source: MNB.

Chart 46: Liquidity ratios of the banking sector
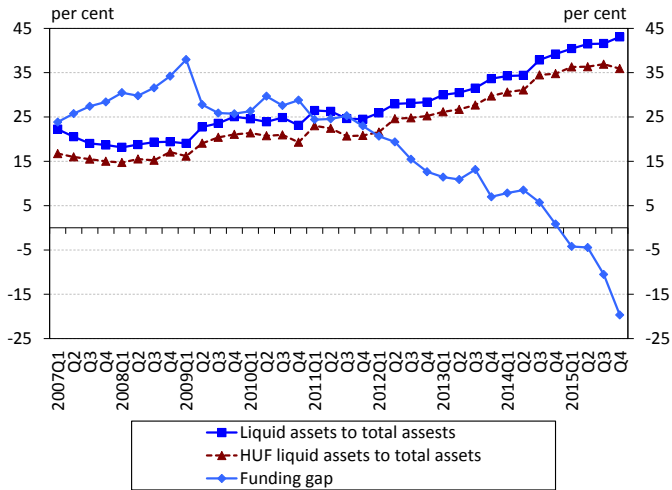
Source: MNB.

Chart 47: External funds of the banking sector
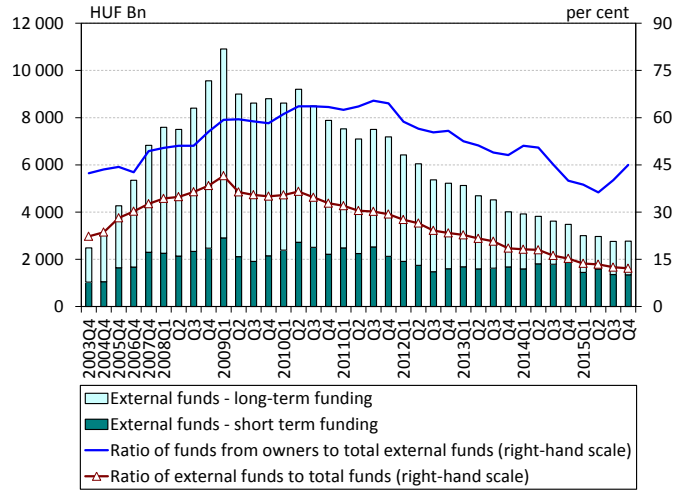
Source: MNB.

Chart 48: ROA, ROE and real ROE of the banking sector
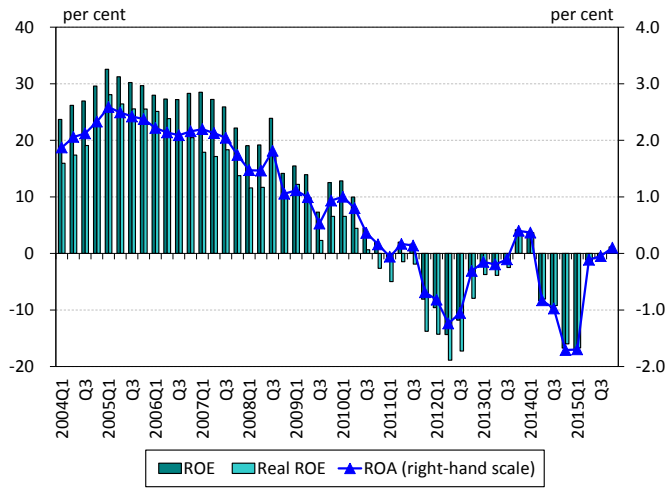
Source: MNB.

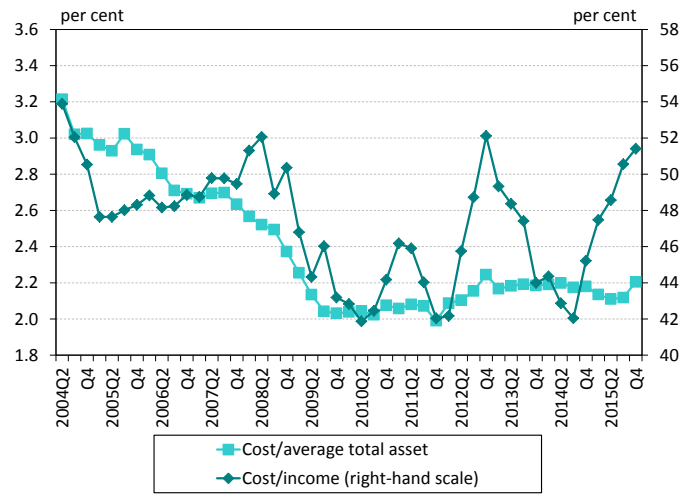## Chart 49: Dispersion of banks' total assets by ROE
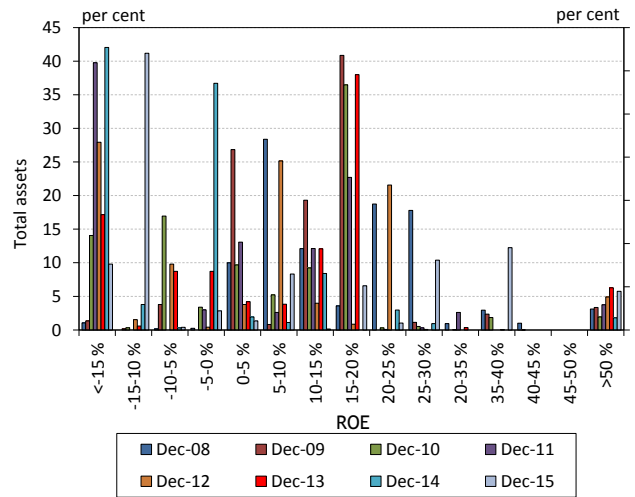
Source: MNB.

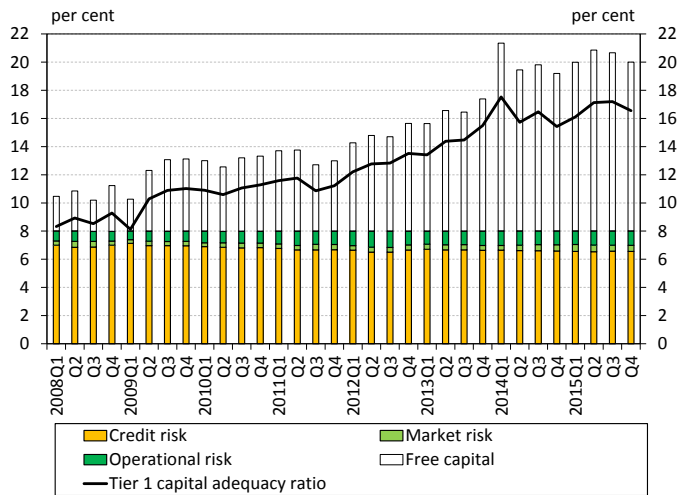## Chart 50: Net interest income as a proportion of the gross and net interest bearing assets in the banking sector
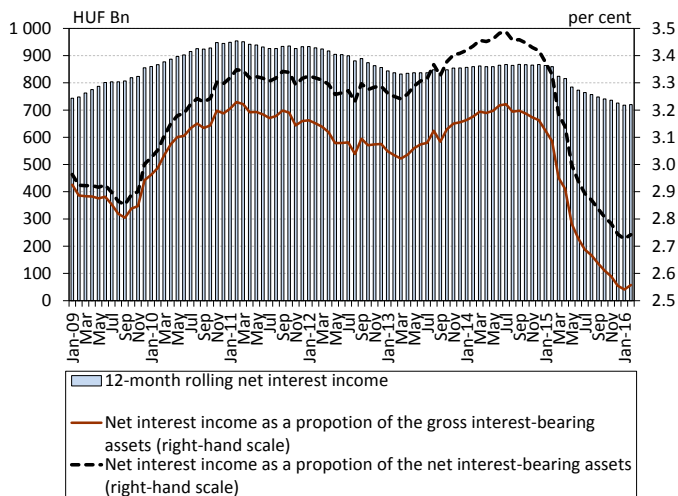
Source: MNB.

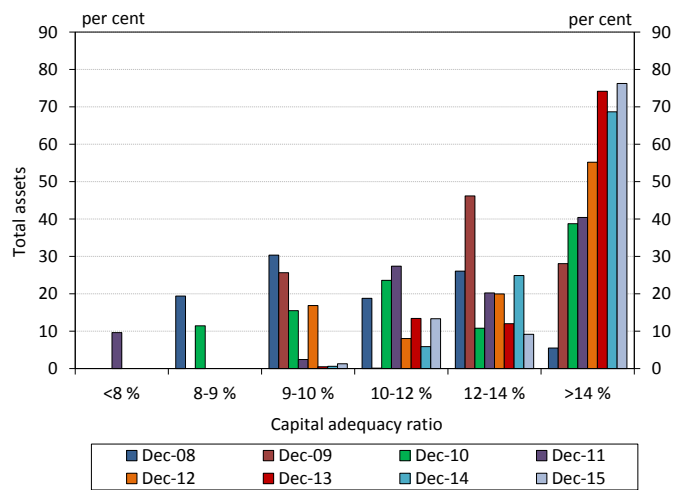## Chart 51: Operating efficiency indicators of the banking sector

Source: MNB.

Chart 52: Banks' capital adequacy ratios
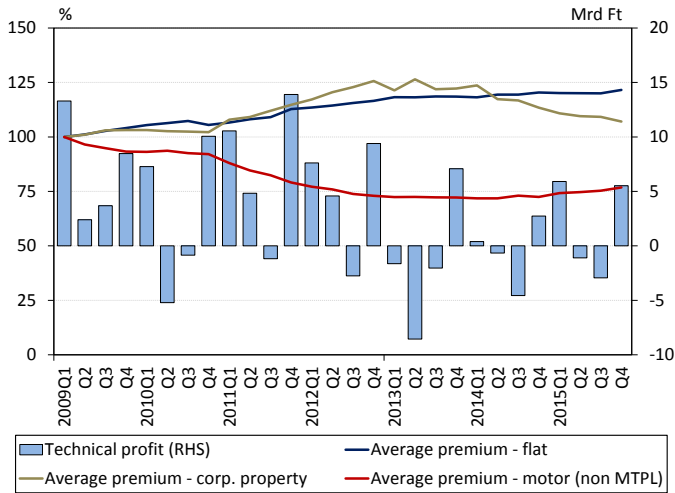

Source: MNB.

Chart 53: Dispersion of banking sector's total assets by capital adequacy ratio
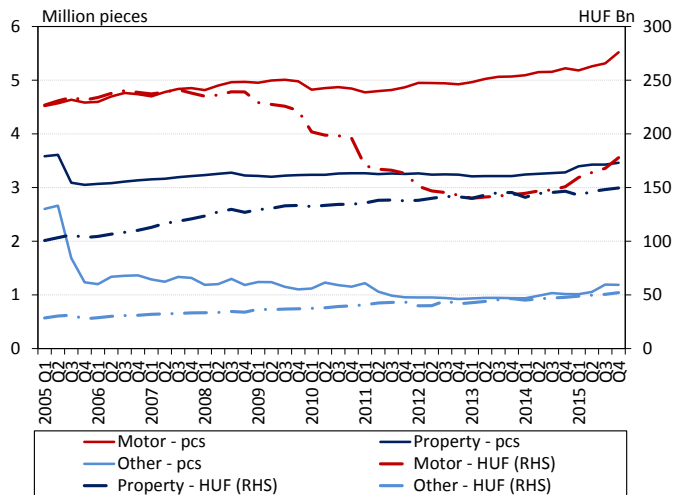

Source: MNB.

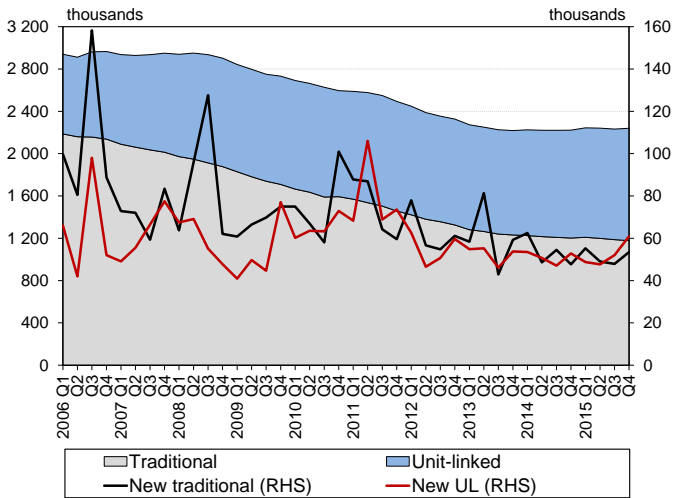## 7. Institutional investors

Chart 54: Underline data of insurance tax

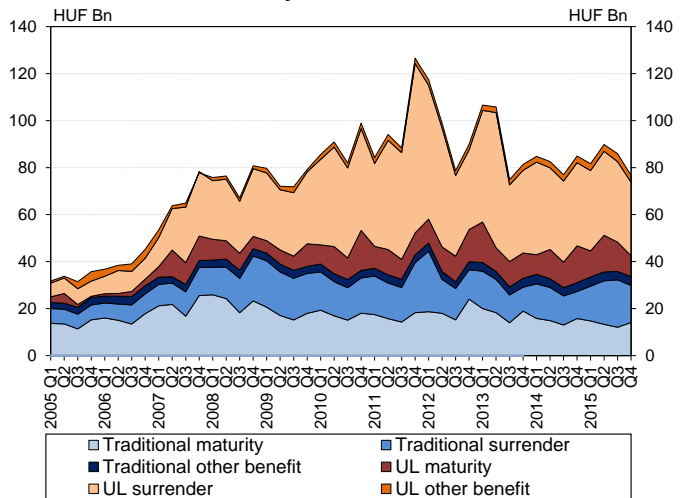Source: MNB.

Chart 55: Development of non-life insurance

Source: MNB.
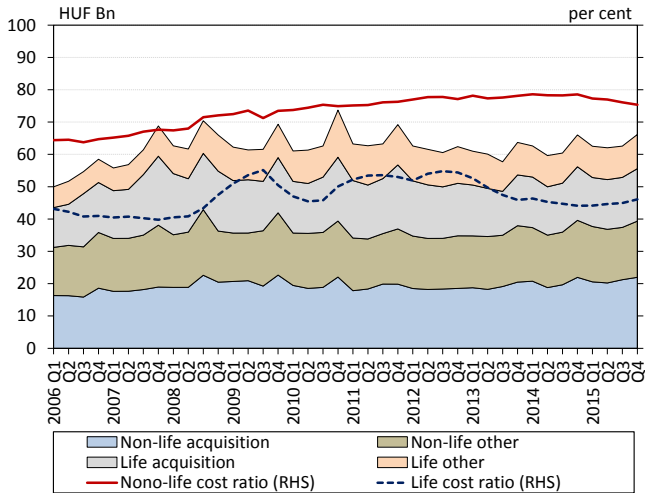
Chart 56: Development of life insurance

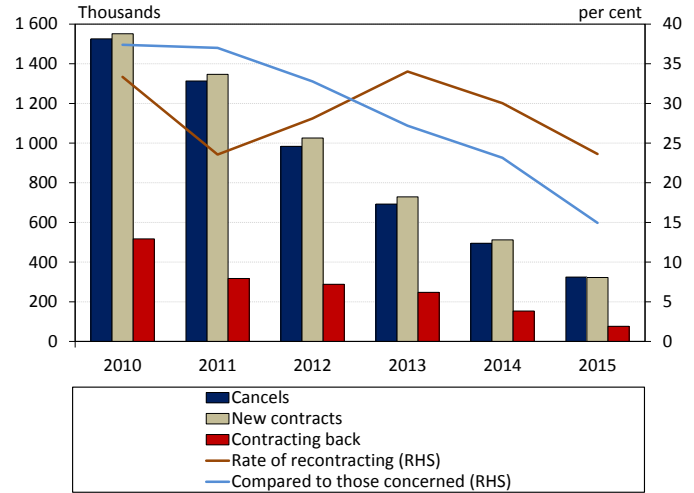Source: MNB.

Chart 57: Life insurance services

Source: MNB.

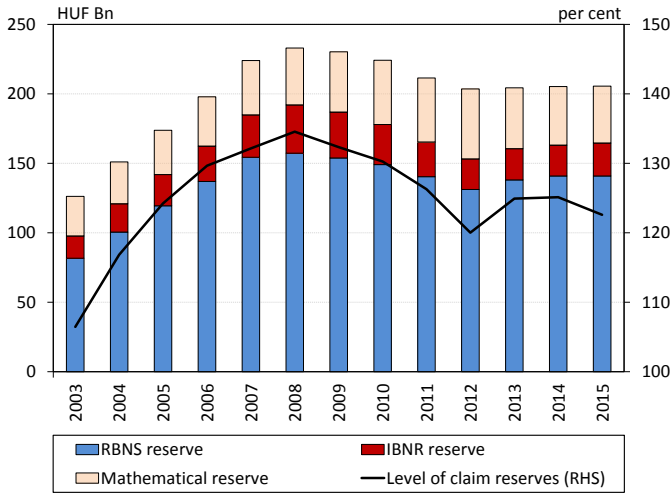## Chart 58: Costs in the insurance sector

Source: MNB.

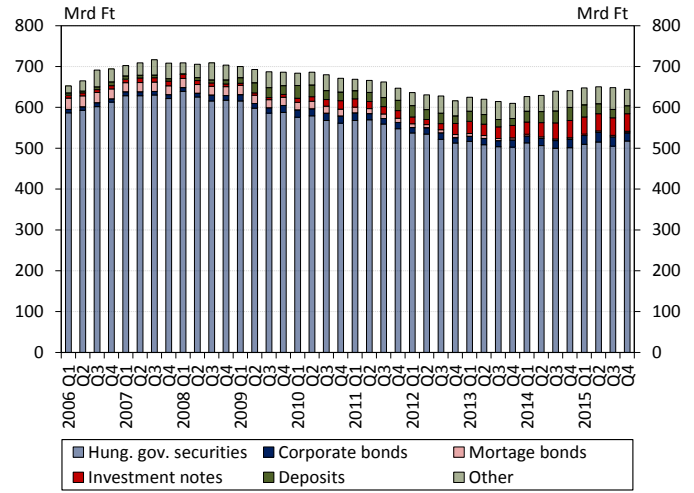## Chart 59: Development of mtpl insurance

Source: MNB.

Chart 60: Development of gross mtpl reserves

Source: MNB.

Chart 61: Assets behind life mathematical reserve

Source: MNB.

Chart 62: Composition of assets (excluding mathematical reserves)
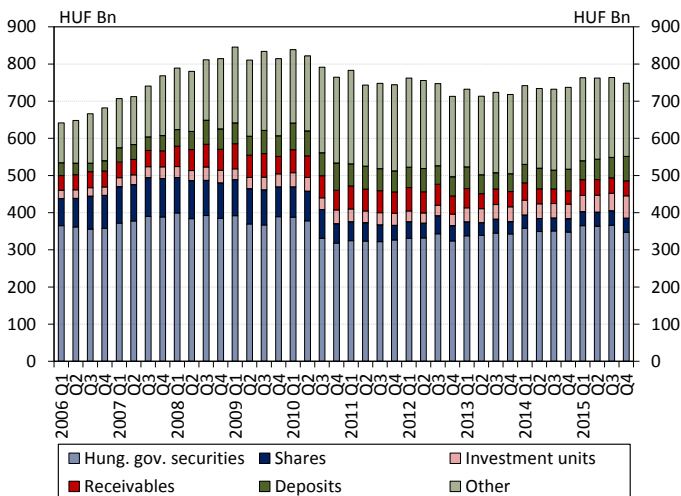
Source: MNB.

Chart 63: Number of investment fund managers and funds
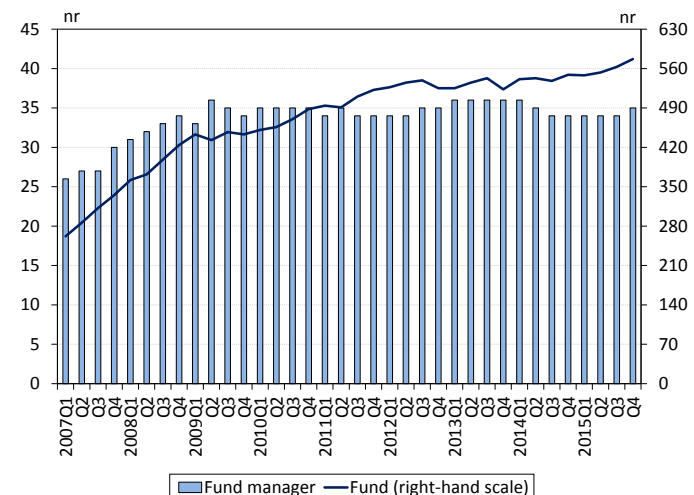
Source: MNB.

Chart 64: Capital market turnover of investment firms

Source: MNB.

Chart 65: Asset allocation in public offered investment funds

Source: MNB.

Chart 66: Capital adequacy (CAR) of investment firms

Source: MNB.

Chart 67: 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 31st of December) if it's not indicated otherwise.

Chart 1:

The increased value of the indicator indicates declining risk appetite or increasing risk aversion.
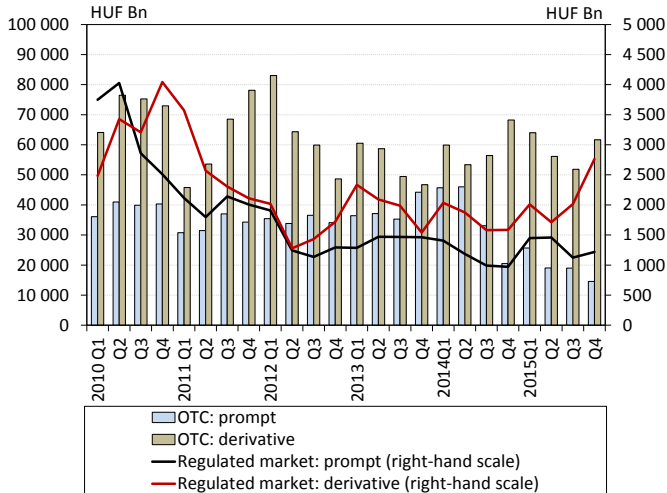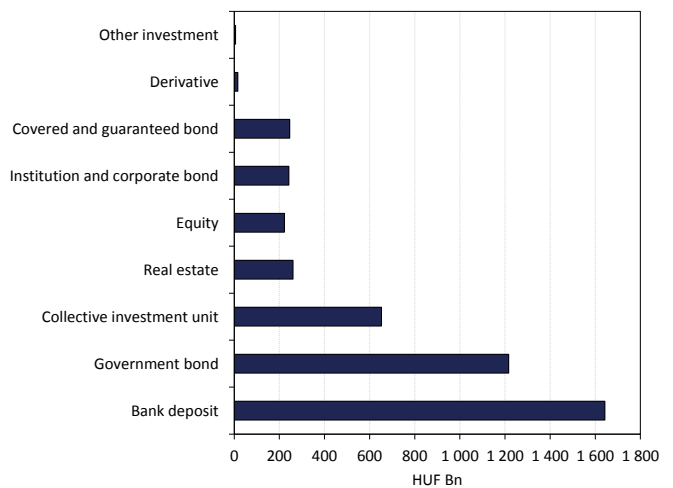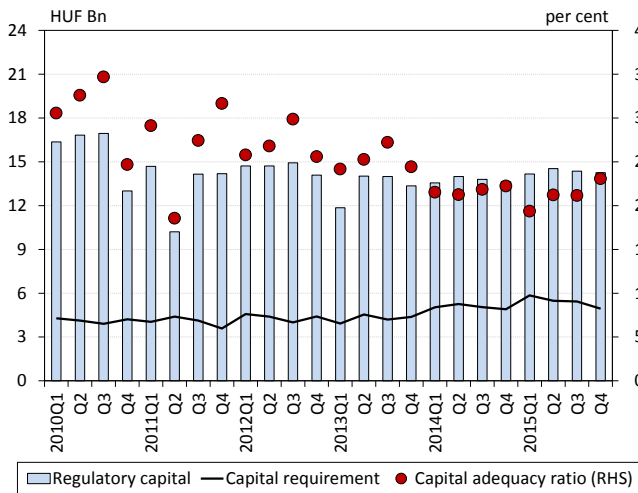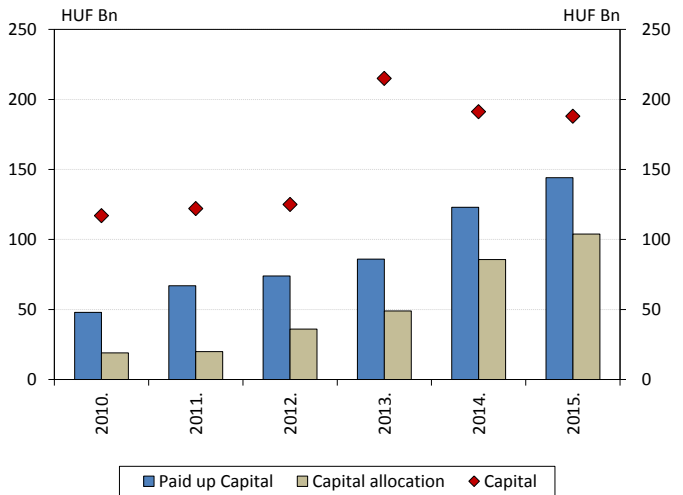
Chart 2:

VIX: implied volatility of S&P 500.

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

Chart 3:

The increased value of the indicator indicates 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, summed according to the date of publication, 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 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 untill 2014, and by contracts from 2015.

Chart 27:

In brackets bellow 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:

If the value of the HAI is 1, it shows that under a given set of credit conditions a typical household has just enough monthly income to take out the mortgage loan necessary to purchase an average flat.

If the value of the index is above 1, it indicates that a household with average income can afford to borrow for the purchase of a home.

The uncertainty band is given from the different values of the LTV.

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 48:

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 49:

Pre-tax profit.

Chart 50:

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 51:

Cost: previous 12 months

Income: previous 12 months

Average total asset: mean of previous 12 months

Chart 52:

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

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

Chart 64:

Sum turnover of investment firms and credit institution.

Chart 65:

31-Dec-2015

Ferenc Deák

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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