

REPORT ON FINANCIAL STABILITY

November 2011



MAGYAR NEMZETI BANK

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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.

The Magyar Nemzeti Bank facilitates and strengthens financial stability using all the tools at its disposal and, should the need arise, manages the impact of shocks. As part of this activity, the Magyar Nemzeti Bank undertakes a regular and comprehensive analysis of the macroeconomic environment, the operation of the financial markets, domestic financial intermediaries and the financial infrastructure, reviewing risks which pose a threat to financial stability and identifying the components and trends which increase the vulnerability of the financial system.

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

The analyses in this *Report* were prepared by the Financial Stability, Financial Analysis, Monetary strategy and Economic Analysis as well as the Payments and Securities Settlements Directorates, under the general direction of Márton Nagy, Director. The project was managed by Tamás Balás, senior economist of Financial Stability. The *Report* was approved for publication by Júlia Király, Deputy Governor.

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The *Report* incorporates the Monetary Council's valuable comments and suggestions following its meetings on 4 October and 25 October 2011. However, the *Report* reflects the views of the contributing organisational units and does not necessarily reflect those of the Monetary Council or the MNB.

This Report is based on information in the period to 10 October 2011.

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Overall assessment

Key risks:

1. Sovereign debt crisis in the euro area peripheral countries has been escalating; risks of another financial crisis and a global recession are increasing.

2. Although early repayment at preferential exchange fixed rates reduces the debts and eliminates the exchange risks of those participating in the scheme, but:

2.1. foreign currency demand at the time of the conversion may weaken the exchange rate of the forint;

2.2. which, in turn, will increase the burdens of debtors unable to participate in the scheme;

2.3. and weaken the lending capacity of the banking sector through the sector's increasing losses.

2.4. if the central bank takes over the exchange rate position of the households, the level of foreign exchange reserves will decline.

3. Inefficient management of a rising rate of non-performing loan portfolios, frozen balance sheets, which prevents an upturn in bank lending.

Risk mitigating measures:

1.1. Maintaining prudent national fiscal policy, further reduction of government debt in a way that the market considers credible.

1.2. Introduction of an FX funding adequacy ratio aimed at improving the maturity mismatch in the domestic banking system.

1.3. Strengthening of the banking system's long-term FX funding and capital position.

2. The central bank, by tapping its foreign exchange reserves, provides the amount of FX needed for the early repayment of FX denominated mortgage loans to the domestic banking sector, with which it will

2.1. dampen the impact of higher demand for foreign currency arising from the early repayment of FX loans on the HUF exchange rate;

2.2. reduce the increasing burdens of debtors unable to participate in the scheme;

2.3. the losses that the banking system is likely to incur also depend on the market rate prevailing at the time of the conversion; this uncertainty will subside;

2.4. although there will be a drop in country's foreign exchange reserves, short-term foreign debt will also decrease; thus, vulnerability will not increase considerably.

3.1. By tightening loan loss provisioning regulations for restructuring, banks would be prompted to accelerate portfolio cleaning and apply selective debt relief.

3.2. Introduction of personal bankruptcy would enable regulated debt settlement – at the end of this process, the debtor would have a clean sheet.

4. Due to capital losses, subsidiaries may be compelled by parent banks to radical deleverage, so the drop in corporate lending might accelerate, deteriorating significantly the economic outlook.

4.1. Higher state guarantee commitments, by increasing the capacities of guarantee institutions.

4.2. The establishment of non-bank financial intermediation for corporations, development of corporate bond market and the preparation of securitisation legislation.

4.3. Capital injection by parent banks improving banks' lending capacity, hence commitment to support lending.

5. Weak price competition in the household sector conserving the high interest burdens of debtors.

5.1. Allowing only reference interest rate based loans with a fixed premium or fixed interest rate credit products regarding mortgage loans. Introduction of a credit products, stimulation of bank-switching (the Government also supports these proposals, as they comprise part of the National Protection Plan).

5.2. The Government accepted the central bank's proposal for the complete (positive and negative list) credit register for households.

The sovereign debt crisis in the euro area peripheral countries has been escalating, and risks of another financial crisis and a global recession are on the rise

Governments in developed countries intervened to mitigate the adverse economic effects of the global financial crisis by moving forward with unprecedented fiscal expansion in 2009. However, the negative effects of government overspending emerged from early 2010, particularly in the peripheral countries of the euro area. The rising sustainability risks of sovereign debt and surging funding costs have made considerable fiscal consolidation necessary. As the financial sector has a high level of sovereign exposure, the risk of contagion between sectors (government-financial sector) and countries (euro area member states) has also mounted. The losses incurred by the financial system and the subsequent stronger deleveraging may exacerbate the negative effects of austerity measures on economic growth. In the second phase of the crisis, i.e. with the euro area sovereign debt crisis, a global financial crisis may emerge and the global economy may even fall back into recession.

More severe external shocks, substantial slowdown in the Hungarian economic growth

Due to strong trade integration, the worsening external environment is rapidly spilling over to the export sales of domestic companies. As a result of strong financial integration, surging risk premium and funding costs pass through to higher domestic interest rates, leading to not only increasing debt burdens in the private sector, but also in that of the government, and consequently decreasing investment and consumption in Hungary. The persistent appreciation of safe haven currencies such as the Swiss franc against the euro and the forint negatively affects activity in the private sector and the lending capacity of the financial sector. As a positive development, the Swiss central bank intervened by setting a minimum exchange rate target of EUR/CHF 1.2 in early September to stop the steady strengthening of the franc. At the same time, after a relatively stable period, the forint depreciated significantly against the euro in September 2011 and thereby also lost ground against the Swiss franc. Finally, contagion risk is also rising due to strong financial integration between subsidiary and parent banks. The euro area sovereign debt crisis worsens the liquidity and capital position of parent banks, which may result in constraints in refinancing and restrained lending in the domestic banking sector. Furthermore, domestic factors have also contributed to the erosion of domestic banks' capacity and willingness to lend. The most important is the early repayment of foreign currency denominated mortgage loans at preferential fixed exchange rates. As a result of the above developments, the Hungarian economy is expected to grow only at a moderate rate next year, with significant downward risks.

The portfolio quality of the domestic banking sector continues to deteriorate in all segments

The fading global economic outlook, rising funding costs and the persistently strong Swiss franc significantly worsens the portfolio quality of the domestic banking sector. By the end of 2011 H1, the ratio of non-performing loans in the corporate sector reached 16 per cent, while the ratio of restructured loans amounted to 4-5 per cent. The portfolio quality of project loans within the sector deteriorated significantly. The ratio of non-performing loans within the household sector was nearly 13 per cent, while the ratio of restructured loans reached 4 per cent. The largest problem in the household sector is non-performing foreign currency mortgage loans, mostly denominated in Swiss francs. Finally, risks are also rising in the municipality sector. The debt servicing burden of the sector – predominantly Swiss francs exposure – not only increased due to the persistently strong Swiss franc, but also the expiration of grace periods on principal repayment.

Managing non-performing foreign currency-denominated mortgage loans is a major challenge

Accounting for nearly one-third of the loans to the private sector, foreign currency denominated mortgage loans amounted to close to HUF 5,000 billion in the Hungarian banking system at the end of June 2011. This corresponds to almost 800,000 contracts (nearly 900,000 with the financial intermediaries), but the number of debtors is significantly lower. Loans overdue over 90 days account for 11 percent of foreign currency denominated mortgage loans outstanding, corresponding to 100,000 contracts (140,000 for the entire financial intermediary sector). The ratio of restructured and still performing loans within the portfolio exceeds 6 per cent, corresponding to 55,000 contracts, where the probability of default is considerably higher than in the case of other performing loans. The management of the non-performing foreign currency mortgage loans is one of the banking sector's major challenges.

Early repayment at preferential fixed exchange rates carries a number of risks

The Home Protection and National Protection Plan of the Government contain numerous elements that aim at remedying the problems of borrowers in foreign currency. The temporary exchange rate cap and early repayment at a preferential fixed exchange rate available to borrowers of foreign currency denominated mortgage loans are key elements of the measures. The exchange rate cap may temporarily mitigate high debts servicing burdens; however, after the grace period of favourable fixed exchange rate, participants may encounter even higher monthly instalments than previously. As regards the early repayment at a preferential exchange rate, the scheme may significantly reduce the debt and exchange rate risk of participants. This, however, may involve substantial costs for the banking sector. Higher demand for foreign currency in response to early repayment may affect the exchange rate of the forint adversely. The higher the participation rate in the scheme, the higher the demand for foreign currency. This demand may arise through expectations earlier than the conversation, which may, in turn, substantially increase the debt servicing burden of debtors unable to participate in the programme and, in parallel increase the volume of debt relief of participants and thereby exacerbating banks' losses.

The participation rate, estimated to be 20 percent as most plausible, and maximum 40 percent, is of key importance

The participation rate is of key importance. Many debtors do not have sufficient savings and banks are less inclined to lend in certain customer segments (due to low creditworthiness or insufficient collateral), while technical limits also emerge. Banks are unlikely to compete for debtors with loans overdue for 30-90 days and over 90 days, for customers with restructured loans or loans with a high loan-to-value ratio. Finally, borrowers of mortgage loans combined with other products may also be excluded from the programme. Thus, the debts of these customer segments are not likely to meaningfully shrink due to banks' low inclination to refinance these loans. The above segments altogether, taking into account overlapping, add up to around 60-70 per cent of total foreign currency denominated mortgage loans, meaning that 30-40 per cent, a HUF 1,500-2,000 billion, of the portfolio of foreign currency debt could take advantage of the scheme via loan refinancing. Our estimates, however, suggest that a lower, 20 per cent rate of participation can be expected, as it is not likely that all eligible borrowers will use this opportunity during the available limited time period, particularly in view of the fact that the debt servicing burden of forint loans is not expected to be significantly lower than that of current foreign currency denominated loans. As a consequence, the slow build-down of the remaining substantial foreign currency debt continues to pose problems.

Use of central bank foreign exchange reserves protects foreign currency debtors unable to participate in the scheme and improves the financial system's stability

The central bank is able and willing to offset the adverse impact on the front of the elevated foreign currency demand from the early repayment of foreign currency denominated mortgage loans. This means that the MNB will provide the amount of foreign currency needed for early repayment to the banks from the country's foreign exchange reserves. By doing so, it will moderate debt servicing burden of non-participants, decrease bank losses, and assume the exchange rate risk of households. Despite interventions by the central bank, commercial bank losses may be substantial, reducing their lending capacity, and thereby resulting in real economic costs.

Banks' rapid portfolio cleaning is plausible through partial debt relief

Troubled debtors are unable to prepay their debts due to lack of savings and lack of creditworthiness for loan refinancing. This customer segment remains an acute problem for banks. In the case of many defaulted households, the amount borrowed was not in line with debt servicing capacity (in many cases even documented income was not required; loan approval was based purely on collateral); while others defaulted as a result of the steadily appreciating Swiss franc. These debtors are neither able to honour fully their debts under current levels, nor can multiple restructuring help them. Keeping above mentioned household loans in banks' books and restructuring them continuously decreases transparency (ever-greening) and unnecessarily absorbs bank capacities. This also applies to corporate project loans. Banks should be helped to accelerate portfolio cleaning through writing off or, in certain cases, applying partial debt relief, which will restore customers' solvency and free up lending capacities. This could be incentivised through, among other things, by tightening the loan loss provisioning regulations of restructuring.

Personal bankruptcy is a missing part of an efficient debt management

For non-performing households, neither lifelong efforts can help honour their debt; nor can the Home Protection and National Protection Plan offer long-term solutions. In addition, there are a large number of debtors who owe not only to banks, but also to utilities and the tax authority, etc. In their case, a certain form of competition may arise between creditors and other entities with claims. In certain cases, it may lead to rapid enforcement of claims from debtors that could be otherwise "saved" in the long term (an induced default of debtors). For the above reason, the central bank is proposing the introduction of personal bankruptcy, embedded in the legal practice of many countries. Firstly, it would coordinate the debt collection of creditors, and secondly, it would provide the possibility of acquiring a "clean sheet" for defaulted, but cooperating debtors, with the minimisation of moral hazard.

The profitability and capital position of the domestic banking sector is adequate, but with a very high level of asymmetry among banks

The profitability of the banking sector improved moderately in the first half of the year compared to the same period of last year. Dividend income from abroad accounts for a rising proportion of profit, with a shrinking share of domestic income sources. Only three banks account for nearly 90 per cent of sector-level income, indicating significant asymmetry. The sector-level capital adequacy ratio is adequate, at close to 14 per cent, although it is also characterised by significant asymmetry, as three banks account for 60 per cent of capital buffers.

Considerable deleveraging strengthens the domestic banking system; however, only a decreasing number of banks are adequately prepared for more severe shocks

The domestic banking system has undergone a substantial deleveraging in recent years. The loan-to-deposit ratio of the banking system has decreased, coupled with falling reliance on external funding and FX swaps. The liquidity and capital positions have strengthened. However, the recovering financial system is facing more severe shocks, and only a decreasing number of domestic banks are adequately prepared to face these. Our integrated market and credit risk stress test indicates a capital injection need of approximately HUF 200 billion, which is higher than the results of our stress tests carried out in the past two years, but does not exceed the result of the stress test performed in March 2009. Not only the more severe external shocks, but also the deteriorating capital position, due to bank losses from the early repayment scheme, contribute to the increasing need to raise capital. The liquidity stress tests indicate adequate resilience to shocks; risks persist in case of a frozen FX swap market. The effect of a market disturbance can be mitigated by using the MNB overnight or 3 months swap facilities. Overall, we can conclude that parent bank commitment is gaining importance in relation to capital injections. The European sovereign debt crisis, however, increases the risks that parent banks may force subsidiary banks to deleverage more strongly, rather than providing capital injection.

Banks' willingness to lend has been low, but their lending capacity is also weakening, resulting in restrained corporate lending

The contraction in the corporate lending continues; we expect a turning point only in early 2013, slowing down and increasing the vulnerability of economic growth. The creditless recovery is primarily attributable to supply constraints, where a low willingness to lend is accompanied with deteriorating lending capacity. Banks are less inclined to lend due to the uncertain environment and the mounting stock of non-performing loans. The weak lending capacity is caused by a decreasing capital buffer. The most efficient instrument to reduce supply constraints could be greater share of lending backed by state guarantees, while developing the corporate bond market and creating the legal background of securitisation could be also an option.

The pricing of household loans should be made transparent as early as possible to promote development of the household credit market

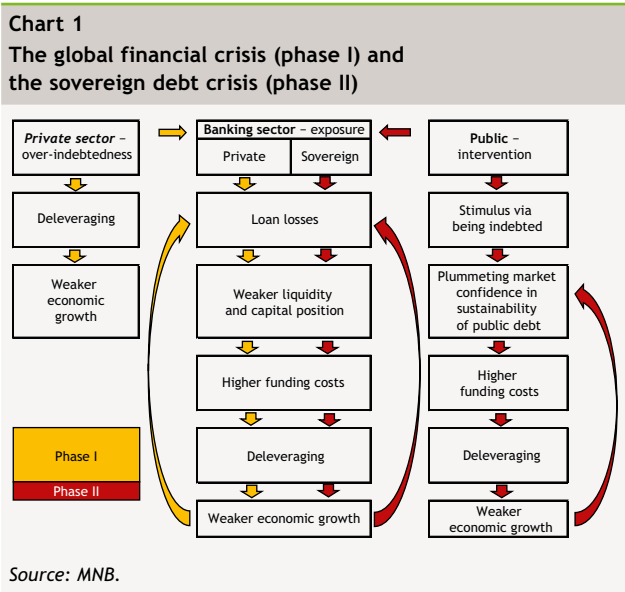
The household credit portfolio is also shrinking at a significant rate. The credit demand of households is very weak, due to strong balance sheet adjustments caused by excessive indebtedness and high debt servicing burdens. An increase in credit demand and meaningful growth in new loan volumes are only expected after 2013. In addition to the strong demand constraints, supply constraints are also emerging, primarily through price conditions. Supply constraints could be alleviated by increasing price competition among banks. The introduction of so-called reference rate based credit products with fixed premia and stimulation of the bank-switching could play a major role in this process.

1 The external environment of the domestic banking sector is deteriorating drastically as a result of the escalating euro area sovereign debt crisis

The global economic outlook and financial stability have significantly worsened since the Report on Financial Stability issued in April 2011. Prompt, effective solutions were not found to resolve the sovereign debt problems in the euro area peripheral countries, leading to an escalation in market turbulence. Rising funding costs caused by the sovereign debt crisis and fiscal consolidation triggered by risks relating to the sustainability of sovereign debts are significantly retarding growth in the European economy. The financial systems of the euro area countries may incur substantial losses as a result of the significant sovereign exposure, leading to very stressed investor sentiment and a confidence crisis. As a result, the risk of an outbreak of a crisis in the global financial and economic system, similar to 2008, has increased.

The worsening external environment negatively affects customers in the domestic financial system in numerous ways. The slowdown in the export markets negatively affects the performance of the Hungarian economy, due to the high level of trade integration. With the escalation of the sovereign debt crisis, investments and domestic demand are being negatively impacted by the strong Swiss franc and the high external funding costs, in particular the high level of FX indebtedness in the private sector. Moreover, the risk of contagion between parent banks and their subsidiaries has also risen, due to strong funding reliance which may result in restrained lending and the withdrawal of foreign funds. As a result of the above developments, the Hungarian economy is only expected to grow at a moderate rate next year, with significant downward risks.

1.1 The sovereign debt crisis increases the risk of a financial crisis and may lead to another recession in the euro area



The sustainability of sovereign debts is at risk in several developed countries. Since the onset of the global economic crisis, developed countries have mobilised unprecedented amounts of funds to restore the economy and the financial system. The negative effects of government overspending escalated starting from early 2010, particularly in European peripheral countries where competitiveness-related problems and in the case of Greece, where previously accumulated debts increased the risk of the unsustainability of debts. At the same time, investors became more sensitive to the sustainability of sovereign debt paths. A sovereign debt crisis emerged in the wake of the global financial crisis. Due to banks' sovereign exposure, focus also shifted to the financial system again (Chart 1).

Prompt, effective solutions were not found to tackle the sovereign debt crisis in the peripheral euro area countries. Governments in the euro area have been aiming to strengthen market confidence with massive austerity measures and the establishment of the European Stability Mechanism, but these steps have proven insufficient (Chart 2). Following the bailout of Ireland and Portugal, Greece once again required aid in the summer of 2011. Amidst protracted political debates and uncertainty, an agreement was eventually reached at the end of July on the second rescue package for Greece, in which private investors will also participate on a voluntary basis (representing a loss of roughly EUR 54 billion up to 2014 and EUR 135 billion through to 2020). Investors, however, were not convinced by the second rescue package as well, and at the same time investor confidence in Italy and Spain also weakened during the summer. Tensions escalated in early August, when Standard & Poor's downgraded the USA following the dispute about the debt ceiling. Following this, many peripheral countries, including Spain and Italy, and banks in these countries were downgraded during the autumn. The sovereign debt crisis, the banking sector's sovereign exposure and mounting concerns about the global economic slowdown reinforced each other and led to tense investor sentiment, reflected in surging risk premia and plummeting asset prices (Chart 3).

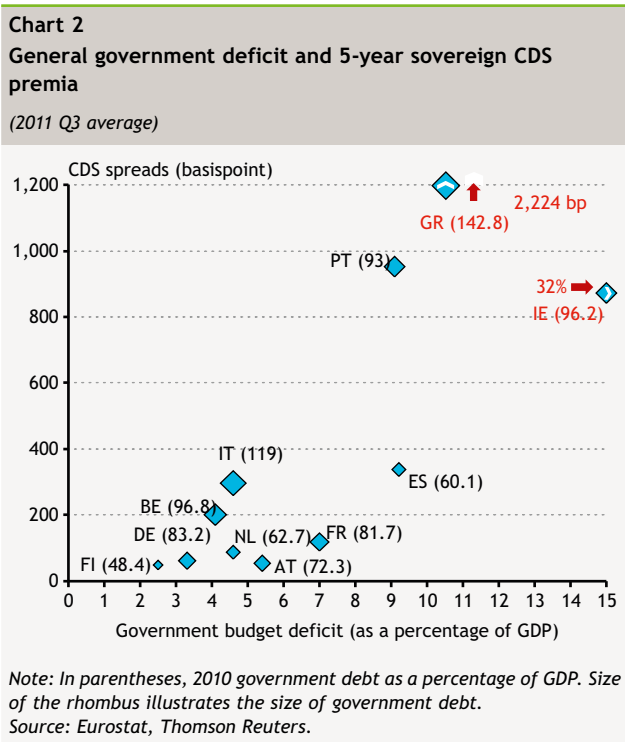
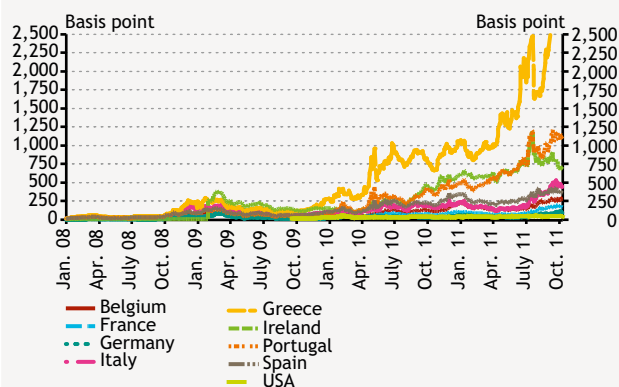


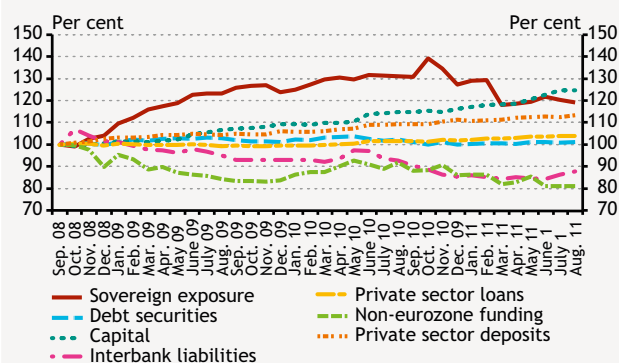
Chart 3
5-year CDS premia



Source: Thomson Reuters.

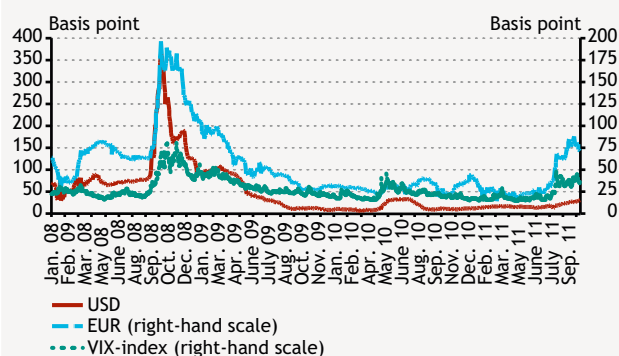
Chart 4
Adjustment of the euro area banking sector during the crisis

(September 2008 = 100)



Source: ECB.

Chart 5
LIBOR-OIS spread and VIX index



Forrás: Thomson Reuters.

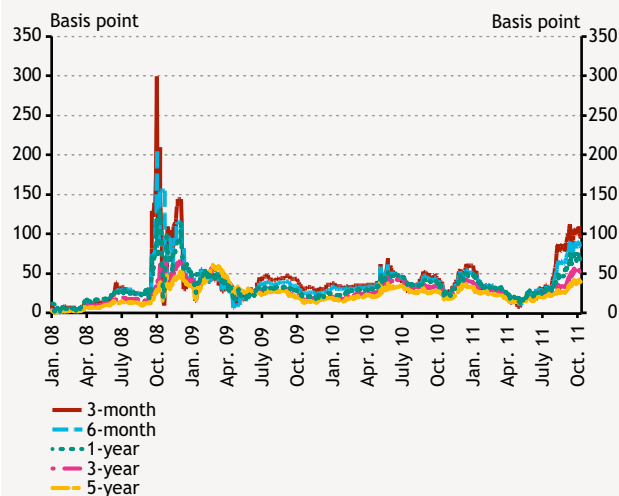
The substantial sovereign exposure of the European banking sectors entails major risks. The worsening crisis at the end of the summer is not attributable to the condition of the financial system, but focus shifted to the liquidity and solvency of the system again, due to the high level of sovereign exposure. Although leverage in the euro area banking sector improved substantially during the crisis (Chart 4) – the Tier-1 ratio approximated 11 per cent, while return on equity was roughly 8 per cent – aggregate sovereign exposure¹ to the peripheral countries accounted for three-fourths of total Tier-1 capital. As a result of concerns related to losses expected on sovereign exposures, significant strains were seen not only in the government securities markets, but also in the swap markets and interbank markets in the euro area (Chart 5).

Banks' funding and roll-over risks have increased significantly in the euro area. Due to the sovereign debt crisis, access to wholesale funding has become more difficult again. Although the banks participating in the European stress test exercise published their sovereign exposure in detail, major tensions have remained in wholesale funding as a result of uncertainty surrounding the expected losses. Signs of stress were also seen on other markets which are important for banks, as premia on the interbank and bank bond markets also surged during the summer. Issues on the bank bond market dropped to a record low between July and September. Banks with ample liquidity prefer to deposit their money with the ECB, instead of the interbank market. US money market funds are also retreating from Europe: so far they have reduced their exposure by approximately 30 per cent in 2011, resulting in intensifying USD financing tensions and increased reliance on EUR/USD swaps (Chart 6). If the current tense conditions persist, several banks may face extraordinary challenges in complying with the Basel III capital and liquidity regulations.

The ECB measures reduce the risk of a renewed confidence crisis from escalating. The ECB switched back to crisis operation in the summer of 2011. First, it relaunched its government securities purchase programme, only used for renewals in the past six months, extending it to Spain and Italy, and then it announced a new covered bond purchase programme starting at the end of autumn. From August 2011 till the beginning of October, the ECB purchased government securities from peripheral countries in a total value of approximately EUR 80 billion (Chart 7). The ECB prolonged its unlimited liquidity measures (with fixed interest rate and further eased eligibility criteria), and re-introduced its 6-month and 1-year liquidity providing

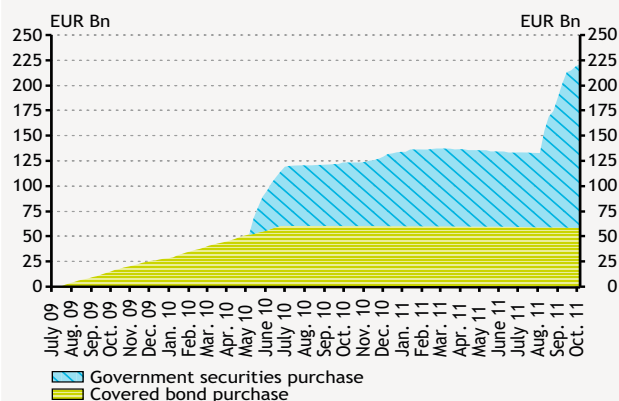
¹ Based on EBA and ECB data for end-2010. Sovereign exposure significantly increased during the crisis with the aim to increase liquidity buffers.

Chart 6
EUR/USD swap spread



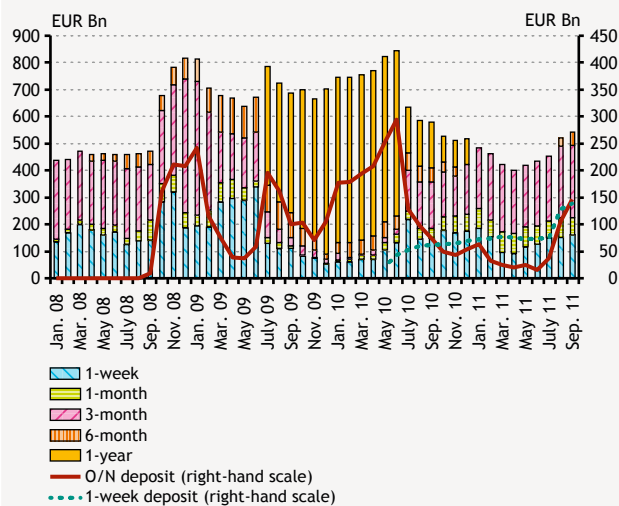
Source: Bloomberg.

Chart 7
Securities purchase programme of the ECB



Source: ECB.

Chart 8
Average monthly usage of ECB instruments



Source: ECB, own calculations.

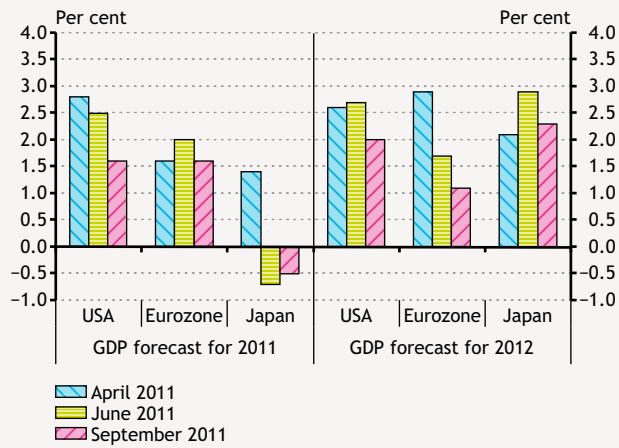
operations in response to the liquidity tensions on the interbank markets (Chart 8). Finally, owing to US dollar funding tensions, in cooperation with several central banks, the ECB offered a 3-month unlimited USD tender in addition to the previously offered two-week tender.

The global economy is slowing down, but there is no recession for the time being. The growth outlook of the developed countries struggling with debt problems has worsened significantly since the spring (Chart 9). Q2 GDP data confirm weakening performance, and analysts' expectations have lowered significantly. The weak domestic demand in developed countries is also affecting the developing countries. Interest rate hikes in the developing countries aimed at curbing excessive lending and inflationary pressure stemming from high raw material prices also undermine domestic demand, which in turn affects the exports of developed countries.

Slowing economic growth further increases the likelihood that the sovereign debt crisis will continue to worsen. Due to the enormous sovereign debts, fiscal policies have very limited room to stimulate the economy. Cutting the fiscal deficits slows down the recovery, increasing the political risks, and at the same time funding costs are not declining. As a result of slower growth and higher funding costs, government debt may in fact become unsustainable in euro area peripheral countries as a self-fulfilling process.

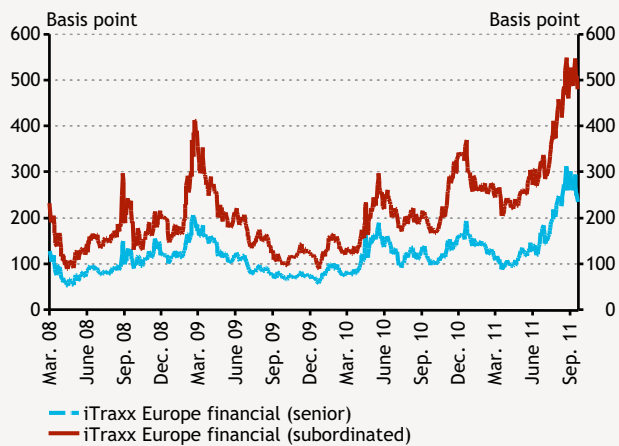
The feedback loop between the banking sector and the real economy may lead to a global recession. Deleveraging in the financial system may strengthen as a result of uncertainty about sovereign debt losses. This may trigger the mechanism of financial acceleration. As a result of loan losses caused by weaker economic growth and losses on sovereign securities, the banking sector may be forced to deleverage by tightening credit supply. Access to market funds becomes more expensive (Chart 10) and limited, due to uncertainty surrounding expected losses on sovereign exposure, further exacerbating the need for adjustment. The negative developments of the banking sector and the real economy may amplify each other leading to a financial and economic crisis. This mechanism may cause an economic recession, as opposed to a slowdown in economic growth due to weaker demand triggered by fiscal policy adjustment.

Chart 9
GDP forecasts of the IMF for developed countries



Source: IMF WEO.

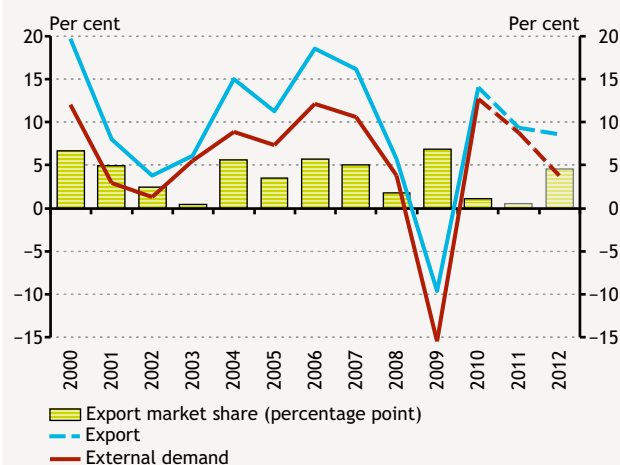
Chart 10
iTraxx (5-year) CDS index for European financial sector



Source: Bloomberg.

1.2 The deteriorating external financial and economic environment affect Hungary negatively in numerous ways

Chart 11
The annual change of the export market share



Source: MNB.

Hungary is particularly exposed to the slowdown in the developed economies which are the country's key export markets. Due to the high level of commercial and financial integration, Hungary is unable to isolate itself from the effects of the sovereign debt crisis in the euro area. As an indicator of the high level of commercial integration, three-fourths of Hungarian exports are destined for the European Union. The worsening economic outlook in these countries was rapidly reflected in the decline in Hungarian exports, which had previously supported recovery from the economic recession. In 2011 Q2, growth in exports slowed significantly, substantially contributing to weaker-than-expected GDP growth. According to the MNB's projections, the decline in external demand will continue in 2012, although falling exports will be partly offset by rising production resulting from large-scale investments launched earlier in the automobile industry (Chart 11).

Unfavourable conditions on the money market also worsen Hungarian economic prospects. Financial contagion may also significantly affect Hungary through a risk premium and the financial integration channel. These channels of contagion were also observed during the crisis in October 2008. Under the current circumstances, however, the source of shocks is the public sector, and not the financial system, and therefore the contagion mechanisms are different (Box 1).

Box 1

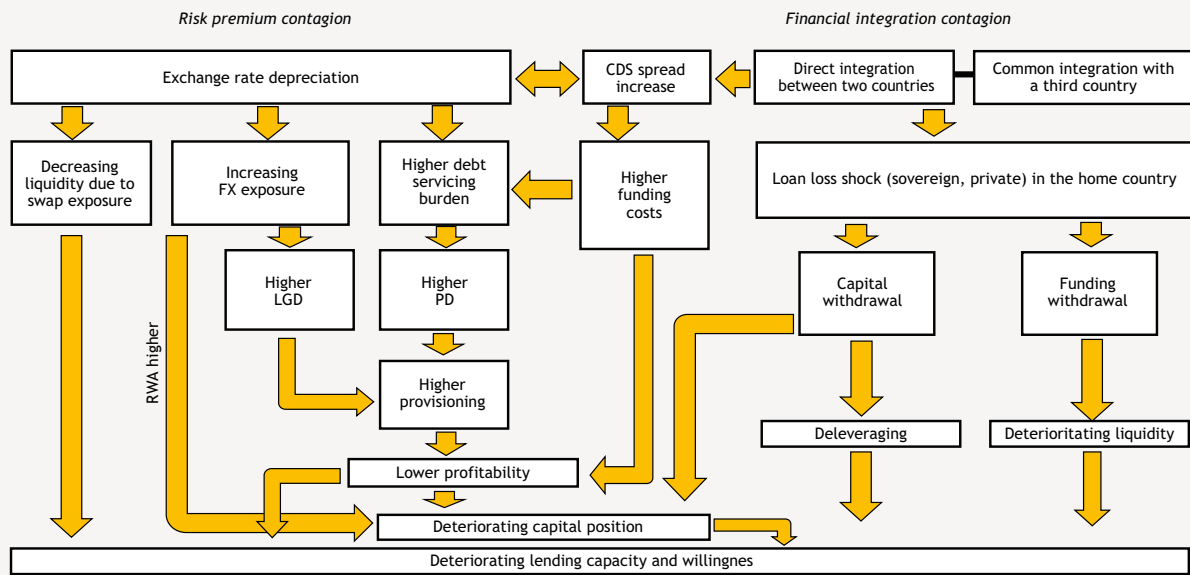
Contagion channels of financial crises

Due to the high level of financial integration and large net external debt, Hungary is quickly and strongly affected by an external financial crisis. Contagion may occur through two basic channels: the risk premium shock and the financial integration channel.

The risk premium shock results in rising external funding costs, generally accompanied by a sudden, significant depreciation of the exchange rate. The risk premium shock can affect the financial system over the short term through a deteriorating liquidity position and over the longer term through declining profitability or – if banks become unprofitable – a worsening capital position.

The liquidity position of the banking sector declines as a result of exchange rate depreciation, as margin requirements – typically payable in foreign exchange – increase. In addition, if the spot exchange rate of the forint weakens compared to the forward exchange rate of maturing FX-swaps, banks are only able to renew maturing transactions with a higher forint liquidity requirement. The negative effect on profitability is partly caused by higher funding costs, resulting in a falling interest margin. Additionally, it is caused by

The risk premium and the financial integration contagion channel



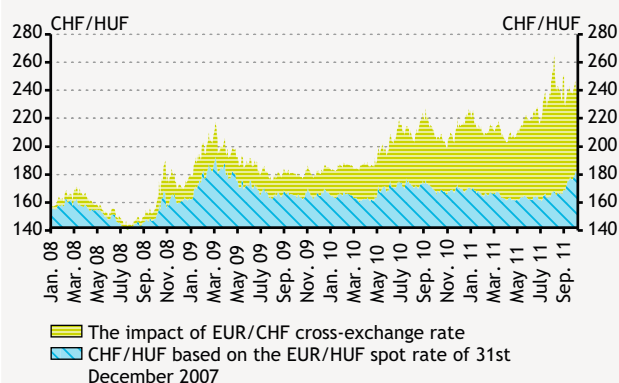
Source: MNB.

portfolio deterioration and the resulting increase in loan losses due to a weakening exchange rate and the pass-through of higher funding costs to customers. Finally, exchange rate depreciation increases risk weighted assets (RWA), thereby increasing the capital requirement (denominator of the capital adequacy ratio).

The financial integration contagion channel is attributed to the direct credit risk exposure of a banking sector (home country) to the banking sector of another country (host country), or – from the point of view of the host country – the reliance on funding and capital of foreign banks. Due to losses from the credit risk shock – including on-balance sheet and off-balance sheet items (CDS) – in the home country, the parent bank may be forced to withdraw funds and capital from the host countries. As a result, the funding and capital position of the subsidiary banks deteriorates and they may need to deleverage, thereby severely affecting the real economy. Due to rising risks, the credit risk shock in the country of the parent bank also increases external funding costs, which also affects the funding costs of subsidiary banks. Moreover, the parent bank may pass part of its loan losses to its subsidiaries. Higher funding costs result in lower profitability through a declining interest margin and the pass-through of costs to customers (portfolio deterioration). The above mechanisms operate similarly if a third country has major exposure to the parent bank’s country and the subsidiary’s country.

Overall, both contagion channels cause a decline in lending capacity which negatively affects the real economy, while rising interest rates attributable to the pass-through of costs adversely affect demand for loans. It is important to emphasise that a close connection exists between the two channels; thus the development of one contagion channel may trigger the other channel and they may reinforce each other, resulting in severe developments.

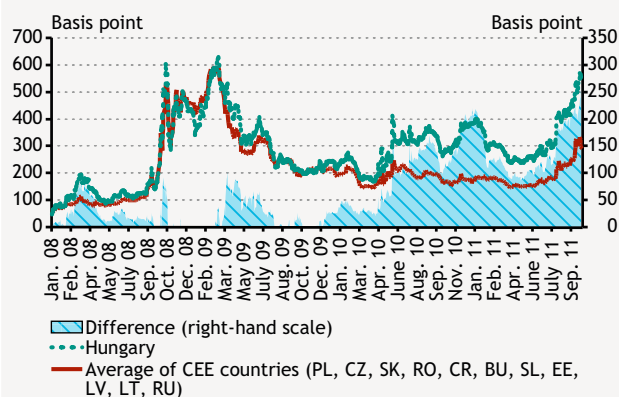
Chart 12
The role of the EUR/CHF cross exchange rate in the CHF/HUF exchange rate



Source: MNB.

The forint weakened significantly, first against the Swiss franc and then against the euro as well in July-September 2011. In the course of the sovereign debt crisis, the Swiss franc – as a safe haven currency – strengthened significantly against the euro and thus also against the forint, while the forint exchange rate remained stable against the euro, which was a marked difference compared to the autumn of 2008 (Chart 12). During the summer, the EUR/CHF cross exchange rate fell to below 1.1, while the CHF/HUF reached, and on several occasions exceeded, 250. In reaction to the steady appreciation of the Swiss franc, in early September The Swiss National Bank set the lower limit of the franc against the euro at 1.2, i.e. it intervenes unlimitedly if the franc strengthens below this exchange rate. In September, the forint also weakened against the euro, from EUR/HUF 270 to EUR/HUF 290, and thus, despite the intervention by The Swiss National Bank, the CHF/HUF exchange rate remained relatively stable at 240.

Chart 13
Relative risk assessment of Hungary based on the 5-year CDS spread

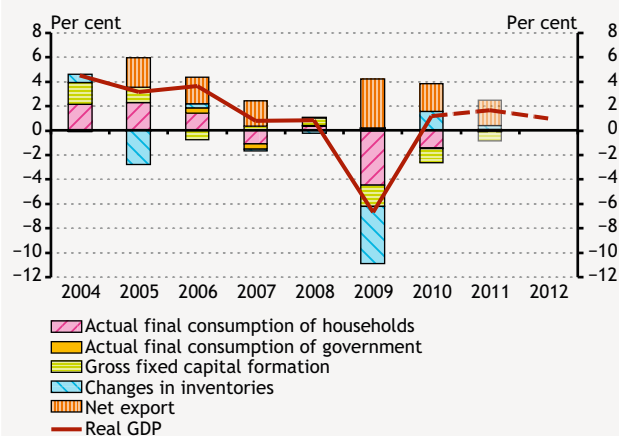


Source: Thomson Reuters.

The strong Swiss franc significantly weakens the lending capacity of banks and curbs domestic demand. The high level of unhedged Swiss franc exposure of households and municipalities and the resulting rise in loan losses results in pressure on the domestic banking sector. In addition, a strong Swiss franc also negatively affects the consumption of households indebted in Swiss franc.

Hungary's high reliance on external funding and its vulnerability due to the strong Swiss franc led to a sharp rise in the sovereign CDS. The Hungarian CDS spread has increased significantly, diverging from its regional peers since the market turbulence in the summer of 2011 (Chart 13). The market is apparently pricing in risks attributed to the region's high net external debt and the open Swiss franc position. A high CDS spread increases external funding costs and leads to higher credit interest rates.

Chart 14
Structure of annual changes in the real GDP



Source: MNB.

The funding channels of parent banks may tighten. Risk of two-way parent bank-subsidary bank contagion resulting from financial integration is increasing. At the same time, in the current sovereign debt crisis, the contagion risk from parent banks is the dominant risk factor (Box 2). Tightened funding channels from parent banks may force domestic subsidiaries to deleverage further.

As a result of external shocks, slower growth is expected with significant downward risks. Weakening external economic conditions and the spill-over to the Hungarian economy substantially worsens Hungarian growth prospects. So far, the sovereign debt crisis has exerted an effect through the risk premium channel, although the risk of financial integration contagion has also increased significantly. The strong Swiss franc owing to the risk

premium channel reduces domestic consumption, while higher funding costs negatively affect investments. Due to these developments, the MNB reduced its annual GDP growth forecast from 2.6 per cent to 1.6 per cent in 2011 and from 2.7 per cent to 1 per cent for 2012 (Chart 14), with significant downside risks.

Box 2

The financial integration contagion channel in Hungary

The risk of financial integration contagion has increased in Hungary due to the sovereign debt crisis in the peripheral euro area countries, as foreign parent banks active in Hungary have considerable sovereign and private sector exposure to these countries, while they account for over two-thirds of the Hungarian banking sector in terms of total assets. Consequently, it is necessary to examine the extent to which the lending capacity, – that is, the profitability, capital and liquidity position – of parent banks with subsidiaries in Hungary is resilient to losses from sovereign exposure and stronger risk aversion.

In the course of its stress test conducted this year, the European Banking Authority published the capital position, profitability and sovereign and private sector exposure of major European banks, including parent banks with a Hungarian market share of over 5 per cent, in a country breakdown. The capital position of parent banks is strong; the Tier-1 (own funds) ratio exceeds 9 per cent for all major parent banks, and even 10 per cent in the case of Bayerische Landesbank, KBC and Erste. All parent banks passed the stress test carried out by the EBA; only UniCredit ended up in the 6-7 per cent Tier-1 ratio range in the stress scenario. We should note, however, that the scenario linked to sovereign losses was regarded as insufficient by the market; the picture would show greater variation with more severe scenarios. In terms of profitability, Raiffeisen Bank and the KBC Group showed high return on equity in 2011 H1, but the return on equity of Italian parent banks fell short of 5 per cent.

In terms of sovereign exposure, among parent banks, Italian parent banks have considerable sovereign exposure to the euro area peripheral countries: the exposure of Intesa Sanpaolo is over double of total Tier-1 capital and nearly one and a half times more in the case of the UniCredit Group. Sovereign exposure, however, is predominantly made up of Italian government securities, while sovereign exposure to Greece only approximates two per cent of own funds. With regard to other parent banks, Bayerische Landesbank and the KBC Group have significant sovereign exposure – in excess of one-third of own funds – in euro area peripheral countries, while Austrian parent banks have moderate exposure.

The characteristics of the parent banks

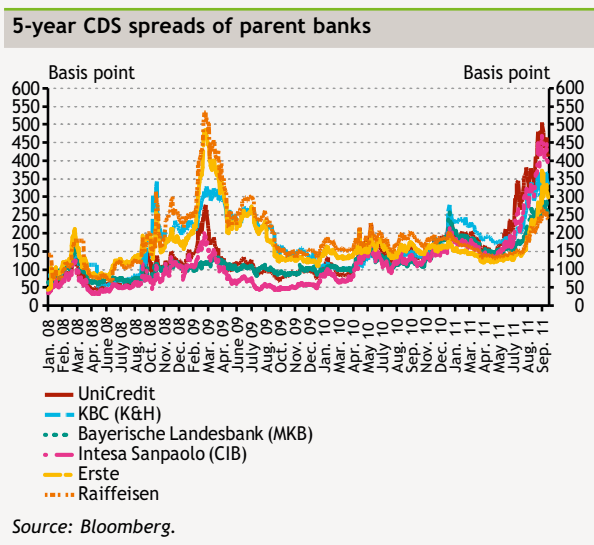
(2010)

Weighted by market share		Intesa Sanpaolo	UniCredit	Bayerische Landesbank	KBC	Erste Group	Raiffeisen
Tier-1 rate		9.4	9.5	11.2	12.4	10.2	9.7
Tier-1 rate (EBA stress-test scenario)		8.9	6.7	7.1	10.0	8.1	7.8
ROE (2011 H1)		4.3	3.1	5.2	18.5	7.7	19.3
As a percentage of total assets	Interbank funding	12.0	8.0	26.3	16.7	9.8	25.7
	Debt securities on liabilities side	18.8	30.6	27.2	10.6	17.5	15.0
	Private sector exposure to euro area periphery	65.0	41.1	4.7	33.9	2.2	4.6
	Private sector exposure to CEE region	3.9	n. a.	0.8	24.8	41.0	60.0
As a percentage of tier-1 capital	Sovereign debt exposure to euro area periphery	226.3	140.4	33.6	46.2	11.7	6.0
	Sovereign debt exposure to CEE region	5.0	25.1	17.7	137.3	124.1	85.6

Note: Euro area periphery includes Greece, Portugal, Ireland, Spain and Italy.

Source: EBA, Bankscope, Bloomberg.

Expected losses incurred on sovereign exposures are priced by the market in risk premia which significantly increase roll-over risks. The CDS premia of Italian parent banks rose 200-250 basis points, while the premia of parent banks based in other countries increased by an average of 100 basis points. Parent banks are heavily reliant on wholesale funding; an average of one-third of their funds is of this sort. Market funds with longer maturities (bonds) play a more prominent role to UniCredit and Bayerische Landesbank (25-30 per cent of funds), for which investors demand a significant risk premium. An average of 30-40 per cent of the bonds issued by parent banks matures by 2013. Tension in US dollar funding is an additional relevant risk factor. US money market funds significantly reduced their exposure to the European banking sector due to their growing risk aversion, principally to banking sectors in the peripheral countries.



2 Government intervention to resolve the FX debt problem of debtors significantly changed the domestic operating environment of the Hungarian financial intermediary system

The principal objective of the Government's steps directly affecting the financial intermediary system is to ease the repayment burden of and mitigate the exchange risks borne by debtors, which, in turn, may also reduce the country's vulnerability. The exchange rate cap and prepayment at a preferential fixed exchange rate available to borrowers of foreign currency denominated mortgage loans are key elements in terms of financial stability. The exchange rate cap can temporarily manage the problem arising from high debt servicing burdens, but after the grace period, customers may encounter higher monthly instalments than the previous levels. With respect to foreign currency denominated mortgage loans, early repayment at a fixed preferential exchange rate may significantly reduce the debt burden and eliminate exchange rate risk of participants of the scheme. At the same time, early repayment may exert pressure on the forint exchange rate before the commencement of repayments, possibly resulting in higher debt servicing burdens on debtors who cannot participate in the scheme. In order to prevent the development of such a scenario, the central bank, by tapping its foreign exchange reserves, makes available to the domestic banking sector the amount of foreign currency needed for the full repayment of foreign currency denominated mortgage loans. If during the early repayment of the foreign currency loans the banks use the country's foreign exchange reserves to repay their short-term foreign debts, vulnerability will not increase considerably. However, early repayment at a preferential fixed exchange rate will result in a substantial one-off loss for the banking sector, causing a decline in its capital position and lending capacity. This may, through additional deleveraging, result in significant real economic costs.

The Government has adopted numerous new regulations affecting the financial intermediary system. Two government packages (the "Home Protection" and the "National Protection" packages) have been adopted since the publication of the April issue of the Report on Financial Stability, aimed at improving the position of households with foreign currency denominated loans. In both cases, the main objective is to reduce the debt service burden of households to prevent future defaults and manage current customers experiencing difficulties.

The exchange rate cap is the key element of the Home Protection package. On 30 May 2011, the Government and the Hungarian Banking Association announced an agreement relating to the "Home Protection" measures that represented the first steps to assist debtors. The key points of the programme are the possibility of debt servicing at a fixed exchange rate, lower than current market rates for 3 years, the setup of National Asset Management Ltd., lifting

Measure	Purpose of the measure
Exchange rate cap	Debtors of performing FX loans may apply for participation in the scheme until the end of 2011, pursuant to which they may repay their loans at preferential rates (HUF/CHF 180, HUF/EUR 250, HUF/JPY 2) during the period of the exchange rate fix lasting until the end of 2014.
Establishment of a National Asset Management Company	The purpose of the established company is to purchase bad loans. The former debtor can stay as a tenant in the property.
Lifting of the moratorium by the introduction of quotas	Gradual lifting of the former ban on distressed sales through increasing quotas (2 per cent of residential properties are allowed to be sold in the final quarter of 2011, 3 per cent per quarter in 2012, 4 per cent per quarter in 2013 and 5 per cent per quarter in 2014).
Resumption of lending in FX	FX loans to applicants with income exceeding 15 times the minimum wage and denominated in FX.
Encouraging residential downshifting and low cost housing	Reducing loan repayments or loan debt of the debtor's by moving into a smaller property.

Source: MNB.

of the foreclosure and eviction moratorium with the introduction of auction quotas, support of the change of dwellings, and the reintroduction of foreign currency lending with very tight credit conditions (Table 1).

The Home Protection package is only able to slow the rise in non-performing loans on a temporary basis. The most important step among the measures of the first package is the lifting of the moratorium, as this is essential for the cleaning the portfolio of accumulated problem loans. The possibility of fixing the exchange rate is a form of restructuring, with relatively more favourable conditions than general market ones. This may offer a viable option primarily for those who are hardly able to pay their instalments or fall just barely short of being able to pay. The introduction of the exchange rate cap implicitly assumes that the exchange rate will be better at the end of the transitional period, and therefore, if the exchange rate remains unchanged, the scheme is only able to postpone defaults over time.

Measure	Purpose of the measure
Possibilities for repayment at preferential exchange rate	The customers could repay their FX mortgages at preferential exchange rates (180 HUF/CHF, 250 HUF/EUR, 2 HUF/JPY). Deadline for applications for participation in the scheme is 31 December 2011, and debtors have to repay their debt within 60 days from the date of the submission of the application.
Complete credit register	The positive debtors' list will also apply to households.
Anchoring loans' interest rates to a reference rate	Lending at a fixed or benchmark interest rate will be mandatory in the banking sector. Interest margins stay unchanged over the maturity period.
Ceiling the APR	The annual percentage rate (APR) is capped at 30 per cent, which is meant to curb and contain usury.
Costs raising in HUF can only be transferred in HUF also in case of FX loans	In the case of FX and FX-based loans only charges and fees directly related to the raising and maintaining of FX funds are allowed.

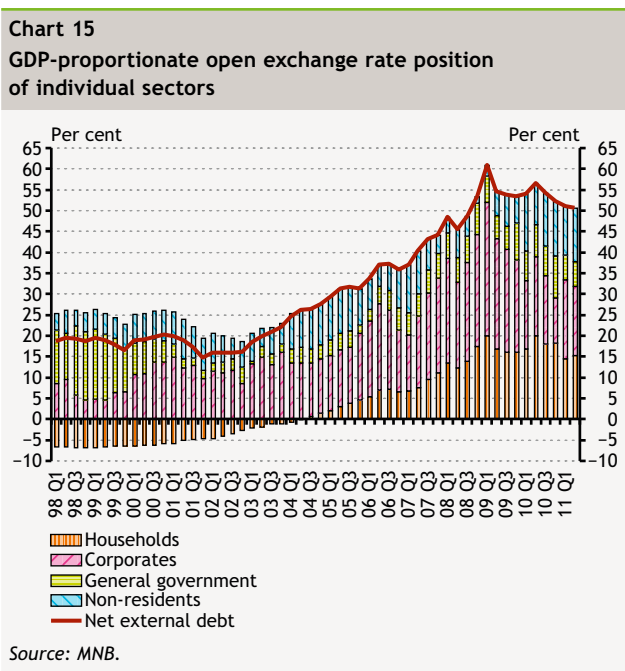
Source: MNB.

Several elements of the “National Protection” package announced in September result in the implementation of earlier central bank proposals. Of the six elements of the package of measures announced in mid-September, five contain regulations related to the operation of the domestic banking sector (Table 2). Among these, the requirement of the complete household credit register (its legislative regulation has been prepared) and the requirement of pricing linked to the reference interest rate are steps moving in the direction of regulation proposed by the central bank which may significantly contribute to strengthening financial stability.

The option of repaying foreign currency mortgage loans at fixed exchange rates is the key element of the package. Debtors with foreign currency denominated mortgage loans may repay their total debt (total prepayment) at an exchange rate of CHF/HUF 180 for Swiss franc denominated loans, EUR/HUF 250 for euro denominated loans and JPY/HUF 2 for Japanese yen denominated loans. The Government provides this opportunity only on a temporary basis. To our current knowledge, the statement relating to the intention of repayment must be submitted by the end of 2011 and 60 days are available thereafter to conduct the transaction.

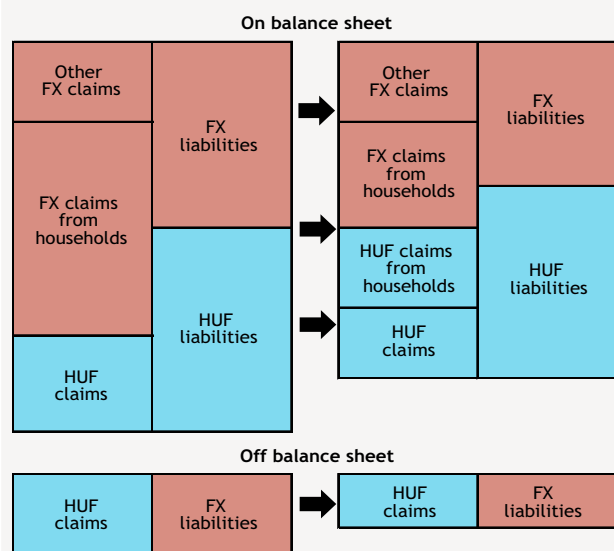
Substantial early repayment is only possible through loan refinancing. The early repayment of foreign currency denominated mortgage loans has two possible sources: personal savings or new borrowing. In view of domestic saving patterns, only a small portion of customers would be able to repay loans without borrowing, thus a substantial volume of early repayment is expected only through loan refinancing. The latter, according to regulations in force, is only possible through a new forint denominated loan, corresponding to the conversion of foreign exchange loans to forint denominated loans.²

Redenomination of foreign currency loans involves major cost transfers. Customers are inclined to convert their previous foreign currency denominated loan typically if debt service burden of the new forint loan is lower than that of the previous loan. This means that the Government or banks would have to assume costs arising from the foreign currency and forint interest rate differential or the exchange rates that are more favourable than market rates. The current programme exemplifies this: households can repay their loans at levels that are more favourable than the current exchange rates, and costs arising from the exchange rate difference must be incurred entirely by the banking sector.



² According to Government Decree 361/2009 (XII. 30.), Swiss franc loans are convertible to euro or forint loans, but this possibility does not pertain to early repayment at a preferential exchange rate, according to Act CXXX/2011. (X. 14).

Chart 16
Changes in the schematic balance sheet of the banking sector upon partial conversion of household foreign exchange mortgage loans to forints or their early repayment, if both the central bank and foreign entities take the net open FX position of households

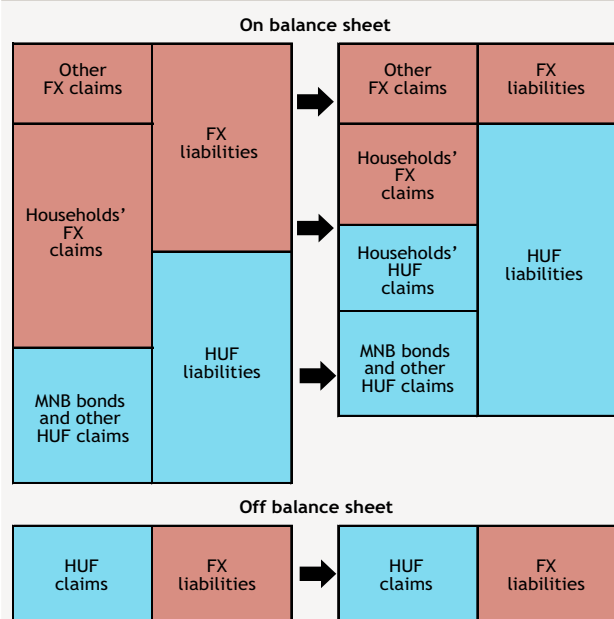


Note: Assuming a 20 per cent participation ratio, early repayment is made with forint-denominated loans and debt after early repayment decreases by 20 per cent.
Source: MNB.

The exchange rate risk cannot be eliminated – someone has to assume it from households. In addition to the cost transfer, conversion and early repayment also result in an exchange rate risk transfer. Customers or banks need to buy foreign currency for forints on the foreign exchange market that is necessary for the early repayment of the foreign currency mortgage loans; this may affect the exchange rate of the forint. This means that the open foreign exchange position of households cannot be eliminated; another sector needs to assume the open foreign exchange position of households up to its closing, through the sale of foreign currency (Chart 15). Banks are unable to assume the exchange rate risk, as due to the high capital requirement of an open exchange rate position, they need to close their on-balance sheet open position by off-balance sheet items. Non-residents, however, would provide such quantity of foreign exchange to residents only with a higher interest rate or a weaker exchange rate. In this case, the on-balance sheet and off-balance sheet position of the banking sector changes (Chart 16).

Foreign exchange demand may rise due to expectations well before the commencement of prepayment of foreign exchange loans. The higher the ratio of participation in the programme, the higher the possible volume of the foreign exchange transaction related to early repayment and thereby the impact on the forint exchange rate via foreign currency demand. Foreign exchange demand, however, may arise due to expectations well before the commencement of prepayment of foreign exchange loans. In addition, the domestic banking sector has an open foreign exchange position in economic terms, as the amount of loss is determined by the future exchange rate on the market, applied to early repayment. In hedging the position prior to the early repayment transaction, i.e. assuming a position against the forint, the banking sector may also affect the forint exchange rate.

Chart 17
Changes in the schematic balance sheet of the banking sector upon partial conversion of household foreign exchange mortgage loans to forints or their early repayment, if only the central bank takes over the net open FX position of households



Note: Assuming a 20 per cent participation ratio, early repayment is made with forint denominated loans and debt after early repayment decreases by 20 per cent.
Source: MNB.

By using its foreign currency reserves, the central bank can mitigate the increasing foreign currency demand stemming from early repayments, but it implies that the MNB also assumes the open foreign exchange position of households. By making available its foreign exchange reserves, the central bank can eliminate the exchange rate effect stemming from additional foreign currency demand (Box 3). If the central bank assumes the open foreign exchange position of households, the open exchange rate position of consolidated general government will sharply increase, as foreign currency debts will not change, but foreign exchange reserves will decrease. When the central bank supplies foreign currency to banks with foreign currency mortgage loans via its foreign exchange reserves, it reduces MNB-bills outstanding on a systemic level, and –

assuming that total HUF assets held by non-residents does not change – reduces the balance sheet total, while the total net outstanding swaps of the banking sector against the forint remains unchanged (Chart 17).

Box 3

Partial deployment of the foreign exchange reserves for mitigating the risk of the early repayment scheme

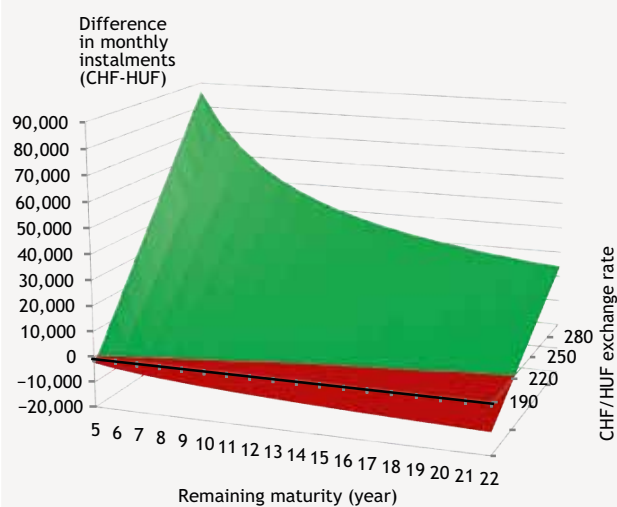
A new instrument was launched by the MNB on 3 October 2011. It offers to sell euro for forint to counterparties. The decision was justified by the potentially high foreign currency demand of banks in connection with the early repayment scheme of foreign currency loans. The scheme could have resulted in a substantial increase in the EUR/HUF exchange rate and its volatility on the interbank foreign exchange market. While the purchase of the required amount of foreign currency has a weakening effect on the forint in itself, a great deal of additional speculative forint sale transactions could have taken place, which would have increased the negative effect on the exchange rate of the Hungarian currency. Since such trends would have had an adverse effect on both inflation and financial stability, the Monetary Council decided that the MNB should satisfy the euro needs arising due to early repayments from its foreign exchange reserves in order to prevent an excessive weakening of the forint (i.e. induced by speculation and hence of a greater extent than justified by actual transactional needs). The purposes of the MNB's programme are thus to reduce the sudden foreign currency demand related to early repayment and alleviate its negative impact on the exchange rate of the forint by the partial deployment of its foreign exchange reserves. Through its programme, the MNB also wishes to encourage banks to reduce their short-term external liabilities in the first place, as this should reduce the country's financial vulnerability. This would in turn counterbalance the effect of drop in the country's foreign exchange reserves.

The tender will be announced regularly, i.e. on a weekly basis or more frequently if required, until 29 February 2012. The maximum amount of foreign currency available at the tenders to each credit institution shall be equal to the total amount of their respective housing and home equity loans, denominated in foreign currencies, outstanding to households as at 31 August 2011. On the announcement of individual tenders, the MNB will not determine the amount to be allotted; the acceptance of bids will essentially be based on the exchange rates submitted: once the bids have been ranked, they shall be allotted starting with the highest EUR/HUF exchange rate bid. Each accepted bid shall be allotted at the submitted exchange rate (multiple price auction method). The window open for banks to submit bids shall be between 11:15 a.m. and 11:30 a.m. on the days tenders are announced. Results shall be announced at 12:00 a.m., when the MNB publishes the lowest approved EUR/HUF exchange rate. Of the amount approved at the tenders, the MNB will provide information on a monthly basis, simultaneously with the preliminary publication of the statistical balance sheet of the MNB.

As eligibility criteria, credit institutions shall provide information to the MNB on the amounts of the early repayment demands received and the early repayments completed, the loans provided in order to replace foreign currency loans and the foreign liabilities repaid due to the early repayments completed. The latter is required as the credit institutions participating in the tender shall also commit themselves to first repay short-term (12 months or shorter) foreign liabilities according to remaining maturity whenever foreign liabilities are repaid due to early repayments. The completed early repayments need to be monitored as credit institutions shall actually receive the foreign currency allotted to them only following completion of the early repayment; until such date, it will be rolled over by the MNB in spot/next EUR/HUF FX swaps. Credit institutions shall convert back all their unused foreign currency allotment to forint with the MNB between 1 and 14 March 2012. Such amounts shall be repurchased by the MNB at the exchange rate the euro was originally purchased from the MNB in order to avoid that credit institutions bear the risk of any changes in the EUR/HUF exchange rate between the two dates.

The early repayment scheme may appeal to a significant portion of debtors. The current discount is so large that customers with savings may be quite inclined to participate in the scheme. Several factors need to be considered in relation to loan refinancing. The customer may be encouraged to replace the loan if the debt service burden would be lower than the current one. At the current

Chart 18
Difference between instalments of CHF and forint mortgage loans, depending on remaining maturity and the exchange rate of the Swiss franc



Note: 40,000 CHF loans, Swiss franc loan APRC = 8%, HUF APRC = 11%.
Source: MNB.

interest rate levels, conversion to a forint loan may be more favourable if the remaining maturity of the loan is relatively short (Chart 18), thereby resulting in a smaller impact of the interest rate differential. If remaining maturity is relatively longer, than the instalment will not necessarily be smaller and therefore the client's debt service capacity will not improve either. Obviously, customers' exchange rate expectations can play also an important role in this decision, particularly in view of extremely high volatility observed in the past. Because with conversion, the borrower is freed of the exchange rate risk, which markedly facilitates the planning of debt service burdens. As an additional argument in favour of loan refinancing, the outstanding debt may be significantly reduced both nominally and relatively to the collateral (i.e. property value). Lower outstanding debt would provide better opportunities for a repayment in the future, and would result in higher ownership equity in the event of a default. Overall, clients' demand may be high, but supply restrains participation in the programme.

Participants in the banking sector have different interests in connection with loan refinancing. Banking sector agents may prefer a participation ratio as low as possible for two reasons: firstly, the programme causes a substantial one-off loss, and secondly, the opportunity is likely to mainly attract good debtors; that is, early repayment on a massive scale would erode their profits expected in the long term. Thus, banks with major foreign currency mortgage loan portfolios are not likely to initiate the refinancing of foreign currency mortgage loans with forint-denominated loans. One sign of this is that after the regulation came into effect many large banks significantly raised the interest rates on their forint-denominated mortgage loans. However, banks and co-operative credit institutions with a significantly smaller foreign currency denominated portfolio and ample forint funding may have an interest in building up a forint portfolio. These institutions may foster competition in mortgage lending, which may prompt all agents to facilitate refinancing so that creditors can keep part of their clients.

A large number of customers will not be able to benefit from the scheme through loan refinancing. Total foreign currency denominated mortgage loans in the banking sector (including bank branches) amounted to HUF 5,000 billion (Table 3), predominantly consisting of loans denominated in Swiss franc. Most of these loans are theoretically eligible, as these loans were extended almost exclusively in periods when the forint was stronger than the CHF/HUF 180 criteria (Table 4). Full refinancing of Japanese yen denominated loans is also possible (Table 5). Only a negligible portion of euro denominated loans,

Table 3
Main characteristics of foreign exchange mortgage loans in the banking sector at the end of June 2011

HUF Bn	Outstanding amount	In the share of the outstanding amount
Total outstanding amount of FX mortgage loans	4,867	100
from which EUR	422	9
from which CHF	4,300	88
from which JPY	145	3
from which combined product	577	12
from which in up to 90 days delay	549	11
from which in 30-90 days delay	256	5
from which restructured well performing	491	10
from which LTV over 90 per cent	1,759	36

Source: MNB.

Table 4
Distribution of the exchange rate of CHF-denominated loans in the banking sector based on the date of the loan contract

Exchange rate bands		January 2004–July 2011 period, share within new contracts
140	150	10.1%
150	160	51.3%
160	170	25.5%
170	180	10.9%
180	190	1.4%
190	200	0.2%
above 200		0.6%

Source: MNB.

Table 5
Distribution of the exchange rate of JPY-denominated loans in the banking sector based on the date of the loan contract

Exchange rate bands		October 2007–October 2008 period, share within new contracts
1.3	1.4	7.1%
1.4	1.5	11.2%
1.5	1.6	57.5%
1.6	1.7	21.6%
above 1.7		2.7%

Source: MNB.

Table 6
Distribution of the exchange rate of EUR-denominated loans in the banking sector based on the date of the loan contract

Exchange rate bands		January 2004–July 2011 period, share within new contracts
230	240	0.3%
240	250	7.9%
250	260	5.8%
260	270	28.6%
270	280	30.9%
above 280		26.6%

Source: MNB.

however, were extended at an exchange rate lower than EUR/HUF 250 (Table 6), and thus our estimates do not include refinancing of EUR-denominated loans. In estimating the number of customers effecting repayment via loan refinancing, we assumed that banks are not likely to compete for debtors with low creditworthiness. It is assumed that banks will not compete for debtors with loans currently overdue over 90 days (11 per cent of the loan portfolio), customers with loans overdue between 30 and 90 days (5 per cent of the loan portfolio), customers with restructured loans (10 per cent of the loan portfolio) or customers with a high loan-to-value ratio (customers with an LTV of over 90 per cent account for 30-40 per cent of the loan portfolio). Troubled debtors are unable to repay their debts due to insufficient savings; moreover they have little prospect of refinancing their existing loans with forint loans. Thus, this customer segment remains an acute problem. In addition to debtors with poor creditworthiness, various combined (unit-linked, housing savings fund linked) products cannot be deemed convertible either (10 per cent of the loan portfolio). Thus, altogether the above segments, taking into account overlapping, add up to around 60-70 per cent of total foreign currency denominated mortgage loans, meaning that 30-40 per cent, or approximately HUF 1,500-2,000 billion, of the portfolio of foreign currency debt could benefit from the scheme through loan refinancing.

Prudent lending may also limit loan refinancing. The LTV limits in the decree on prudent lending adopted in 2009 do not apply to loan refinancing, but banks need to set creditworthiness limits based on households' debt service burden capacities. According to earlier practices, loans were granted purely on the basis of collateral. In the absence of adequate documented income, a substantial portion of customers may not be eligible for new lending, which would further decrease the participation rate via loan refinancing.

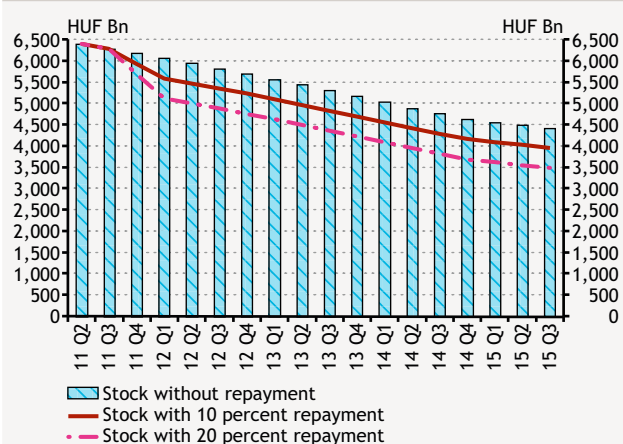
The time limit on the scheme also reduces the possible number of participants. In our opinion, only a fraction of the clients who are creditworthy for loan refinancing will replace their loans due to the short deadline noted above. From 2007 to 2008, in the period with the largest increase in mortgage lending, on average HUF 200-300 billion was granted on a quarterly basis. If customers with larger loan amounts make up a dominant portion of customers in the scheme (Table 7), this may lead to a larger amount of loan refinancing. Notwithstanding the above, we estimate a participation ratio of only 15-20 per cent due to infrastructure capacity limits.

Table 7
Distribution of foreign exchange mortgage loans based on amount

Outstanding amount of FX mortgage loan	Contracts		Outstanding amount	
	share	pcs	share	HUF Bn
Under 2.5 million	14.4%	114,867	3.4%	167
Between 2.5–5 million	31.9%	255,046	17.6%	857
Between 5–7.5 million	24.1%	192,706	22.6%	1,100
Between 7.5–10 million	12.3%	98,220	16.4%	797
Between 10–15 million	11.0%	87,900	20.0%	973
Between 15–20 million	3.7%	29,714	9.6%	466
Between 20–30 million	2.1%	16,628	7.2%	351
Above 30 million	0.6%	4,919	3.2%	156
Sum	100.0%	800,000	100.0%	4,867

Source: MNB estimate.

Chart 19
Decline in the foreign exchange loans of Hungarian households



Source: MNB.

Early repayment may substantially restrain lending.

Gradually conversion of foreign currency loans into forint results basically in reducing vulnerability.³ The scheme reduces the debts (Chart 19) and exchange rate exposure of households and lowers reliance on external funding. At the same time, the programme also involves risks. The losses incurred by the banking sector and thus the declining capital buffers may result in further deleveraging and restrained lending. Hence, early repayment does not offer a genuine alternative for problematic customers. Moreover, if the forint exchange rate weakens, their debt service burdens may increase even more. The institution of personal bankruptcy, however, might help mitigate the problem of non-performing loans (Box 4).

Box 4

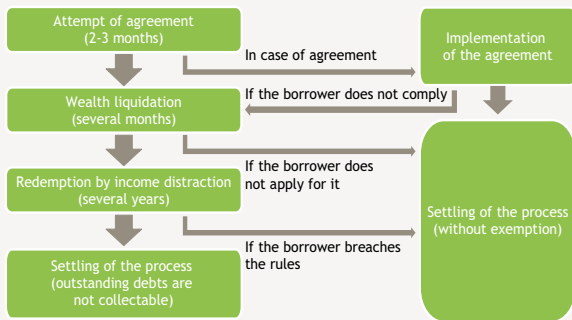
Proposal for the introduction of the institution of personal bankruptcy

The "Home Protection" and "National Protection" programmes of the Government contain support elements for debtors who are partially able to pay the instalments of their mortgage loans and for insolvent debtors as well. These in themselves, however, cannot necessarily effectively remedy the payment problems of mortgage loan borrowers. Moreover, the problems of customers with other debts (unsecured loans, arrears to the government, utilities or other entities) also remain unresolved. According to data of the Central Credit Register, nearly half of troubled mortgage loan borrowers also have 90-day overdue unsecured loan; moreover one-tenth of them have at least three loans. Although accurate data is not available, it is also likely that many borrowers who are unable to service their debts also owe to non-financial institutions. There may be a large number of borrowers whose assets and income do not provide coverage for the repayment of all their debts in the long term either. Any creditor may initiate enforcement of the income or property

³ For details of risks stemming from a rapid conversion, see BALÁS, T. AND M. NAGY: Conversion of foreign currency loans into forints, *MNB Bulletin*, October 2010.

http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbszemle/mnben_mnb_bulletin_october_2010/balas-nagy_EN.pdf.

Schematic process of private bankruptcy



Source: MNB.

rights, including residential property, of indebted persons that may lead to uncoordinated default of debtors, with negative consequences for all parties involved.

The introduction of the institution of personal bankruptcy – which exists in almost all developed market economies – may be adequate to manage the market failures arising from such competition between creditors, which is expected to pick up pace due to the lifting of the eviction moratorium, and to supplement the Home Protection programme. This procedure can support debtors who are partially able to service their debts in restoring their solvency and failed debtors as well in their recovery after insolvency in relation to the full range of debts, in addition to bank loans. The form of personal bankruptcy regulation we have

proposed combines European procedures (maximum acknowledgement of creditor rights, including general government) and American procedures (priority of keeping homes and mortgage loans).

Accordingly, with the institutional arrangement adopted by majority decision, binding for all creditors, the regulation would support cooperation between partially solvent debtors and their creditors, based on mutual benefits and the renegotiation of debts. Although not even personal bankruptcy can “save” debtors who are unable to resolve their problems in this manner, the procedure would offer them the possibility of a new start with a clean sheet. According to the proposal, debtors would be required to provide maximum cooperation, that is, they would satisfy their creditors’ claims to the maximum extent possible under the circumstances, through the sale of their property and the deduction of a large portion of their income for several years. At the end of this personal bankruptcy procedure, however, they may be exempted from any outstanding uncovered debt, which would provide substantial relief compared to the current legislation where, because of a debt spiral, enforcement may trail them throughout their entire life.

Although in international practice, debtors in personal bankruptcy generally also lose their residential property, the procedure we propose aims to ensure that debtors with various debts, who are able to pay the instalments of their mortgage loans, are able to save their mortgage loans and thereby their homes under personal bankruptcy. However, due to the requirement of the protection of creditors, this is possible only if the debtor is able to pay his mortgage loan instalments, waive other possible property, and is partially also able to repay other debts.

Since significant costs are related to asserting claims under the current legislation, assuring low operational costs is desirable during the introduction of personal bankruptcy. In order to achieve this, fees payable for third parties might be regulated, and also the co-ordination of regarding processes could be managed by government sponsored non-profits.

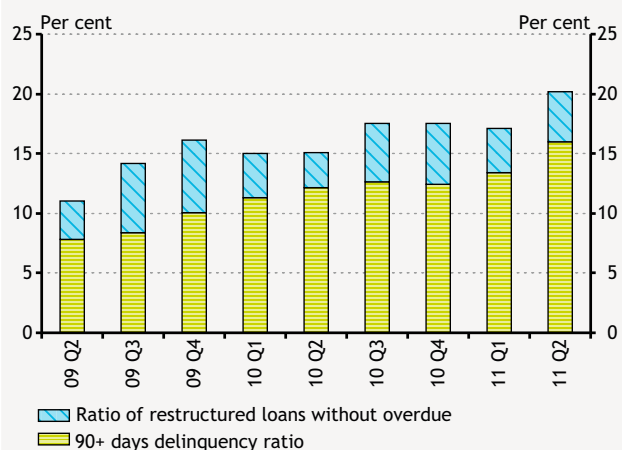
3 The vulnerability of the domestic banking sector is significantly increased by the rapid deterioration of corporate and household credit portfolio quality and the high ratio of non-performing loans

As a result of worsening economic outlook, the slowdown in the deterioration in the ratio of non-performing corporate loans within the portfolio came to an end in 2011 H1, and deterioration accelerated again. The ratio of loans overdue more than 90 days reached 16 per cent by the end of June. Re-default of previously restructured loans played a central role in the increase. Despite the sharp rise in the ratio of non-performing loans, loan loss provisioning declined. The loan loss coverage of the non-performing portfolio is adequate, but with a substantial asymmetry between banks, which is not justified by differences in the composition of the portfolios. In terms of the future, the ratio of non-performing loans will further rise next year, while loan loss provisioning may stagnate.

The quality of the household portfolio continued to deteriorate in 2011 H1, but the pace of deterioration was significantly slower than in the case of corporations. The ratio of loans overdue more than 90 days was 12.7 per cent at the end of the observed period. In parallel with the moderate increase in non-performing loans, loan loss provisioning declined and loan loss coverage rose moderately at the sector level. Behind the adequate loan loss coverage at the banking sector level there is a large deviation between banks, which cannot be explained by the different composition of portfolios. The ratio of non-performing loans within the household sector may further increase in 2012, albeit at a slower pace, while loan loss provisioning may decline at certain banks.

3.1 Rapidly deteriorating corporate credit portfolio

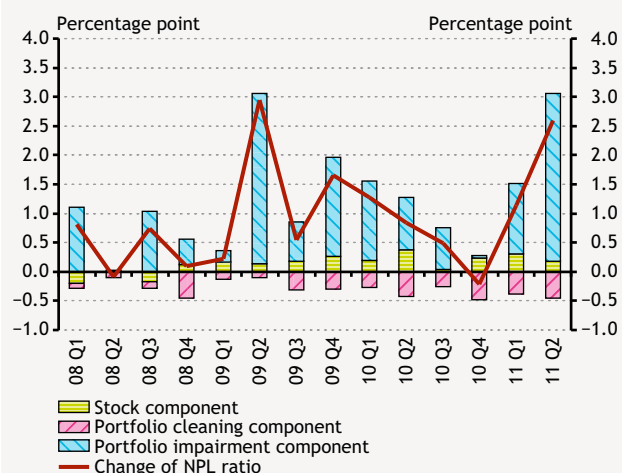
Chart 20
Ratio of impaired corporate loans within total loan portfolio



Source: MNB.

The slowdown in the economic recovery caused by the sovereign debt crisis has resulted in more rapid deterioration in the quality of the corporate credit portfolio. In the corporate segment, loans delinquent by more than 90 days increased by nearly one-fourth in the span of one half year, moderately exceeding 16 per cent of the total portfolio at the end of June (Chart 20). This extreme deterioration is partly attributable to a one-off event, but the increase would have been substantial without it. Although the decline in the total corporate credit portfolio also contributed to the rising ratio of non-performing loans, the increase in overdue loans was the dominant factor (Chart 21).

Chart 21
Factors affecting changes in the ratio of non-performing corporate loans

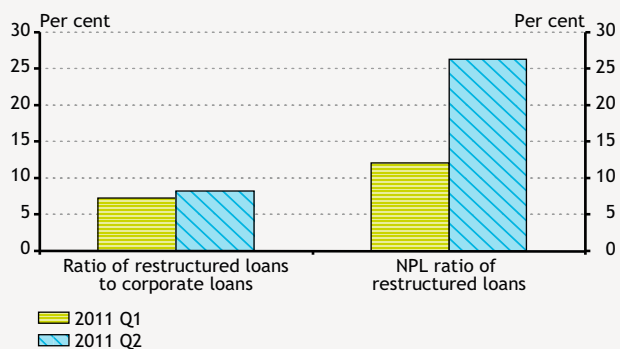


Source: MNB.

The deterioration in portfolio quality is significantly attributable to previously restructured loans becoming non-performing. In assessing the rapid growth of non-performing loans, it is important to distinguish restructured loans. The probability of default on these loans is generally higher and therefore they are more sensitive to worsening economic conditions. The ratio of non-performing loans within the restructured portfolio surged in the second quarter, and by the end of H1, over one quarter of the total renegotiated loan portfolio was overdue by more than 90 days (Chart 22). In previous Reports on Financial Stability, we also noted that if the economy fails to recover substantially, banks may incur major losses on commercial real estate loans, as these loans cannot be restructured *ad infinitum*.

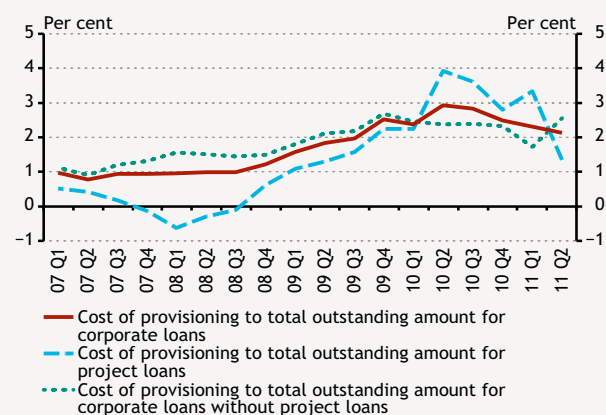
Despite the accelerating rise in non-performing loans, the cost of provisioning to total loans declined further. Despite the faster increase in non-performing loans, the ratio of loan loss provisions to the total outstanding amount decreased to below 2.2 per cent in the first half of 2011 (Chart 23). It is clear that the decline is related to lower provisions accrued for commercial real estate loans, primarily caused by the high base. In 2010 H1, loan loss provisioning was exceptionally high in this portfolio, and thus its absence from the observed one-year period explains the decrease in itself.

Chart 22
Ratio of restructured corporate loans and their performance



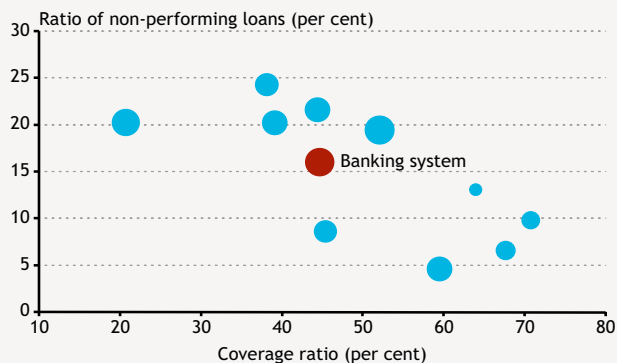
Source: MNB.

Chart 23
Cost of provisioning to total loans in the corporate segment (previous 12 months)



Source: MNB.

Chart 24
Non-performing corporate loans and their loan loss coverage and value of collateral



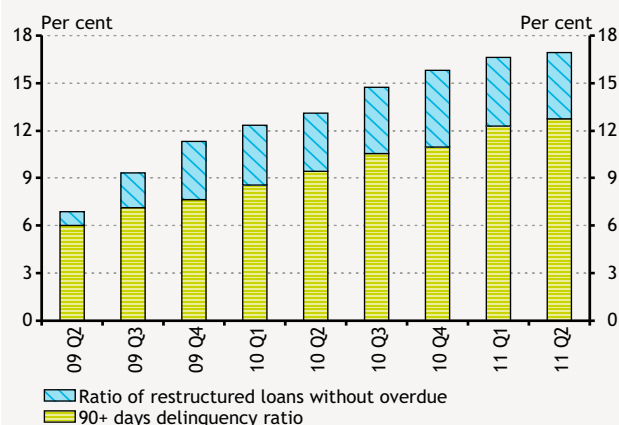
Note: The size of the bubbles indicates the value of coverage for non-performing loans proportionate to total loans. Banks with at least 2 per cent share in corporate lending.

Source: MNB.

Loan loss coverage remained high at the sector level, but the deviation between banks poses risks. The loan loss coverage of the total corporate loan portfolio in the banking sector remained at 45 per cent. There is major asymmetry, however, between banks. Coverage ranges between 20 per cent and 70 per cent among banks with a market share of over 2 per cent in the corporate lending segment (Chart 24). Although there are major variations between the collateral for transactions, the value of collateral does not even reach the average level for most banks with a lower coverage ratio and a higher ratio of non-performing loans than the banking sector average. There is a similarly large deviation in loan loss coverage for project loans. In this case, loan loss coverage for the worst performing portfolios remains below average, which is not in all cases warranted by the value of the collateral. It should be emphasised that the worsening economic outlook particularly negatively affects such projects, possibly requiring considerable additional loan loss provisioning.

3.2 The rise in non-performing loans in the household segment is attributed to the strong CHF

Chart 25
Ratio of non-performing household loans in the banking sector



Source: MNB.

The ratio of non-performing loans in the household segment continued to increase. The repayment ability of households is negatively affected primarily by the high instalments caused by the persistently strong CHF exchange rate and the persistently poor labour market conditions. The income tax modifications introduced this year do not particularly improve the position of troubled borrowers, and thus these did not contribute to halting the portfolio deterioration either. By hindering the cleaning of troubled mortgage loans from the portfolio, the moratorium on evictions also contributed to the high level of non-performing loans. While lifting the moratorium definitely has a positive effect on banks' non-performing loan portfolio, the loan portfolio may decrease only moderately due to the low foreclosure rates. The ratio of non-performing loans to total loans increased from approximately 11 per cent at the end of 2010 to 12.7 per cent (Chart 25), principally due to the deteriorating portfolio, and to a lesser extent, to the declining outstanding amount of loans. A similar increase was observed in delinquency in terms of loan contracts, but its level is lower with 10.9 per cent non-performing loan ratio (Box 5). The above trend emerged despite the rise in the ratio of restructured loans that currently exceeds 10 per cent of the total loan portfolio. However, the increasing NPL ratios are partly attributed to the sharp decline in the rate of portfolio cleaning (Box 6) compared to the period preceding the crisis.

Box 5

Portfolio quality indicators in the household segment

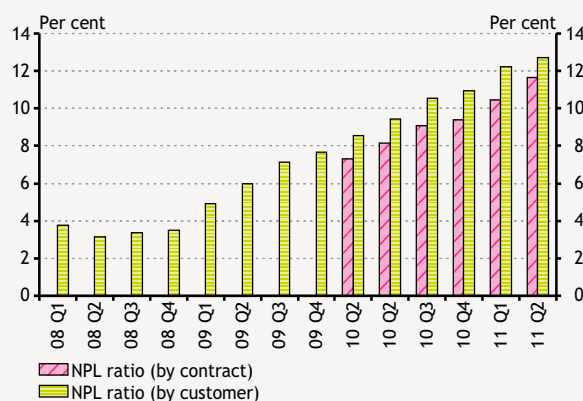
Analysis of the credit portfolio is of key importance for the identification and evaluation of risks in the banking sector. In the process of analysis, several types of indicators can be used; these indicators were discussed in detail in the Background Papers prepared for the Report on Financial Stability issued in November 2009.⁴ As a final conclusion, we found the ratio of loan loss provisioning to total outstanding loans to be the key indicator. In addition, we also consider non-performing loans to total loans (NPL ratio) to be important, particularly as this is the most commonly used indicator in international practice. In the calculations, non-performing loans are most frequently determined in two ways: on the basis of rating categories or delinquency. In the NPL ratio which we publish, loans overdue more than 90 days are deemed to be non-performing. Non-performing loans do not include interest debt; only gross principal debt is considered, in accordance with Hungarian Accounting Standards.

⁴ BALÁS, TAMÁS: Comparison of the indicators describing the loan portfolio quality of the banking sector, *Report on financial stability*, November 2009, http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_stabil/mnben_stab_jel_20091104/stabjel_3_balas_200911_en.pdf.

In the past, we applied a customer view in the calculation of non-performing loans, i.e. if at least one loan of an individual customer fulfils the requirements of an NPL, all loans of the credit institution to the same customer should be considered to be non-performing. Although this approach produces an extremely prudent result, it nevertheless overestimates the real situation, as it fails to take into account that the ability and willingness of the same customer may vary for the different transactions. This may particularly be true in the household segment. In this segment, namely, a borrower may often have uncovered loans in addition to a mortgage loan (e.g. consumer loan or credit card). If his income position worsens or his repayment burden changes, it is possible that he can continue to pay the instalments of the mortgage loan without any problem, while he “lets” the uncovered loan default. Thus, due to an uncovered loan of relatively low value, a mortgage loan of higher value is considered as non-performing. Owing to the expanded range of provided data, individual contract information is now also available in relation to the delinquency of loans. The chart shows that we consistently receive a lower ratio than the value per customer when calculating the ratio of non-performing loans in this manner. Although the two indicators based on the two approaches show a very similar picture in terms of dynamics, we believe that the indicator based on individual contracts better reflects the actual risks related to households. Therefore, in the future we will publish this indicator in addition to the ratio used in the past.

Corporate loans are handled differently. In contrast to households, we think that the customer-based approach better reflects the risks. Default of corporation may lead to bankruptcy that also affects the performance of the other loans of the corporation. For this reason, defaulting on a given transaction may entail more severe consequences. We will therefore use customer-based classification, i.e. loans are classified on the basis of the worst performing transaction.

NPL ratio of household loans in the banking system



Source: MNB.

Box 6

Workout procedure and portfolio cleaning relating to household loans

In addition to the increase in delinquent loans, the significant rise of the ratio of non-performing loans within the household loan portfolio during the recent crisis is also attributable to the slow pace of portfolio cleaning. The accumulation of non-performing loans in banks' balance sheets entails substantial risks, as this may result in additional losses for the banking sector in the event of an adverse macroeconomic scenario (weakening exchange rate, substantial decline in residential property prices). Banks' portfolio cleaning is likely to increase due to the lifting of the eviction and foreclosure moratorium and the introduction of auction quotas, and therefore it is useful to examine developments in recent quarters in terms of banks' workout procedures and portfolio cleaning.

Although sold or written off, problematic claims increased on a nominal level in the past quarters, the decomposition of NPL growth suggests that portfolio cleaning was only able to slow the rise in the ratio of defaulted loans to a moderate degree. The volume of problem loans removed from the balance sheet has decreased in proportion to non-performing loans in comparison to pre-crisis levels, particularly in relation to mortgage loans, where this ratio was approximately 2-3 per cent each quarter.

To understand the relatively slow rate of portfolio cleaning, we should examine what happens to problem loans between their default and their removal from the balance sheet and the length of time between the two events. With regard to a non-performing loan, the first important period extends between the date of default and termination of the loan. In this phase of the workout procedure,⁵ the bank initially attempts to establish contact with the customer and warn him of the default. If the default is not remedied, bank staff or

⁵ For details relating to banks' workout practices, see HOMOLYA, DÁNIEL AND GÁBOR SZIGEL: Banks' households credit collection procedures, *Report on Financial Stability*, November 2009, http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_stabil/mnben_stab_jel_20091104/stabjel_4_homolya_szigel_200911_en.pdf.

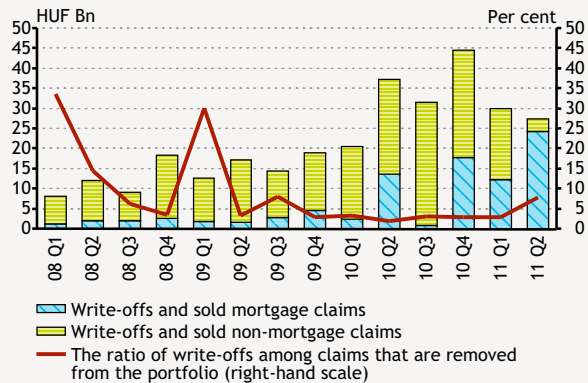
the debt settlement company authorised by the bank contact the customer personally as well and attempt to persuade him to settle the debt. If this alternative is also unsuccessful, it is still possible to restructure the loan, that is, modify the terms of the contract to restore the solvency of the debtor. If this process also fails, the loan agreement is terminated. Prior to the 2008 crisis, typically, 6-7 months elapsed between termination and default; this process, however, has slowed down, increasing to 10-12 months in 2009 and 2010.

The bank has two options after termination of the contract: either it conducts the collection process and attempts to recover its claim, or it sells the debt to a company specialising in debt purchase and collection. In the first case, the transaction ends with the sale of collateral, in the second case, with the sale of the debt. The slowdown in portfolio cleaning can be observed in this phase as well; while an average of 2 months elapsed between termination and sale in 2006 and 2007, this period increased to 9-11 months between 2009 and 2011. Overall, we can conclude that the management of problem loans has lengthened significantly since the outbreak of the recent crisis (2008), both in terms of the period between default and termination and between termination and the write-down or sale of the problem loan.

The slowdown in portfolio cleaning may be related to several factors. Firstly, the number of delinquent loans has increased significantly compared to the levels measured before the 2008 crisis, and the workout departments of banks were not necessarily prepared for this. Secondly, banks demonstrated greater patience with customers and mobilised more resources to restore the solvency of customers, which may have also led to the slowdown of portfolio cleaning. Thirdly, the foreclosure and eviction moratorium in force earlier impeded such actions, and this also prompted banks to wait and see, while keeping problematic loans in the portfolio.

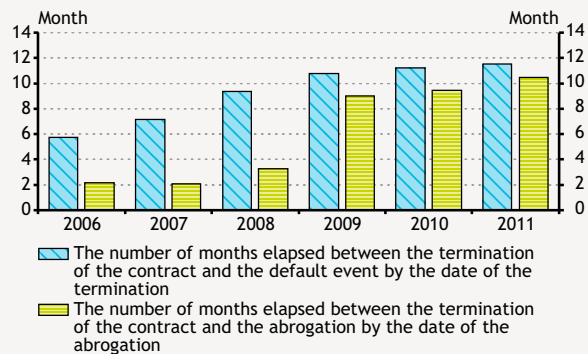
The sale of claims is the dominant form of portfolio cleaning in the banking sector; less than 5 per cent of sold and written off gross loans are derived from write-offs. This is supported by the LGD database of the Association of Hungarian Mortgage Banks,⁶ where the factoring of claims was also dominant in relation to banks contained in the sample. It is important to note, however, that there is considerable asymmetry underlying this trend; the sale of debts is limited to a few banks. We should also add that even with factoring, debt often remains at the bank group, as it is frequently sold to the bank's own factoring company.

The decomposition of claims that are removed from the portfolio



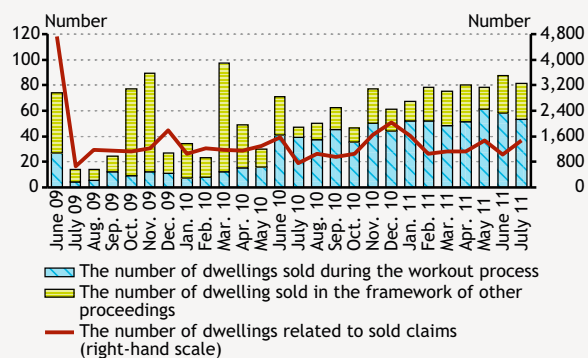
Source: MNB.

The duration of the workout process



Source: LGD database, Association of Hungarian Mortgage Banks.

Number of dwellings removed from the banking sector's portfolio by the method of portfolio cleaning



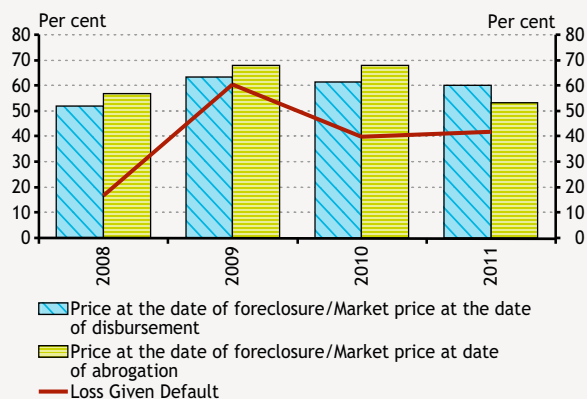
Source: MNB.

⁶ The loss given default (LGD) database comprises loss data related to households' mortgage loans since 2005 anonymously in a primer form. The creation of the database was initiated by the Association of Hungarian Mortgage Banks; the Association collects the data for the participating credit institutions. At present, this is a unique database that comprises data from different banks in Hungary. These data can play an important role in the prudent operation of banks, in pricing loans, in loan loss provisioning and the database can be also prominent in the determination of advanced internal rating-based capital requirement.

The picture emerging from the method of portfolio cleaning does not change upon analysis of the quantity of real estate collateral; a large proportion of real estate serving as collateral is related to claims sold to third parties. The latter amounts to 1,000 – 1,200 properties each month. By contrast, residential properties sold after repossession or other proceedings framework amounted to 60-80. As a sign of difficulties arising in the course of portfolio cleaning, nearly 15,000 properties were in the repossession phase in June 2011 at the banking sector level.

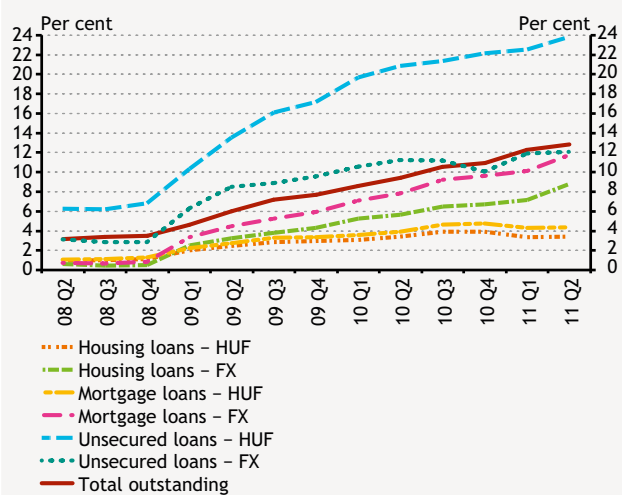
The amount of loss suffered by banks on loans removed from the balance sheet is a key issue in terms of the pace of portfolio cleaning. In relation to factored loans, loss rates have increased significantly during the crisis, possibly attributed to over-supply on the market. Although a foreclosure moratorium was in force in 2010 and 2011 H1, confining auctions conducted in the framework of non-judicial execution, the database of the Association of Hungarian Mortgage Banks contains examples of the auctioning of residential properties serving as collateral and their sale by banks. Although such data should be considered with caution, as the size of the sample is relatively small, available data lead us to conclude that the above residential properties were sold at 50–60 per cent of their market value on the date of disbursement and 55–65 of their estimated market value at the end of the procedure. It is important to note, however, that in the case of these transactions, a small rate of exposure was written off at the time of default, suggesting that auctions were held in relation to relatively well-covered loans.

Average loss given default in the case of factored claims and the ratio of sale and market prices in the case of foreclosed residential properties



Source: LGD database, Association of Hungarian Mortgage Banks.

Chart 26
90+ delinquency ratio of households loans

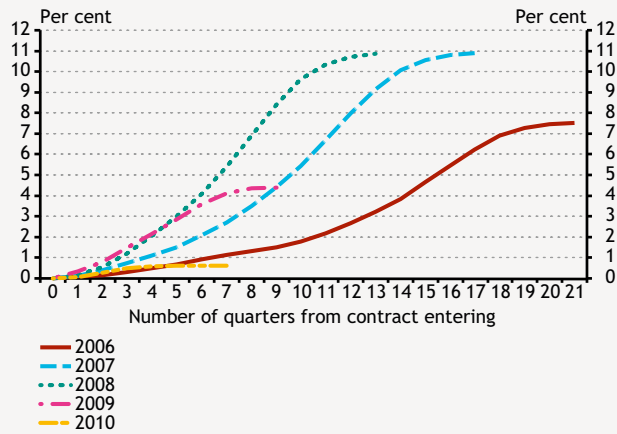


Source: MNB.

Portfolio quality deterioration is mainly due to the persistently strong CHF. Analysis of non-performing loans by credit product breakdown helps to identify the underlying causes of poor performance. In respect of mortgage loans, which comprise a dominant share in loan portfolios, the ratio of non-performing forint-denominated loan products was basically constant in the past half-year, while the ratios showed a continuous rise in relation to foreign currency denominated loans (Chart 26). This suggests that the new defaults are increasingly due to the strong CHF exchange rate.

Household loans extended from 2007 to 2008 perform weakest. In the years preceding the crisis, banks offered increasingly risky products (JPY-denominated loan, unit-linked products, loans provided with a high loan-to-value ratio) to increasingly risky customers (also supported by growing agent activity as discussed in previous Reports on Financial Stability), and this is reflected in the performance of loans. Foreign exchange mortgage loans extended before 2006, i.e. prior to the most intensive period of household lending growth, perform significantly better than loans disbursed between 2007 and 2008 (Chart 27). The ratio of non-performing loans is substantially lower in the older portfolio segment, despite the loans being more mature. Initially weaker performance also implies that these loans were granted to riskier customers. The crisis did not have a

Chart 27
Ratio of non-performing household foreign exchange mortgage loans drawn in different periods

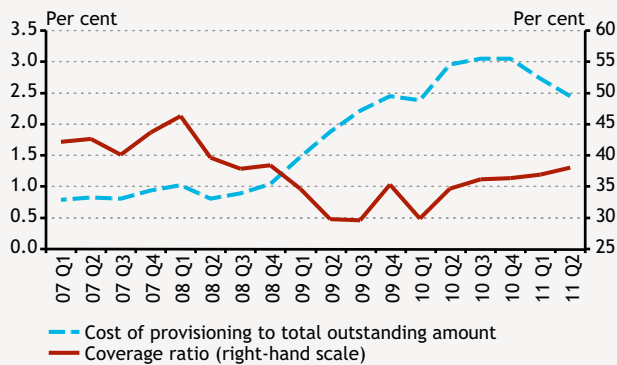


Source: Central Credit Registry, MNB estimate.

major impact on the first 8-9 months of loans disbursed in 2007 or on the first 4-5 months of loans extended in 2008. In the period between 2009 and 2010, however, the range of customers able to access foreign currency denominated mortgage loans was shrinking; banks were much more prudent in relation to these debtors, as reflected by the performance of these loans.

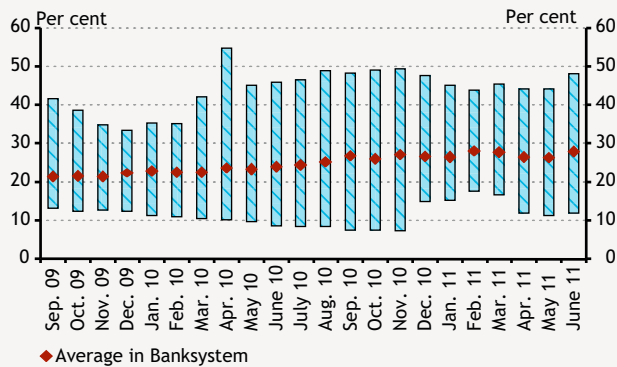
Loan loss provisioning began to decline in the past half-year. In 2011 H1, provisions accrued on household loans were lower than the value measured in the same period in 2010. Accordingly, the cost of provisioning to total loans decreased to below 2.5 per cent (Chart 28). With regard to the decline in loan loss provisions, we should note that data for June do not yet reflect the effect of CHF appreciation in July and August. Loan loss coverage showed moderate growth this year at the sector level. Examining mortgage loans separately, the coverage of the non-performing mortgage portfolio did not change significantly, amounting to 27.9 per cent at the end of the half-year. However, the fact that there are marked differences between individual banks in respect of coverage of mortgage loans overdue by more than 90 days poses risks (Chart 29). Such substantial deviation cannot be explained by differences in the collateral value of the mortgage loans.

Chart 28
Loan loss provisioning and loan loss coverage relating to household loans



Source: MNB.

Chart 29
Distribution of loan loss coverage of non-performing mortgage loans

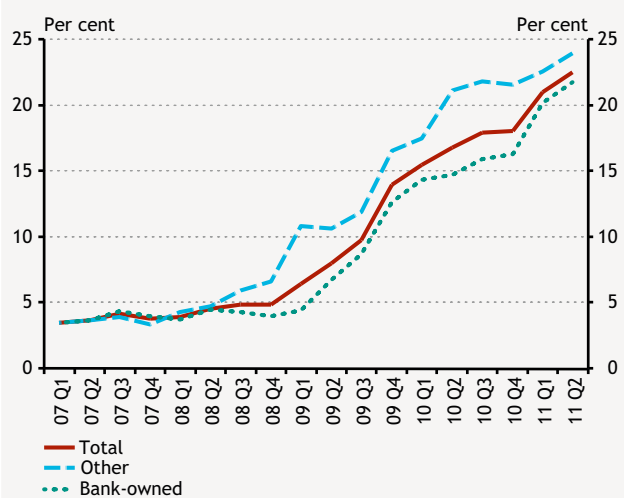


Note: Banks with at least a 2 per cent market share on the mortgage loan market.

Source: MNB.

3.3 Continuing deterioration of portfolio quality at financial enterprises and co-operative credit institutions

Chart 30
Ratio of loans overdue more than 90 days in the portfolio of financial enterprises



Source: MNB.

Deterioration of the portfolio of financial enterprises is accelerating again. The ratio of non-performing loans within the portfolio stagnated in during the final quarter of the previous year. In 2011 H1, however, the ratio of loans of financial enterprises overdue more than 90 days increased sharply from 18 per cent to 22.5 per cent (Chart 30). In terms of portfolio quality, the difference between resident bank owned institutions and other institutions has diminished. The sector has a substantial outstanding amount of CHF-denominated motor vehicle loans to both households and companies, and thus the persistently strong CHF caused a major deterioration of portfolio quality. The considerable contraction of loans outstanding also significantly contributed to the rising ratio of non-performing loans. Loan losses declined; loan loss provisioning this year did not reach the high level measured in 2010 H1. The cost of provisioning equalled 2.2 per cent to total loans at the sector level, reflecting a substantial decline over 2010. The decrease was particularly large in relation to non-resident bank owned institutions. This trend may pose a high risk for the sector.

The portfolio quality of the co-operative credit institution sector also deteriorated further. The ratio of corporate loans overdue more than 90 days increased to 25 per cent from 17 per cent measured at the end of the year (Table 8). In line with earlier trends, the portfolio quality of co-operatives is significantly worse than that of the bank portfolio. Although the sharp increase was accompanied by higher loan loss provisioning, this was nevertheless insufficient to maintain the previous level of loan loss coverage. The 5 percentage point decrease of coverage to 30 per cent represents a risk. It is difficult to accurately assess the condition of the portfolio, as the on-site audit

Table 8
Key indicators of corporate portfolio quality for co-operative credit institutions

Per cent	2007	2008	2009	2010 H1	2010 H2	2011 H1
Share of 90 days past due loans to total loans	9.6	12.8	13.8	17.8	17.3	25.0
Coverage ratio	51.7	40.9	42.9	35.0	35.2	30.4
Loan loss provisioning in the share of total loans	1.0	1.2	1.3	-	1.9	2.3

Source: MNB.

Table 9
Key indicators of household portfolio quality for co-operative credit institutions

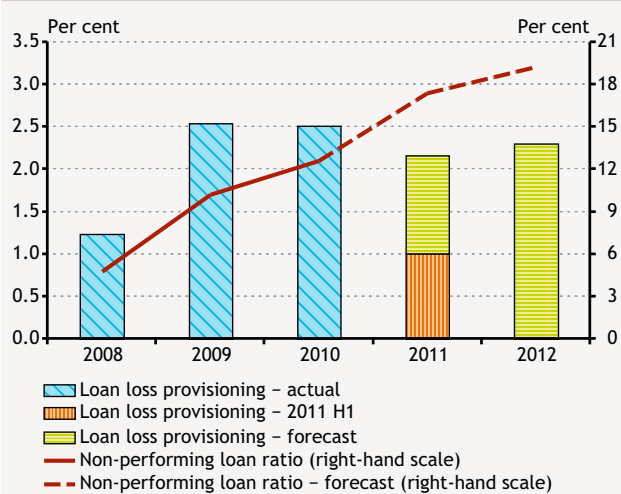
Per cent	2007	2008	2009	2010 H1	2010 H2	2011 H1
Share of 90 days past due loans to total loans	6.4	9.1	11.0	13.0	13.8	16.9
Coverage ratio	53.1	47.9	50.6	46.7	46.6	45.3
Loan loss provisioning in the share of total loans	0.7	0.9	1.3	–	1.2	1.1

Source: MNB.

conducted by the Supervisory Authority found portfolio rating, management and loan loss provisioning to be inadequate in several cases. Deterioration also continued within the household portfolio, but at a slower pace (Table 9). The ratio of non-performing loans still amounted to almost 17 per cent – significantly higher than the figure for bank loans. Loan loss coverage only declined moderately in parallel with low loan loss provisioning.

3.4 The pace of growth in the NPL ratio in the private sector is slowing, possibly accompanied by declining loan loss provisioning

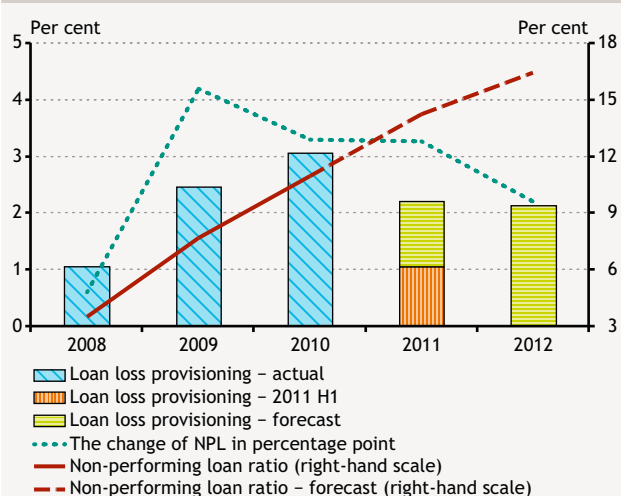
Chart 31
Ratio of non-performing loans and the cost provisioning in the corporate segment



Source: MNB.

As a result of the worsening economic outlook, the ratio of non-performing loans within the corporate segment does not peak during the forecast horizon. We expect the ratio of non-performing corporate loans to increase to 17.5 per cent by the end of 2011 and possibly reach 19 per cent by the end of 2012 (Chart 31). We do not expect the rate to peak during the forecast horizon, but it is important to emphasise that this is principally attributed to the fact that portfolio cleaning will not offset new non-performing loans. If banks' portfolio cleaning activity accelerates in comparison to recent quarters, the rise in the non-performing ratio may slow and possibly reach a maximum level over the forecast horizon. The cost of provisioning is expected to decline this year, basically as a result of lower provisioning in the first half-year. In 2012, however, we expect a moderate increase in loan loss provisioning, principally as a result of the weak economic outlook, insufficient collateral and catching up in loan loss provisioning.

Chart 32
Ratio of non-performing loans and the cost of provisioning in the household segment



Note: Data do not contain the effects of the exchange rate limit and early repayment.

Source: MNB.

The ratio of non-performing loans in the household segment will not peak either, but the cost of provisioning may decline moderately. In the baseline scenario, we expect a further, albeit a significantly slower, increase in non-performing loans in the household segment (Chart 32). The additional increase is mainly attributable to the higher debt servicing burden caused by the strong Swiss franc, and the fact that – despite the lifting of the eviction and foreclosure moratorium – banks have so far not accelerated portfolio cleaning. We expect provisions to amount to nearly 2.5 per cent in the household portfolio in 2011, and accordingly loan loss provisioning is expected to decrease. With the slowdown in the deterioration of non-performing loans ratio in 2012, risk costs may also further decline, partly attributable to the fact that foreign currency denominated loans will be replaced with forint-denominated loans – involving lower risks – after early repayment through loan refinancing.

The government measures only moderately affect the ratio of non-performing loans. The exchange rate cap option may reduce the rise in non-performing loans,

Table 10
Effect of government measures on the ratio of non-performing loans in the household segment

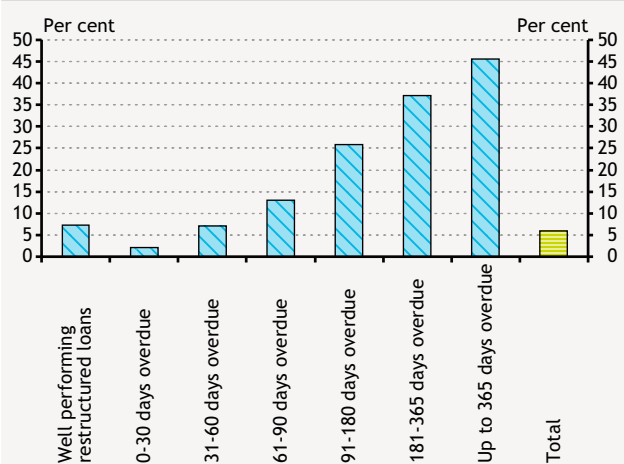
	NPL ratio (per cent)	
	End of 2011	End of 2012
Without any measure	14.2	16.4
With National Protection Action Plan	14.2	17.2

Note: In our estimates, in the early repayment scheme 5 per cent of loans are repaid by customers with own funds, while 15 per cent through loan refinancing.

Source: MNB.

depending on the number of customers joining the programme, as households will temporarily pay lower monthly instalments. The possibility of early repayment at a preferential fixed exchange rate has a dual effect: firstly, it may reduce the probability of default by decreasing the debt servicing burden, and secondly, the denominator of the ratio of non-performing loans decreases along with the reduction in the outstanding amount of loan contracts, increasing the NPL ratio. Since we expect that it will mainly be performing debtors who make use of early repayment and loan refinancing, the measure is more likely to increase the ratio of non-performing loans over the short term, due to the composition effect (Table 10).

Chart 33
Loan loss provision coverage of loans in the household segment



Source: MNB.

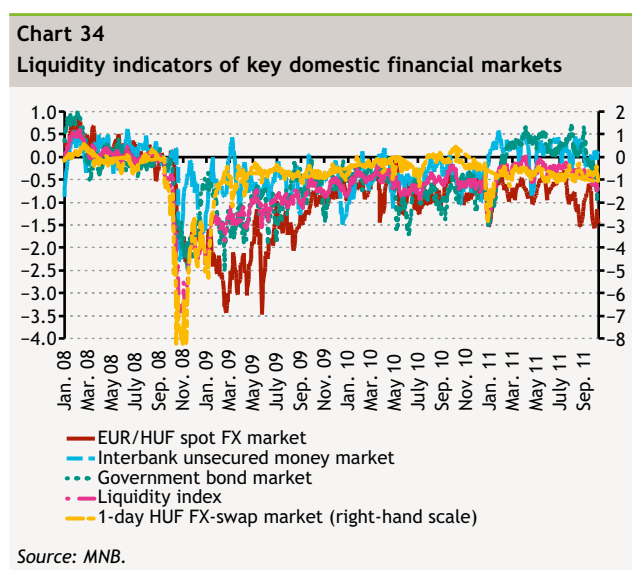
Tightening the provisioning rules relating to restructuring would improve the portfolio quality and lending capacity.

The holding of troubled household and corporate loans in bank books adversely affects the transparency of banks' performance. In the event of a slow recovery, banks may simultaneously incur substantial loan losses on the restructured loans, and the banks are not currently prepared for this. The fact that loan loss provisioning on performing restructured household loans barely exceeds the loan loss provision coverage of the total portfolio (Chart 33). Abrupt loan loss provisioning should be avoided with the tightening of loan loss provisioning rules for loans with exchange rate cap option (particularly in the case of loans undergoing multiple restructuring). This may encourage banks to clean their portfolios faster and thereby free up capacity for new lending.

4 Financial market conditions have significantly worsened due to the sovereign debt crisis in euro area countries, and market risks of the banking sector have also increased

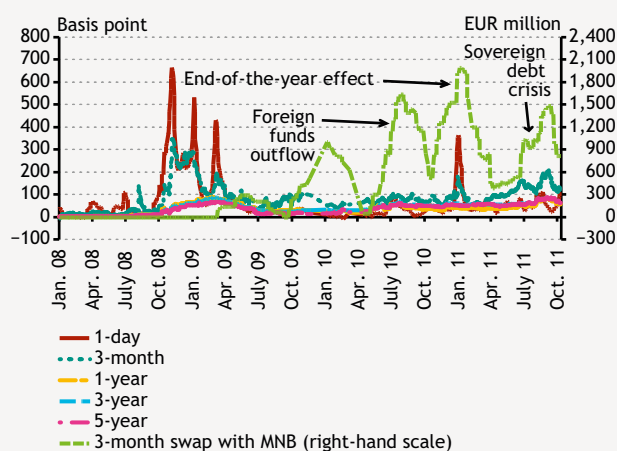
Primarily on the basis of price indicators, the liquidity of markets – with the exception of the government security market – continues to fall short of the long-term average measured prior to the onset of the crisis in the autumn of 2008. Due to higher margin requirements, the appreciation of the Swiss franc significantly increased the vulnerability of the FX swap market, key in managing foreign exchange liquidity. In segments with maturity of over one year, the gap between implied foreign currency yields and reference yields with corresponding maturity widened to reach a multi-annual high, in parallel with the rise in sovereign risks. This represents a major risk for the Hungarian banking sector, as it predominantly uses currency swap transactions to keep its total foreign exchange position at a stable, low level.

The domestic banking sector is facing additional two major market risks. The changing yields of government securities continue to keenly affect the income position of the banking sector due to the high government securities market exposure. Further risk stems from the early repayment of foreign exchange mortgage loans at a preferential fixed exchange rate. With early repayment, losses arising from the difference between the fixed exchange rate and market rate are incurred by the banks. For the above reason, the banking sector maintains a substantial open foreign exchange position in economic term, notwithstanding that this is not revealed in accounting term. Since the commencement of repayments may exert pressure on the exchange rate, for the purpose of limiting expected losses, prior to the repayments, it may be rational to buy foreign currency on the spot market and thereby assume a position against the forint in the accounts prior to repayments.



The vulnerability of the currency swap market increased significantly with the escalation of the sovereign debt crisis and the strengthening of the Swiss franc. Appreciation of the Swiss franc – due to the high swap exposure to the Swiss franc – resulted in higher swap market dependence and rising swap market tensions via higher margin requirements. The liquidity position of the overnight segment temporarily declined on the basis of the bid-ask spread, reflecting transaction costs, and the price effect indicator, expressing flexibility. Average transaction volume, however, increased, and thus the total liquidity of the market only declined mildly (Chart 34). At the same time, in relation to maturities of up to one year and over one year, the gap between implied foreign exchange yields and reference yields with corresponding maturity widened significantly (Chart 35). The continuous eligibility of and recourse to the central bank's overnight and 3-month FX-swap instruments mitigated market turbulence to a great degree.

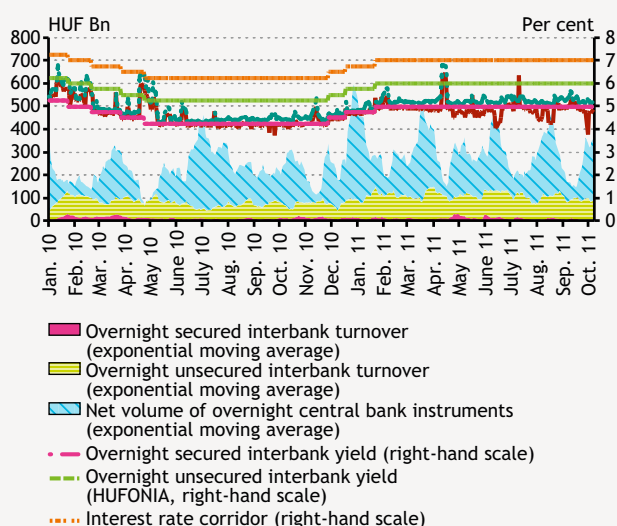
Chart 35
FX swap premia and total central bank EUR/HUF swap instruments



Source: MNB, Reuters.

Global events in the past half-year did not support the recovery of interbank markets. Conditions on the overnight market remain worse than before the crisis. Turnover is still lower than the level before 2008, and several participants are probably not trading in reaction to mounting pressure from the parent bank, favouring overnight central bank facilities instead. Due to the hectic conditions on the swap market and the segmentation witnessed in the euro area as well, the passive behaviour of the predominantly foreign owned banking sector is not expected to improve in the near future. The HUFONIA index only moves away from the bottom of the interest rate corridor temporarily during extraordinary, unexpected liquidity contracting shocks (Chart 36). The central bank is working to decrease interbank market turbulences with its overnight, two-week and 6-month collateralised loan tenders.

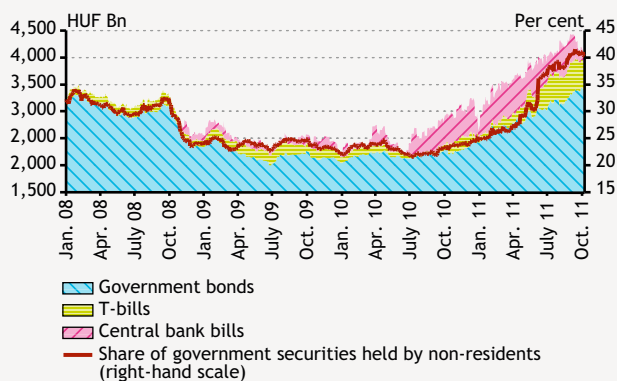
Chart 36
Turnover and interest rate of overnight interbank markets and central bank instruments



Source: MNB.

Liquidity conditions on the forint government securities market did not deteriorate, despite the mounting tensions during the summer. The forint government securities holdings of non-residents have increased continuously in recent months. The current value of over HUF 4,000 billion, increased with MNB bills, significantly exceeds the level seen prior to the crisis in 2008 as well (Chart 37). While non-residents were traditionally active in the government bond segment, since April they have substantially increased their discount treasury bill holdings as well. Turnover also surpasses the long-term pre-crisis level, but this rise is principally due to the spread of a previously uncommon type of transaction. So-called sell/buy back transactions, corresponding to repo transactions in economic terms, are a combination of a spot government securities sale and a forward transaction of the opposite direction. Stronger activity on the market may also be related to the more active role played by new foreign primary traders of the Government Debt Management Agency. Although interest rate swap spreads, also a proxy for market liquidity, deteriorated somewhat, they remain at significantly more favourable levels than prior to the onset of the crisis at the end of 2008 (Chart 38).

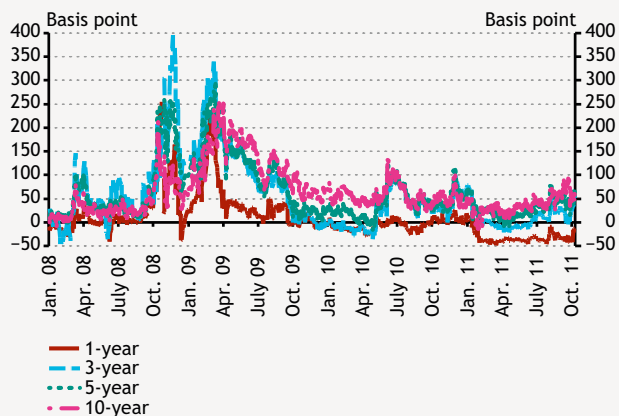
Chart 37
Forint government securities held by non-residents



Source: ÁKK, MNB.

The banking sector's high government securities exposure continues to represent a risk in terms of its profitability (Chart 39). The banking sector's HUF government securities portfolio typically amounts to around 10 per cent of the balance sheet total. In terms of maturity, 80-85 per cent of the portfolio is of a longer maturity, while the average remaining maturity is 2.1-2.5 years. In the event of a prolonged, substantial decline/increase in forint yields, the banking sector realises a substantial potential profit/loss on the government bond portfolio, depending on the rate of exposure hedged by the banks (with interest rate swaps and other derivatives) and the type of settlement

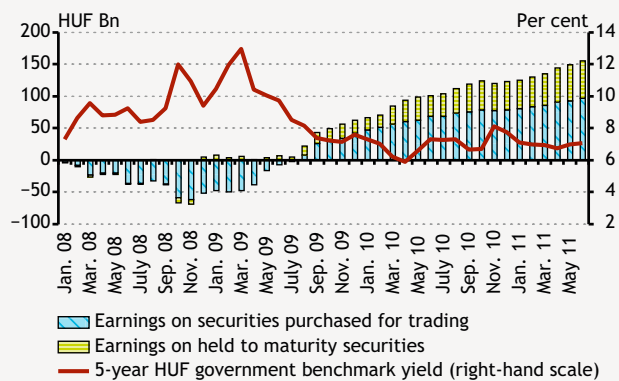
Chart 38
Changes in interest rate swap spreads



Source: Bloomberg, MNB estimate.

procedures applied. The banking sector realised a larger profit from the decline in forint yields between 2009 and 2011 H1 than the amount of loss incurred in the course of the turmoil on the government securities market in the spring of 2008, the crisis in October 2008 and the rise in yields in the spring of 2009. This suggests that the banking sector reacts sensitively to possible market turbulence due to the government securities exposure.

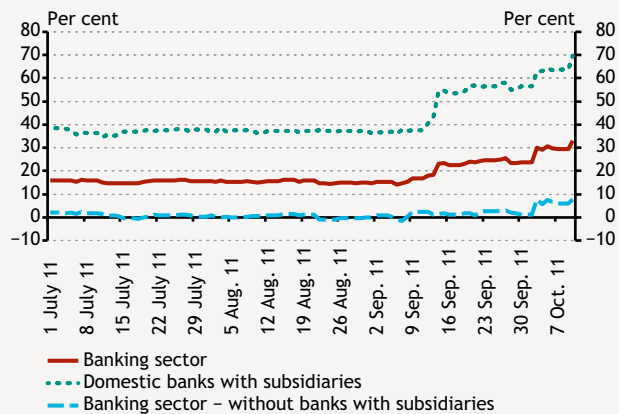
Chart 39
Effect of forint yields on profit via the government securities portfolio, cumulated from January 2008



Source: MNB.

Participants in the banking sector can reduce losses resulting from early repayment by widening the total open foreign exchange position. Under the current circumstances, banks have an open foreign exchange position in economic terms, as their losses on early repayment of foreign exchange mortgage loans increase with the depreciation of the forint. Banks can hedge this open position by acquiring foreign currency necessary for conversion as early as possible on the market or at the central bank, fixing the amount of potential loss at a given participation rate. Since this is possible prior to actual conversion, banks may assume an open position against the forint in the accounts, however in economic terms the FX position would be closed (Chart 40). Obviously, this open position in the accounts closes with the early repayment.

Chart 40
Total open foreign exchange position of the banking sector in percentage of regulatory capital

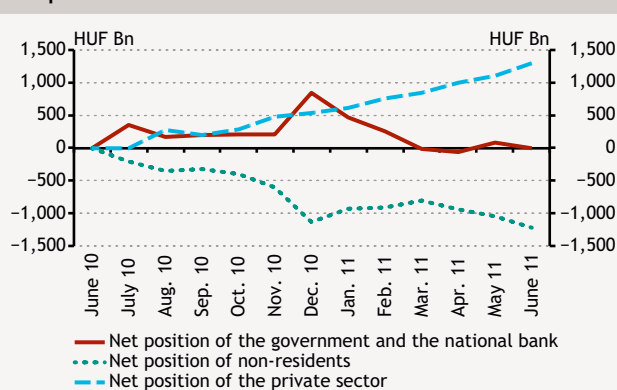


Source: MNB.

5 Vulnerability of the domestic banking sector is declining due to on-balance sheet adjustment, but funding risks are on the rise due to external shocks

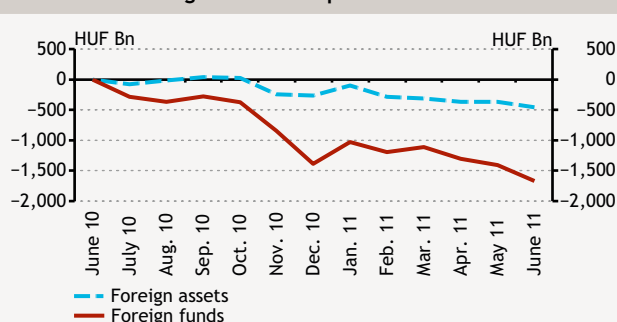
The domestic banking sector underwent a strong balance sheet adjustment between 2009 and 2011. The loan-to-deposit ratio decreased, and thus reliance on external funds and currency swap transactions diminished. As a result of this, the liquidity position of the domestic banking sector improved. At the same time, the financing problems of the financial system in the euro area result in major challenges for the Hungarian banking sector. The roll-over risk of external funds is growing, funding risks have increased further and the appreciation of the Swiss franc adds to margin requirements of outstanding currency swaps. The introduction of regulatory steps may be required to further reduce the funding vulnerability of the domestic banking sector.

Chart 41
Cumulated change in the position of the banking sector compared to end-June 2010



Source: MNB.

Chart 42
Cumulated change in the position of the banking sector vis-à-vis the foreign sector compared to end-June 2010



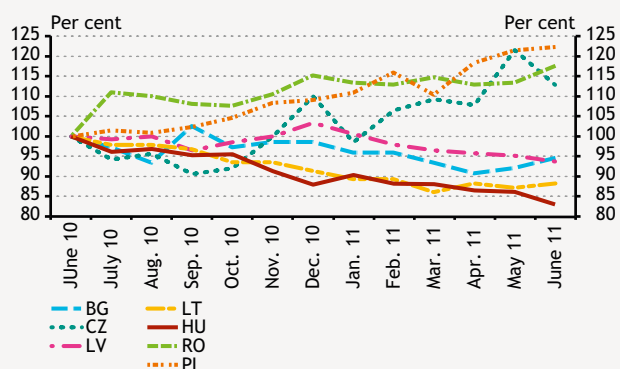
Source: MNB.

Funding risks built up in the period preceding the October 2008 crisis. Before the Lehman crisis, there were rapid increases on the asset side of banks' balance sheets in relation to foreign currency denominated household mortgage loans, and in relation to the foreign exchange financing of subsidiaries in the case of certain banks. The average residual maturity of the external foreign exchange resources used for their financing and of the currency swaps lagged significantly behind the average term of outstanding foreign exchange loans, resulting in a significant maturity mismatch. Following the crisis, this maturity mismatch did not deteriorate, since due to the halt in lending activity the maturity mismatch between assets and liabilities did not change as a result of depreciation (without material lending activity, both assets and liabilities shorten by 1 year in 1 year). Nevertheless, roll-over risks increased, as the shortening of the liability side resulted in strong demand for roll-over. This roll-over risk continued to increase until mid-2010, and then came to a stop. This was the consequence of the fact that external funds started to outflow from then on.

Compared to the onset of the crisis in late 2008, the banking sector's net exposure to the foreign sector declined slowly until June 2010, followed by a rapid, substantial fall. As a result of the contraction in corporate and household lending and the steady increase in domestic savings, the loan-to-deposit ratio of the banking sector continued to decrease. Initially, the resulting excess liquidity was reflected in the increasing financing of the government and central bank sectors, then - after June 2010 - the net

Chart 43
Foreign liabilities of the banking sector in international comparison

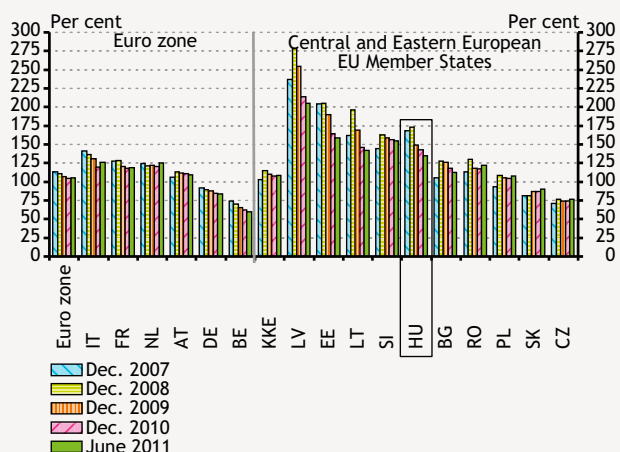
(June 2010 = 100)



Source: ECB, MNB.

position vis-à-vis the rest of the world declined considerably (Chart 41). The decreasing exposure of the banking sector to the foreign sector materialised mainly in the form of outflows of external funds, whilst the decline in external assets was only able to slightly offset the withdrawal of funds (Chart 42). In total, from the onset of the crisis until June 2010 the banking sector's external funds declined by HUF 900 billion, and then by another HUF 1,700 billion until June 2011. In the last year, 16 per cent of external funds were withdrawn, whereas the ratio of external funds to the balance sheet total fell from 33 per cent to 28 per cent. In the period under review, external funding either decreased to a smaller degree or increased in the majority of the neighbouring countries (Chart 43).

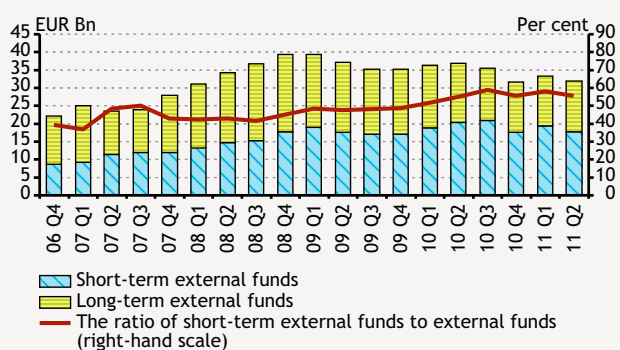
Chart 44
The loan-to-deposit ratio in international comparison



Sources: ECB, MNB.

The foreign currency funding risk of the banking sector due to the shortening of external funds is still significant. In international comparison, the loan-to-deposit ratio continues to be high (Chart 44), while short-term liabilities account for most of the amount outstanding (Chart 45). Shortening mainly took place before March 2009 as well as between September 2009 and June 2010. Subsidiaries played a dominant role in this process. As a result of the growth in the sovereign risks in the euro area, longer-term credit risk premia are increasing to a greater extent and therefore, longer-term liabilities are significantly more expensive than shorter-term funding. Moreover, short-term funding is also strengthened by the fact that euro area parent banks have easy access to short-term liquidity at the European Central Bank. In addition, domestic subsidiaries and branches which are financed by the parent bank practically at a price corresponding to the parent bank (or banking group) CDS and not to the Hungarian sovereign CDS, typically have access to funds with a shorter maturity (Box 7). Accordingly, the shortening results in increasing demand for the short-term roll-over of external funds. Roll-over risks may be mitigated by the considerable role (63 per cent) of parent bank refinancing within external funds.⁷

Chart 45
Foreign liabilities of the banking sector according to remaining maturities



Source: MNB.

⁷ This share among banks owned by strategic investors amounts to 78 per cent.

Box 7

Developments in the costs of external funds of the domestic banking sector: focus on sovereign risk premia⁸

Due to the domestic banking sector's high dependency on external funds, developments in the costs of external funds are particularly important in terms of the pricing and profitability of banks. Earlier, qualitative information on the costs of external funds was basically obtained during the so-called Market Intelligence Surveys carried out by the Financial Stability Department of the MNB. However, based on these surveys it was only possible to establish that risk-based pricing was becoming increasingly typical of external funds following the crisis in 2008, and we could draw conclusions on the level of prices only in terms of the magnitude. The significant increase in credit risk premia due to the sovereign crisis and their unfavourable effect on financial stability made a more precise mapping of the pricing principles and costs of external funds timely. For this reason, in the summer of 2011, we conducted a study with 11 institutions on the pricing principles of the costs of external funds and their changes in recent years.

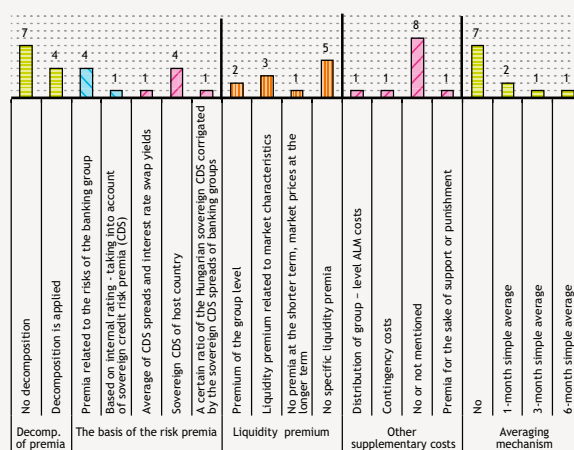
Although the risk and liquidity premia applied present a very colourful picture, on the whole, it can be established that the domestic sovereign risk premium plays an important role in pricing. At the majority of the institutions surveyed (7 out of 11 institutions), the premium is not broken down into components. At these banks, the premium is typically shown as 'risk premium', whereas in the case of credit institutions which do not apply differentiation within the group it appears as 'liquidity risk'. Our survey reveals that at the majority of the banks operating in Hungary, the risk premium applied reflects the Hungarian country risk. Hungarian sovereign risk, in turn, is usually approximated with CDS spreads of corresponding maturity (4 credit institutions). At banks that price on the basis of the CDS spread, the change in the CDS spread appears in the interest rates with an average delay of 1 month. In terms of the numerical proportion, in 36 per cent of the surveyed sample, there is no differentiation according to country risk during the allocation of funds within the banking group. Considering the current high level of the default risk premium of the Hungarian state, this practice creates a more favourable opportunity for raising funds.

However, the precise method of determining the risk premia has often been revised during the last few years. According to reports of banks, well-defined pricing principles within banking groups typically did not exist prior to the crisis in 2008. At the same time, as a result of the current crisis, the relevant internal rules have become tighter.

Within the framework of our survey we also asked for transaction-level data on the main parameters of the newly obtained external funds for the period between 2006 and the summer of 2011: their premia, the amount of funds raised, their maturities, currency, length of repricing period, and type of interest payment, as well as the type of the financing partner and of the instrument. This allowed for an examination of premia according to various dimensions. The findings reveal that – prior to the onset of the

The premia of foreign funds

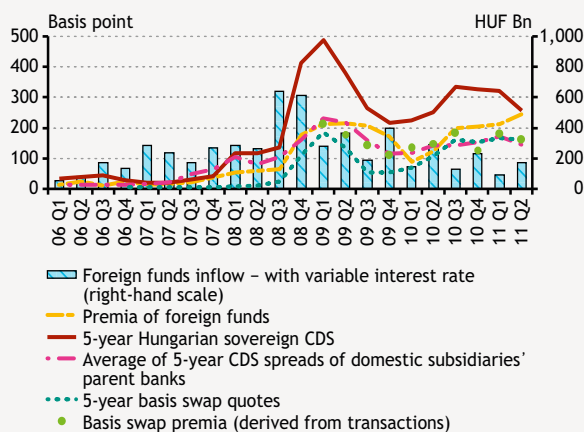
(distribution of the individual bank responses by piece)



Source: MNB.

The costs of foreign funds with variable interest rates and longer than 1-year maturity

(quarterly averages)

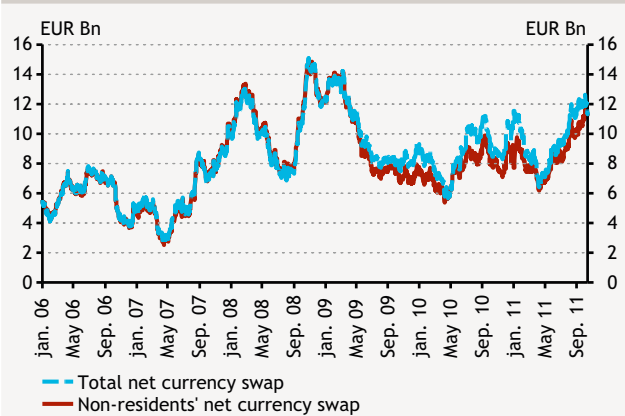


Source: MNB.

⁸ PÁLES, JUDIT AND DÁNIEL HOMOLYA (2011), Developments in the costs of external funds of the Hungarian banking sector, *MNB Bulletin*, October 2011, http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbszemle/mnben_mnb_bulletin_october_2011/pales-homolya_en.pdf.

crisis in October 2008 – the domestic banking sector was able to obtain funds with a maturity over a year even with premia that were below the domestic sovereign and foreign parent bank CDS (credit default swap) premia on average. Following the Lehman bankruptcy, until 2009 H1 the domestic banking sector basically obtained external funds at prices in line with the default risk premia of the foreign parent banks. From 2009 H2 on, the premium on external funds increasingly exceeded the average of CDS premia of parent banks, and from early 2010 on, rising in parallel with the escalation of the sovereign debt crisis it increasingly approached the level of the CDS premium of the Hungarian State. For a significant part of the period under review, external foreign exchange funds with a maturity over one year proved to be more expensive than currency swaps.

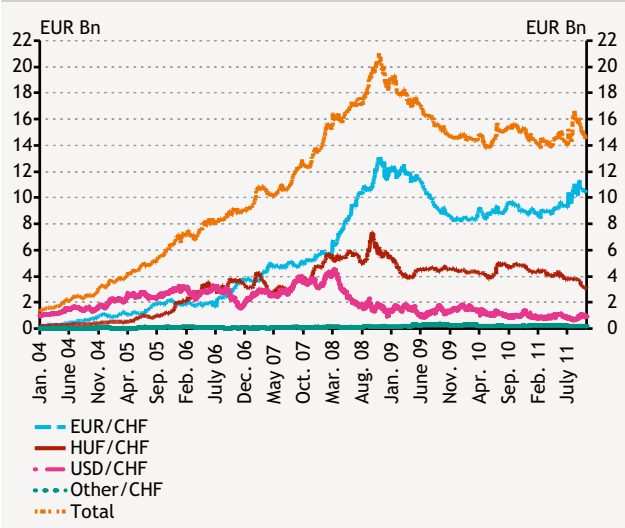
Chart 46
Net swap stock of the banking sector and branches against HUF



Source: MNB.

Currency swaps are the other method of foreign currency financing for the banking sector. In respect of currency swaps, monitoring roll-over risks and developments in margin requirements are important; these depend on the depreciation of the HUF exchange rate and on the currency swap stock. Roll-over risks declined in recent years, and banks were able to enter into longer and longer-term swap transactions. The currency swap stock itself also declined, and thus both the exchange rate sensitivity of banks' liquidity as well as the magnitude of the underlying margin requirements declined (Charts 46 and 47).

Chart 47
Net swap stock of the banking sector and branches against CHF



Source: MNB.

Reduction of the maturity mismatch may mitigate financing risks considerably. If the outflow of external funds of the banking sector and the decline in currency swaps continue in parallel with the banking sector and the private sector, funding risks are not expected to mount. At the same time, in a banking sector that may be characterised with expanding balance sheet and increasing lending activity, these risks may grow again, and lending may again be implemented in an unhealthy funding structure. Immediate regulatory steps should be taken to prevent this from occurring (Box 8).

Box 8

Proposal for the regulation of the maturity mismatch of foreign exchange funding

Lending to the private sector, and especially to households, accelerated significantly in the 3-4 years preceding the 2008 crisis. This primarily meant an increase in foreign currency denominated mortgage loans with typically very long maturities, sometimes exceeding even 20 years. However, the average term of the foreign exchange funds and swap transactions for financing was considerably shorter, resulting in a significant maturity mismatch in the balance sheet of the banking sector. Risks stemming from maturity mismatch can be observed in other countries in the European Union as well, so this phenomenon cannot be considered unique to Hungary. For European banks, the problem of maturity mismatch is especially significant in the case of US dollar assets and liabilities: the short-term USD liabilities from money market funds mostly serve the financing of long-term assets.

On the one hand, the shortening of external funds can be considered as a natural consequence of the decline in lending, but on the other hand it is also driven by the emphasis on short-term profitability. Under the current market circumstances, the sector is not attempting to improve the maturity mismatch, and therefore, we believe that the reduction of this risk and stopping the worsening trend can be achieved using macroprudential instruments.

The Basel Committee has already adopted a regulatory standard that places significant emphasis on the reduction of liquidity risks, and in this context it introduces a requirement system based on two indicators (LCR and NSFR). The aim of the LCR (Liquidity Coverage Ratio) is that over the short term (within 30 days) banks have adequate amount of liquidity to be able to meet their obligations even in the case of an external shock and survive the 30-day period, during which they can find a longer-term solution. The NSFR (Net Stable Funding Requirement), in turn, was developed to reduce bank maturity mismatch, i.e. it intends to enforce the financing of long-term assets from longer-term funds. However, the indicators proposed by the Basel Committee would only be introduced in 2015 and 2018, respectively. Moreover, these indicators do not address Hungary-specific problems, i.e. they do not lay proper emphasis on the importance of improving the on-balance-sheet and off-balance-sheet maturity balances by currency breakdown. Finally, the calculation methodology of the indicators is not fully developed yet, and thus introducing these indicators earlier than scheduled may be problematic.

Considering that the Basel indicators do not address the maturity mismatch problem of the Hungarian banking sector in an adequate manner, the MNB is proposing the introduction of a foreign exchange funding adequacy ratio (FFAR), which also takes account of the peculiarities of the domestic banking sector. This indicator is the quotient of stable foreign exchange funds plus the net foreign exchange swap stock with a maturity over one year divided by the weighted foreign currency denominated assets outstanding with a maturity over one year to be financed; thus it is able to manage the maturity mismatch problem of the on-balance-sheet and off-balance-sheet foreign exchange positions at the same time.

$$FFAR = \frac{\text{Available amount of stable foreign currency funding + long term net FX swap position}}{\text{Required amount of stable foreign currency funding}}$$

Components of the FFAR

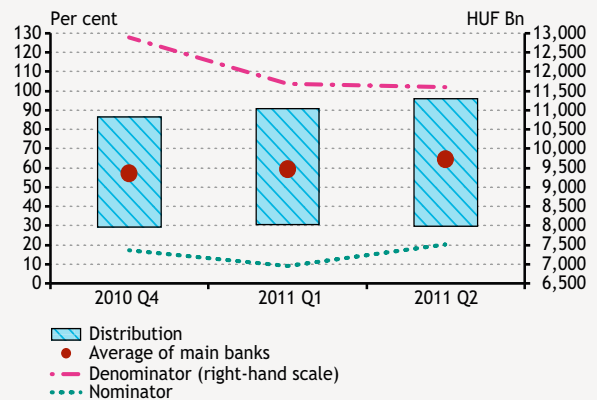
Nominator (Stable foreign currency on and off balance sheet funding)	Denominator (Stable foreign currency assets and other contingent liabilities)
Long term deposits and other liabilities with over one year remaining maturity Household's and SME's deposits maturing within one year or without maturity Corporates', government's and central bank's deposit maturing within one year or without maturity Deposits of money market funds within one year or without maturity Net outstanding foreign currency swap with over one-year remaining maturity	Government bonds, central bank's bonds and other EMU government's bonds with over one year remaining maturity Covered bonds issued by outside the group with over one-year remaining maturity 35% weighted long term loans covered by dwellings with any maturities Short term loans of corporates, general governments or central banks Shares listed on stock exchange(s) not issued by banks or its subsidiaries Households' and SME's short term loans Other assets Guarantees and other off balance sheet items Stand-by or liquidity credit lines

Source: MNB.

Upon selecting the expected level of the indicator, the primary aspect is to stop the worsening in the foreign exchange maturity mismatch experienced to date. If adjustment to the expected level is necessary, it may be implemented through the following channels. On the asset side, the reduction of any long-term foreign currency denominated loans contributes to compliance with the regulation. This is true for the loans extended to the state, other banks, investment funds and financial enterprises as well as for the funding provided for households and corporations. One of the methods of liability side adjustment is the increasing of the sum total of foreign exchange deposits or the extension of the maturity of foreign exchange liabilities to over one year. From the aspect of banks, probably this latter solution can be implemented faster. Finally, banks may also adjust via the renewal of their expiring swap transactions with ones that have long initial maturities.

The adequate selection of the level of the indicator to be met as a minimum may not only facilitate the closing of the on-balance-sheet over-one-year foreign exchange position (and encourage the conclusion of long-term swaps), but also prevents a further deterioration in the on-balance-sheet and off-balance-sheet maturity mismatches of the banking sector, contributing to mitigating the vulnerability of the banking sector and the country. At present, the FFAR of most large banks exceeds 60 per cent.

The distribution, the nominator and the denominator of the main banks' FX Funding Adequacy Ratio (FFAR)

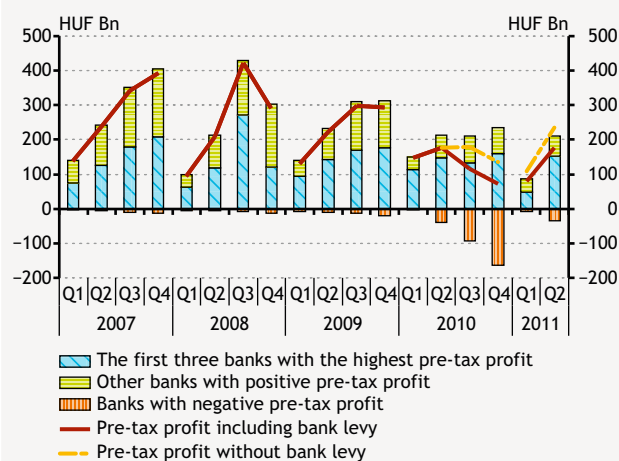


Source: MNB.

6 Considerable asymmetry in profitability and the size of the capital buffer

The pre-tax profit of the banking sector slightly exceeds the level of last year. Its composition, however, changed in an unfavourable manner, and asymmetry between individual institutions increased. An increasing portion of the income stems from dividends from abroad, while the share of domestic income is declining. Asymmetry between institutions is increasing; 86 per cent of the banking sector's pre-tax profit is concentrated at the three largest institutions (in terms of pre-tax profit), while more large banks are booking losses. Based on regional comparison, the profitability of the domestic banking sector is very low. Capital adequacy is sound at the system level, but significant asymmetry exists here as well; three banks account for 60 per cent of the capital buffer. At the individual bank level, the capital buffer above the regulatory minimum requirement is often very low, which may constrain lending at an increasing number of banks. The capital buffer may continue to decline at many banks at the end of the year as a result of banks' losses caused by the early repayment of foreign currency denominated mortgage loans at a preferential fixed exchange rate. The ratio of participation in the programme will significantly influence the capital adequacy of the banking sector and thus its capacity to lend. At the same time, as capital is becoming more expensive due to the sovereign debt crisis, the probability that parent banks will solve the deteriorating capital adequacy with capital injections is declining, which may lead to further deleveraging.

Chart 48
Pre-tax profit/loss of the banking sector and branches cumulated within the year

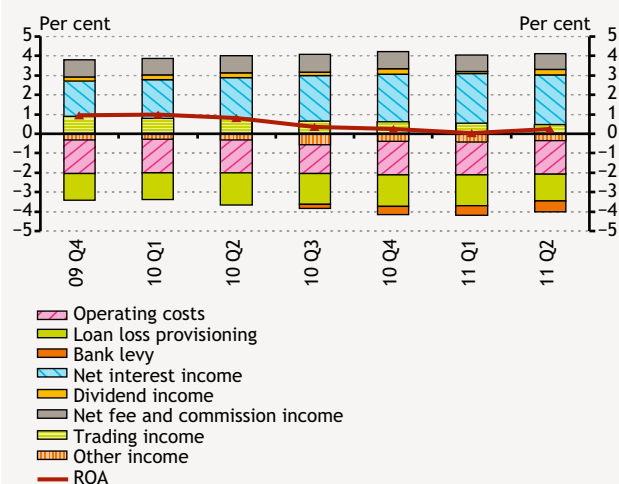


Source: MNB.

In 2011 H1, the pre-tax profit of the banking sector exceeded the performance of the same period last year. At end-June 2011, the pre-tax profit of the banking sector amounted to HUF 178 billion, slightly exceeding the previous year's HUF 176 billion, which did not yet contain the effect of the bank levy. Excluding the bank levy, the profit would amount to HUF 235 billion, which would considerably exceed last year's level (Chart 48). This means the banking sector has been able to pass through most of the increasing costs (provisions, bank levy, funding and operational costs, etc.) to the performing customers.

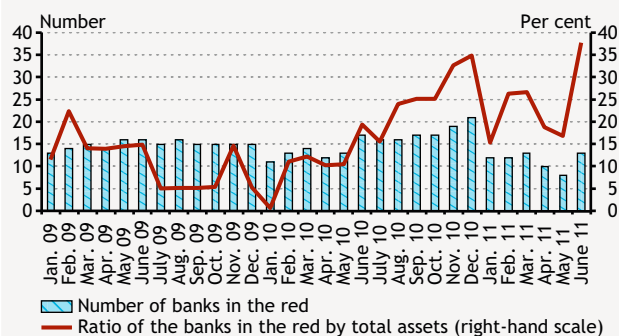
One third of the pre-tax profit is dividend income from abroad. Net interest income, a main source of income of the banking sector, remained unchanged compared to the base, and net fees and commissions declined only slightly. By contrast, trading income declined due to the revaluation of foreign currency denominated assets and liabilities as well as held-for-trading securities, while dividend income, mainly from abroad, increased markedly (Chart 49). Dividend income increased from HUF 55 billion in 2010 H1 to HUF 78 billion; of this HUF 50 billion last year and HUF 74 billion this year came from foreign subsidiaries. On the expenditure side, the level of operating costs was stable. The decline in loan loss provisioning for corporate and household loans from a high level and the accounting for the bank levy constituted the most important expenditure-side changes.

Chart 49
Aggregate 12-month main rolling profit items of the banking sector and branches as a proportion of the average balance sheet total



Source: MNB.

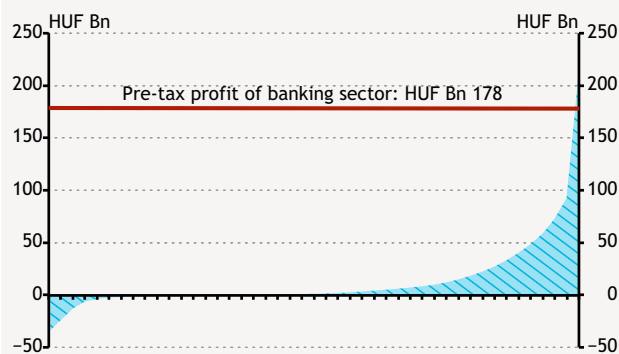
Chart 50
Number and market share of banks and branches in the red on the basis of the pre-tax loss cumulated within the year



Source: MNB.

Chart 51
Pre-tax loss or profit of banks and branches at individual level

(June 2011)



Source: MNB.

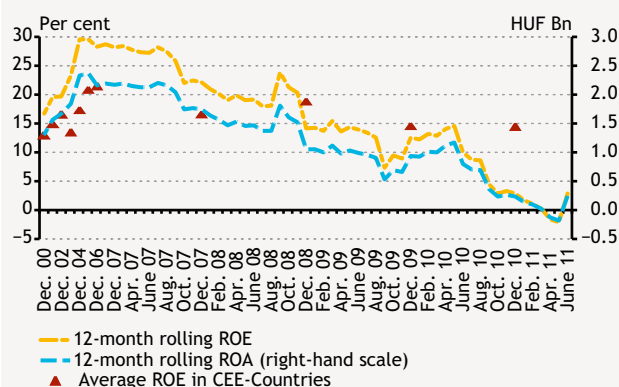
A major portion of the pre-tax profit of the banking sector is concentrated at a few banks. The concentration of profitability is extremely high in 2011 as well: three institutions with the greatest pre-tax positive profit account for 86 per cent of the pre-tax profit of the banking sector (Chart 48). While on the basis of the pre-tax profit/loss the number of banks that book losses declined from last year's 17 to 13, their market share based on the balance sheet total increased from 20 per cent to 38 per cent (Chart 50). Large banks dominate among banks posting either profit or loss, while many banks booked a pre-tax profit/loss around zero (Chart 51).

Profitability is low in international comparison. The rolling one-year ROE and ROA indicators reached their all-time low at end-May 2011 with values of -2.2 and -0.2 per cent, respectively. At end-June 2011, the rolling one-year ROE and ROA increased to 2.9 per cent and 0.2 per cent, respectively. Nevertheless, compared to the average of certain CEE countries the ROE indicator of the Hungarian banking sector indicates a significant competitive disadvantage in profitability at the end of last year (Chart 52).

The profitability of the domestic banking sector may decline considerably by the end of the year. An important risk in connection with profitability is the magnitude of losses due to the early repayment of foreign currency denominated mortgage loans at a fixed preferential exchange rate; the magnitude of these losses mainly depends on the participation rate in the programme and the exchange rate of the forint (Chart 53). Bank losses from the early repayment may mainly reduce the year-end profit. The deteriorating economic outlook and the increase in loan losses due to higher funding costs, and the persistently strong Swiss franc may also add to the losses.

A decisive share of the capital buffer of the banking sector is concentrated at few banks. At the banking sector level, the capital adequacy ratio increased from 12.6 per cent in June 2010 to 13.3 per cent by the end of 2010 and to 13.8 per cent by June 2011. This increase is the result of the decline in capital needs due to shrinking loans outstanding and the increase in available capital. The increase in available capital is attributable to capital injections and profit retention (auditing during the year). Even taking into account the additional capital requirement within the SREP results in a CAR exceeding 12 per cent (Chart 54). At the system level, capital adequacy can be considered very adequate, but the distribution of the capital buffer in the banking sector is extremely uneven. 60 per cent of the regulatory capital buffer that serves the purpose of shock absorption is concentrated at just three banks. Consequently, at the individual bank level capital

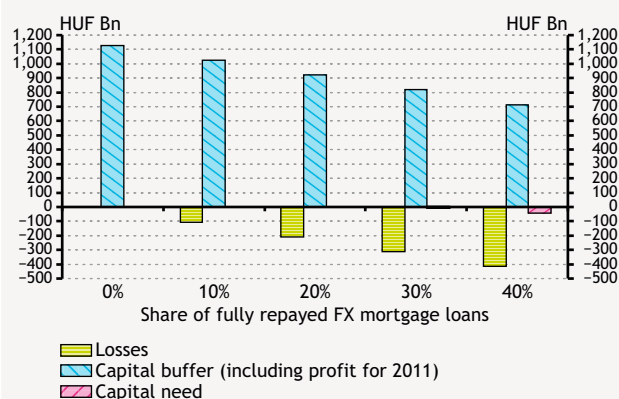
Chart 52
ROE and ROA indicators of the banking sector and average ROE indicators of selected CEE countries



Note: Average of selected CEE countries: Czech Republic, Poland and Slovakia.
Sources: IMF, national central banks.

buffers may prove inadequate in the case of a shock, and may constrain lending at some banks (Chart 55). This risk may be strengthened by the losses stemming from the early repayment of foreign currency denominated mortgage loans at a fixed, preferential exchange rate. At the same time, it is important to emphasise that with the expected participation ratio, early repayment does not induce any significant need for capital injection; therefore, shortage of capital in the banking sector is not expected.

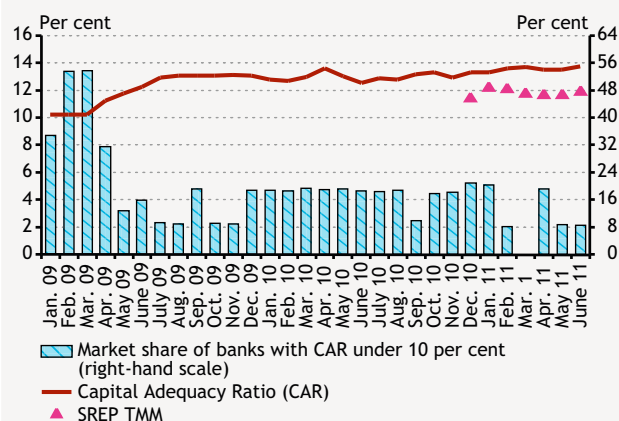
Chart 53
Developments in the loss, capital buffer and capital needs of the banking sector, depending on the proportion of early repayment



Source: MNB.

Provision of the necessary capital is questionable even in the case of parent bank commitment. During the financial crisis, foreign parent banks proved their commitment to their Hungarian subsidiaries and made the necessary capital and liquidity available. Although the parent banks of domestic banks mostly did well at this year's stress test of the European Banking Authority, as a result of the sovereign debt crisis it has become significantly more expensive and more difficult to obtain new additional capital. All this indicates that the opportunities to increase the capital adequacy of Hungarian subsidiaries via capital injections will decline significantly, especially if the weak domestic growth outlook is taken into account. Consequently, the chance has increased that domestic banks will be compelled to restore capital adequacy, which is declining due to the losses, through deleveraging.

Chart 54
Capital adequacy ratios of the banking sector

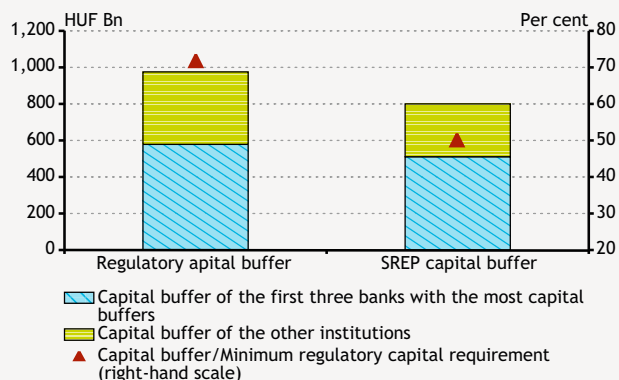


Source: MNB.

Financial enterprises owned by banks are booking losses. Financial enterprises had a near-zero pre-tax profit in June 2011 at aggregate level, although there is considerable asymmetry depending on ownership structure. While non-bank-owned financial enterprises posted a pre-tax profit of HUF 8 billion, bank-owned ones recorded a loss of the same size (Chart 56). Bank-owned financial enterprises restrained their activity considerably. As a result – and coupled with the deteriorating portfolio quality – they have booked significant losses for the last two and a half years already, forcing owners to repeatedly raise capital.

The income of the cooperative credit institutions fell in June, and capital adequacy may be rapidly eroded by the need for further loan loss provisioning. In June 2011, the pre-tax profit of the cooperative credit institution sector declined considerably as a result of increasing loan loss provisioning. The ROE indicator of the sector is still higher than that of the banking sector, but the difference has declined (Chart 57). The underlying reason is that the balance sheet composition of cooperative credit institutions differs considerably from that of the banking sector (the share of corporate and household loans is lower and the share of foreign currency denominated loans is minimal, whereas the share of loans to credit institutions and government securities is higher), thus loan loss provisioning

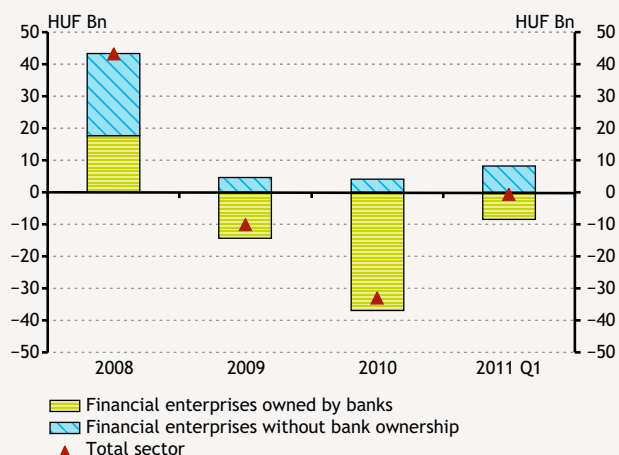
Chart 55
Capital buffer of the banking sector



Note: The regulatory capital buffer does not include the non-audited mid-year profit.
Source: MNB.

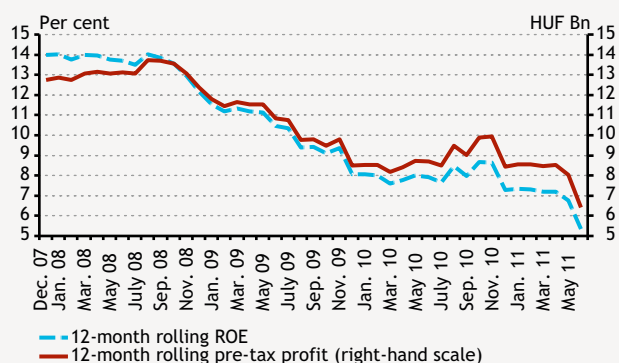
is also lower. Three quarters of cooperative credit institutions have an adjusted balance sheet total below HUF 50 billion, and therefore, they had to pay the bank levy based on a lower tax rate. In June 2011, cooperative credit institutions had a capital adequacy ratio of 15.1 per cent, showing a strong capital position, but significant asymmetry can be observed. Additional risks pertaining to the sector are indicated by the SREP CAR indicator of 12.2 per cent in June 2011.

Chart 56
Pre-tax profit/loss of financial enterprises



Source: MNB.

Chart 57
Pre-tax profit and ROE indicator of cooperative credit institutions



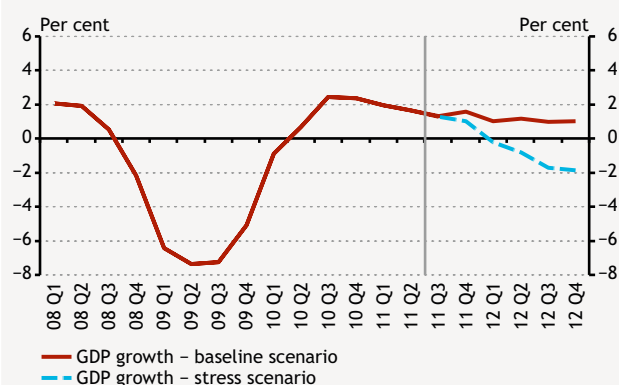
Source: MNB.

7 The stress test shows higher capital need

The Hungarian financial system is facing even more severe exogenous shocks, for which more and more bank participants are not prepared. In the event of a global recession and a strong risk premium shock, resulting in depreciation of the exchange rate of the forint against the euro and the Swiss franc as well as in an increase in the CDS spread, the domestic banking sector's capital needs will be more significant than earlier. Our integrated market and credit risk stress test indicates a capital need of almost HUF 200 billion, a sum which exceeds the results of the stress tests of the previous two years, but is below the March 2009 results. Not only the increase in the magnitude of external shocks, but also the capital position, which weakened due to the losses caused by the early repayment scheme of the foreign currency denominated mortgage loans, contribute to the rising capital need. The implementation of the necessary capital injections requires increasing commitment from parent banks. At the same time, the sovereign debt crisis in the euro area reduces the ability of parent banks to provide support. Liquidity stress tests reflect adequate shock-absorbing capacity, but the drying-up of the FX swap markets entails risks.

7.1 The result of the integrated market and credit risk stress test indicates a weakening shock-absorbing capacity, thus increasing the need for capital injections by parent banks in the stress scenario

Chart 58
GDP growth rate in the scenarios
(YoY)



Source: MNB.

Chart 59
Employment in the scenarios



Source: MNB.

The escalation of the European sovereign debt crisis and the consequences of the related global economic downturn are quantified in the stress scenario. The current baseline scenario is identical to the forecast in the September issue of the Quarterly Report on Inflation which accounted for the latest fiscal measures related to the 2012 budget. Overall, the baseline scenario is much less favourable than the one applied in the April Report on Financial Stability. The deteriorating international risk environment and economic outlook and, in connection with that, the slowdown in the domestic economy have contributed to the deterioration of the baseline scenario. While the baseline scenario represents the most likely scenario, the stress scenario examines the consequences of a low-probability, very severe, but plausible series of events. Consequently, our stress scenario assumes a further escalation of euro area sovereign risks and intensification of European interbank market turbulences starting from the last quarter of 2011 and, in connection with that, the evolution of a global economic recession (W-shaped recession). These effects can be quantified in the significant increase in expected returns taking place in the European markets, while the consumption and investment activity of households and corporations of the euro area is declining. As a result of economic developments abroad, expected returns are rising sharply in Hungary as well, and, in parallel with the slackening external demand, domestic consumption and investment are also plummeting. As a result, economic growth has slowed considerably in 2011, and the domestic economy will slip into recession from 2012 (Chart 58). Employment in the domestic private sector is characterised by very slack labour market conditions (Chart 59). Macroeconomic developments have been accompanied by the sudden depreciation of the forint as well as an increase in the domestic and external funding costs. Considering the commitment of the Swiss National Bank regarding the exchange rate of the Swiss franc, we expect an exchange rate of EUR/CHF 1.2 over the entire horizon (Table 11).

Both in the baseline and the stress scenario a decline in income before loan losses of individual institutions is assumed. In order to determine profitability, the operating

Table 11
Macroeconomic scenarios in the stress test

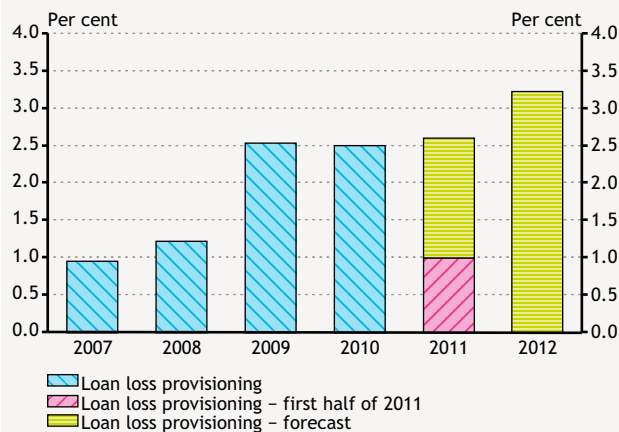
	Baseline scenario		Stress scenario	
	2011	2012	2011	2012
GDP*	1.6	1.0	1.5	-1.2
Sovereign CDS spread (bp)	450	450	580	740
Yearly average HUF/EUR exchange rate	273	284	282	329
Yearly average HUF/CHF exchange rate	223	237	231	275
Employment*	0.5	0.9	0.4	-0.5
House prices**	0.0	0.0	0.0	-10.0

* YoY percentage change.

** Percentage change to the end of the previous year.

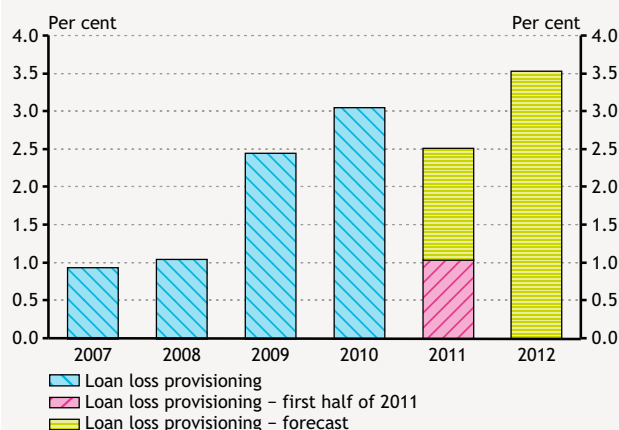
Source: MNB.

Chart 60
Loan loss ratio for the corporate portfolio in the stress scenario



Source: MNB.

Chart 61
Loan loss ratio for the household portfolio in the stress scenario



Source: MNB.

profit was taken as a basis, and then exceptional impairment, loan loss provisioning and the levy to be paid by financial institutions were added. Profitability in the baseline and stress scenarios was forecasted on the basis of the empirical connection between adjusted income calculated as described above as well as performing loans and certain financial variables (short and long forint yields, foreign interest rate). The forecasts were modified in certain respects on the basis of additional information received. Considering the banking sector as a whole, in the baseline and stress scenarios we expect income before loan losses to be 12 per cent and 24 per cent lower, respectively, than the average of the previous three years.

Loan losses were taken into account not only for corporate and household loans, but also for the foreign currency denominated local government portfolio. The probability of default (PD) and loss given default (LGD) of corporate and household portfolio elements were estimated using our earlier methods for the macroeconomic scenarios (Chart 60 and Chart 61). This was the first time when loan loss provisioning arising at local governments was quantified, because after a grace period the first part of principal payments on a huge amount of loans and bonds will start over our stress test horizon. In the case of foreign currency denominated loans and bonds, we assumed the possible losses on an expert judgement basis, relying on restructuring ratios expected by banks.

Non-performing loans remaining in the balance sheets of banks continue to be a considerable source of risk, the further reduction of which needs to be facilitated. Similarly to our earlier stress test, the additional loss on non-performing loans was calculated again in the stress scenario. Further considerable losses may arise on these loans as a result of the deterioration in macroeconomic circumstances (due to the drop in real estate prices and the weakening of the exchange rate of the forint); therefore, carrying them continuously adds to the vulnerability of the

banking sector. Consequently, the earliest reduction of these stocks is desirable in terms of financial stability.

Assumptions were made for the participation ratio in the exchange rate cap scheme and for the ratio of participation in the early repayment scheme. Of the earlier discussed two schemes aiming at improving the situation of debtors with foreign currency denominated mortgage loans, the effects of the exchange rate cap and of the early repayment scheme were taken into account in our stress test. Since the demand for this scheme has proved to be modest so far we only took into account the exchange rate cap in the stress scenario. We assumed in our calculations that the worst 20 per cent of performing debtors will enter the exchange rate cap. As the period under review lasts until end-2012, increases in instalments following the expiry of the grace period have not been taken into account. Accordingly, in this segment of household foreign exchange debtors the probability of default (PD) and loan losses have declined. It needs to be emphasised that this improvement shown on the horizon of our stress test will remain steady only if the weakening trend of the forint against the Swiss franc reverses during the exchange rate cap, which lasts until end-2014. The effects of the early repayment scheme are much more complex. Our calculation is based on the assumption that 5 per cent of foreign currency debtors will be able to repay using their own savings, and another 15 per cent will take the opportunity borrow forint loans (representing 20 per cent participation ratio as a proportion of total outstanding amount). The most serious consequence of this is that in the baseline scenario banks are expected to suffer a 24 per cent loss (the difference between the exchange rate assumed in the baseline scenario and the fixed, preferential exchange rate) as a proportion of totally repaid loans to loans outstanding. In the stress scenario a higher, 30 per cent was considered for the participation ratio, half financed by savings and the other half by forint loans. The effects of forint depreciation in the stress scenario were partly taken into account in the losses related to early repayment. It is assumed that banks hedge their exchange rate risk according to the participation ratio considered in the baseline scenario, but a higher-than-expected participation ratio is used in the stress scenario. Hence, as a result of the difference in the participation ratio occurring between stress and baseline scenario, banks suffers losses due to exchange rate depreciation (in relation to 10 per cent of foreign currency mortgage loans).

Significant losses stem from the shock originating in the euro area and from the early repayment scheme. In the baseline scenario, our previous loan loss provisioning forecast has been revised negatively due to the escalating sovereign risks and the subsequent weaker economic

Table 12
Main components of the losses of the banking system in the stress test over the six-quarter horizon

	Effects on the banking system's income over the six-quarter horizon (HUF Bn)	
	Baseline scenario	Stress scenario
Loan losses on corporate and household portfolio, excluding exchange rate cap programme	-474	-753
Loan losses on new non-performing corporate and household loans	-474	-662
Additional loan losses on the already non-performing loans		-91
Loan losses on local government portfolio	-16	-26
Loan loss effect of exchange rate cap programme		27
Losses of the early repayment scheme	-207	-356
Losses of the early repayment scheme excluding exchange rate risk	-207	-310
Exchange rate risk of early repayment scheme because of higher-than-expected repayment ratio		-46
Exchange rate risk of open position		107
Interest rate risk		-98

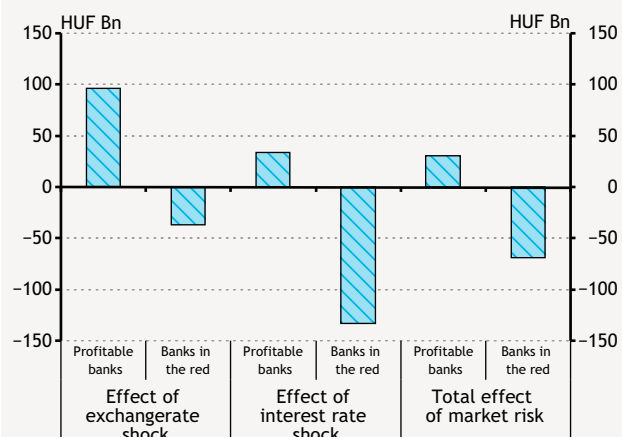
Source: MNB.

outlook. An additional component of the losses, compared to our previous report in April, stems from the possibility of early repayment. Based on our calculations, these losses amount to 40 per cent of costs related to credit risk. According to our expectations, the losses related to credit risk in the stress scenario exceed the loan losses in the baseline scenario by 60 per cent, mainly due to the significant deterioration in the economic outlook. A higher, 70 per cent increase is expected in the losses related to the early repayment scheme. This rise can be mainly explained by the 10 percentage point increase in the participation ratio, but the weaker exchange rate that is assumed in the stress scenario also play a role (Table 12).

In the stress scenario, an increase in yields in the government securities market would have a significant negative effect on profitability. In the case of the interest and exchange rate shocks as well, the average difference between the baseline and stress scenarios was considered to be the size of the shock. The resulting effect on profit was evenly distributed over the two years horizon. The parallel (250 basis point) upward shift of the yield curve results almost in a HUF 100 billion loss at the banking sector level, mainly due to the revaluation of the government securities portfolio.

The impact of the exchange rate shock is positive, but smaller in comparison with the previous market stress test. On aggregate, the banking sector is holding an open position against the forint; therefore, depreciation of the exchange rate has a positive effect on profitability. At the same time, due to the early repayment scheme, losses may arise through exchange rate depreciation, if the participation ratio exceeds the proportion that is hedged by banks (20

Chart 62
Market stress test results



Source: MNB.

Table 13
Results of stress test based on 8 per cent regulatory capital requirement

	Baseline scenario	Stress scenario
Capital need of banks (HUF Bn)	0	196
Banks with positive capital buffer (HUF Bn)	1,016	658
Total capital buffer (HUF Bn)	1,016	462

Source: MNB.

Table 14
Results of stress test based on 9 per cent capital requirement

	Baseline scenario	Stress scenario
Capital need of banks (HUF Bn)	36	294
Banks with positive capital buffer (HUF Bn)	881	574
Total capital buffer (HUF Bn)	845	280

Source: MNB.

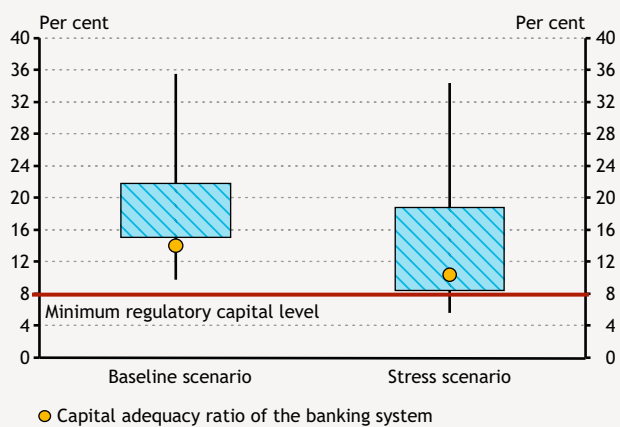
per cent according to our assumptions). Taking this effect into account, depreciation of the forint still affects banks' profitability positively, but there is a strong asymmetry among banks as the open position against the forint is concentrated at a few banks (Chart 62).

Overall, the depreciation of the exchange rate considerably impairs the capital position of banks. Although, at the system level, the exchange rate shock improves the results through market risk, its effect through loan losses and through increasing capital requirements is reversed and significantly exceeds the gains from market risk. Consequently, the Hungarian banking sector is quite sensitive to the depreciation of the forint.

In the baseline scenario there is a bank where the capital level will approach the regulatory minimum by end-2012. Compared to our April results, the resilience of the banking sector has deteriorated considerably. On the one hand, this results from losses stemming from the early repayment scheme and on the other hand it is the result of the worsening growth outlook. There is a bank where the capital level will be close to the regulatory minimum level by end-2012, and the capital buffer of the banking sector will also decline, resulting in a deteriorating ability to lend (Table 13 and Table 14).

Significant capital needs appear in the stress scenario, requiring further commitment from parent banks. While the banking sector does not need to raise additional capital in the baseline scenario, compared to earlier stress tests, the need for raising capital has increased in the stress scenario. In spite of the shorter time horizon of our stress test compared to April, capital injection needs for end-2012 increased considerably in the stress scenario (Table 13 and Table 14). In the unfavourable scenario, the capital buffer of the banking sector declines further; therefore, presumably, the lending capacity of banks would decline considerably in the case of another strong wave of the crisis (Box 9). As regards the HUF 196 billion capital need in the stress scenario, the commitment of foreign parent banks to their subsidiaries continues to be of key importance. Perceiving rising vulnerability, a parent bank has announced its intention to raise capital.

Chart 63
Distribution of CAR based on number of banks at the end of 2012



Note: Vertical stick refers to the interval of 10-90 per cent, while rectangle refers to the interval of 25-75 per cent.
Source: MNB.

Although capital adequacy seems to be adequate, the aggregate indicator conceals significant asymmetry. The capital adequacy ratio of the banking sector is very favourable, 14 per cent in the baseline scenario and 10.5 per cent in the stress scenario by end-2012. This seemingly favourable figure conceals very high asymmetry however: statistics based on the indicators of individual institutions disperse widely. Moreover, larger institutions are overrepresented among the poorly performing ones; hence, the capital adequacy ratio of the banking sector is in the weaker tail of the distribution. That is, contrary to the large number of banks with sound capital adequacy, the CAR of the banking sector is relatively moderate, since the capital adequacy of banks with significant market share are close to the regulatory minimum in the baseline scenario, or even below the minimum in the stress scenario (Chart 63).

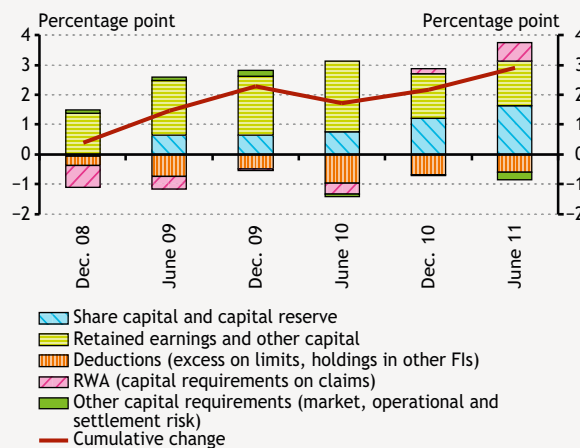
Box 9
The nexus between banking sector adjustment and stress test results

Compared to the capital need calculated in the previous stress tests, the current level is much higher, although not unprecedented. According to the results of earlier credit risk stress tests published in the Reports on Financial Stability, the capital need shown in the stress scenarios declined from the high value (HUF 250-300 billion) observed in early 2009 to a more moderate level by 2010-2011.

Accordingly, past experience shows that the banking sector is able to restore its shock-absorbing capacity after faltering, although partly at the cost of restraining lending. In addition to several other factors, the banking sector's measures to enhance the capital position also played a role in this improvement. The domestic banking sector showed the weakest initial capital position at end-2008; this date served as the starting point of the April 2009 stress test. Capital adequacy showed the greatest improvement in 2009 H1, which may have contributed to the fact that the shortage of capital indicated by the autumn 2009 stress test was already only nearly half of the one in April. Since the onset of the crisis in 2008, (cumulative) capital adjustment took place through retained profit, explicit capital injections of parent banks and deleveraging.

Obviously, the initial capital position is not the only factor that influences the results of the stress test. For example, the macro scenarios used in the stress test may also significantly influence the final result. These scenarios changed considerably during the period, mainly as a consequence of the changes in the baseline scenarios, as the magnitude of the stress applied (the difference between the baseline and stress scenarios) was more or less the

Decomposition of cumulative change in CAR since June 2008



Source: MNB.

Scenarios of credit risk stress tests

	April 2009	October 2009	April 2010	November 2010	April 2011	November 2011
HUF/CHF exchange rate baseline/ stress scenario	192/221	180/209	188/220	203/234	212/257	237/275
CDS spread baseline/stress scenario (basispoint)	540/740	220/420	190/390	320/520	260/500	450/740
Average of GDP growth rate in stress scenario (per cent)	-10.5	-6.3	-1.6	0.1	0.9	-0.4
Capital need in stress scenario (HUF Bn)	300	170	50	50	83	196
End of stress test horizon	End of 2009	End of 2010	End of 2011	End of 2011	End of 2012	End of 2012

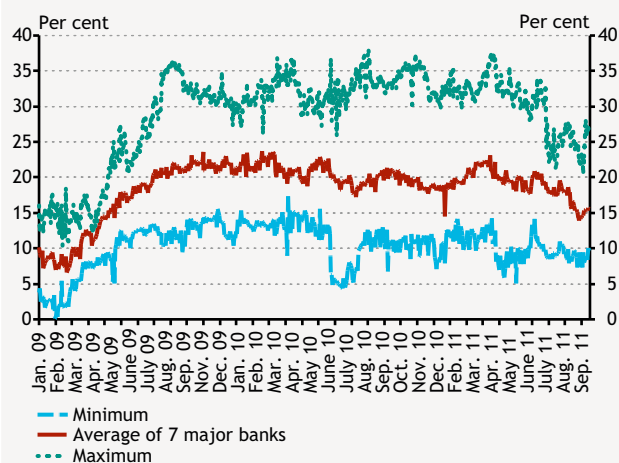
Source: MNB.

same. In 2009, for example, during the deepest recession, the fall in GDP that was meaningful in the baseline scenario as well resulted in a much greater real economic stress than in the following years, which also may have contributed to the weaker results.

However, the exchange rate of the forint against the Swiss franc depreciated considerably during 2010 and 2011, which would have impaired the results *ceteris paribus* in this period. In addition, the results of the stress test are affected by a number of other factors, such as the assumptions regarding earnings, the increasing amount of information available on debtors' behaviour, the length of the horizon of the stress test and methodological innovations.

7.2 The liquidity stress test indicates a considerable shortage of foreign currency

Chart 64
30-day liquidity surplus of the seven major banks as a percentage of the balance sheet total⁹



Source: MNB.

The short-term liquidity of the seven large banks is adequate. The short-term liquidity position of banks is measured on the basis of a thirty-day forward-looking maturity gap. The thirty-day cumulated total maturity gap shows what overall effect the maturing on- and off-balance-sheet treasury assets and liabilities have on the liquidity position of a bank without balance-sheet adjustment during the next thirty days. Its comparison with the level of liquidity reserves shows the size of the liquidity surplus that a bank has at the end of the thirtieth day reckoned from a specific day. The liquidity surplus of the seven large banks is significant, amounting to more than 15 per cent of their balance sheet total (Chart 64).

The short-term liquidity stress test measures the effect of an assumed simultaneous occurrence of financial market turmoil, deposit withdrawal and exchange rate shock. Regarding the stress parameters, unfavourable exchange rate changes play a prominent role, due to the margin call requirements which increase as a result of the market valuation of foreign exchange swap positions. The margin call requirement in foreign exchange is obtained by banks either to the account of their forint liquidity with the use of foreign exchange swaps, or by using foreign exchange funds within the balance sheet. In the event of market turmoil, however, reliance on the swap instruments of the MNB may also increase. Using the data of the seven largest banks, in determining the household and corporate

Table 15
Main parameters of the liquidity stress test

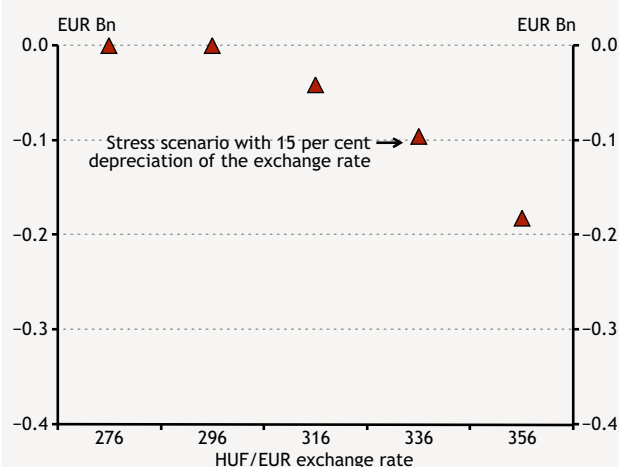
Assets			Liabilities		
Item	Degree	Currency effect	Item	Degree	Currency effect
Default at HUF interbank assets	20%	HUF	Withdrawals in household deposits	10%	HUF/FX
Exchange rate shock on swaps	15%	FX	Withdrawals in corporate deposits	15%	HUF/FX
Depreciation of central bank eligible assets	10%	HUF	Stand-by credit cancellation	100%	HUF

Note: The forward-looking treasury gap assumes no active treasury management on the part of the bank; hence it does not take into account the rollovers of maturing interbank and foreign funds.

Source: MNB.

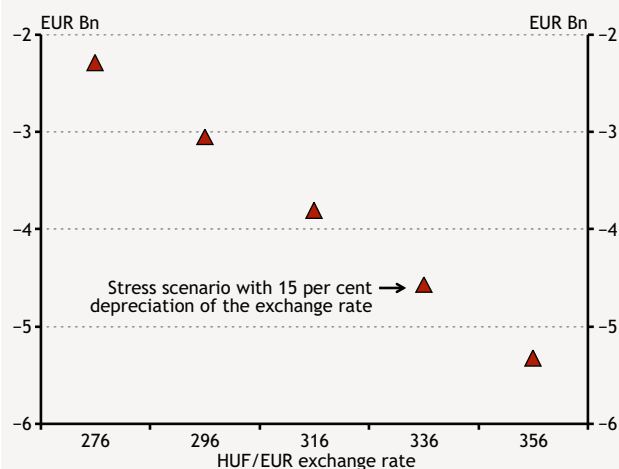
⁹ Liquidity surplus: the 30-day total cumulated gap (difference between inflows and outflows) + liquidity reserve available 30 days later. Total cumulated gap: treasury financing deficit or surplus calculated on the basis of static maturity cash-flow. Available liquidity reserve: foreign exchange nostro account + disposable MNB-eligible securities + undrawn stand-by credit facilities + (settlement account current balance - average settlement account holding requirement during maintenance period).

Chart 65
Total (HUF and FX) liquidity shortage
(only shortage)



Note: Based on 30 September 2011 data.
 Source: MNB.

Chart 66
Foreign exchange liquidity shortage
(only shortage)



Note: Based on 30 September 2011 data.
 Source: MNB.

deposit withdrawal as well as the price decline of eligible securities, we applied value-at-risk (VaR) based stresses, calculated on the basis of historical data. The size of the exchange rate shock applied is identical to the one applied in the macro stress scenario, whereas mainly empirical crisis experiences were used in determining the other parameters (Table 15).

The total liquidity buffer, which contains both the forint and foreign exchange surpluses, remains high under stress as well. In our liquidity stress test, with the generally applied 15 per cent depreciation, the liquidity surplus of the seven large banks was quantified for several exchange rate levels. According to our findings, with a 15 per cent depreciation the total liquidity surplus of the seven large banks would exceed EUR 5 billion, while the shortage at banks with a negative buffer would amount to a mere EUR 0.1 billion (Chart 65).

At the same time, a significant shortage of foreign exchange may develop in a stress situation. Although the level of the total liquidity surplus is adequate, in the event of turmoil on the swap markets – which play a key role in the foreign exchange refinancing of the domestic banking sector – the provision of foreign exchange may run into difficulties. Therefore, it is necessary to examine the liquidity surplus according to denomination as well, because in an extreme case exchangeability between currencies may not be possible. In a stress situation, there would be a foreign exchange liquidity need of EUR 4.6 billion, which is less than the forint surplus (Chart 66).

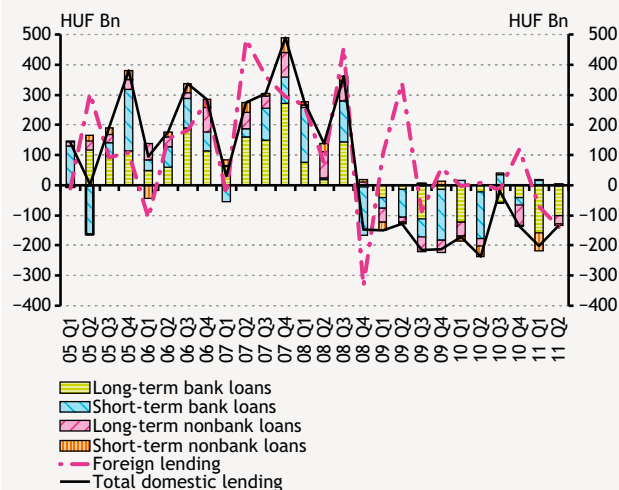
8 A protracted creditless recovery is expected, in which the deteriorating ability to lend, in addition to the low willingness to lend, may play an increasing role

Lending to the domestic private sector continued to decline in 2011. Strong supply constraints remain in domestic corporate lending, while demand constraints are also becoming increasingly effective due to the weaker economic outlook. Of the Visegrád Group, Hungary is the only one where there has been no turnaround in corporate lending. The creditless recovery is mainly attributable to the supply side, i.e. a low willingness to lend coupled with an increasingly weak ability to lend. An additional risk is that subsidiaries might be compelled by their parent groups to further restrain drastically their lending due to the euro area debt crisis and the early repayment scheme at a preferential exchange rate. The most efficient instrument to reduce the credit supply constraints in corporate lending could be government guarantee schemes; developing the corporate bond market and creating the legal background of securitisation also arises as a possibility. Besides credit supply constraints, potential instruments to ease demand constraints are also coming to the forefront as a result of the considerable economic slowdown.

The decline in lending to households is characterised by a decrease in foreign currency denominated loans and weak forint lending. Balance sheet adjustment by indebted households continues to be dominant in this segment. The persistently strong Swiss franc reduces disposable income and significantly decelerates the contraction in outstanding debt. In addition to the strong demand constraints, supply constraints are also appearing, primarily in relation to price-related conditions. Supply constraints could be eased by increasing price competition among banks. An upturn in bank-switching may play an important role in this regard. However, an important precondition for price competition is the introduction of transparent loan products with an interest rate pegged to a reference interest rate and fixed premium.

8.1 Credit rationing continues to be relevant in the corporate segment

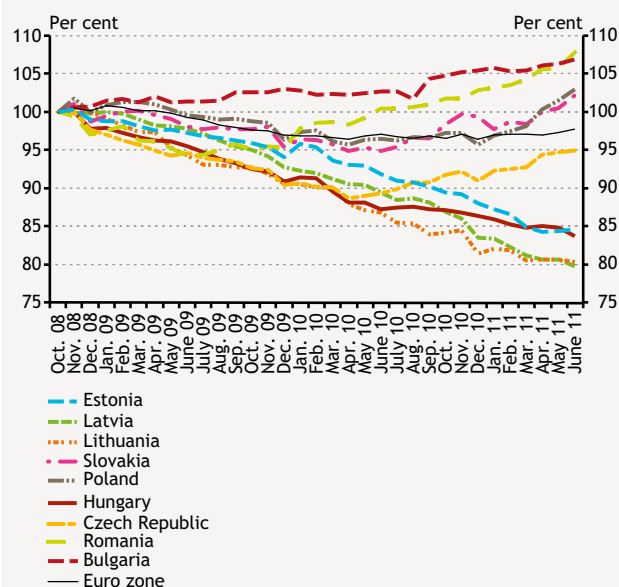
Chart 67
Net increase of loans to non-financial corporate sector by maturities



Source: MNB.

Chart 68
Corporate lending in international comparison

(October 2008 = 100; exchange rate adjusted)



Sources: Statistics of the ECB and national central banks.

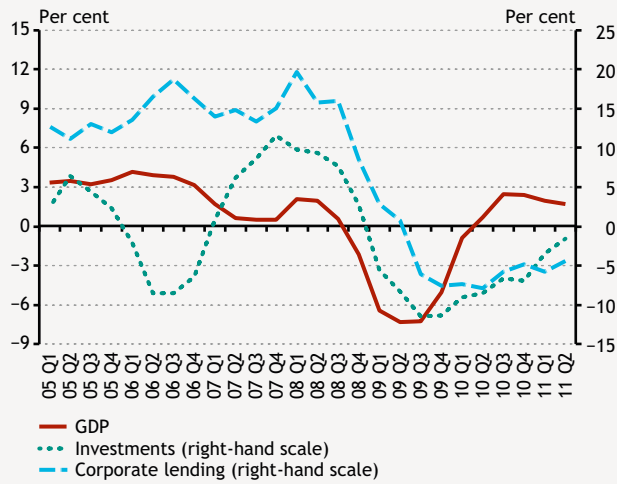
The decline in corporate lending continues to be driven by contraction in long-term loans. In the first two quarters of 2011, the total corporate loans of the domestic financial intermediary system continued to decline; in which long-term bank loans with their 80 per cent share played a key role. Although the magnitude of the total decline is high, at HUF 326 billion, it is 20 per cent below the decline in the same period of previous year (Chart 67). Overall, corporate lending is characterised by a slowing pace of contraction. Within the financial intermediary system, different types of institutions show a mixed picture: while the banking sector and financial enterprises are clearly characterised by contracting lending, a slight increase can be observed in the case of co-operative credit institutions. In addition to subdued domestic lending, cross-border financing of non-financial corporations declined as well; external financing adjusted for intra group loans decreased in both quarters during 2011.

Of the Visegrád Group, only Hungary is characterised by a creditless recovery. In the Visegrád countries, a turning point took place in corporate lending in early and mid-2010, and in this regard an increase was observed in the euro area as well in 2011, whereas lending activity in Hungary continues to follow a declining trend (Chart 68). Due to the interruption in the economic recovery this year and the overall increase in the risks of the banking sector, the decline in corporate lending activity may continue, thus prolonging the creditless recovery, resulting in real economic costs.

Deterioration in the domestic economic outlook has an adverse effect on corporate lending. Developments in lending usually follow the cyclical movements of the economy with a lag. In spite of the recovery that started in 2010, corporate lending was still negative in Hungary during 2011 (Chart 69), and the interruption in economic growth in Q2 and, in particular, the weakening external demand continue to restrain the economic activity of the corporate sector. This is expected to have further unfavourable effects on corporate lending, as so far domestic demand is not supporting growth. The economic outlook has a negative effect on both the demand and supply sides of lending: on the one hand, due to excess capacities, corporations may decide on a further postponement of

Chart 69
Annual growth rate of domestic GDP, investments and corporate lending

(exchange rate adjusted)

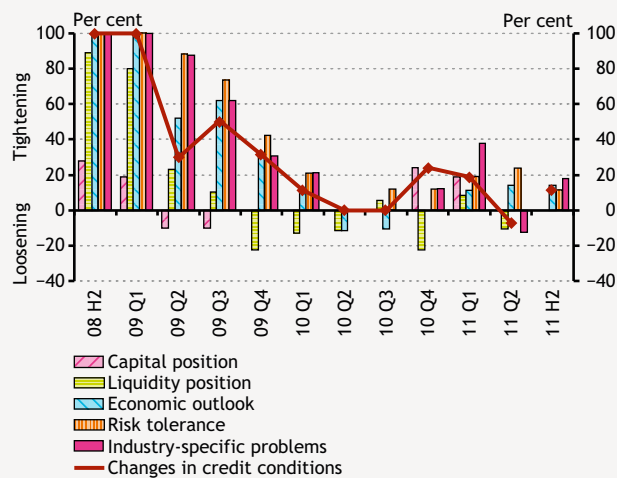


Source: HSCO, MNB.

their investments and on the other hand, worse corporate profitability results in lasting tight credit conditions.

The contraction in lending activity is determined to a great degree by supply constraints. Supply constraints continue to be a key factor behind the decline in corporate loans (Box 10). This is basically attributable to the low willingness to lend: the quarterly lending surveys indicate a prolonged tightening cycle, which has been lasting for nearly five years (Chart 70). The tightening of credit conditions is mainly explained by the worsening economic outlook, the deterioration in risk tolerance and industry-specific problems. All of this means that banks continue to extend credit to only more creditworthy clients. Moreover, due to the worsening economic outlook, the number of creditworthy companies may decline. This trend means funding difficulties mainly for the SME sector, because in their case typically there is no alternative to domestic bank lending. The latest lending survey was prepared in June-July 2011, and thus it does not contain the escalating sovereign debt crisis in the euro area at the end of the summer and the effects of the 'national protection' action plan on the financial system. Considering the above factors, it can be established that while earlier it was the willingness to lend that played a key role in tightening the credit supply, looking ahead, the weak ability to lend due to the declining capital buffers may increasingly dominate.

Chart 70
Changes in credit conditions of corporate loans and factors contributing to changes



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

Source: MNB.

Box 10

The negative effect of credit supply on the real economy

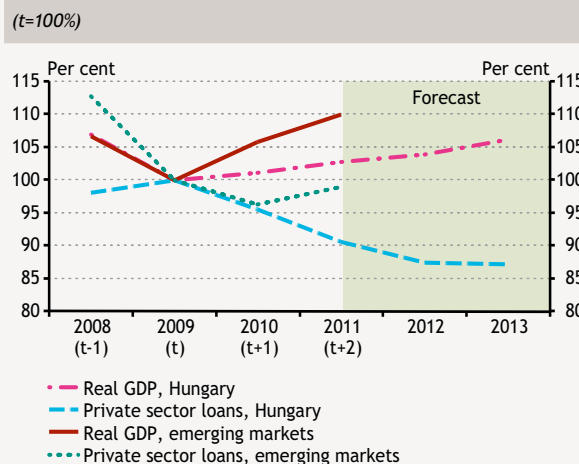
Corporate lending continued to decline in 2011, and, based on currently available information, a turning point is only expected in 2013 Q1. Accordingly, our forecast suggests that a creditless recovery will evolve, i.e. GDP growth will not be coupled with an increase in outstanding loans. This is not a unique phenomenon, as documented by Calvo et al. (2006)¹⁰ studying several emerging market crises. At the same time, comparing the Hungarian case to average emerging countries' data reveals that while in an average case, two years after the trough of the crisis (t+2) total loans almost return to the level observed at the trough (t), in the Hungarian case, after the trough of the crisis the level of loans outstanding is expected to decline further for four years.

All this points to a continuous decline in the Hungarian loan-to-GDP ratio in the coming years. This is not an unusual case, as according to the calculations of Felcser and Körmendi (2010)¹¹ this ratio declines for five years on average following crises.¹² However in current case of Hungary, the decline in the ratio does not take place with slower growth in lending than in GDP, but the lending declines for four years.

For a better understanding of a creditless recovery, it is worth separating to what extent the contraction in lending is attributable to the fall in demand and to what extent it stems from the low willingness to lend of the financial intermediary system. The effect of lending on the real economy is captured by the latter factor. Lending is decomposed using the econometric model presented in Tamási and Világi (2011),¹³ which allows an assessment to what extent the fall in lending is attributable to the effects of negative credit supply shocks¹⁴ or to macroeconomic or other factors, such as the decline in investment.

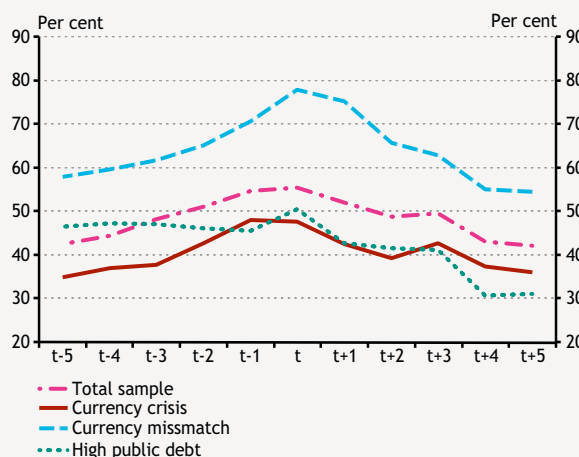
According to the model, starting from 2008, supply factors almost always had a negative effect on lending, i.e. in this period the new loan volume would have been higher and the decline in lending would have been lower without credit supply shocks. The calculations suggest that between early 2008 and 2011 Q2 the net flow of corporate loans would have been some HUF 1,000 billion greater without the negative credit supply shocks. That amounts to 11 per cent of the total corporate loans outstanding in early 2008. The magnitude of the impact of this contraction in lending on the

Recovery of the real GDP and private sector loans after crises



Source: MNB, Calvo et al. (2006).

Private sector loan-to-GDP ratio



Source: IFS.

¹⁰ CALVO, G. A., A. IZQUIERDO AND E. TALVI: Sudden Stops and Phoenix Miracles in Emerging Markets, *American Economic Review Papers and Proceedings*, Vol. 96, No.2, p. 405-10.

¹¹ FELCSER, D. AND GY. KÖRMENDI: International experiences of banking crises: management tools and macroeconomic consequences, *MNB Bulletin*, June 2010, http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbszemle/mnben_mnb_bulletin_june_2010/felcser-kormendi_EN.pdf.

¹² It is important to mention that the study examines not only creditless recoveries, i.e. the decline in the loan-to-GDP ratio is not necessarily attributable to a fall in lending. It may also be explained by the fact that lending grows more slowly than GDP.

¹³ TAMÁSI, B. AND B. VILÁGI: Identification of Credit Supply Shocks in a Bayesian SVAR Model of the Hungarian Economy, *MNB Working Paper*, No. 2011/7, 2011, http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_mnbfuzetek/WP_2011_07.pdf.

¹⁴ In the study, credit supply shocks are defined as changes in the fundamental characteristics of the financial intermediary sector, such as expectations, technology, preferences or the regulatory environment.

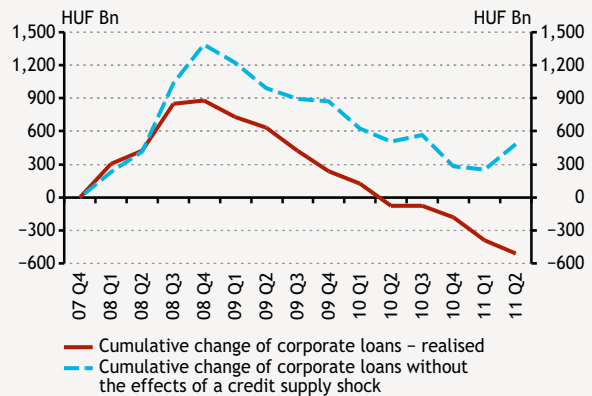
real economy can also be quantified: according to the model, in 2011 the level of real GDP would have been around 1 percentage point higher without the fall in credit supply.

In addition to the above calculations, it is also documented in international literature that a drop in lending has a negative impact on economic growth, and contributes to a protracted economic recovery. According to the above cited study by Calvo et al. (2006), generally recovery could occur even in the presence of declining lending as well, but these phenomena were accompanied by very low levels of investment.

The study by Abiad et al. (2011)¹⁵ examined what factors add to the probability of occurrence of a creditless recovery. As opposed to Calvo et al., they examined not only the downturns caused by the sudden stop of capital inflow, but also recoveries after normal recessions in economic cycles. Creditless recovery was identified in about 20 per cent of the episodes, but its probability increased considerably if the recession was coupled with a banking crisis or if the economic downturn was preceded by a significant credit boom. The authors demonstrated that the lack of lending implies growth sacrifice: real GDP returns to its normal growth trend more slowly if the upturn is not supported by sound lending. All this also results in a distortion of the economic structure, as the size of the sectors having more credit need declines in a disproportionate manner.

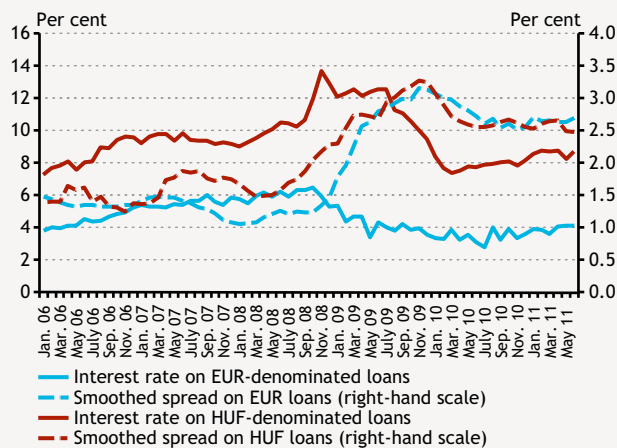
The findings of Bijsterbosch and Dahlhaus (2011)¹⁶ are similar. Credit booms and bank crises significantly increase the probability of a creditless recovery. The authors quantify this probability in the case of Eastern European EU Member States. According to their results, the probability of a creditless recovery is 15 per cent in the case of Hungary. They found similar figures for Bulgaria and Romania, whereas this indicator is 7 per cent for the Czech Republic and a mere 1 per cent for Poland.

Impact of credit supply shock on corporate loans



Source: MNB.

Chart 71 Interest rates and spreads on corporate loans



Source: MNB.

In general price conditions for clients with good creditworthiness are reflected. Based on a central bank survey that can be considered representative, banks use a spread of 100-200 basis points for large corporations and 400-800 basis points for the SME sector. As there is a risk that players in the SME sector may not be able to afford this spread with an acceptably risky activity, banks' lending policies are driven by non-price conditions. The conditions are designed in a way that clients of better creditworthiness who can thus be financed with a lower risk premia are able to meet these conditions. Consequently, in the latest period average risk premia tended to reflect the premia of the 'creditworthy', typically large corporate clients and this situation remained practically unchanged in the first half of the year (Chart 71). All of this suggests that banks continue to disburse loans only to the most creditworthy clients, which may necessitate further government steps in order to facilitate access to credit for the SME sector (Box 11).

¹⁵ ABIAD, A., G. DELL'ARICCIA AND B. LI: Creditless Recoveries, *IMF Working Paper*, No. 11/58.

¹⁶ BIJSTERBOSCH, M. AND T. DAHLHAUS: Determinants of Creditless Recoveries, *ECB Working Paper Series*, No. 1358.

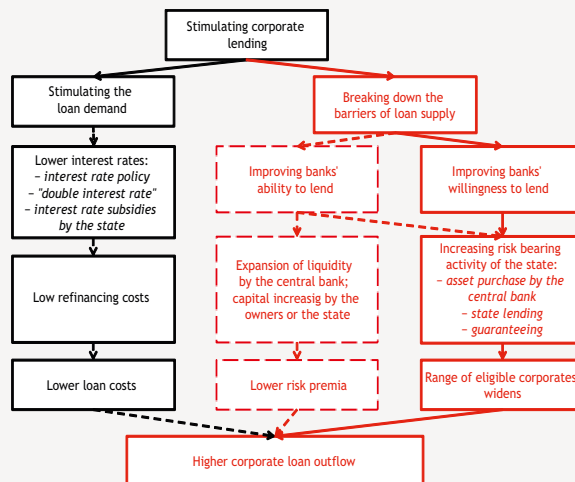
Box 11

Theoretical and practical possibilities of stimulating corporate lending

In a recently published analysis, MNB staff reviewed all of the – conventional and non-conventional – types of intervention that may theoretically be used to stimulate corporate lending.¹⁷ Stimulating banks’ corporate lending can occur with actions aimed at increasing either credit demand or credit supply. In addition, within credit supply a distinction can be drawn between banks’ ability and willingness to lend: the former means the amount that banks are able to lend on the basis of their financial strength, whereas the latter means how much they intend to lend on the basis of their risk tolerance. The mechanisms of the instruments for stimulating both credit demand and credit supply – and within that on banks’ lending ability and willingness – are summarised in the chart of this box. Of course, only those instruments are effective that address the factors causing the decline in lending.

Several previous internal and public analyses of the MNB also dealt with the reasons for the decline in corporate lending and the

Possible tools of stimulating corporate lending



Source: MNB.

Possible means of stimulating lending

Means of intervention	Who can intervene?	It has more influence on:	Possibilities and limits of its application in the current situation
(Partial) assumption of corporate credit risks 1	central bank	credit supply (willingness)	possible only in the form of security, there are not enough corporate bonds; fiscal costs; allocation problems
(Partial) assumption of corporate credit risks 2	state-owned banks, guarantee organisations	credit supply (willingness)	fiscal costs; allocation problems; its extent is limited: the state cannot take over the lending function of the banking sector
Tax allowance to banks that lend more	state budget	credit supply (willingness)	fiscal costs, not targeted (those who would lend anyway also receive it)
General (bank) liquidity expansion ('quantitative easing')	central bank	credit supply (ability)	implemented in forints; it would be possible in foreign exchange only to the account of the foreign exchange reserves; does not affect willingness of banks to take risks
Reduction of capital requirement and other prudential expectations	regulatory authority	credit supply (ability)	conflict with prudential objectives; impairs the shock-absorbing capacity of the banking sector; does not affect willingness of banks to take risks
'Dual interest rate level' (cheap central bank refinancing to banks)	central bank	credit demand ('cheaper credit')	equivalent to state-subsidised refinancing; conflict with price stability objective; does affect credit demand and not affect willingness of banks to take risks
Base rate reduction	central bank	credit demand ('cheaper credit')	conflict with price stability objective; does not mitigate risk-taking limits, increase credit demand
Interest rate subsidy, preferential refinancing	state budget, state-owned banks	credit demand ('cheaper credit'), credit supply (ability)	fiscal costs; allocation problems; does not affect willingness of banks to take risks
Other administrative measures (e.g. strengthening of creditor's rights)	regulatory authority	uncertain	there are no fiscal costs; not efficient; negative externalities (e.g. the strengthening of creditor's rights deteriorates the situation of debtors)

Source: MNB.

¹⁷ FÁBIÁN, GERGELY, PÉTER FÁYKISS AND GÁBOR SZIGEL (2011), A vállalati hitelezés ösztönzésének eszközei, [Means of stimulating corporate lending], MNB-tanulmányok, 95, http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_mnbtanulmanyok/mt95.pdf.

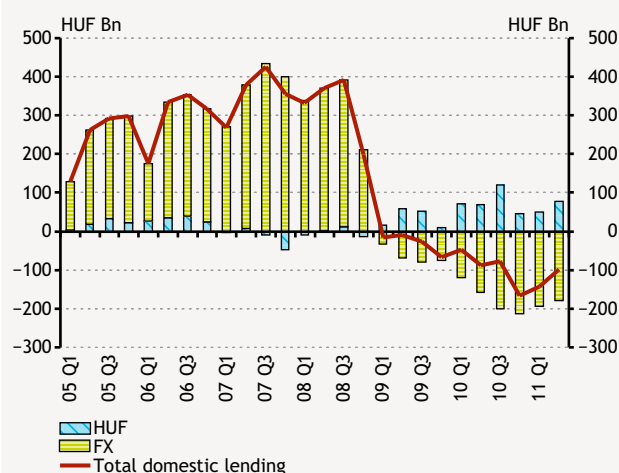
possibilities of stimulating lending.¹⁸ They show that in Hungary two-thirds of the decline in corporate lending since end-2008 is attributable to the drastic fall in credit supply, although demand for loans also declined to some extent during the recession. Deterioration in banks' willingness to take risks (to lend) played the most important role in credit supply constraints. Therefore, interventions that attempt to offset the low lending willingness of banks can be effective in stimulating corporate lending: i.e. a government institution must take over a part of or the whole credit risk of the corporate borrowers. A good example for the former is the activity of guarantee organisations backed by state guarantee, whereas for the latter the direct lending by state-owned banks. Theoretically, the central bank itself could also assume direct corporate credit risk: in countries with developed capital markets there are examples of the central bank purchasing significant amounts of corporate bonds. However, Hungarian companies have very limited access to securities market due to their small size and technical difficulties.

Based on historical experience, interventions should focus on credit supply constraints. The most effective means of stimulating lending activity, which is weak due to the low willingness to lend, may be greater risk-taking by the state. Although at present the low willingness to lend is the main problem, at the same time, as a result of the unfavourable effects of the sovereign debt crisis, improving lending capacity may become necessary in the near future, which can be achieved by strengthening the capital and liquidity positions of banks or expanding alternative channels of corporate financing. Over the longer term, it would be necessary to develop the corporate bond and securities market in any case, as this would allow a reduction of the dependency on bank financing. Beside of that, it could be worth considering that eventually diminishing credit demand due to the decelerating economy may call the need for stimulating the demand side, as well.

¹⁸ SÓVÁGÓ, SÁNDOR (2011), Identifying supply and demand in the Hungarian corporate loan market, *MNB Occasional Papers*, 94, http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_muhelytanulmanyok/OP_94.pdf.

8.2 Lending continues to decline due to households' on-going balance sheet adjustment

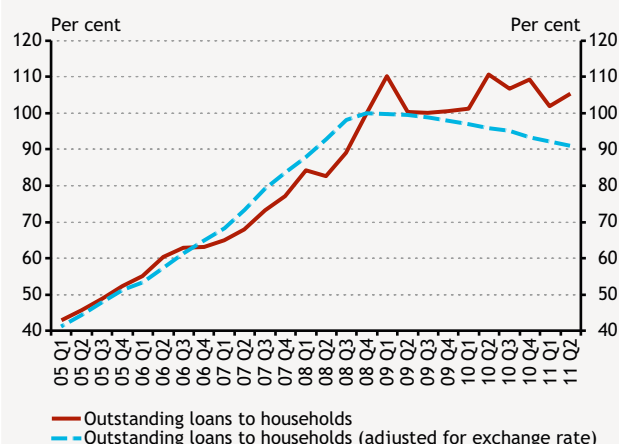
Chart 72
Net quarterly change of loans outstanding to households by currency breakdown



Source: MNB.

Chart 73
Relative level of household loans outstanding

(December 2008 = 100)



Source: MNB.

The decline in lending is attributable to the shrinking in foreign currency denominated loans outstanding. The balance sheet adjustment of households accelerated in 2011. The contraction in outstanding loans reached HUF 240 billion in H1, which is nearly twice as much as the decline in the same period last year (Chart 72). Although balance sheet adjustment is becoming stronger, the outstanding amount of household loans is increasing due to the appreciation of the Swiss franc. In 2011 Q2, the nominal level of household loans outstanding exceeded the end-2008 level by 5 per cent (Chart 73), whereas excluding the exchange rate effect it was 10 per cent lower. In 2011, foreign currency loans played a decisive role in the decline in both housing and consumer loans, as low amount of newly extended loans denominated in HUF does not offset the repayment of foreign currency denominated loans. There is no material difference among types of institutions either. In 2011, a decline in loans outstanding was typical both in the case of banks and financial enterprises, while in the co-operative credit institutions sector only a marginal increase was seen.

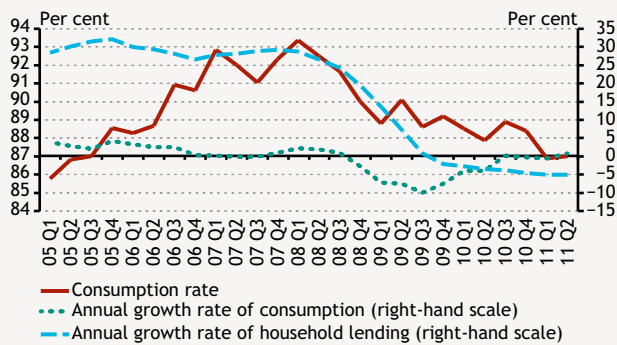
Due to households' continuing balance sheet adjustment, demand constraints continue to be effective. In spite of the economic growth, household consumption as a proportion of income is still at a low level (Chart 74); balance sheet adjustment due to foreign currency denominated loans plays a considerable role in that sense. The permanently strong level of the Swiss franc reduces households' disposable income as well as decelerates downsizing in indebtedness. Due to uncertainties in economic activity and the weakness of employment, precautionary considerations continue to play a dominant role; therefore, significant demand constraints prevail in lending to households.

Domestic lending is weak in regional comparison, which is partly attributable to the lack of price competition. The international comparison of household lending shows a similar picture to that of corporate lending. Of the Visegrád Group, Hungary is the only country where there has not been a turning point in household lending (Chart 75). However, this is attributable not only to credit demand constraints. The regulatory tightening practically meant a

Chart 74

The household consumption and lending

(exchange rate adjusted)

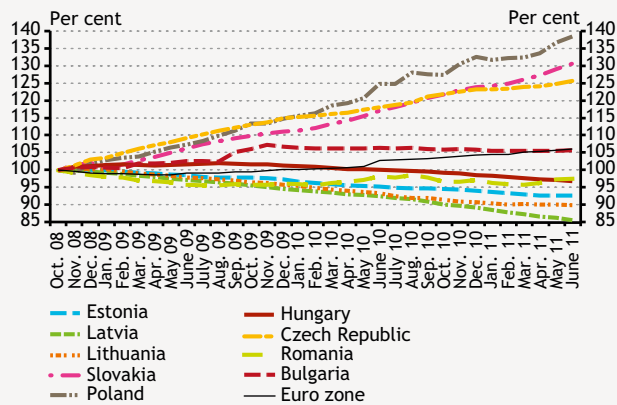


Source: HSCO, MNB.

Chart 75

Household lending in the CEE region

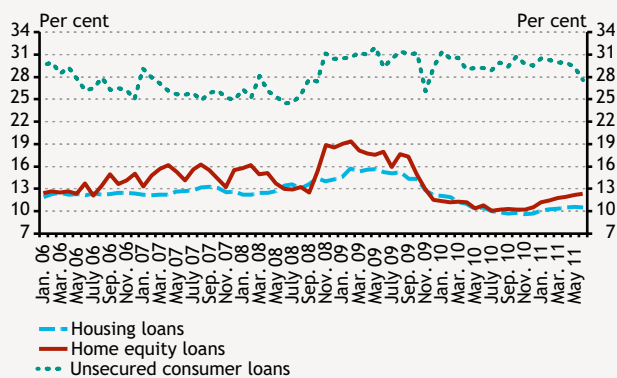
(October 2008 = 100; exchange rate adjusted)



Source: Statistics of ECB and national central banks.

Chart 76

The annual percentage rate of charge (APRC) of new forint lending



Source: MNB.

quasi prohibition on foreign currency mortgage loans, which, at the same time, is perceived as an interest rate shock for clients, as it is not possible any more to borrow in foreign currencies with lower nominal interest rates. Consequently, the volume of new forint loans is considerably lower. At the same time, examining the Visegrád Group, there is a material interest rate spread on outstanding loans in Hungary. In addition to the strengthening of the Swiss franc, debt service burden of households is also significantly influenced by the fact that the interest rate spreads applied by the Hungarian banking sector are high in international comparison (Box 12).

Supply constraints primarily appear in price conditions.

Compared to end-2010, a slight increase was experienced in the interest rate conditions of housing loans; total APRC was around 10.5 per cent (Chart 76). This value is 90 basis points higher than the one at end-2010, while the increases in the central bank base rate amounted to 75 basis points. In the same period, the interest rate conditions of home equity loans became considerably tighter. The spread above the reference interbank rate increased by more than one and a half percentage points (170 basis points), thus the total APRC of home equity mortgage loans exceeded 12 per cent. In the case of new loans, lending is narrowing not only because of demand constraints but also due to the higher nominal interest rates. According to the lending survey conducted by MNB, non-price conditions of housing and consumer loans have not changed significantly, and banks do not expect any major change until the end of the year.¹⁹

¹⁹ However, it should be taken into account that banks submitted their answers to the Q2 lending survey in early July, so these replies do not yet reflect the possible effects of the fall in global risk appetite and the considerable strengthening of the Swiss franc that took place in July and August.

Box 12

Supporting lending to households by increasing the price competition among banks

Previously, the MNB has presented its proposals for the development of the household loan market several times – last time in Report on Financial Stability of November 2010. Many of these elements were included in the ‘country protection’ action plan, including the initiatives for transparent pricing and complete credit register. The regulation of latter has already been prepared. As a result, credit histories of not only bad debtors but of good ones as well will be traceable in a central registration system of debtors. This will make the assessment and pricing of new clients’ credit risk easier for banks.

The regulation of the pricing of loans is being elaborated. In the household segment, price competition is low in both the existing foreign currency denominated loans outstanding and the new, mainly HUF-denominated lending. Even the regulatory amendments – which are progressive, but still insufficient – implemented in the meantime are unable to remedy this situation.

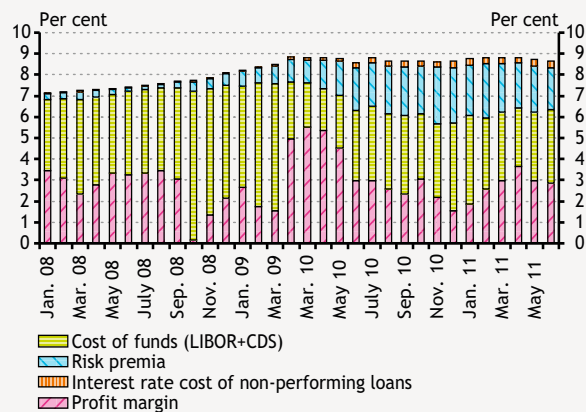
Regarding the outstanding (mainly foreign currency denominated) household loans, according to the decomposition of average APRC – while covering their funding costs, with the inclusion of the risk premium and the interest income foregone – banks gain an around 3 per cent, or sometimes much higher, average interest margin on their clients.

We can make international comparison to evaluate the magnitude of this interest margin. Regionally, in the field of foreign currency denominated housing loans outstanding, the premia above the 3-month reference interbank interest rates and the monthly average 5-year sovereign CDS spread are comparable. This indicator fluctuated around 2.5-3.5 per cent in Hungary between 2010 Q1 and 2011 Q1, which is the second highest value among the countries of the region. Moreover, the above mentioned data for Hungary represents a downward distortion because in Hungary the difference between the total APRC – which contains the total cost of the loan, including the fees related to disbursement and the handling fees charged continuously till maturity – and the interest rate is extremely high (2-2.5 percentage points), while the same figure for the region is around 1 percentage point.

In terms of newly extended forint denominated mortgage loans, the interest rate spread has declined to some extent recently, but at the same time its current level of about 3.5-4 per cent also indicates that there would be room for an increase in price competition and for a decline in lending interest rates.

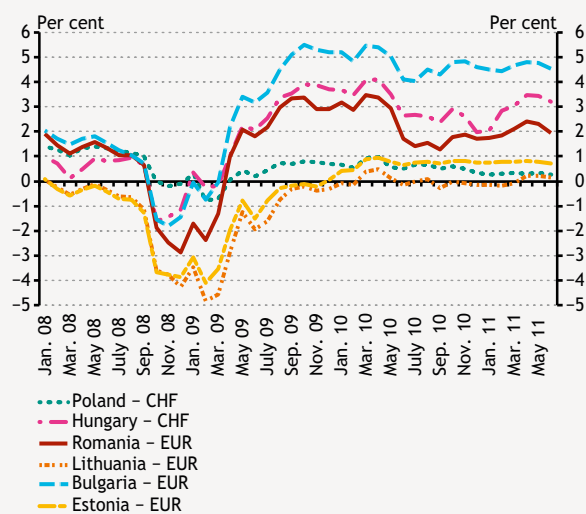
The high interest rate premia in Hungary are signs of the problems existing in the household lending market, and are attributable to two main sources. Firstly, typical mortgage loans are products whose interest rates may still be changed unilaterally, with a short (3-12-month) interest rate period. This leads problems in loan refinancing, as comparison between products is not possible by the non-transparent interest rate conditions, because the client can know the interest rate on loans only for one interest rate period in advance. And this, in turn, makes loan refinancing impossible regarding existing loans outstanding, as it does not make sense for consumers to assume the costs (in terms of money and time) related to the new loan in exchange for uncertain benefits.

Decomposition of APRC applied for FX loans outstanding



Source: MNB.

Interest margin of FX loans in the CEE region



Source: national central banks, MNB.

Moreover, the government decree on prudent lending makes the replacement difficult. According to the current regulation the replacement of Swiss franc denominated loans with loans denominated in forint or euro is possible independently of the Loan-to value ratio, but the replacement by the Swiss franc loan is practically impossible as a result of the effectiveness of the 45 per cent loan-to-value ratio limit.

Another factor that hinders loan refinancing may be the prepayment fee, the reduction of which was aimed at by several recent changes in legislation. At the same time, according to the current rules the prepayment of housing mortgage loans is more expensive if the prepayment is financed from borrowing from other bank, i.e. loan is refinanced. This regulation obviously limits competition, as the higher prepayment fee cannot be justified from a banking operation aspect. Therefore, it would be expedient to terminate this difference in order to increase competition.

It would be necessary to simultaneously introduce several measures that strengthen one another in the household market. As the first and most important step, making the pricing of loans transparent is necessary in the case of outstanding and new loans alike. The recommended solution in place of the non-transparent interest rate conditions is to make available two sorts of loan products to consumers possible in term of interest rate condition: loans linked to a reference interest rate with a premium that cannot be raised or loans with an interest rate fixed for a longer period (3-5 years).

The loan with interest rate pegged to a reference interest rate creates a clear and transparent relationship between lending rates and interbank rates, relevant for funding costs, and ensures that declining market interest rates are taken into account at the level of borrowers as well. The regulation also should require the fixing of the premium above the reference rate. Of course, the regulation regarding transparent pricing would only be able to considerably reduce the repayment burden of households if it was valid for the outstanding loans as well.

As the second element of the proposal package, dismantling the barriers to loan refinancing is necessary in the case of the outstanding loans as well, which would involve two modifications. First, an amendment to the government decree on prudent lending in a way that the application of the loan-to-value ratios should not be required in the case of loan refinancing of Swiss franc denominated loans by the same currency denominated loans. The other necessary change would be the standardisation of prepayment fees, i.e. it should not be allowed to charge higher fees in case of loan refinancing than in the case of an ordinary prepayment.

Price of several dominant mortgage product in some European countries

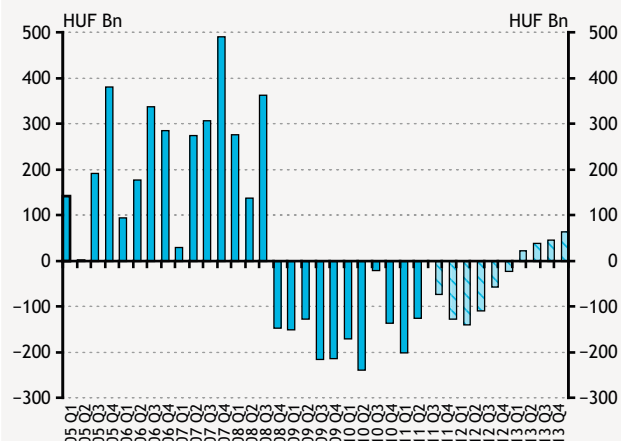
(new loans)

Country	Dominant product	Country	Dominant product
Austria	VARIABLE (3 month EURIBOR)	Czech Republic	FIXED (3-5 -10 year)
Belgium	FIXED (Whole maturity, 10+ year) and VARIABLE (government bond yields)	Bulgaria	VARIABLE ("fund cost" + premia, 3 month EURIBOR, 6 month SOFIBOR)
Germany	FIXED (5-10 year)	Lithuania	VARIABLE (3-6 month EURIBOR, VILIBOR)
Spain	VARIABLE (12 month EURIBOR)	Latvia	VARIABLE (3 month and 6 month EURIBOR)
France	FIXED (10 year), VARIABLE (12 month EURIBOR)	Poland	VARIABLE (3 month EURIBOR, WIBOR, CHFLIBOR)
Ireland	VARIABLE (3 month EURIBOR, ECB MRO, optional)	Romania	VARIABLE (3/6/12 month EURIBOR, LIBOR, ROBOR)
Italy	VARIABLE (6 month EURIBOR)	Slovakia	FIXED (1-5)
The Netherlands	FIXED (5-10 year)	Slovenia	VARIABLE (6 month EURIBOR)
United Kingdom	VARIABLE (Optional, BoE rate, LIBOR), FIXED		

Source: National banks' and Financial Supervisor Authorities' data, ECB: Housing Finance in the Euro Area (2009).

8.3 Turning point in lending to the private sector is delayed significantly

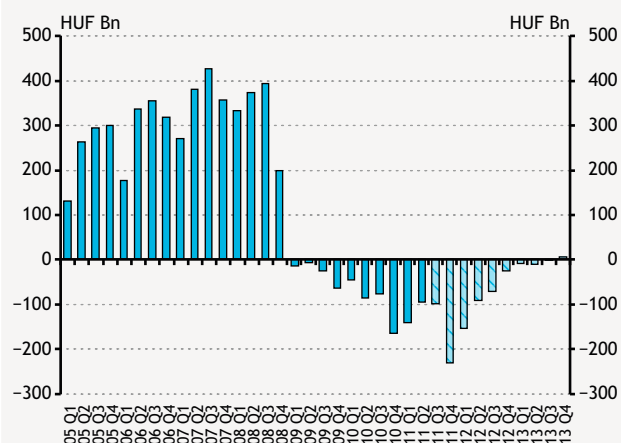
Chart 77
Forecast of net credit flow to non-financial corporate sector



Source: MNB.

Banks' low willingness and ability to lend as well as the deteriorating economic and risk environment hinder corporate lending. In our forecast published in an earlier Report on Financial Stability we expected a turning point in corporate lending for end-2010. However, economic outlook in the period that elapsed since then has changed considerably: the outlook of the export sector worsened coupled with the subdued domestic demand, thus reducing demand for loans. On the other hand, further tightening of credit conditions is also expected on the supply side, which is explained by the market conditions related to the euro area sovereign debt crisis and by the potential losses related to the mortgage loan repayment scheme. Within supply constraints, the deterioration in the ability to lend may play an increasing role, which is primarily attributable to the weakening capital position. The above factors lead to a further delay in a turning point of corporate lending; an increase in corporate loans outstanding is expected only from 2013 Q1 (Chart 77).

Chart 78
Forecast of net credit flow to household sector



Note: Two-thirds of the early repayments from savings are settled in 2011 Q4, one-third in 2012 Q1.

Source: MNB.

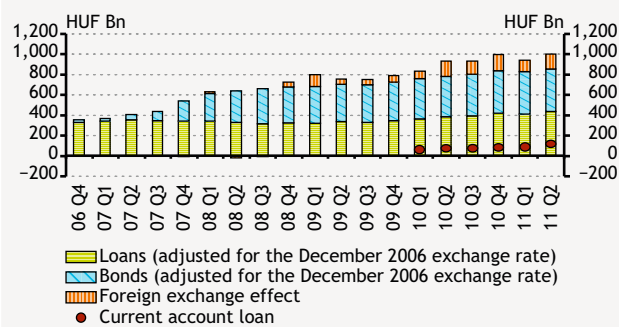
Balance sheet adjustment is expected to continue in the household sector. In parallel with the worsening ability and willingness to lend of the financial intermediary sector, considerable credit demand constraints affect lending to households. The persistently strong Swiss franc continues to significantly impair the income position of households, while slack labour market conditions may remain for a longer period of time. Precautionary motives also play a material role in the subdued household consumption, mainly due to the uncertain economic outlook and the concerns related to the strengthening of the Swiss franc. Taking into account of the constraints prevailing in household credit demand and the significantly worsening risk environment of domestic financial intermediaries, no material increase in lending is expected in this segment over the forecast horizon. In parallel with this, in 2011 Q4 and 2012 Q1, total loans outstanding may shrink substantially as a result of the repayments of foreign currency mortgage loans from savings²⁰ (Chart 78).

²⁰ In the lending forecast, the share of early repayment implemented via refinancing were not take into account, as no transaction type change in loans outstanding is related to it.

9 Increasing risks in financing the local government sector

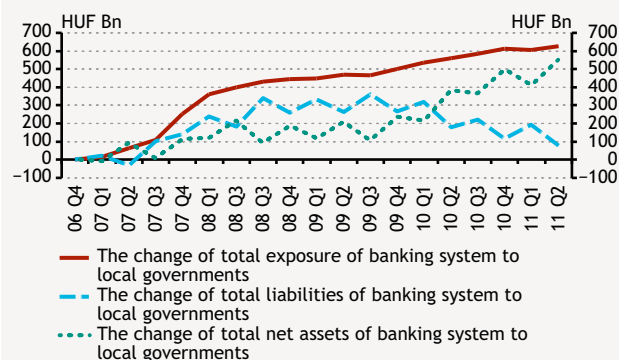
Banks' exposure to the local government sector has been increasing steadily in recent years. Principal repayment of bonds issued during the municipality bond "boom" preceding the financial crisis has started only in the case of one third of the bonds outstanding, and for most of the bonds the principal repayment will start in the coming two years. Due to the considerable foreign exchange exposure of total loans and bonds outstanding as well as to the declining revenues of local governments and the worsening economic outlook, it is doubtful that local governments will be able to repay their debts to the banking sector in line with their original repayment scheme. Although the risks related to the debt of the local government sector have increased significantly in the recent period, the banking sector shows willingness and has capacity to manage these risks.²¹

Chart 79
Local government exposure of the banking system



Source: MNB.

Chart 80
Changes in the position of the banking sector vis-à-vis the local government segment compared to December 2006
(adjusted for the December 2010 exchange rate)



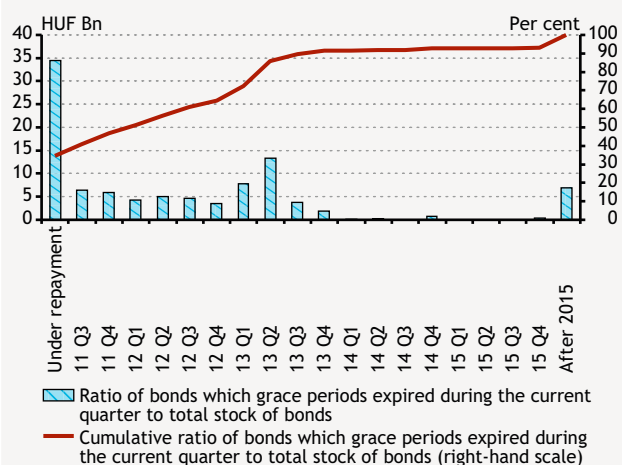
Source: MNB.

The net exposure of the banking sector to local governments is increasing. The indebtedness of the local government sector represents an increasing risk for both the general government budget and the portfolio quality of banks. At end-July 2011, assets of the domestic banking sector to local governments amounted to some HUF 1,000 billion. Regarding loans, starting from the second half of 2010, only overdrafts outstanding have increased in net terms (Chart 79). In spite of the extremely restrained lending, the exposure of the banking sector to the local government sector increased considerably (Chart 80). The main underlying reason is that previously the deposits placed by local governments had also increased in parallel with increasing outstanding amount of bonds, but during 2010 deposits started to be withdrawn.

The debt service burden increases due to the steadily strong Swiss franc and the expiry of the principal repayment grace periods. Another factor in the increase in net exposure is the strengthening of the Swiss franc. 60 per cent of the municipality bonds and loans are foreign exchange denominated; within that, more than 80 per cent is denominated in Swiss franc. Therefore, in spite of the restrained lending similarly to the household sector, both the outstanding debt and the debt service burden have become higher (Chart 79). The grace periods of the bonds issued in a total value of approximately HUF 550 billion, with typically 3-5-year principal repayment grace periods, started to expire at end-2010. Based on our estimates, by end-2011 the grace period will expire for nearly half of all the bonds outstanding, and this ratio may even reach 90 per cent by end-2013 (Chart 81). Calculating with the exchange

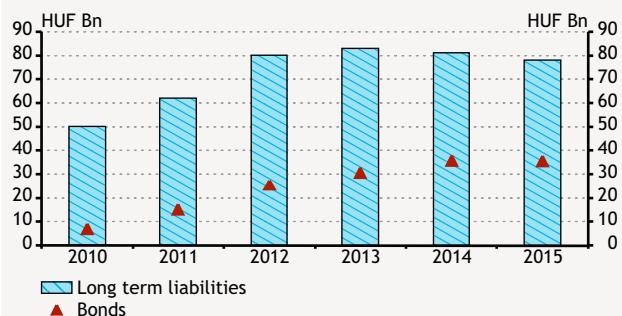
²¹ ACZÉL, ÁKOS AND DÁNIEL HOMOLYA: Risks of the indebtedness of the local government sector from the point of view of financial stability, *MNB Bulletin*, October 2011. http://english.mnb.hu/Root/Dokumentumtar/ENMNB/Kiadvanyok/mnben_mnbszemle/mnben_mnb_bulletin_october_2011/aczel-homolya_en.pdf.

Chart 81
Timing of the start of principal repayment within local government bonds outstanding



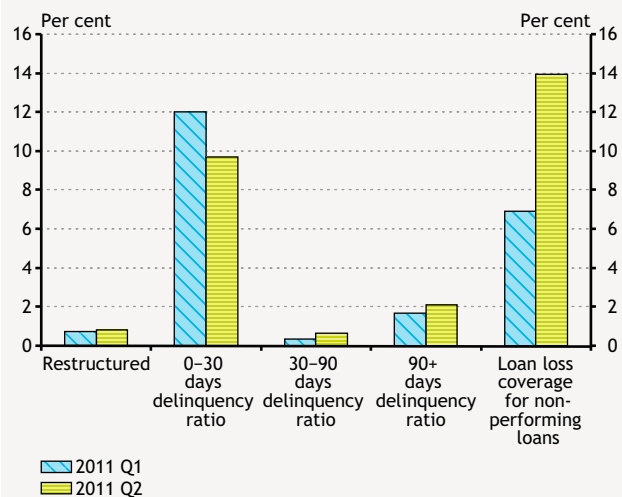
Source: MNB.

Chart 82
Expected repayment burden of the long-term local government debt at end-2010 exchange rate



Note: Estimate based on forecast by local governments.
Source: MÁK.

Chart 83
Portfolio quality indicators as percentage of the total local government portfolio



Source: MNB.

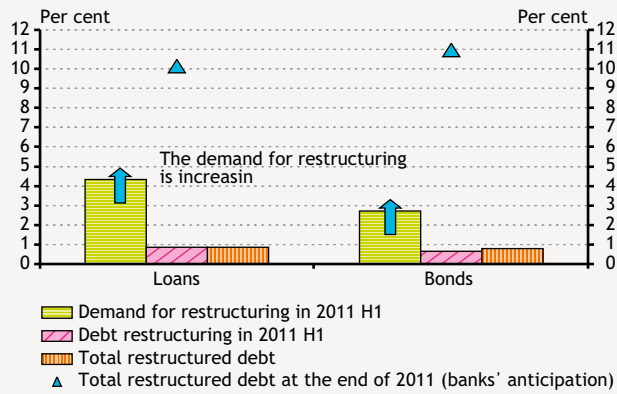
rate at the end of 2010, with the start of the principal repayment periods, in 2011 the annual debt servicing burden related to total long-term liabilities may exceed HUF 60 billion. According to our forecast, by 2012-2013 the debt service burden may grow to HUF 80 billion, within which the annual debt service burden related to bonds is expected to amount to HUF 30-40 billion (Chart 82).

Credit risk indicators started to worsen significantly in mid-2010. Based on portfolio indicators at the end of the second quarter of 2011, the exposure of banks to local governments is not problematic, although the trends of the changes point to increasing risks. At the end of the second quarter of 2011, the proportion of non-performing loans was 1.2 per cent. Loan loss provision coverage (a level of 26 per cent) is below the approximately 40 per cent coverage of the total non-performing loan portfolio of banks. According to our estimate, at end-June 2011 the ratio of more than 90 days overdue bonds outstanding to total bonds outstanding was nearly 3 per cent, which represents a gradual increase compared to the level of 2.1 per cent at end-March 2011. Accordingly, within total local government exposures the ratio of non-performing loans reached 2.1 per cent, while the loan loss provision coverage of the total exposure grew to 14 per cent (Chart 83).

Debt restructuring has commenced in the local government segment as well. Risk indicators may deteriorate in the future: although at end-June 2011 the restructured exposure fluctuated around the level of merely 1 per cent, demand for restructuring from the borrowers' side was already 3-4 per cent of the portfolio, and based on the data of the lending survey, banks expect an around 10 per cent restructuring as a proportion of total loans by end-2011 (Chart 84). Recently, some interest representation bodies of local government proposed a further general principal repayment moratorium of 1 or 3 years covering all bonds. However, due to the unique nature of local government transactions, the optimum solution would be to treat the cases of local governments that have payment difficulties individually. The restructuring of local governments' debt by a considerable number of banks confirms that the banking system shows willingness and ability to solve the peculiar problems of local governments.

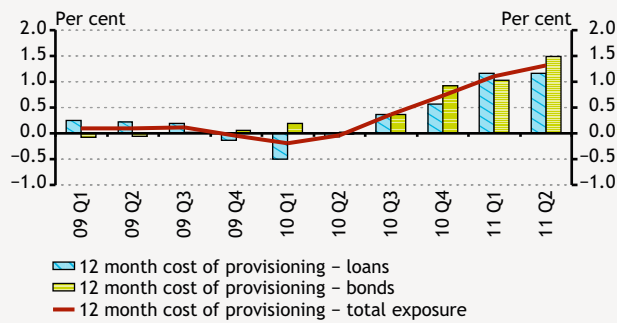
Adequate loan loss provisioning is of key importance in this segment as well. The cost of provisioning as a proportion of total loans outstanding increased from practically zero to 1.3 per cent by mid-2011 (Chart 85). This level is below the 3 per cent level seen for the corporate and household loan portfolios during the current crisis, but points to increasing risks. Looking ahead, we consider it important that banks apply prudent loan loss provisioning

Chart 84
Restructuring expectations in the local government portfolio



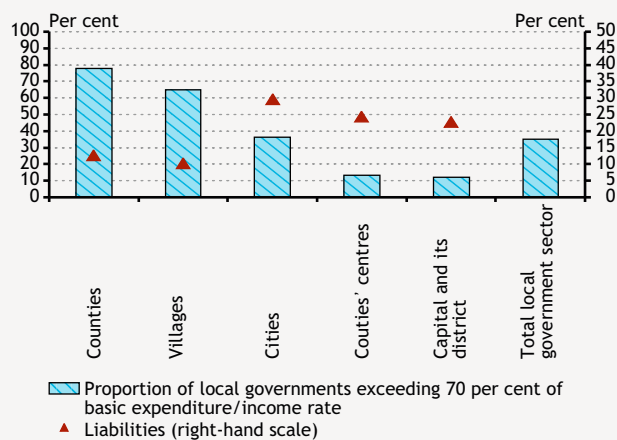
Source: MNB.

Chart 85
Cost of provisioning in the local government portfolio



Source: MNB.

Chart 86
Distribution of local governments' liabilities by type of settlement and the proportion of local governments with high basic expenditure to income rate within each category



Source: MÁK and own calculations.

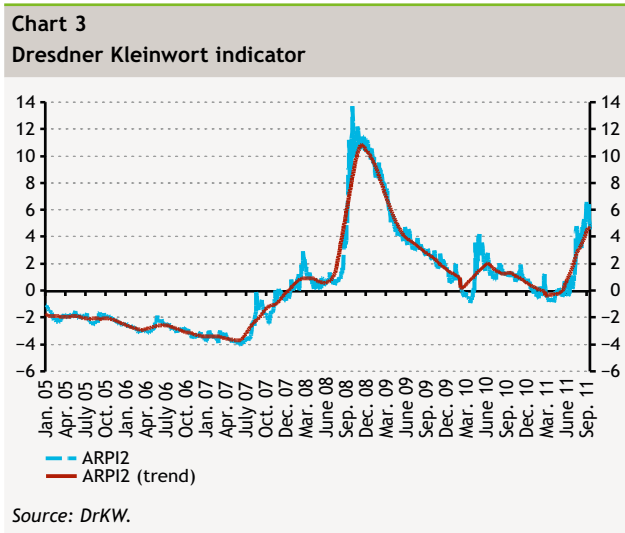
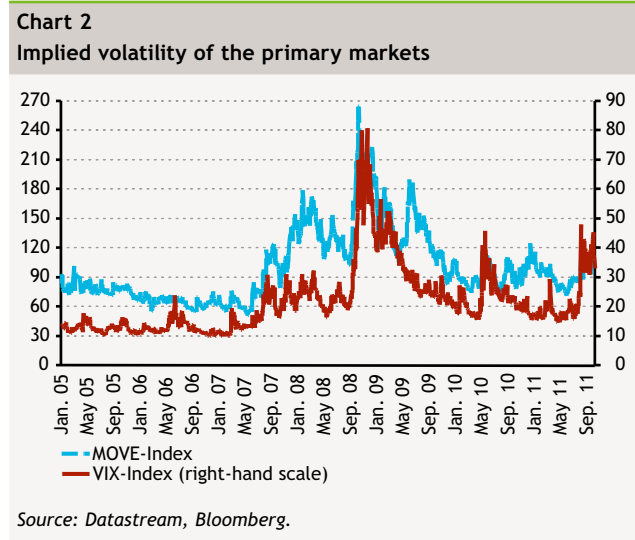
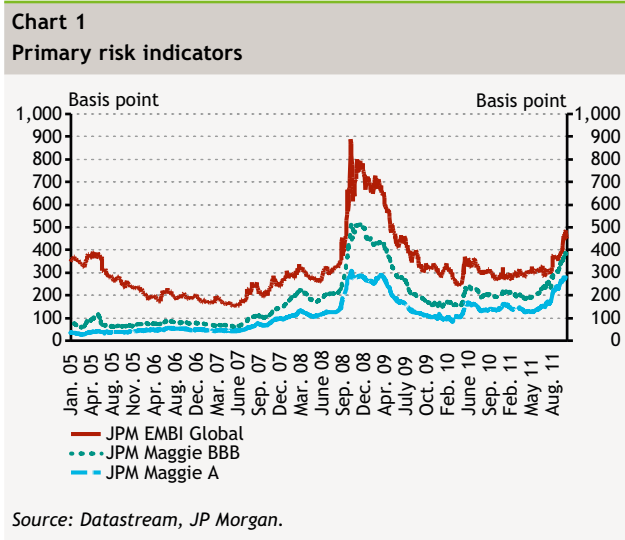
methods for the local government exposure, and keep adequate records of the restructured transactions, reflecting the risks related to the exposures.

Making the financing of the local government system transparent is of key importance in terms of financial stability as well. From the aspect of the reduction of risks it is of significance that repayment by local governments continue to remain an acknowledged obligation and looking ahead, local government borrowing constraints move in the direction of 'effectiveness'. This latter is especially important because the current debt limits are too loose (debt servicing burden is not allowed to be higher than 70 percent of the modified own revenue), and thus they are not effective at systemic level. Finally, it is important to emphasise that there is no state guarantee on local government debt, and in the event of any payment problems, liabilities may be settled in a debt settlement procedure. Nevertheless, in the current turbulent environment the uncertainties related to local governments' ability and willingness to pay may escalate risks related to the Hungarian sovereign as well. In addition to all the above, the future situation of local governments may be significantly influenced by the forthcoming reorganisation of the municipality system as a whole.

The government's plan of taking over the counties' debt together with their institutions eases the risks concerning the local governments' ability to meet their obligations. Among the different types of local governments, the counties have the highest default risk as beside their heavy debt burden their revenues are low (Chart 86). According to the government's plan, the counties' institutions will be taken over by 1 January 2012. The government will assume the debt of HUF 180 billion as well, and initiate discussions with banks and financial institutions concerning the debt and payment details, along with possible restructuring. The consolidated government debt will not increase by the takeover as the local governments' debt is a part of the consolidated government debt.

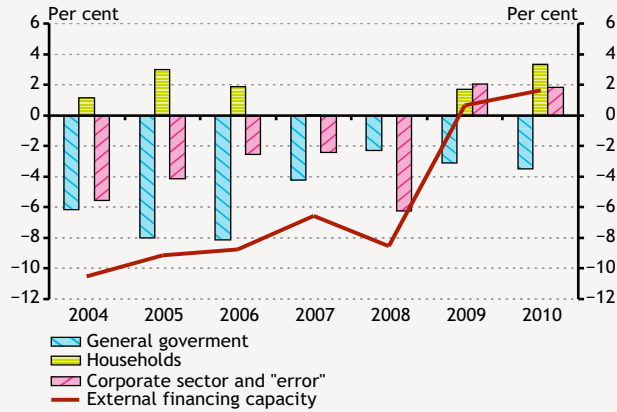
Appendix: Macro-prudential indicators

1 RISK APPETITE



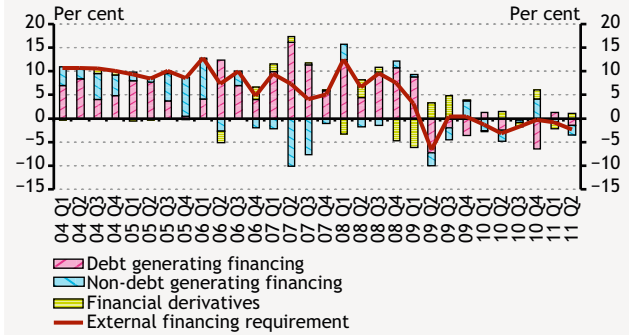
2 EXTERNAL BALANCE AND VULNERABILITY

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



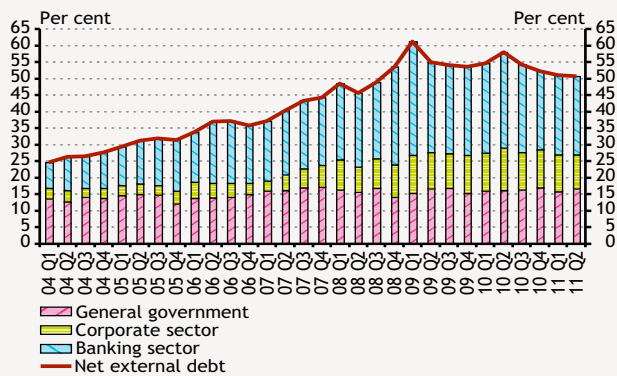
Source: MNB.

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



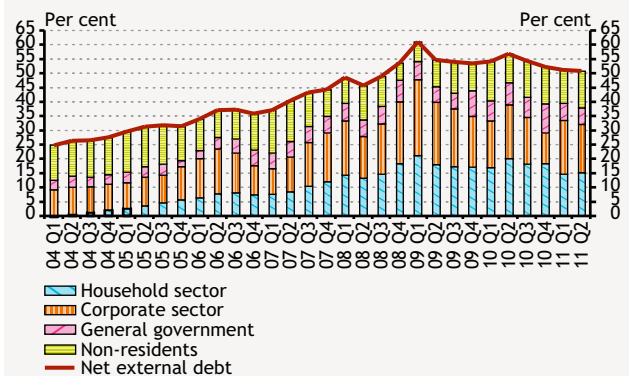
Source: MNB.

Chart 6
Net external debt as percentage of GDP



Source: MNB.

Chart 7
Open FX position of the main sectors as percentage of GDP

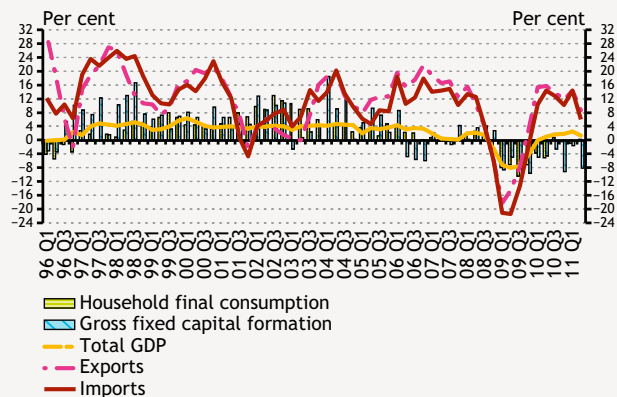


Source: MNB.

3 MACROECONOMIC PERFORMANCE

Chart 8
GDP growth and its main components

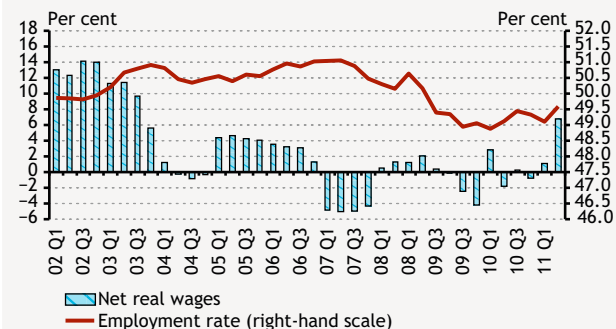
(annual growth rate)



Source: HCSO.

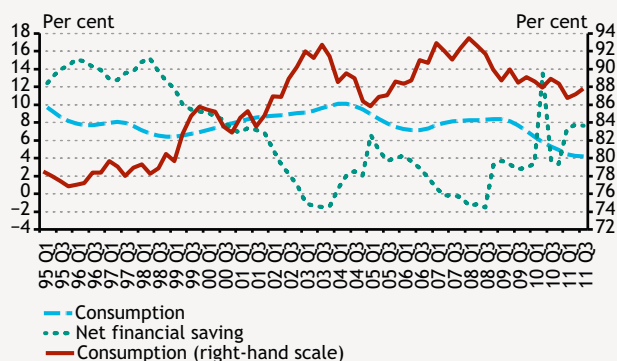
Chart 9
Employment rate and net wage developments

(annual growth rate)



Source: HCSO.

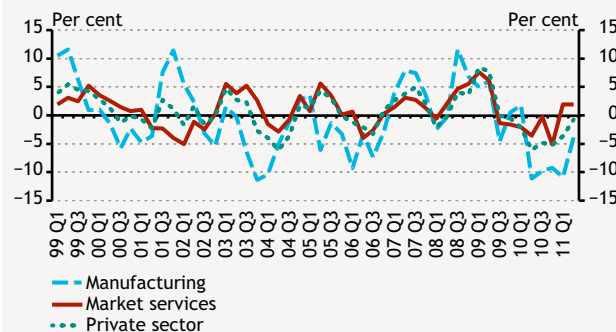
Chart 10
Use of household income as a ratio of disposable income



Source: HCSO, MNB.

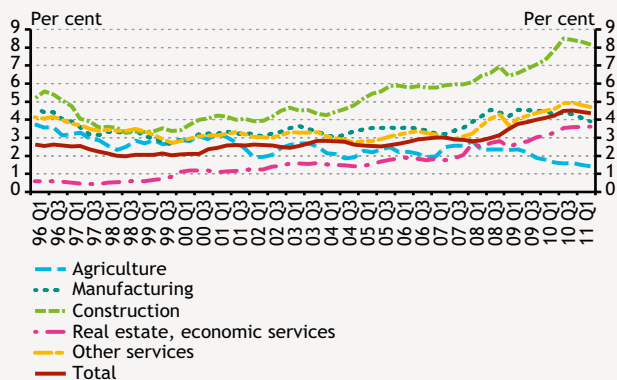
Chart 11
Corporate real unit labour cost in the private sector

(annual growth rate)



Source: HCSO, MNB.

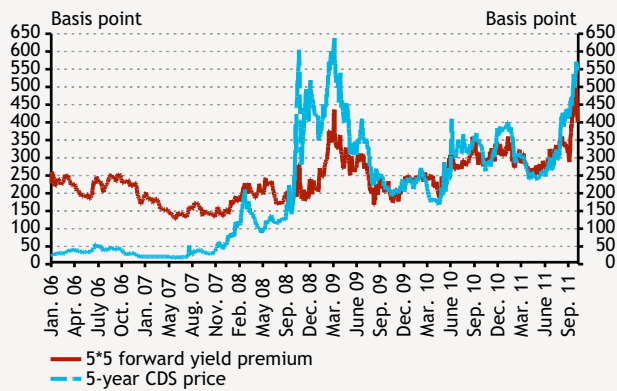
Chart 12
Sectoral bankruptcy rates



Source: Opten, HCSO, MNB.

4 MONETARY AND FINANCIAL CONDITIONS

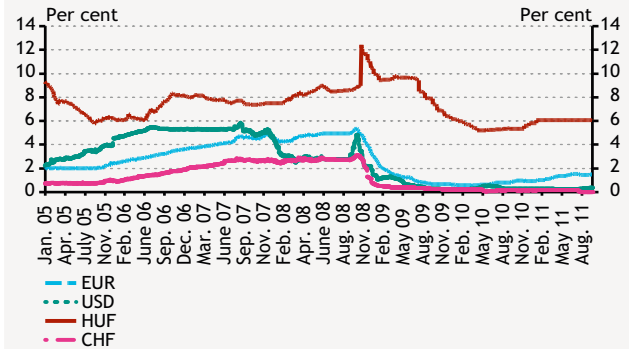
Chart 13
Long-term default risk and forward premium of Hungary



Source: Datastream, Reuters.

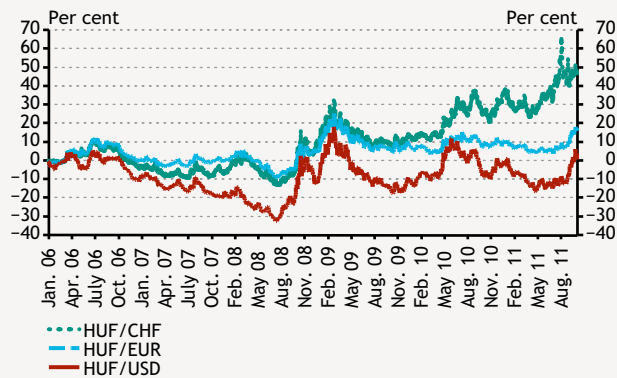
Chart 14
Three-month EUR, USD, CHF and HUF money market interest rates

(LIBOR and BUBOR fixing)



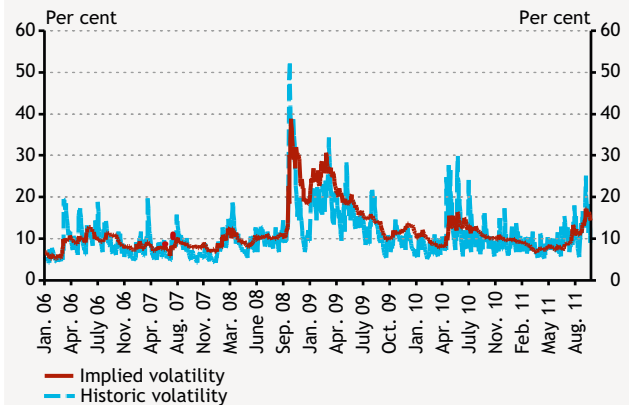
Source: Reuters.

Chart 15
HUF/EUR, HUF/USD and HUF/CHF exchange rates compared to January 3, 2005



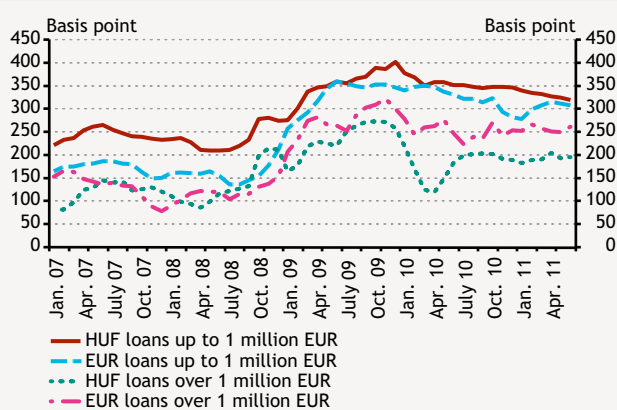
Source: Reuters.

Chart 16
Volatility of the HUF/EUR exchange rate



Source: Reuters, MNB.

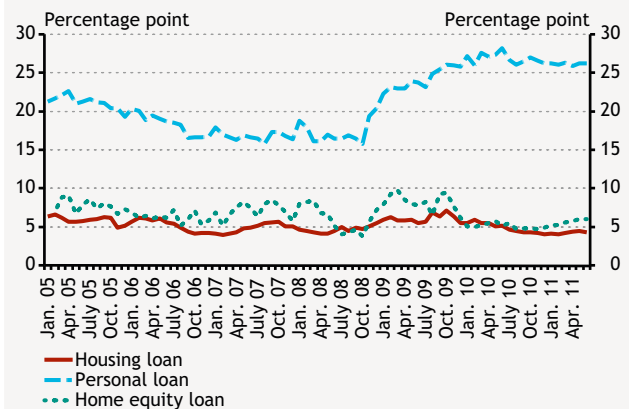
Chart 17
Interest rate premium of new loans to non-financial enterprises



Source: MNB, Euribor.

Chart 18
Interest rate premium of new HUF loans to households

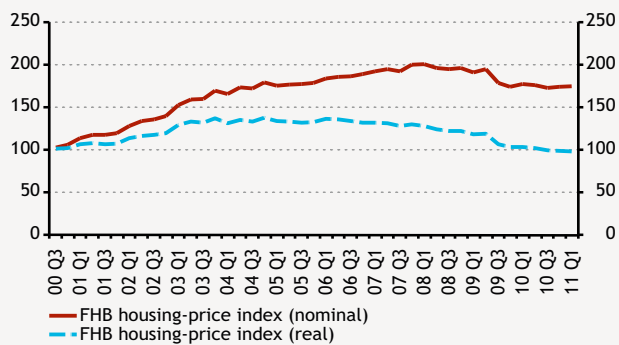
(over 3-month BUBOR)



Source: MNB.

Chart 19
FHB housing-price index

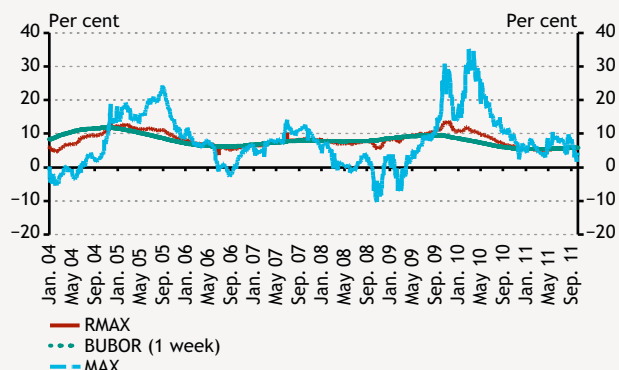
(2000 = 100)



Source: FHB.

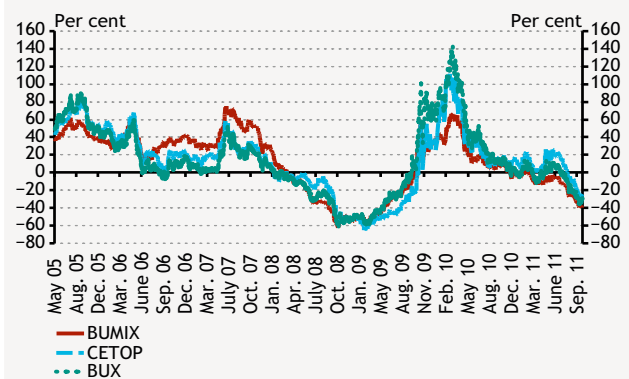
5 PRICES OF INSTRUMENTS

Chart 20
Annualised yields on government securities' indices and money markets



Source: FHB.

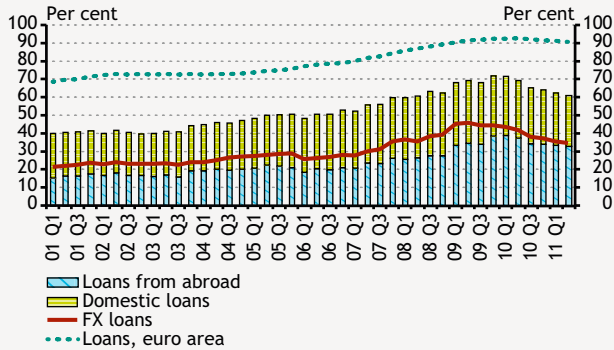
Chart 21
Annual yield of key Hungarian and Central and Eastern European stock market indices



Source: ÁKK, portfolio.hu, MNB.

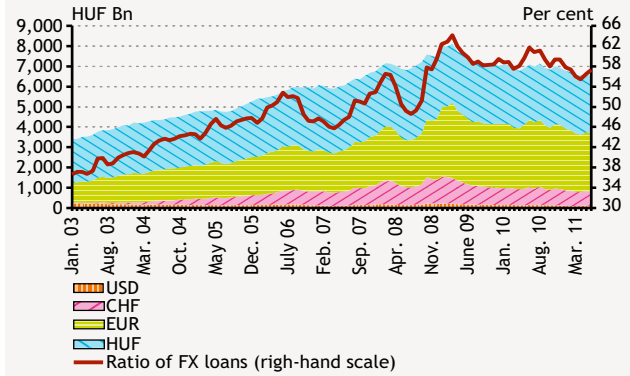
6 RISKS OF THE FINANCIAL INTERMEDIARY SYSTEM

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



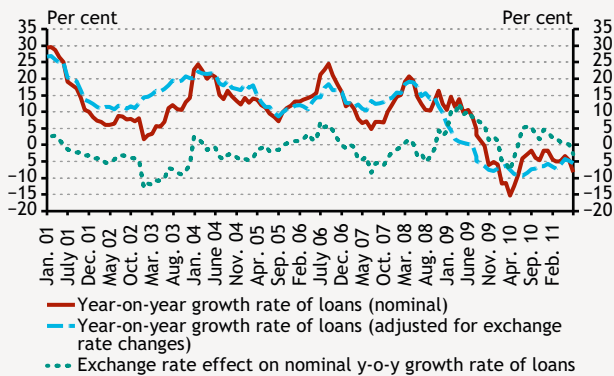
Source: MNB, Eurostat.

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



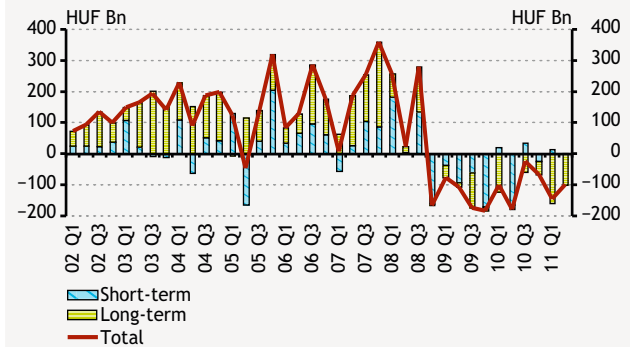
Source: MNB.

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



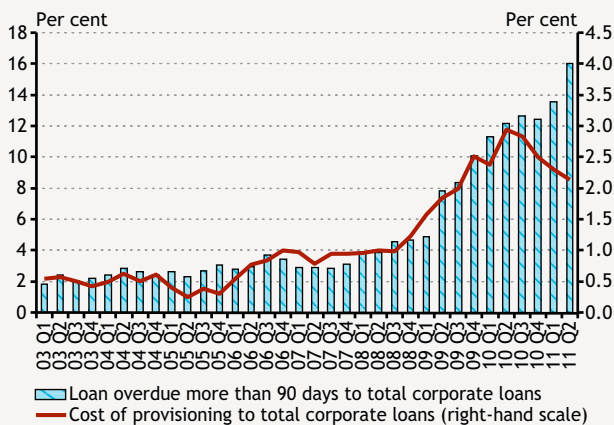
Source: MNB.

Chart 25
Net quarterly change of bank loan volumes of non-financial enterprises



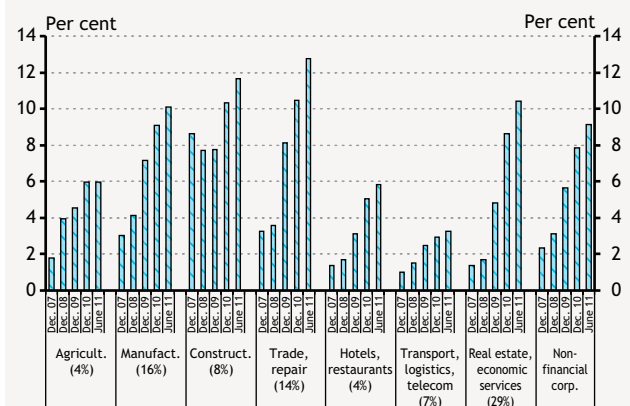
Source: MNB.

Chart 26
Quality of the corporate loan portfolio



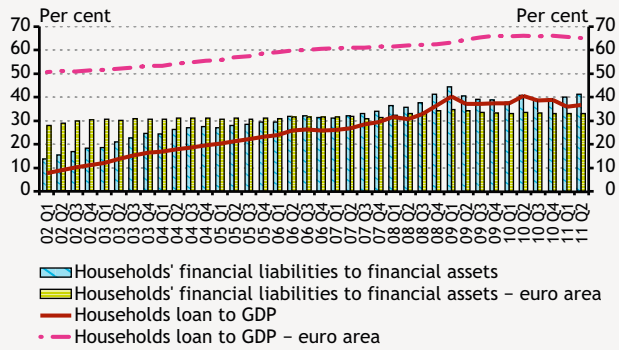
Source: MNB.

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



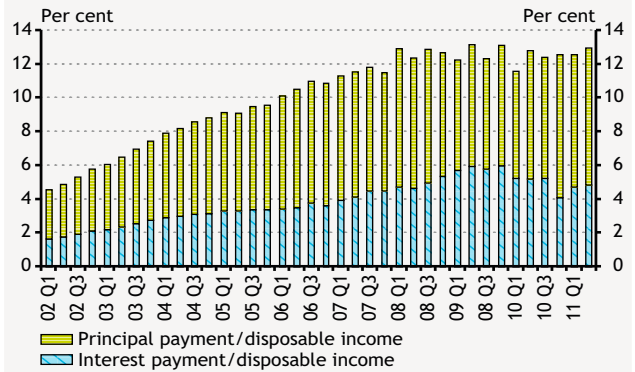
Source: MNB.

Chart 28
Indebtedness of households in international comparison



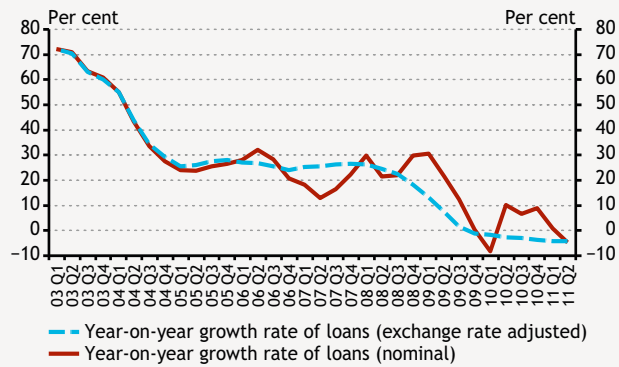
Source: ECB, MNB.

Chart 29
Debt service burden of the household sector



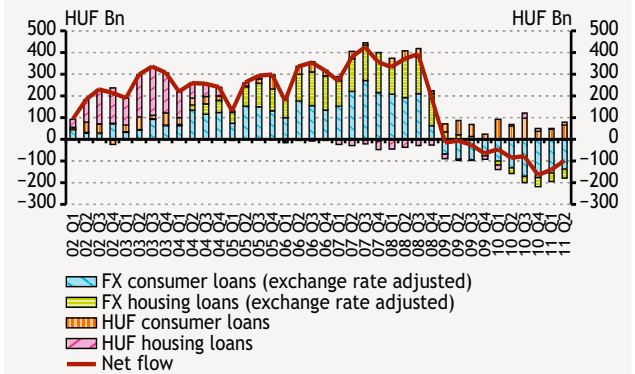
Source: MNB.

Chart 30
Annual growth rate of total household loans



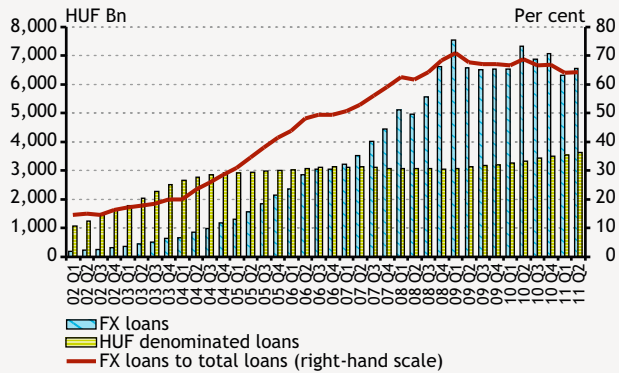
Source: MNB.

Chart 31
Net quarterly change of bank loan volumes of households by main products and currencies, adjusted for exchange rate changes



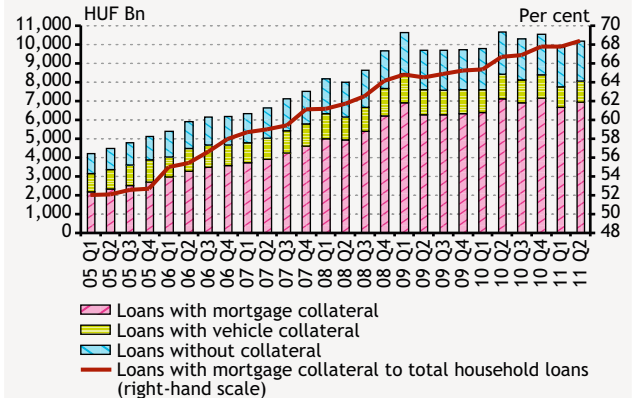
Source: MNB.

Chart 32
Household loans distribution by denomination



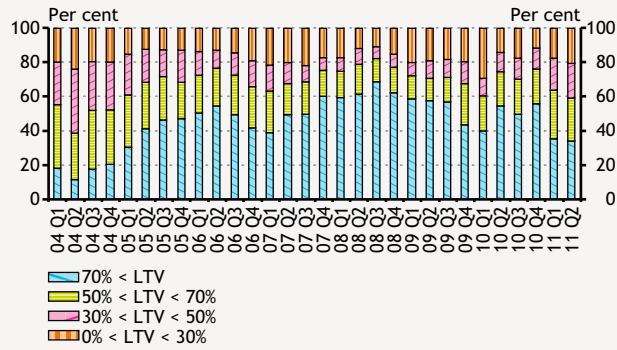
Source: MNB.

Chart 33
Household loans distribution by collateral



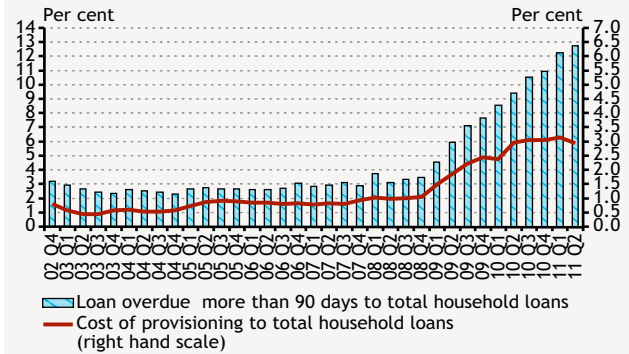
Source: MNB.

Chart 34
Distribution of new housing loans by LTV



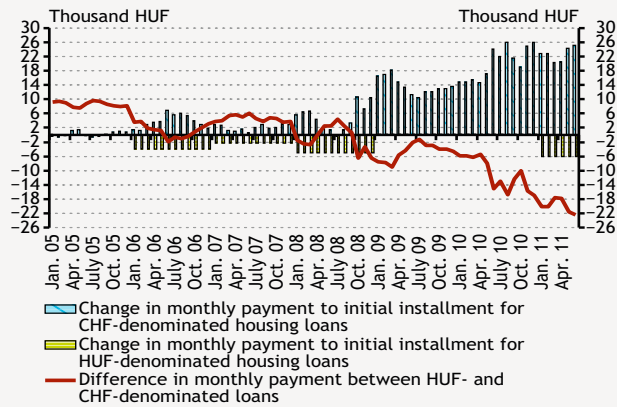
Source: MNB.

Chart 35
Quality of the household loan portfolio



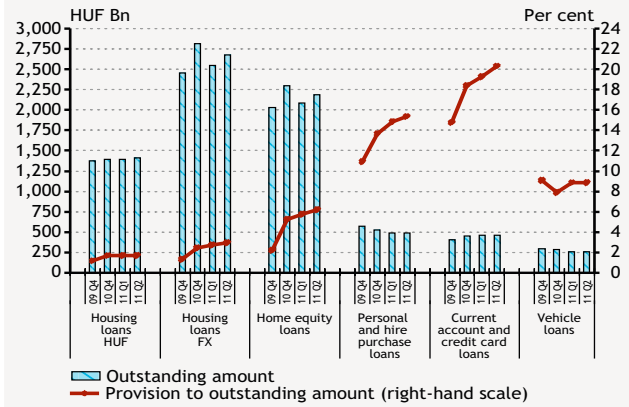
Source: MNB.

Chart 36
Comparison of instalment payments of CHF- and HUF-denominated housing loans



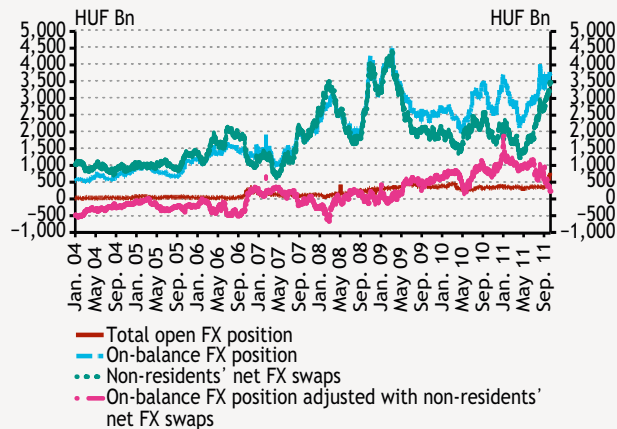
Source: MNB.

Chart 37
Provisioning on household loans



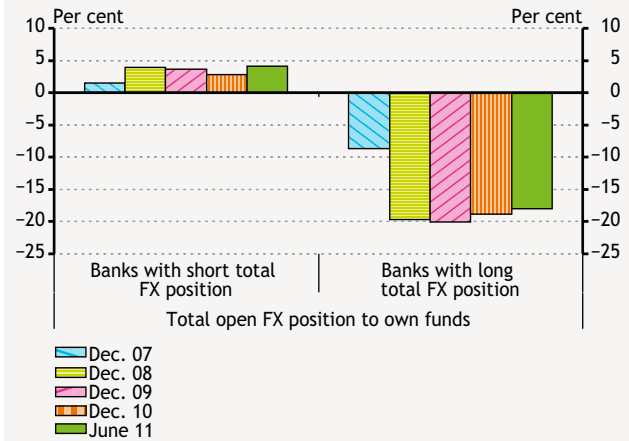
Source: MNB.

Chart 38
Open FX position of the domestic banking system



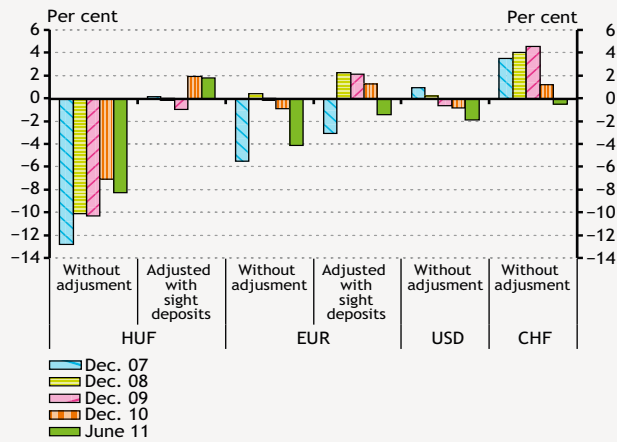
Source: MNB.

Chart 39
Banking sector's exchange rate exposure



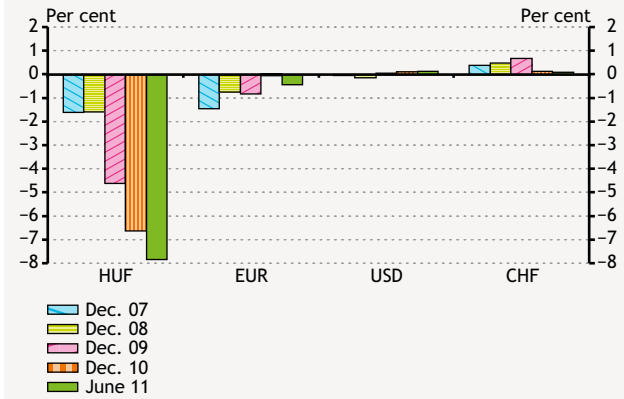
Source: MNB.

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



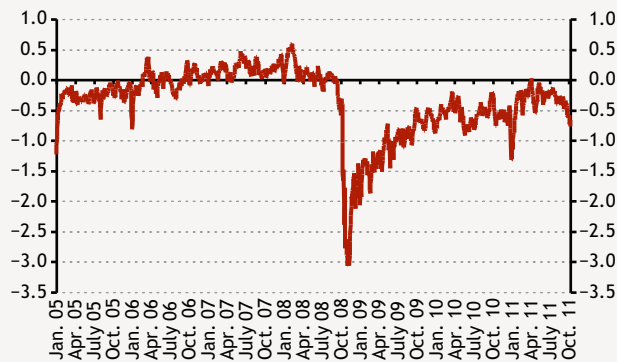
Source: MNB.

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



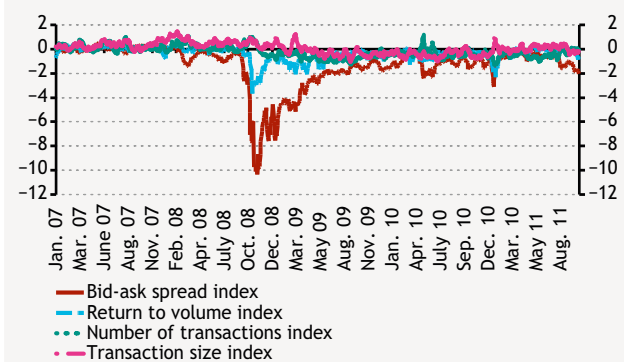
Source: MNB.

Chart 42
Liquidity index
(exponentially weighted moving average)



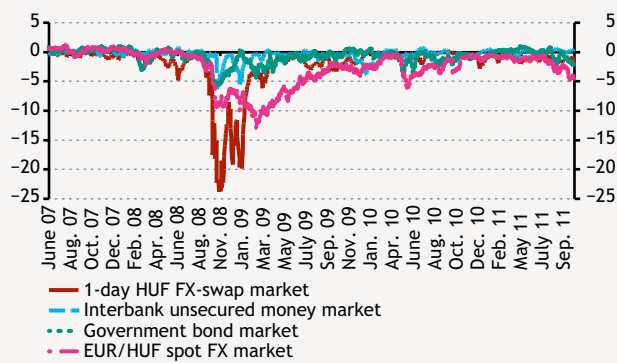
Source: MNB, Keler, Reuters, DrKW.

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



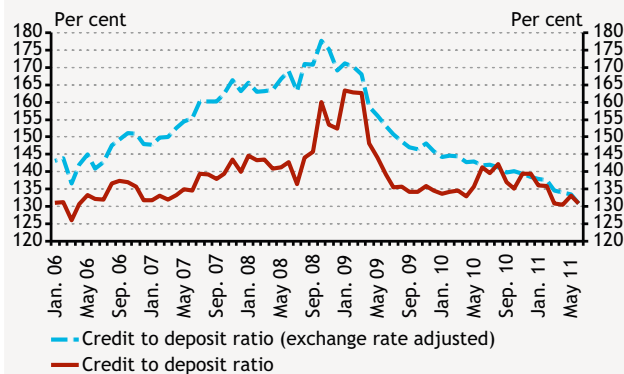
Source: MNB, Keler, Reuters, DrKW.

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



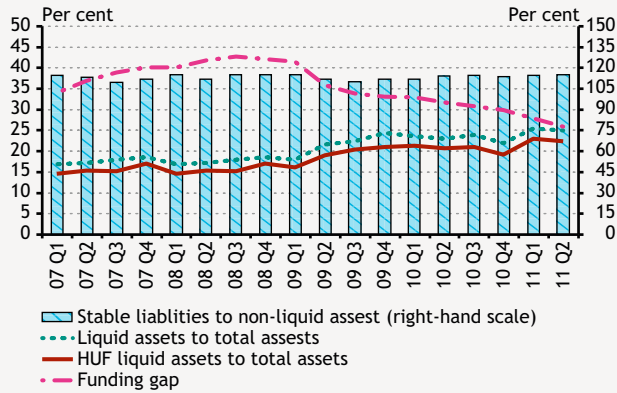
Source: MNB, Keler, Reuters, DrKW.

Chart 45
Credit to deposit ratio of the banking sector
(adjusted for exchange rate changes)



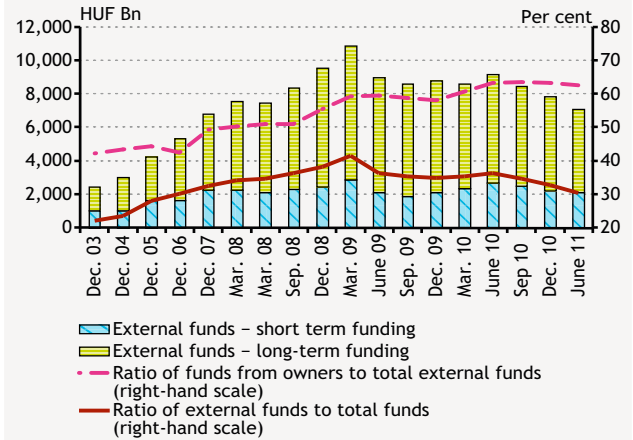
Source: MNB.

Chart 46
Liquidity ratios of the banking sector



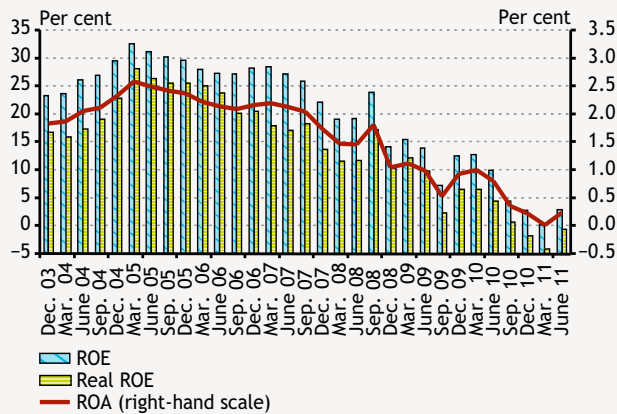
Source: MNB.

Chart 47
External funds of the banking sector



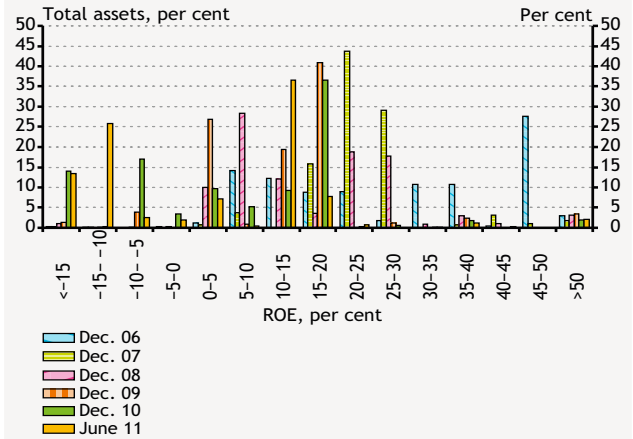
Source: MNB.

Chart 48
ROA, ROE and real ROE of the banking sector



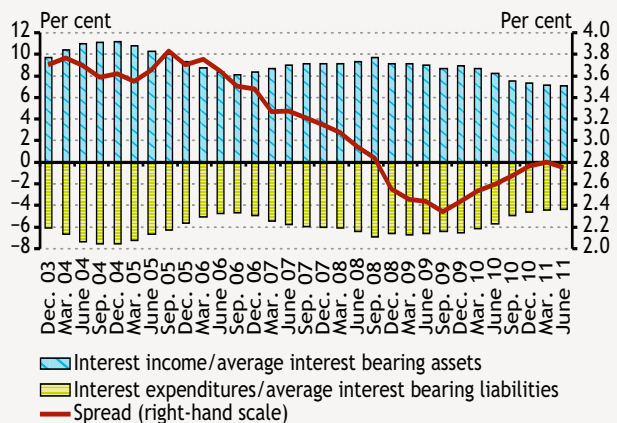
Source: MNB.

Chart 49
Dispersion of banks' total assets by ROE



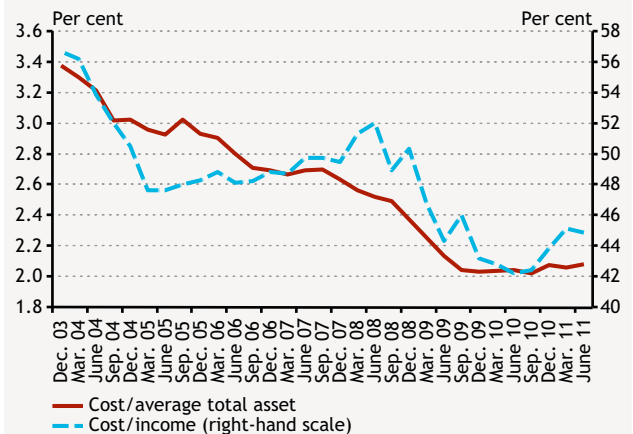
Source: MNB.

Chart 50
Banking sector spread and its components



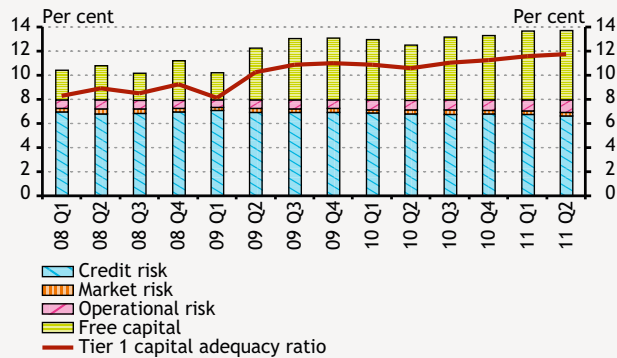
Source: MNB.

Chart 51
Operating efficiency indicators of the banking sector



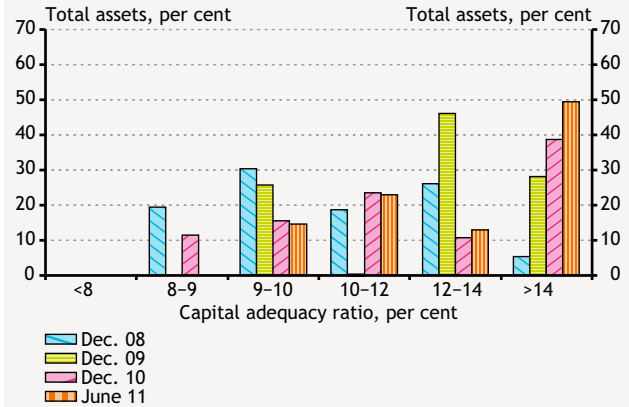
Source: MNB.

Chart 52
Banks' capital adequacy ratios



Source: MNB.

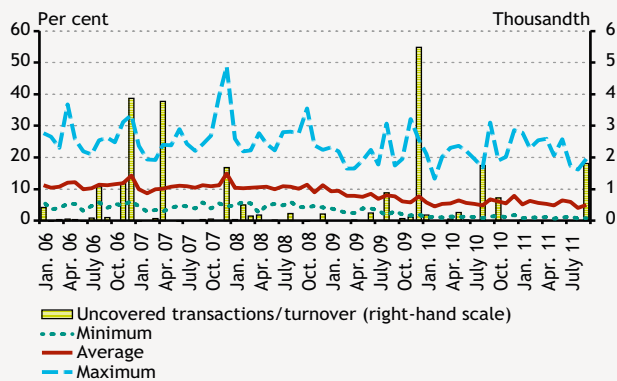
Chart 53
Dispersion of banking sector's total assets by capital adequacy ratio



Source: MNB.

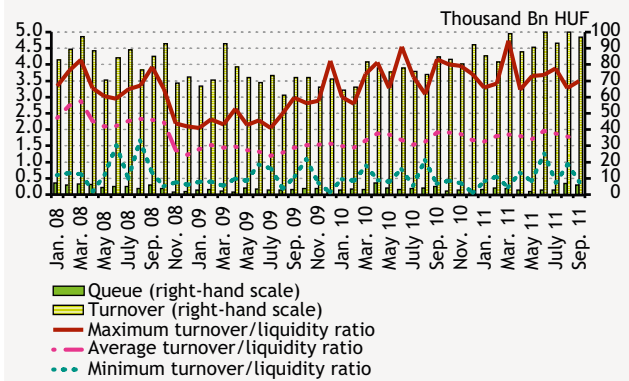
7 RISKS OF THE PAYMENT SYSTEMS

Chart 54
Liquidity needed for settling IBC-turnover as a percentage of available liquidity and uncovered transactions as a percentage of the turnover



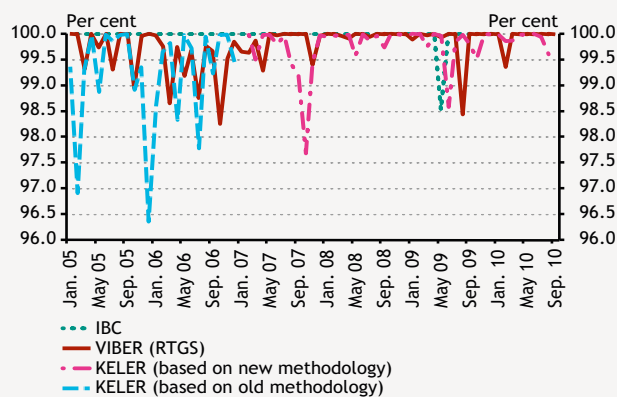
Source: MNB.

Chart 55
Monthly turnover/liquidity ratio (VIBER) and monthly turnover and queue statistics



Source: MNB.

Chart 56
Availability of domestic overseen systems (IBC, KELER, VIBER)



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: according to SNA methodology.

Corporate sector and "error": the financing requirement of corporate sector is calculated as a residual, so it includes errors.

External financing requirement: adjusted by the difference caused by imports brought forward on account of EU accession and by the import increasing impact generated by customs warehouses terminated due to EU accession and Gripen acquisitions.

Chart 10:

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

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 19:

FHB House Price Index.

Chart 24:

FX loans, exchange rate as of end-December 2000, HUF loans adjusted by state loan refinancing in December 2002.

Chart 25:

FX loans on December 2000, end of month exchange rate.

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 500 basis points for the forint, and by 200 basis points for the euro, the US dollar, and the Swiss franc. 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, increase in liquidity sub-indices suggests an improvement in the given dimension of liquidity.

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: $\text{pre-tax profit} / \text{average (equity - balance sheet profit)}$

ROA: $\text{pre-tax profit} / \text{average total assets}$

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:

Interim data are annualised

Interest income: previous 12 months

Interest expenditure: previous 12 months

Average interest bearing assets: mean of previous 12 months

Average interest bearing liabilities: mean of previous 12 months

Chart 51:

Cost: previous 12 months

Income: previous 12 months

Average total asset: mean of previous 12 months

Chart 52:

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

Tier 1 capital adequacy ratio = $(\text{tier 1 capital after deductions} / \text{minimum capital requirement}) * 8\%$

Chart 55:

Start-of-day balance adjustments and central bank payments are excluded.

Chart 56:

Due to differences in the nature of the overseen systems and in the calculation methodology, comparing the availability ratios can be misleading. The calculation methodology for the availability ratio for KELER was changed in January 2008. The ratios based on the new and old methodologies are not comparable, which is why we will publish the data based on the new methods for KELER in separate time-series.

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