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Phone: ++385 1 45 64 555
Contact phone: ++385 1 45 65 006
Fax: ++385 1 45 64 687

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Introductory remarks

Finance plays a key role in the allocation of resources, i.e. the process of transforming savings into investments, and therefore in economic growth and an increase in the overall level of social welfare. At the same time, because financial stability is based on the confidence of financial market participants, it largely depends in turn on their perceptions and behaviour, which are subject to cyclical swings. As financial crises create considerable economic and social costs, the maintenance of financial stability has the character of a public good and is thus an important economic policy objective.

Financial stability is characterised by the smooth functioning of all financial system segments (institutions, markets, and infrastructure) in the resource allocation process, in risk assessment and management, payments execution, as well as in the resilience of the system to sudden shocks. This is why the Act on the Croatian National Bank, in addition to the main objective of the central bank – maintenance of price stability and monetary and foreign exchange stability – also lists among the main central bank tasks the regulation and supervision of banks with a view to maintaining the stability of the banking system, which dominates the financial system, as well as ensuring the stable functioning of the payment system. Monetary and financial stability are closely related, for monetary stability, which the CNB attains by the operational implementation of monetary policy, performing the role of the bank of all banks and ensuring the smooth functioning of the payment system, lowers risks to financial stability. At the same time, financial stability contributes to the maintenance of monetary and macroeconomic stability by facilitating efficient monetary policy implementation.

The CNB shares the responsibility for overall financial system stability with the Ministry of Finance and the Croatian Financial

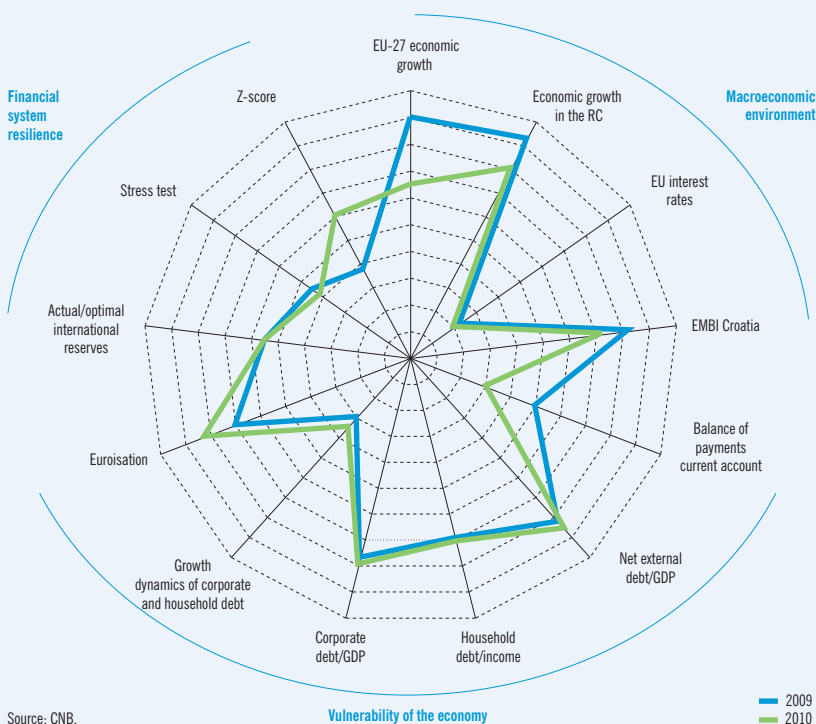
Services Supervisory Agency (HANFA), which are responsible for the regulation and supervision of non-banking financial institutions. Furthermore, owing to the high degree of banking system internationalisation, which is reflected in the foreign ownership of the largest banks, the CNB also cooperates with the home regulatory authorities and central banks of parent financial institutions.

The publication Financial Stability analyses the main risks to banking system stability stemming from the macroeconomic environment of credit institutions and the situation in the main borrowing sectors, as well as credit institutions' ability to absorb potential losses should these risks materialise. Also discussed are CNB measures to preserve financial system stability. The analysis focuses on the banking sector, due to its predominant role in financing the economy.

The purpose of this publication is systematically to inform financial market participants, other institutions and the general public about the vulnerabilities and risks threatening financial system stability in order to facilitate their identification and understanding as well as to prompt all participants to take adequate safeguards should these risks actually occur. It also aims at enhancing the transparency of CNB actions to address the main vulnerabilities and risks and strengthen financial system resilience to potential shocks that could have significant negative impacts on the economy. This publication should encourage and facilitate a broader professional discussion on financial stability issues. All this together should help maintain confidence in the financial system and thus its stability.

Overall assessment of the main risks and challenges to financial stability policy

Figure 1 Financial stability map



The advent of the government debt crisis, confined mostly to European countries, has recurrently destabilised international financial markets and increased the risks to global economic recovery. As the risks of a prolonged domestic economic recession and fiscal risks grow in such conditions, external funding conditions could again deteriorate, which would increase risks to the stability of the domestic financial system.

The main financial stability indicators for Croatia are summarised in Figure 1. The financial stability map shows changes in key indicators of the possibility of occurrence of risks related to the domestic and international macroeconomic environment and vulnerability of the domestic economy, as well as indicators of financial system resilience that can eliminate or reduce the costs should such risks materialise. The map shows the most

recent market developments or projections of selected indicators and their values in the comparable period, i.e. the previous year. For each variable, an increase in the distance from the map centre indicates greater risks or system vulnerability and lesser resilience, as well as a greater threat to stability. Hence, an increase in the map area suggests an increase in risks to financial stability, while a decrease in the area suggests their reduction.

Powerful fiscal impulse that had spurred the recovery of major advanced and emerging market economies in early 2009 also renewed turbulence in financial markets at the beginning of 2010. It became evident that the policy of substituting private sector borrowing by public borrowing transferred solvency risk to fiscal balance sheets and thus jeopardised both the recovery process and restoration of confidence in financial markets. In their fiscal projections, the governments of major global economies urged for an adjustment that would allow them to maintain fiscal stimulus and spur private sector optimism, while assuring financial markets that fiscal policy would soon return to the sustainable path. In many countries, fiscal policy thus turned into a walk on the edge of the precipice, with fiscal authorities increasingly taking the view that the excessive fiscal adjustments would be potentially less damaging than a sudden loss of financial market confidence and any forced public debt restructuring. Financial markets identified a group of countries in which a combination of high budget deficits and explosive public debt growth, dependency on foreign funding and weak competitiveness exacerbated fiscal sustainability problems. Support packages that international organisations have prepared for the most vulnerable countries, unprecedented in size, should enable the financing of deficits and refinancing of the debt falling due in the forthcoming period, which would transform risks associated with their fiscal solvency from short term to medium term.

The beginning of the global fiscal adjustment process and renewed turbulence have postponed the implementation of the exit strategy from the unconventional monetary policy measures by central banks of the largest countries and return of their interest rates to normal levels. However, as financial market turbulence again raised risk premiums, foreign capital became more expensive and less available to vulnerable countries, despite the fact that interbank interest rates in large currency areas remained extremely low.

Stronger financial market tensions early in 2010 arose just as Croatia was in the midst of continuing external adjustments. This contributed to the continued overall economic slowdown as the gradual recovery in exports could not compensate for the decline in domestic demand and investment. In such circumstances, real sector adjustment is expected to continue, particularly in view of the rising public sector deficit that will increasingly absorb foreign savings.

Croatian enterprises and households, which had heavily borrowed in the pre-crisis period on the back of increasingly optimistic expectations and relaxed lending standards (see Box 3 Impact of household debt growth in the pre-crisis period on financial stability), faced increasingly stringent lending terms from banks. At the same time, pessimistic expectations about future economic growth and rising uncertainty kept in check private sector loan demand (see Box 2 Credit market disequilibrium). The adjustment was particularly evident in the household sector, which continued to reduce its debt at the beginning

of 2010. Still, its debt burden indicators deteriorated due to negative trends in the labour market and a drop in disposable income. The private sector's adjustment to a slowdown in capital inflows and poorer economic prospects in 2009 was, because of the relatively limited budget capacity, only partly offset by the fiscal expansion. As financial markets expect the launch of the global fiscal adjustment process during this year, particularly in the most vulnerable countries, the room to counter the drop in private consumption by fiscal expansion has been completely exhausted for the time being.

All this implies that the impact of adverse effects of the deteriorating domestic and international macroeconomic environment on Croatian financial stability will again grow stronger. This impact could be further enhanced by the increased vulnerability of the Croatian economy. In a situation in which household income and business conditions continue to deteriorate, the private sector increasingly borrows in foreign currency and for shorter periods, incurring additional liquidity risk, in addition to the traditionally high currency and interest rate risks. The vulnerability of the domestic economy has been somewhat reduced both from 2009 and particularly from the end of 2008, when the global financial crisis erupted. The current account balance has come close to the level sustainable in the long run, lowering the need for foreign funding sources and sending a positive signal to foreign investors. Also, financial system resilience to shocks from the environment has not decreased from the pre-crisis-period. The CNB and commercial banks have largely replenished the liquidity reserves used at the peak of the crisis. The costs of value adjustments on non-performing loans have so far been less than half of banks' net operating income, so that the system as a whole has maintained solid profitability and used it to increase capital adequacy further. The projections underlying stress testing suggest that the pressure on bank profitability could this year be lower than in 2009. Of course, each recession has its own way of affecting financial institutions' balance sheets while the probability of an adverse scenario materialising is rising. This is why the effect of the realisation of an extreme but plausible adverse scenario, in which the capital adequacy of the banking system remains satisfactory, was also assessed.

If the economy does not recover this year, the threat of the materialisation of credit risks could further rise due to the banks' practice of prolonging repayment and refinancing loans to troubled enterprises. Loan reclassifications that some banks executed under the CNB orders confirm the widespread use of such practices. A comparison of placement classification systems shows that banks differ significantly in their approaches to risk management. Nevertheless, differences in placement classification systems are much smaller among large banks. Only several small banks should make major corrections with regard to non-performing placements in order to adjust risk management systems to those of more conservative banks (see Box 4 Validation of placement classification systems by using data on multiple debtors). Despite sound results at the system

level, some small banks have begun continuously to generate losses that could soon trigger the need to raise more capital. However, this should not have any consequences for the system as a whole.

The main risks to financial stability in 2010 again stem from an adverse interaction between recession and fiscal balance deterioration, particularly bearing in mind the attention with which financial markets will monitor and punish policies they deem unreasonable, as well as potential shocks from the environment related to changes in the perception of fiscal sustainability in the most vulnerable economies. Any fiscal expansion threatening public sector solvency would be particularly risky in view of Croatia's credit rating, which has come very close to the lowest investment grade. In this context, the policy of tax burden reduction is relatively risky taking into account the still high level of fiscal expenditures. In addition, a delayed recovery compared

with the environment would worsen the perception of fiscal solvency and sustainability of all debts and prompt investors to reduce their exposure to Croatia.

Against this background, the CNB will continue to support financial system liquidity to alleviate the impact of external disturbances and ease the transfer of resources towards the tradable sector. This strategy has so far helped to avoid excessive breakdowns in the economic activity and maintain financial system stability. Still, this policy is associated with the risks stemming from the business policy of banks that have so far directed most of their loans to the non-tradable sector and thus slowed down the necessary economic restructuring and changes in the growth pattern. In such circumstances, it is necessary to enhance the supervision of risk management systems in banks, particularly in the stage of adjustment to new international standards, by focusing on systemic risks.

Macroeconomic environment

The crisis in the euro area sovereign debt market has increased the risk of a weaker global economic recovery. If left unrestrained and allowed to spread to the banking sector, it could turn into a double-dip recession. Such conditions in the external environment weaken the prospects for an export-led recovery of the Croatian economy and stress the necessity to focus economic policy on improving competitiveness and ensuring public sector solvency.

The coordinated economic policy response in major developed economies in the form of a substantial fiscal and monetary expansion to the systemic financial crisis and the deepest post-war recession led to the stabilisation of main financial institutions and markets. Together with more dynamic growth in the largest emerging markets, this reversed the economic cycle, heading it towards recovery in 2009, with the same trend continuing in early 2010 (Tables 1 and 2 and Figures 2 and 3).

As the acute phase of the financial crisis abated and economic recovery gradually took hold in 2009, risk aversion steadily declined over 2009, as evidenced by the fall in risk premiums and gradual stabilisation of flows in global financial markets (Figures 5, 6 and 7).

Such global economic and financial market trends had a favourable impact on developments in smaller emerging markets where negative trends slowed down markedly and in some case real sector started to gradually recover at the turn of 2009-2010. In addition to the rise in export demand generated by the recovery of major global economies, this was due to the end of the downturn and a gradual increase in foreign capital inflows and a cut in the interest rate spread, which cushioned the adjustment of domestic demand (Tables 1 and 2).

Table 1 Economic growth, exports and industrial production in selected developed and emerging market countries

| | Annual rate of change in GDP | | Quarterly rates of change in GDP, $\Delta Q/Q_{t-1}$ | | Annual rate of change in exports of goods and services | | Annual rate of change in industrial production (seasonally adjusted) | |
|-----------|------------------------------|-------------------|--|-------|--|-------|--|-------|
| | 2010 ^a | 2011 ^a | Q4/09 | Q1/10 | Q4/09 | Q1/10 | Q4/09 | Q1/10 |
| USA | 2.8 | 2.5 | 1.4 | 0.8 | -0.6 | 15.9 | -4.7 | 1.1 |
| Japan | 2.1 | 1.5 | 1.1 | 1.2 | -13.9 | 32.7 | -5.2 | 23.5 |
| EU | 1.0 | 1.7 | 0.2 | 0.3 | -7.7 | 8.2 | -7.0 | 3.7 |
| Germany | 1.2 | 1.6 | 0.2 | 0.2 | -6.5 | 8.9 | -9.1 | 6.3 |
| Italy | 0.8 | 1.4 | -0.1 | 0.4 | -12.9 | 7.3 | -9.2 | 3.1 |
| Slovenia | 1.1 | 1.8 | -0.3 | -0.5 | -9.1 | 5.5 | -7.9 | -0.6 |
| Slovak R. | 2.7 | 3.6 | 1.7 | 0.8 | -5.1 | 15.1 | 1.6 | 20.3 |
| Czech R. | 1.6 | 2.4 | 0.5 | 0.5 | -4.5 | 11.9 | -2.9 | 7.1 |
| Poland | 2.7 | 3.3 | 1.1 | 0.5 | -1.9 | 17.9 | 4.6 | 10.2 |
| Hungary | 0.0 | 2.8 | 0.2 | 0.9 | -3.3 | 15.3 | -7.2 | 5.2 |
| Estonia | 0.9 | 3.8 | 2.4 | -2.0 | -14.9 | 12.1 | -15.3 | 6.1 |
| Latvia | -3.5 | 3.3 | -1.5 | 0.3 | -8.0 | 5.3 | -6.8 | 6.5 |
| Lithuania | -0.6 | 3.2 | 1.3 | -3.9 | -13.1 | 9.7 | -8.0 | -3.0 |
| Bulgaria | 0.0 | 2.7 | ... | ... | -2.1 | 7.8 | -13.3 | -3.8 |
| Romania | 0.8 | 3.5 | -1.5 | -0.3 | -5.2 | 11.3 | 3.2 | 4.8 |
| Croatia | -1.6 | 2.0 ^b | -0.3 | -0.7 | -15.8 | 3.8 | -8.1 | 0.3 |

^a Forecast. ^b Eurostat forecast.

Sources: Eurostat, CBS, CNB, Bloomberg and OECD.

Table 2 Fiscal balance and current account balance in selected developed and emerging market countries

| | Fiscal balance, as % of GDP (ESA 95) | | | Current account balance, as % of GDP | | |
|-----------|--------------------------------------|-------------------|-------------------|--------------------------------------|-------------------|-------------------|
| | 2009 | 2010 ^a | 2011 ^a | 2009 | 2010 ^a | 2011 ^a |
| USA | -11.0 | -10.0 | -9.1 | -2.9 | -3.3 | -3.4 |
| Japan | -6.9 | -6.7 | -6.6 | 2.8 | 2.8 | 2.4 |
| EU | -6.8 | -7.2 | -6.5 | -0.3 | -0.2 | -0.1 |
| Germany | -3.3 | -5.0 | -4.7 | 4.8 | 5.5 | 5.6 |
| Italy | -5.3 | -5.3 | -5.0 | -3.4 | -2.8 | -2.7 |
| Slovenia | -5.5 | -6.1 | -5.2 | -0.3 | -1.5 | -1.2 |
| Slovak R. | -6.8 | -6.4 | -5.4 | -3.2 | -1.8 | -1.9 |
| Czech R. | -5.9 | -5.7 | -5.7 | -1.0 | -1.7 | -2.4 |
| Poland | -7.1 | -7.3 | -7.0 | -1.6 | -2.8 | -3.2 |
| Hungary | -4.0 | -4.1 | -4.0 | 0.4 | -0.4 | -1.0 |
| Estonia | -1.7 | -2.4 | -2.4 | 4.6 | 4.7 | 3.9 |
| Latvia | -9.0 | -8.6 | -9.9 | 9.4 | 7.0 | 6.3 |
| Lithuania | -8.9 | -8.4 | -8.5 | 3.8 | 2.7 | 2.6 |
| Bulgaria | -3.9 | -2.8 | -2.2 | -9.5 | -6.3 | -5.8 |
| Romania | -8.3 | -8.0 | -7.4 | -4.4 | -5.5 | -5.5 |
| Croatia | -4.1 | -4.0 | -3.9 | -5.4 | -3.3 | -6.8 ^b |

^a Forecast. ^b IMF forecast.

Sources: European Commission, *Economic Forecast*, spring 2010, IMF, *World Economic Outlook Database*, April 2010 and CNB.

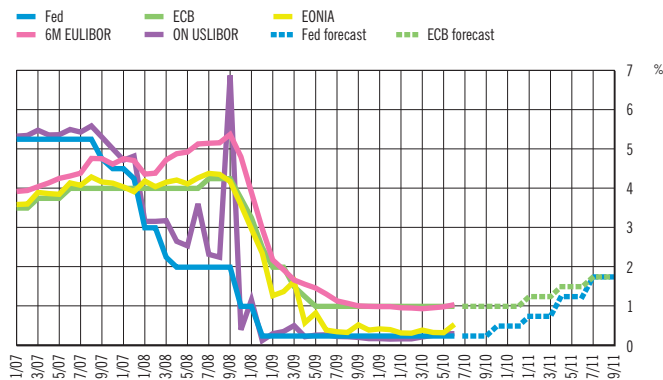
The activation of multilateral external liquidity sources for these countries and the coordinated effort of the central banks of the world's principal economies helped the stabilisation of their external financial conditions.

However, a sharp deterioration in fiscal positions in the form of growing deficits and public debts, which was caused by the recession and rehabilitation of financial sectors in many countries, raised financial markets' concern about the solvency of some countries. Risk premiums on sovereign bonds of some peripheral eurozone economies steadily increased from the end of 2009 and escalated in May 2010, when markets virtually closed for the Greek debt (Tables 2 and 3).

The global financial crisis thus mutated again: from the financial sector crisis through a real sector recession into a sovereign debt crisis. Together with a possible negative impact on the financial sector, this again raised the possibility of a double-dip global recession.

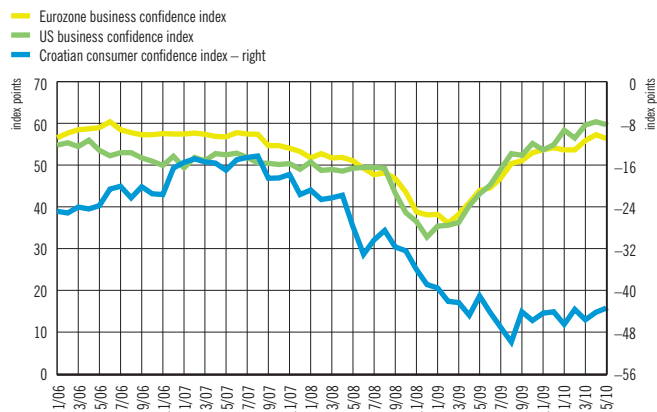
The government debt crisis that spread over the peripheral eurozone economies has necessitated a strong fiscal contraction in these countries, which suggests that the EU recovery will lose much steam. This crisis could negatively affect European economic growth through a number of other channels. Materialisation of insolvency risk in one of the vulnerable countries would have an extremely adverse impact on the EU as it would affect risk premiums, i.e. trigger a general increase in government bond yields and the price of capital for other economic sectors.

Figure 2 Key interest rates of the main central banks and leading market interest rates



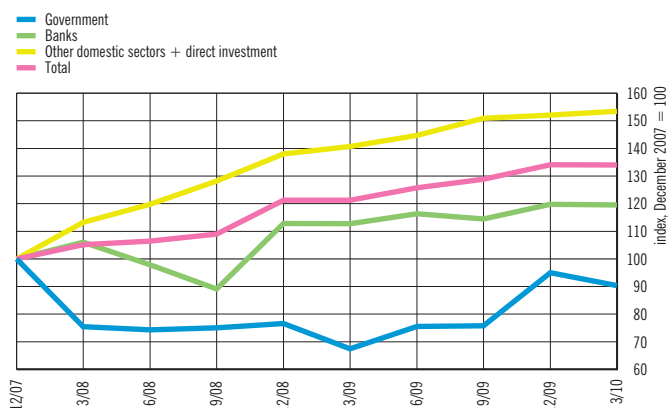
Sources: Fed, ECB and Bloomberg.

Figure 3 Business and consumer confidence indices



Sources: Bloomberg and CNB.

Figure 4 External debt by domestic institutional sector



Source: CNB.

Table 3 Public and external debt in selected European emerging market countries

| | Public debt, as % of GDP | | External debt, as % of GDP | |
|-----------|--------------------------|------|----------------------------|-------|
| | 2008 | 2009 | 2008 | Q2/09 |
| Slovenia | 22,6 | 35,9 | 104 | 115 |
| Slovak R. | 27,7 | 35,7 | 57 | 72 |
| Czech R. | 30,0 | 35,4 | 40 | 44 |
| Poland | 47,2 | 51,0 | 47 | 63 |
| Hungary | 72,9 | 78,3 | 78 | 95 |
| Estonia | 4,6 | 7,2 | 118 | 127 |
| Latvia | 19,5 | 36,1 | 128 | 156 |
| Lithuania | 15,6 | 29,3 | 71 | 86 |
| Bulgaria | 14,1 | 14,8 | 106 | 114 |
| Romania | 13,3 | 23,7 | 50 | 68 |
| Croatia | 29,3 | 35,4 | 83 | 95 |

Sources: Eurostat and World Bank, *Quarterly External Debt Statistics*.

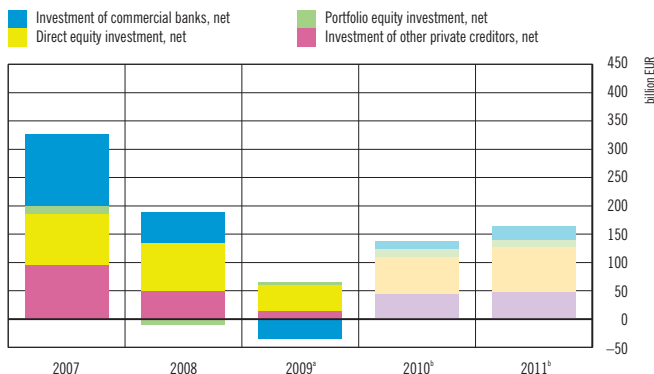
Furthermore, value losses on government bonds in the case of a default would strongly hit financial institutions, their main creditors, negatively affecting financial flows to the real economy and further aggravating the fiscal position of their home countries should financial sector rehabilitation become necessary.

The risks to financial sector stability in the EU have also grown because the banking sector has not yet written off all losses from the first phase of the global crisis. These effects are evident in the crisis of Spanish housing savings banks and the financial weaknesses of German regional banks. In view of the interconnectedness of global financial markets, this could also produce a negative impact on American banks that have significant exposures to European banks.

The market concern about the soundness of banks is evident in a steady climb in bond and CDS spreads and a fall in the share prices of banks (Figure 8). Furthermore, a possible worsening in the perception of insolvency risk of banks in developed economies that are parents of banks in emerging markets could again become a contagion channel, that is, negatively affect their stability and, in the event of a banking crisis, directly lower capital inflows to emerging markets.

To prevent contagion in financial markets through these channels in the case of default by Greece and other vulnerable countries, the EU, in cooperation with the IMF, set up a stabilisation fund worth EUR 750bn, in addition to the special financial support package to Greece. This lowered the risk premiums on Greek bonds from prohibitive levels, though yield spreads soon began widening again (Figure 7). This solution also raises the problem of moral hazard and requires institutional strengthening, including increased fiscal policy coordination, the tightening of

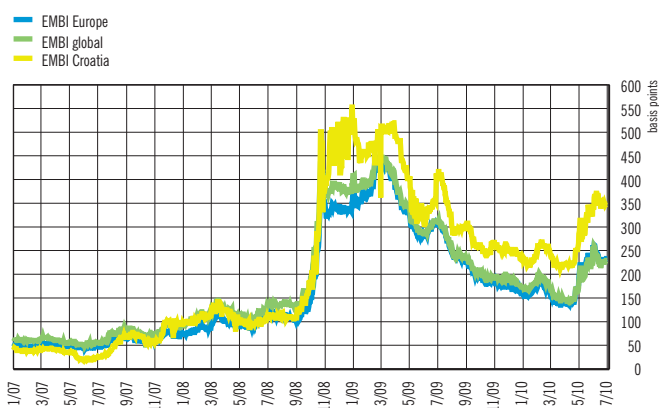
Figure 5 Capital inflows to European emerging market countries



* Estimate. † Forecast.

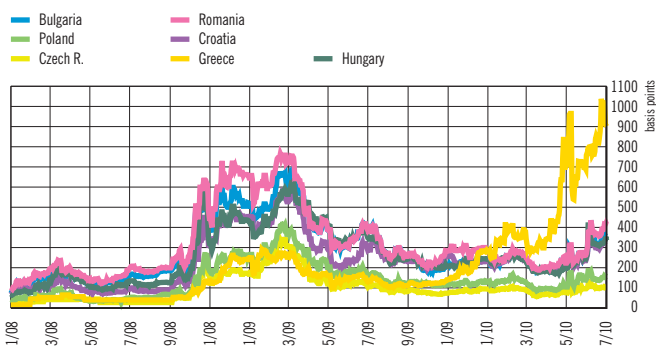
Sources: International Institute of Finance, *Capital Flows to Emerging Market Economies*, April 2010 and Bloomberg.

Figure 6 EMBI spreads



Source: J. P. Morgan.

Figure 7 CDS^a spreads for 5-year bonds of selected countries



^a Credit default swaps (CDS) spread is an annual premium that a CDS buyer pays for protection against credit risk associated with an issuer of an instrument.

Source: Bloomberg.

fiscal rules and the development of procedures for an orderly restructuring of the debts of eurozone countries.

In efforts to stabilise the government debt market, the ECB intervened by repurchasing the debt of Greece and other very vulnerable countries. On the other hand, the ECB thus raised the issue of confidence in independence, which has so far been the key to monetary stability.

As the tensions in the government debt market and their possible effects on the banking sector had already raised the perception of risk and price of money in the interbank market, the ECB also reopened liquidity channels for banks. This was to prevent the recurrence of the situation after the Lehman Brothers collapse, when frozen interbank lending halted the flow of loans to the real sector and generated the recession. This also postponed the exit strategy, i.e. withdrawal of the liquidity injected in the system at the peak of the financial crisis (Figure 2).

The widening of the yield spread on Greek sovereign bonds also raised the spread for other peripheral eurozone countries with unsustainable fiscal positions and gradually increased the spread for European emerging market countries, which are vulnerable to changes in external financing conditions due to large fiscal deficits and public debts and/or external imbalances (Figure 7).

The trends in the government bond market severed or at least substantially weakened the relationship existing in previous periods, when actual or prospective EU membership tended to considerably reduce the spread (i.e. the price of capital) and boost the potential growth in these countries.

The inevitability of major budgetary restrictions, which were implemented by developed EU countries exposed to insolvency risk, and fiscal adjustment policies aiming at securing fiscal sustainability and the survival of the monetary union announced by many of the largest EU economies have opened room for a continued relaxed monetary policy in the rest of 2010 and probably 2011. This means that the ECB rate will remain low, while interest rates in individual segments of the financial market will depend on the solution to the public debt crisis (Figure 2). It seems that markets are expecting a restructuring of the public debt of Greece and perhaps some other peripheral economy, which means that required yields on government bonds and other risky placements will remain elevated in the foreseeable future.

This has created an unfavourable environment for domestic demand and economic growth in the eurozone and, due to weaker demand for imports, for overall EU growth. The weakening of the euro induced by the government debt crisis could be beneficial for peripheral eurozone countries and other EU member states as it strengthens competitiveness, particularly in tourism. Still, a weaker euro negatively affects the growth in US and Asian exports to the EU. In addition, the recovery of US domestic demand appears to be on a shaky footing, while the cooling off of the overheated Chinese economy could slow down the growth of this, the largest, Asian economy.

Figure 8 CDS spreads for 5-year bonds of selected banks

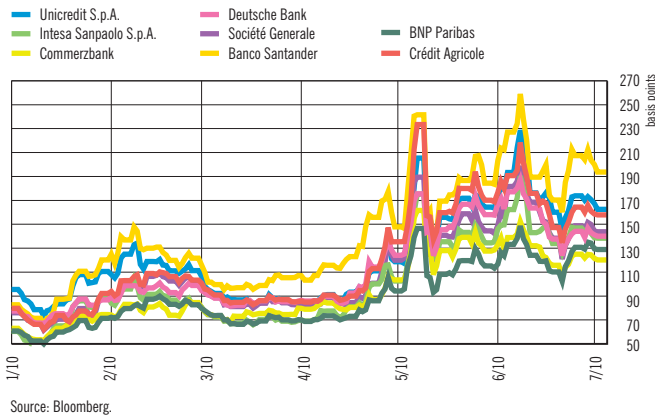


Figure 9 Yields on Croatian and benchmark German bonds maturing in 2014

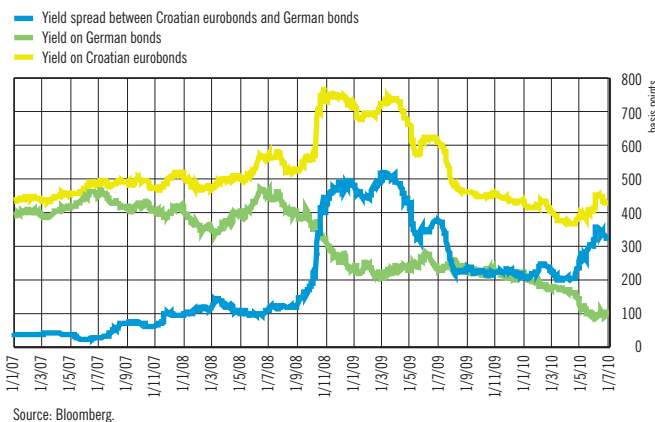
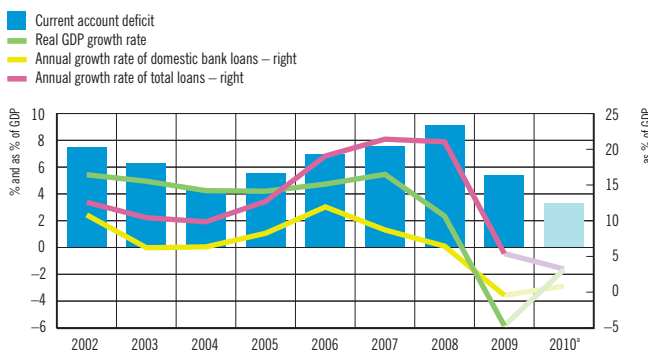


Figure 10 Foreign capital inflows and GDP growth in Croatia



Note: FDI in the form of loans excludes round-tripping transactions. For more details on round tripping, see *CNB Bulletin*, No. 154, Box 4 Round tripping and its impact on Croatian statistical data.
Sources: CNB and CBS.

Hence, although spring forecasts of international institutions mostly predicted a continued or even accelerated recovery, risks of an uneven and fragile recovery have also risen.

Instability in financial markets and risks of a slower economic recovery have somewhat weakened the motive for the introduction and relatively fast implementation of stricter rules for the financial industry as they could negatively affect the supply of financial services.

Against this background, economic policy options in European emerging markets have been considerably curtailed. Given the harsher terms in the government debt market, there is no alternative to the policy of fiscal adjustment, while the negative impact of the relatively higher sovereign risk on financing conditions for other sectors diminishes the impact of the lax monetary policy on domestic private demand.

Coupled with the lacklustre growth in exports due to the weak eurozone recovery, this has slowed the recovery of emerging market economies, exerting a negative feedback on tax revenues and, given the limited options for government funding, putting additional pressure on fiscal contraction. Weak growth and the necessary restructuring of the economy from the non-tradable sector towards the tradable sector negatively affect employment, all of which increases banks' losses and limits credit supply, with an adverse feedback on growth.

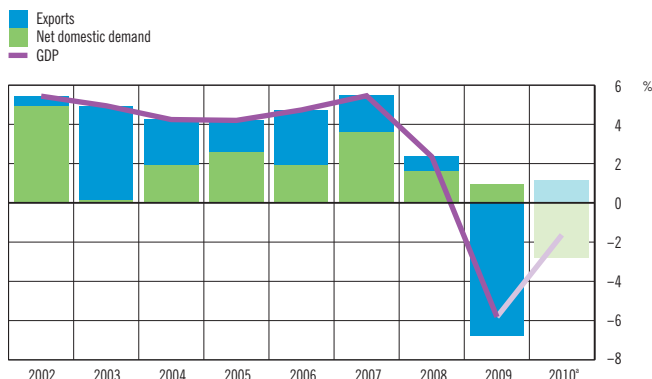
The Croatian economy recorded a 5.8% GDP decline in 2009 under the impact of the global financial crisis and recession. Due to lower capital inflows and a major drop in exports, this necessitated a substantial adjustment in domestic demand, resulting in the cut in the current account deficit from 9% to some 5% of GDP. The Croatian economy has still not shown signs of recovery (Table 1 and Figure 10).

Overall economic activity, which dropped sharply in the first quarter and stagnated in the rest of 2009, again weakened early in 2010, largely due to the continued decrease in non-tradable activities (construction, retail trade), while export-oriented industrial sectors grew mildly.

This shows that the progress of necessary economic rebalancing in relatively unfavourable external conditions will be accompanied by major fluctuations in overall activity.

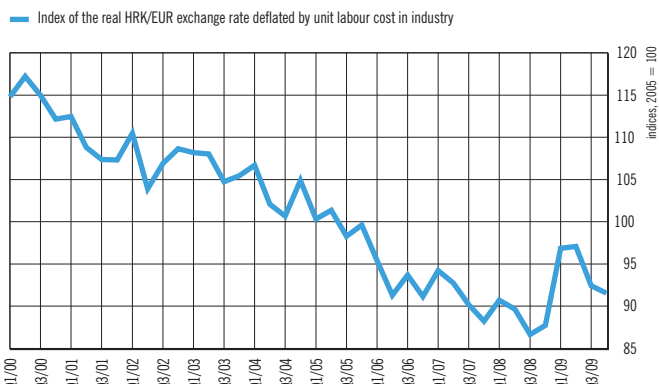
Urgent changes in the present domestic demand-based growth pattern towards exports-led growth are necessary due to the relatively large external debt and call for the redirection of activities from the non-tradable sector to the tradable sector (Figure 11). However, the still weak export demand from the main EU markets and the drop in demand by major Southeast European markets do not provide a strong impetus to growth. Together with the steadily decreasing domestic demand, which has been limited by the negative employment and income growth and the relatively high overall (domestic and external) debt of all non-financial institutional sectors (at end-2009, it stood at 164% of GDP), this will prolong recessionary tendencies in the economy (Figures 16, 17, 18, 19 and 20).

Figure 11 GDP growth pattern (contribution to growth)



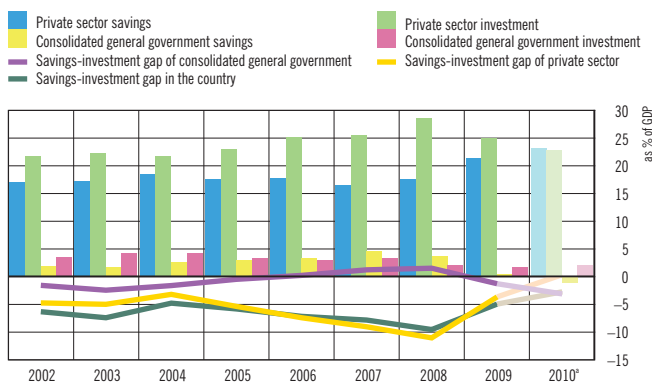
* Forecast.
Source: CBS.

Figure 14 Real kuna/euro exchange rate



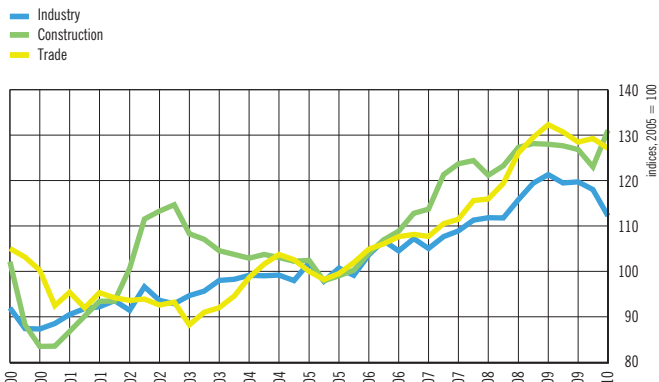
Note: A fall in the index indicates a real appreciation of the kuna against the euro.
Sources: CBS, CNB and CNB calculations.

Figure 12 Savings and investment – total and by sector



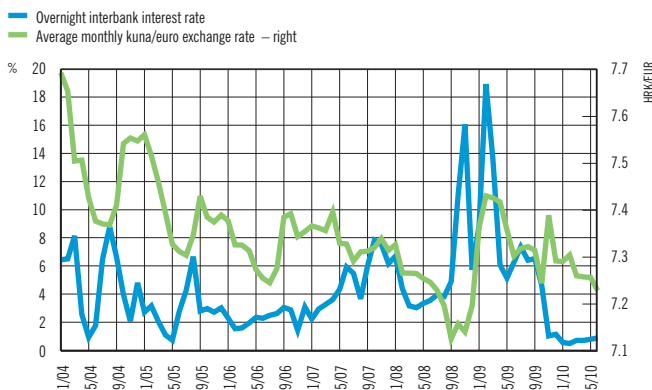
* Forecast.
Sources: MoF and CNB (estimate).

Figure 15 Unit labour cost



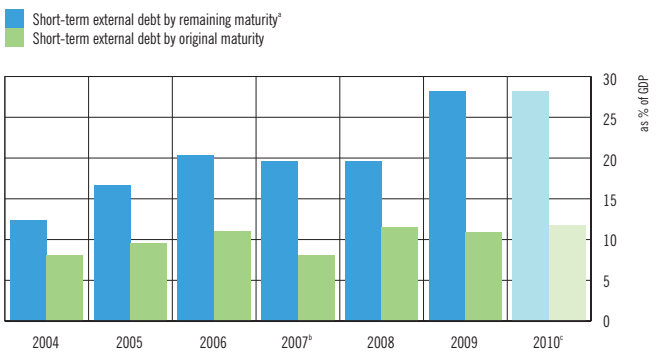
Sources: CBS, CNB and CNB calculations.

Figure 13 Kuna/euro exchange rate and overnight interest rates



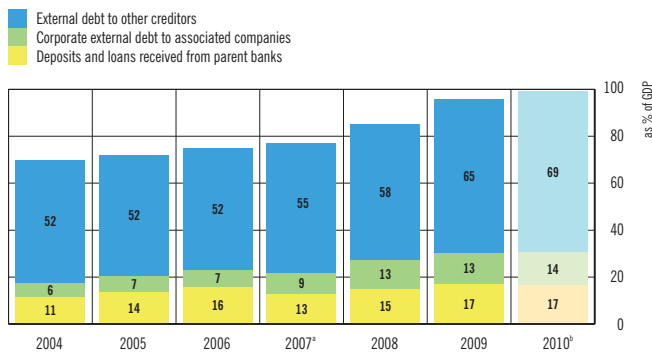
Source: CNB.

Figure 16 Short-term external debt



* Short-term external debt by remaining maturity at the end of the current year is the sum of long-term debt maturing in that year and the balance of short-term debt at the end of the previous year. * Since end-2007, external debt has been calculated according to the new methodology. * Forecast.
Source: CNB.

Figure 17 Total external debt by creditor



* Since end-2007, external debt has been calculated according to the new methodology. ^b Forecast. Note: External debt to associated companies excludes round-tripping transactions. See note under Figure 10.

Source: CNB.

Assuming the absence of a much faster growth in the eurozone and the consequent lack of export demand, the baseline scenario forecasts that GDP growth will be moderately negative (up to -1.6%) in 2010, while external imbalances in the form of the lower current account deficit will continue to decrease (around 4% of GDP) and external debt growth will slow down (Figures 10 and 17).

Considering the configuration of external conditions and domestic fundamentals, economic policy should strive to enhance international competitiveness and ensure public sector solvency.

To strengthen competitiveness, it is important to increase labour market flexibility and implement a wage policy that will reduce unit labour costs relative to the EU (Figures 14 and 15). At the same time, the investment climate should be improved to ensure smooth and rapid progress in the necessary rebalancing of the economy in favour of export sectors.

The fiscal adjustment policy aimed at achieving a sustainable public debt level should be vigorously pursued to ensure public sector solvency. This requirement gains additional importance given the expected increase in the price of capital and potential growth rates lower than in the previous period.

This means that the structural general government deficit should be reduced to zero, which requires a surplus in the primary balance. Apart from ensuring fiscal solvency, this would allow for stabilisation of the economy by running moderate deficits in recessionary conditions, while generating surpluses in periods of above-average growth would prevent the economy from overheating.

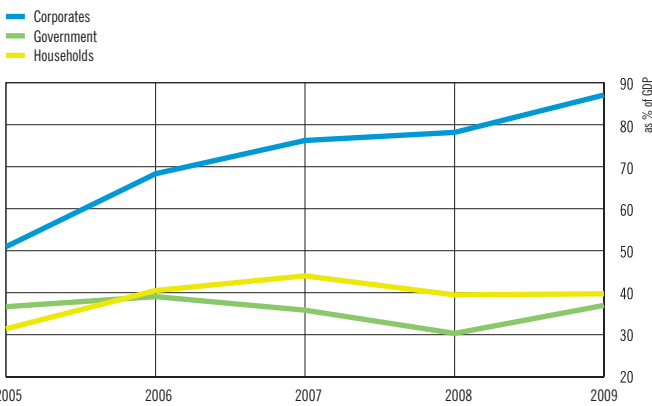
In addition to rules, the credibility of such a policy requires a clear medium-term strategy of expenditures and revenues to provide a transparent view of all risks and ensure broad public support, while taking into account the intergenerational distribution of the consolidation burden. One should not forget that strong volatility of tax revenues reduces both the credibility of fiscal policy and borrowing capacity, which means that consumption taxes should continue to be the mainstay of the tax system.

Reforms of the pension and health care systems are also crucial for fiscal policy credibility. They should ensure their long-term sustainability, which would also ensure sustainability of implicit public debt. This is particularly important given the ageing and less economically active population.

In addition, the policy of restructuring public enterprises should ensure the stability of potential public debt arising from government guarantees to these enterprises. Banking sector stability is also paramount given the explicit and implicit government guarantees to this sector.

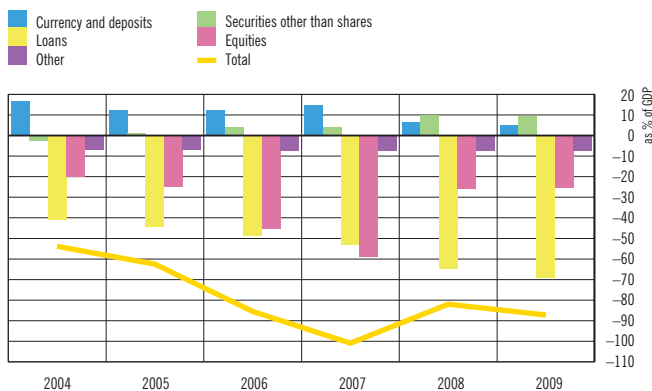
The Government's Economic Recovery Programme adopted in May 2010 addresses well all the above stated elements that are vital to enhance competitiveness and ensure public sector solvency, including the institutional strengthening of

Figure 18 Total debt by sector



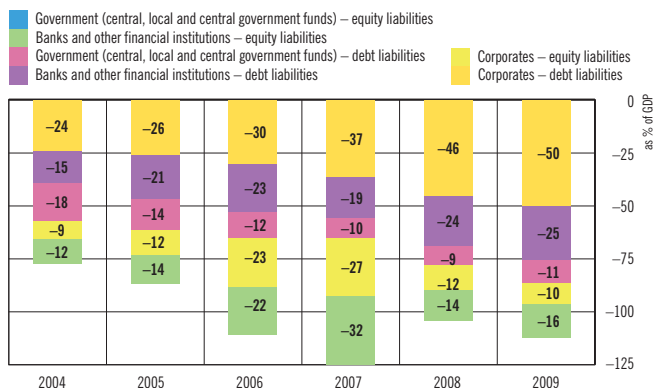
Source: CNB.

Figure 19 Net position of domestic sectors with respect to the rest of the world by instrument



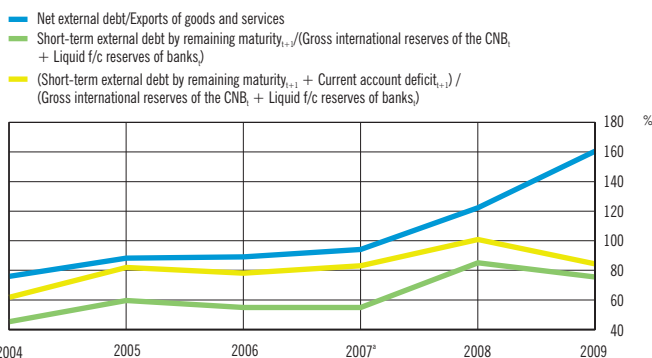
Source: CNB.

Figure 20 Net financial position of selected domestic sectors with respect to the rest of the world by equity and debt instrument



Source: CNB.

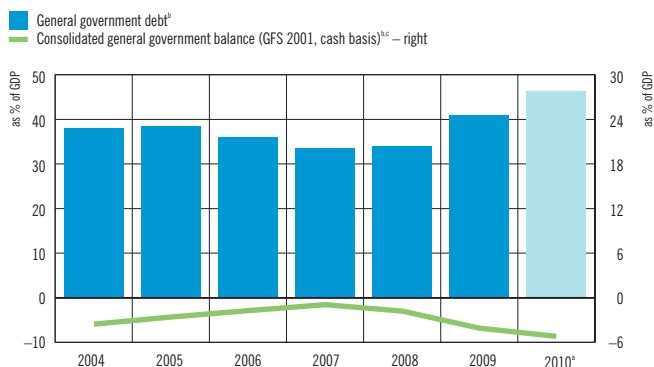
Figure 21 Selected indicators of external vulnerability



* Since end-2007, external debt has been calculated according to the new methodology.

Source: CNB.

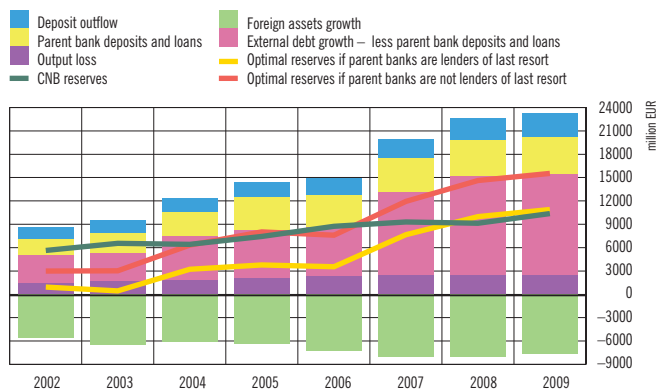
Figure 22 General government fiscal position



* CNB projections. ^b Consolidated general government includes estimated CM deficit. ^c Data for 2004-2009 were adjusted for changes in arrears.

Sources: MoF and CNB.

Figure 23 Contribution of individual components of optimal international reserves



Source: CNB.

the budgetary process through the fiscal responsibility act. Its consistent implementation will crucially determine the financial markets' perception.

As public sector solvency is a key determinant of a country's creditworthiness, its strengthening will lower the refinancing risk on external debt (exceeding 25% of GDP in 2010, Figure 16) and ensure that during turbulent times in the government debt market the availability and price of both foreign and domestic capital stay at levels that enable sustainable financing of the economy.

A prudent fiscal policy creates room for relatively lax monetary policy that maintains banking sector liquidity at high levels without exerting pressures on the kuna/euro exchange rate. This is the outcome of a fall in demand for foreign exchange triggered by the recession-induced continuous decline in the current account deficit and sufficient foreign capital inflows.

However, the abundant banking sector liquidity has failed to spur a more rapid growth in loans to domestic non-banking sectors; demand has been low due to high debt (households, companies in the non-tradable sector), diminished growth expectations and unused capacity (investors). This situation could be changed only by improved expectations based on a recovery driven by higher export demand.

Box 1 Financial accounts for Croatia

Financial accounts describe financial relations among institutional sectors of the domestic economy and their relations with the rest of the world. By presenting total inter-sector claims and liabilities of particular sectors and their net financial position, which indicates the sectors that are sources of financial surpluses and the sectors that are sources of financial deficits, financial accounts also provide an insight into finan-

cial instruments used in inter-sector financial transactions as well as their currency and maturity breakdown. These constitute key information needed to make an economic analysis for the purposes of economic and business policy makers, for both the public and private sectors. The table below presents a several-year dynamics of certain aspects of inter-sector financial relations that are particularly interesting for the analysis of financial system stability.

Table 1 Inter-sector claims and liabilities at end-2008 and end-2009

as % of GDP

| Liabilities | | Claims | | | | | | | | | | | | Total liabilities | |
|--------------------|--------------------------------|------------------|------------|------------------|------------|--------------------|-----------|------------|-----------|------------|------------|-------------------|------------|-------------------|------------|
| | | Domestic sectors | | | | | | | | | | Rest of the world | | | |
| | | Corporates | | Financial sector | | General government | | Households | | Total | | | | | |
| | | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 | | | | |
| Corporates | Monetary gold and SDRs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Currency and deposits | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Securities other than shares | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 3 | 3 |
| | Loans | 0 | 0 | 38 | 40 | 0 | 0 | 0 | 0 | 38 | 40 | 38 | 43 | 75 | 84 |
| | Shares and equity | 34 | 35 | 3 | 3 | 27 | 28 | 17 | 17 | 81 | 83 | 19 | 19 | 100 | 101 |
| | Insurance technical provisions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Other claims and liabilities | 31 | 32 | 1 | 1 | 5 | 6 | 2 | 2 | 39 | 41 | 11 | 11 | 50 | 52 |
| | Total | 65 | 66 | 43 | 46 | 33 | 34 | 19 | 19 | 160 | 166 | 68 | 75 | 228 | 241 |
| Financial sector | Monetary gold and SDRs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Currency and deposits | 15 | 14 | 17 | 19 | 2 | 3 | 48 | 51 | 82 | 87 | 11 | 14 | 93 | 101 |
| | Securities other than shares | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 3 | 2 |
| | Loans | 0 | 0 | 6 | 7 | 0 | 0 | 0 | 0 | 6 | 7 | 24 | 25 | 30 | 32 |
| | Shares and equity | 2 | 2 | 2 | 2 | 7 | 9 | 3 | 4 | 14 | 16 | 16 | 18 | 30 | 34 |
| | Insurance technical provisions | 1 | 1 | 1 | 1 | 0 | 0 | 11 | 13 | 13 | 15 | 0 | 0 | 13 | 15 |
| | Other claims and liabilities | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 3 | 4 | 1 | 1 | 4 | 4 |
| | Total | 19 | 18 | 26 | 29 | 9 | 12 | 64 | 69 | 118 | 128 | 55 | 60 | 173 | 188 |
| General government | Monetary gold and SDRs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Currency and deposits | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Securities other than shares | 0 | 0 | 16 | 18 | 0 | 0 | 0 | 0 | 16 | 18 | 5 | 8 | 21 | 26 |
| | Loans | 0 | 0 | 6 | 8 | 0 | 0 | 0 | 0 | 6 | 8 | 3 | 3 | 9 | 11 |
| | Shares and equity | 0 | 0 | 0 | 0 | 29 | 30 | 0 | 0 | 29 | 30 | 0 | 0 | 29 | 30 |
| | Insurance technical provisions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Other claims and liabilities | 4 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 6 | 4 | 0 | 0 | 6 | 4 |
| | Total | 4 | 4 | 22 | 26 | 29 | 30 | 2 | 0 | 57 | 60 | 9 | 11 | 65 | 71 |
| Households | Monetary gold and SDRs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Currency and deposits | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Securities other than shares | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Loans | 0 | 0 | 39 | 39 | 0 | 0 | 0 | 0 | 39 | 39 | 1 | 1 | 39 | 40 |
| | Shares and equity | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Insurance technical provisions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Other claims and liabilities | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| | Total | 0 | 0 | 40 | 40 | 0 | 0 | 0 | 0 | 40 | 40 | 1 | 1 | 41 | 41 |
| Rest of the world | Monetary gold and SDRs | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| | Currency and deposits | 0 | 0 | 15 | 16 | 0 | 0 | 3 | 3 | 18 | 19 | 0 | 0 | 18 | 19 |
| | Securities other than shares | 0 | 0 | 19 | 22 | 0 | 0 | 0 | 0 | 19 | 22 | 0 | 0 | 19 | 22 |
| | Loans | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| | Shares and equity | 5 | 9 | 1 | 2 | 0 | 0 | 0 | 0 | 6 | 10 | 0 | 0 | 6 | 10 |
| | Insurance technical provisions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Other claims and liabilities | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 4 |
| | Total | 9 | 13 | 37 | 41 | 0 | 0 | 3 | 3 | 49 | 57 | 0 | 0 | 49 | 57 |
| Total | Monetary gold and SDRs | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| | Currency and deposits | 15 | 14 | 32 | 35 | 2 | 3 | 51 | 54 | 100 | 105 | 11 | 14 | 111 | 119 |
| | Securities other than shares | 0 | 0 | 37 | 41 | 0 | 0 | 0 | 0 | 37 | 41 | 9 | 12 | 46 | 53 |
| | Loans | 0 | 0 | 89 | 95 | 0 | 0 | 0 | 0 | 89 | 95 | 66 | 72 | 155 | 167 |
| | Shares and equity | 41 | 45 | 6 | 6 | 63 | 67 | 20 | 21 | 130 | 139 | 35 | 37 | 165 | 175 |
| | Insurance technical provisions | 1 | 1 | 1 | 1 | 0 | 0 | 11 | 13 | 13 | 15 | 0 | 0 | 13 | 15 |
| | Other claims and liabilities | 40 | 41 | 3 | 4 | 6 | 6 | 6 | 3 | 54 | 54 | 12 | 12 | 66 | 66 |
| | Total | 97 | 101 | 168 | 183 | 71 | 76 | 88 | 91 | 423 | 450 | 133 | 146 | 556 | 597 |

Source: CNB.

Box 2 Credit market disequilibrium

An abrupt stop in lending activity in Croatia prompted a discussion on the extent to which such loan dynamics was due to tighter lending policies of banks and possible liquidity shortages and the extent to which it was caused by the fall in demand triggered by the halt in investment under the impact of pessimistic expectations about future growth and profit. The main aim of this analysis is to estimate a model capable of separating the effects of supply and demand in the Croatian credit market and, within this framework, assessing possibilities and limitations of monetary policy impact on lending. This is particularly relevant in the context of recent financial market developments in the aftermath of the global financial crisis.

There are several approaches used in the literature to identify the determinants of demand and supply and credit market equilibrium (disequilibrium). The methodological basis for a disequilibrium model of the domestic credit market followed in this analysis was the paper by Ghosh and Ghosh (1999),¹ which analyses the demand for and supply of credit by using a switching regression framework. The model was estimated using the maximum likelihood method on quarterly data covering the period from the first quarter of 2000 to the first quarter of 2010, i.e. the period delimited by two global financial crises. The first of them was the late 1990s crisis generated in emerging market countries and the second emerged in most developed countries late in the current decade.

The model was used to identify the main determinants of the real supply of and demand for credit and periods of credit market equilibrium (disequilibrium). Total bank loans to the corporate and household sectors were used as dependent variables in both functions. Independent variables in the function of loan demand that were found significant were: nominal interest rate, real GDP, output gap, EMBI yield spread and one-year EURIBOR (Figure 1), while the credit function was best determined by the credit potential of commercial banks, the spread between lending and deposit rates, real GDP and the credit risk indicator of commercial banks (Figure 2). The difference between the estimated loan supply and the estimated loan demand shows the degree of equilibrium (disequilibrium) in the credit market (Figure 3).

Variables have expected signs in the demand function. Greater economic activity leads to stronger demand for credit and vice versa, and this variable has the strongest impact on movements in loan demand. The output gap parameter is negative, which suggests that economic overheating that results in GDP growth faster than potential lowers the demand for credit due to an increase in own funding sources. Furthermore, above-average growth in the observed period was associated with intensive corporate foreign borrowing, which largely enabled the substitution of domestic credit demand.

In view of the fact that kuna loans indexed to foreign currency predominate in long-term loans to the corporate and household sectors,

Table 1 Results of the credit market disequilibrium model estimated under the maximum likelihood method

| Demand | | |
|--|--|--------------------|
| Independent variable | | Coefficient |
| Constant | | -8.73 ^a |
| Lending rate | | -0.03 |
| GDP | | 3.44 ^a |
| Output gap | | -2.00 ^a |
| EMBI yield spread | | 0.07 ^a |
| 1-year EURIBOR | | -0.00 |
| Standard deviation | | 0.03 |
| Supply | | |
| Independent variable | | Coefficient |
| Constant | | -3.1 ^a |
| Spread between lending and deposit rates | | 0.05 ^a |
| Credit potential | | 0.52 ^a |
| GDP | | 1.41 ^a |
| NPLR | | 0.00 ^a |
| Standard deviation | | 0.01 |

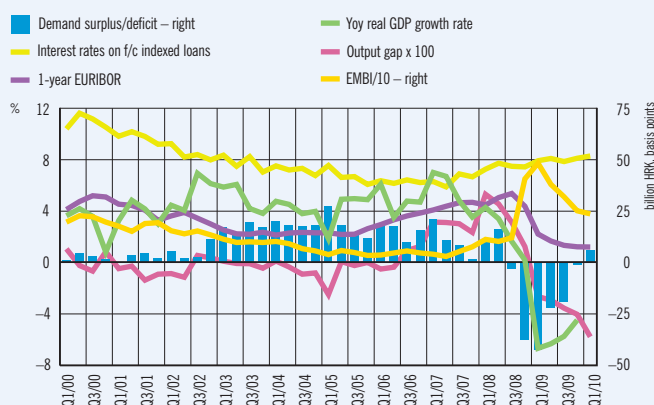
^a Significant at the level of 5%. Loans granted, GDP and credit potential are observed in logs.
Source: CNB calculations.

the nominal interest rate is the interest rate on total kuna loans with a currency clause. This variable has, as expected, a negative sign.

The EMBI yield spread on Croatian eurobonds is an indicator of the risk premium affecting the price of foreign borrowing and reflects the possibility of substituting domestic credit by foreign credit. EMBI yield spread has a positive sign in the assessed credit demand function, which indicates the effect of substitution of foreign credit by domestic credit when risk premium increases, i.e. when external borrowing is less available. One-year EURIBOR reflects the basis price of long-term capital in the eurozone. Together with the EMBI yield spread, it determines overall foreign borrowing costs and, as expected, has a negative sign.

The level of economic activity is the most important determinant of credit supply. In times of dynamic economic growth, banks tend to grant more loans and vice versa.

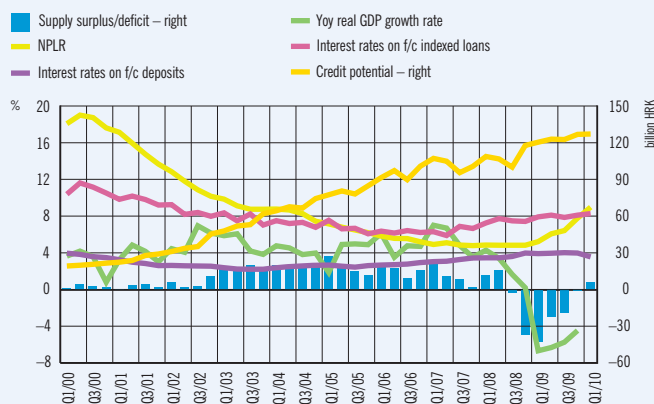
Figure 1 Credit demand determinants



Sources: CNB, CBS, J. P. Morgan, Bloomberg and CNB calculations.

1 The same authors tested a similar model on examples of Latvia, Hungary and Poland in *Credit Crunch or Weak Demand for Credit?*, the World Bank, EU10 Regular Economic Report, October 2009.

Figure 2 Credit supply determinants



Sources: CNB, CBS and CNB calculations.

The credit potential of banks, which was mostly determined by capital inflows to the banking sector in the observed period, is also an important determinant of credit supply.

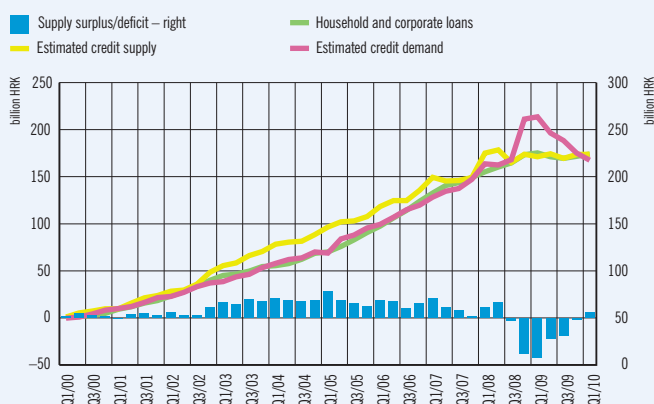
The spread between lending and deposit rates also has a positive sign, which indicates that higher operating profitability provides a boost to credit supply. The share of non-performing loans in total loans was used as an indicator of credit risk of commercial banks. The estimated model shows that its increase has a dampening effect on credit supply.

In terms of the model results, credit market developments in the period under review may be divided into three sub-periods. The first period, which lasted from 2000 to the second half of 2002, was characterised by the gradual stabilisation of global financial markets following the late 1990s crisis. The second period was the period of abundant capital inflows to emerging markets from the second half of 2002 to the third quarter of 2008. The third period began with the Lehman Brothers failure and the escalation of the global financial crisis.

In the first period, the supply of and demand for domestic credit were mostly in equilibrium – an increase in demand was spurred by the economic recovery accompanied by a gradual decline in domestic and foreign interest rates, though they were still relatively high. Together with the economic recovery that contributed to the fall in credit risk, the credit supply growth in that period was affected by a moderate increase in capital inflows, which had been subdued during the late 1990s crisis.

The second period, which was marked by high global liquidity and the drop in the cost of foreign borrowing, led to an upsurge in capital inflows through the banking sector. With continued dynamic growth, this considerably accelerated the growth in domestic credit supply relative

Figure 3 Estimated credit demand and supply



Source: CNB calculations.

to demand, generating a persistent excess supply in the credit market. Still, both foreign capital inflows and loan supply slowed as early as 2007, which gradually decreased excess supply in the credit market.

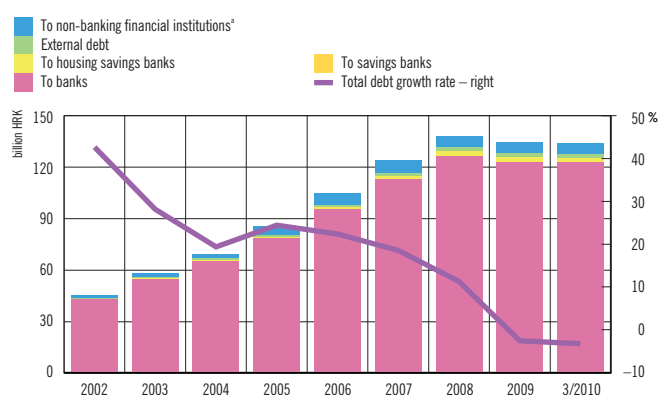
The third period began with the escalation of the global financial crisis in the third quarter of 2008, when capital inflows plunged and reduced the credit potential of banks. Compounded by a major slump in economic activity, this decreased credit supply, which held steady at a low level in the following period. At the same time, notwithstanding the substantial economic slowdown and interest rate hikes, demand for domestic credit grew strongly due to a major upturn in global risk aversion and impeded access to poorly liquid foreign markets. In late 2008 and early 2009, this created a considerable excess of demand for domestic credit over supply. A tendency to balance out demand and supply emerged in the credit market in the remainder of 2009 and early 2010. This was largely due to the fall in demand caused by low economic activity as well as the increased availability of foreign loans.

Assuming that conditions in foreign financial markets normalise, the rise in demand for domestic credit in the forthcoming period will above all depend on the strengthening of export demand, which should provide a major impetus to economic growth. A possible economic recovery will spur capital inflows to the domestic banking system and help reduce the riskiness of loans. In turn, this will raise supply and establish a relative equilibrium in the credit market.

To sum up, this analysis of credit market developments suggests that the main supply and demand determinants are associated with the external environment, which implies that monetary policy efficiency is quite limited when it comes to boosting credit growth.

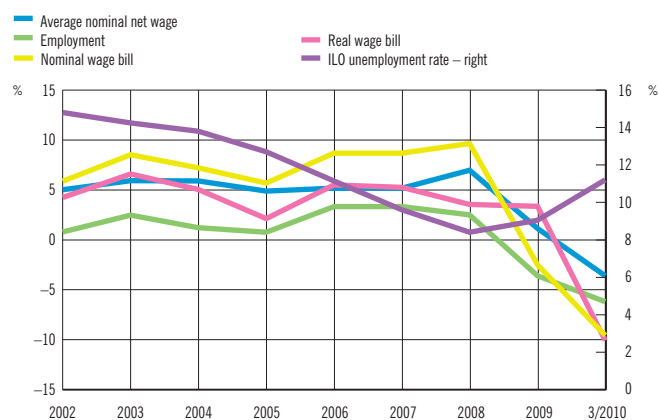
Household sector

Figure 24 Household debt



*Data on household debt to leasing companies and insurance companies are based on estimates.
Sources: CNB and HANFA.

Figure 25 Unemployment, employment and wages



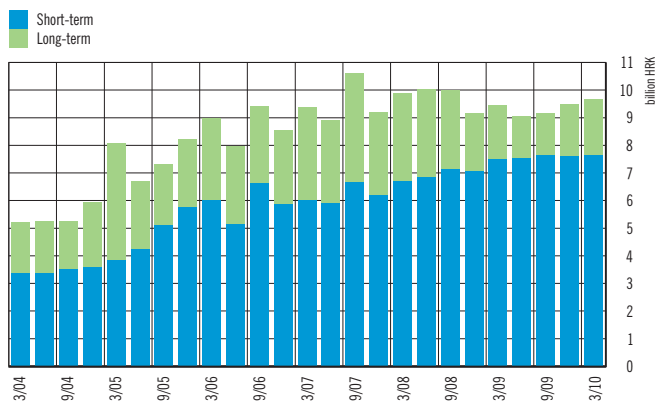
Source: CBS.

Following a brief improvement in 2009, most indicators of household debt have continued to deteriorate. Although total household liabilities are expected to fall steadily in 2010, the deterioration in household debt indicators is expected to continue as adverse labour market trends reduce household disposable income.

The downward trend in total household debt that began in the first half of 2009 slowed down towards the year-end. A marginal fall in household debt early in 2010 was nevertheless sufficient to increase the year-on-year decline in debt from HRK 3.6bn (2.6%) at the end of 2009 to HRK 4.6bn (3.3%) in the first quarter of 2010 (Figure 24). A slower contraction in household loan demand in late 2009 and early 2010 was influenced by the stabilisation of interest rates on household loans, the disappearance of exchange rate pressures that emerged in late 2008 and early 2009 and the end of the decline in real wages due to lower inflation. Still, the pace of employment decline has been maintained at the same level since early 2009, which continued to curb demand for loans in early 2010 (Figure 25). A revival of lending to households, which slowed down the fall in total household debt in late 2009, is indicated by the rise in the amount of newly-granted long-term loans to households. Households had increasingly relied on short-term borrowing from banks ever since the crisis escalation, which banks encouraged due to uncertainty as regards the stability of sources. However, in late 2009 and early 2010, this trend reversed: while short-term loans held steady, newly-granted long-term loans recorded growth for the first time since mid-2008 (Figure 26).

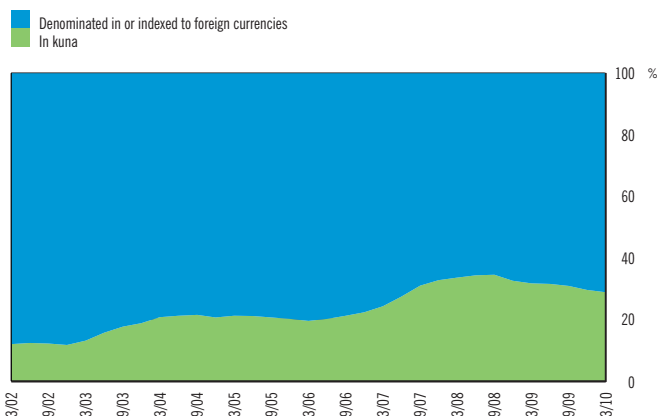
Broken down by purpose, the amount of newly-extended home, car and credit card loans stayed almost the same, while the revival was particularly evident in other long-term loans at end-2009 and in early 2010. As other long-term loans dropped the most when the crisis escalated, their decline has still not been completely offset by the current recovery. Total housing loans

Figure 26 Maturity breakdown of newly-granted household loans



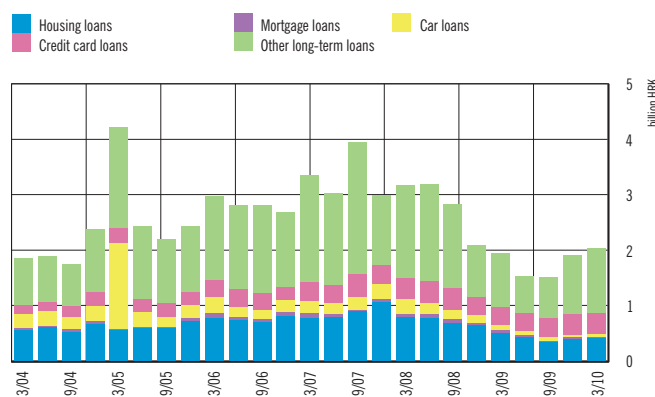
Source: CNB.

Figure 29 Currency breakdown of household loans



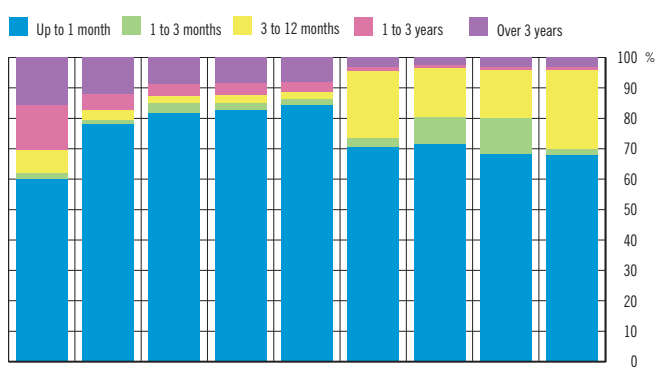
Source: CNB.

Figure 27 Newly-granted household loans by purpose



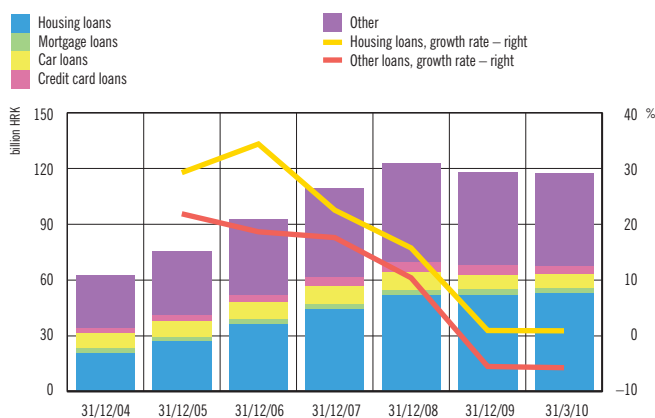
Source: CNB.

Figure 30 Household loans by interest rate variability



Source: CNB.

Figure 28 Household loans by purpose



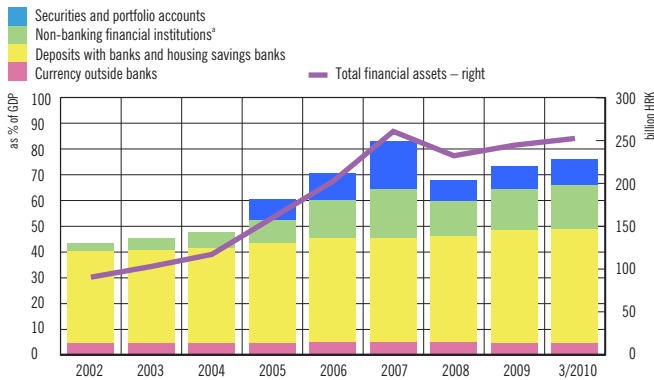
Source: CNB.

continued to grow slowly, while total other loans granted steadily declined at the annual rate of 5-6% (Figure 28), notwithstanding the increase in newly-granted loans.

In late 2009 and early 2010, banks continued increasingly to index loans to the exchange rate, thereby magnifying household exposure to the risk of exchange rate depreciation. At the end of the first quarter of 2010, household loans indexed to foreign currencies accounted for 71.2% of total household loans (Figure 29). The rising share of relatively cheaper long-term loans in the total amount of newly-extended loans could reduce the loan repayment burden of households, which is contributed to by extensions of loan maturities. Still, exposure of households to the risk of increased debt burden due to interest rate movements remained high. In late March 2010, nearly 96% of all household loans were made with interest rates variable within a year, the same as a year earlier (Figure 30).

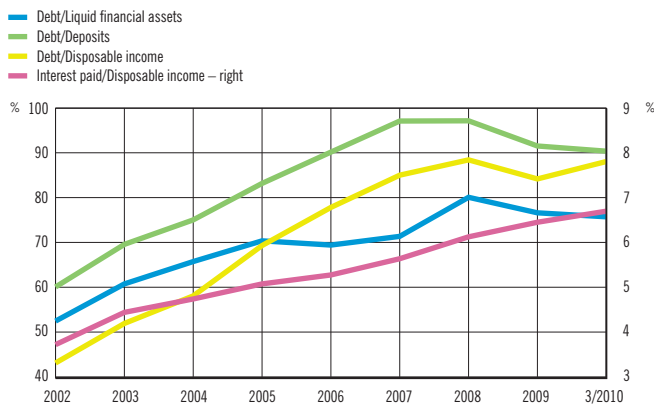
The improvement in most household debt indicators that occurred in 2009 due to the fall in total household debt was of a

Figure 31 Household financial assets



* Data on household claims against open-end and closed-end investments funds and data on claims against insurance companies are based on estimates.
Sources: CNB, HANFA and CDCC.

Figure 32 Household debt and debt burden



Sources: CNB, HANFA and CDCC.

short duration (Figure 32). The impact of unfavourable labour market developments strengthened in early 2010; due to the drop in the total net wage bill in the first quarter of 2010, the ratio of household debt to disposable income deteriorated and returned to the historical high of end-2008. The ratio of interest payments to household disposable income also deteriorated despite stagnation in lending rates in late 2009 and in early 2010. Still, the ratios of household debt to total liquid financial assets¹ and deposits improved in the same period. This was due to the continued growth in household bank savings, but at a lower rate than in previous years, while the recovery of the capital market increased the value of household assets invested in securities and investment funds and prompted some investors to return to the market, particularly to its most-liquid and least risky segments (Figure 31).

The negative labour market trends could subside in late 2010 and slow down the decline in employment, reduce job insecurity to some extent and boost demand for loans. The reduction in tax burden for most households in the second half of 2010 will be no more than a cushion to the expected steady fall in household disposable income. As interest rates have remained relatively high, debt burden and the burden of servicing existing loans could continue to increase. This implies the continued increase in the share of non-performing loans, particularly those granted to households the growth of whose debt in previous years was not in line with their creditworthiness (see Box 3 Impact of household debt growth in the pre-crisis period on financial stability).

¹ Household financial assets exclude foreign cash and deposits with foreign banks since their level cannot be precisely estimated.

Box 3 Impact of household debt growth in the pre-crisis period on financial stability¹

The strong increase in total household debt that lasted for several years before the eruption of the global financial crisis contributed to the convergence of the household debt-to-GDP ratio to the EU average. In late 2008, with their total debt standing at 40.5% of GDP,² Croatian households were among the most heavily indebted in Central and Eastern Europe. Household debt growth relaxed the financial constraint on consumption posed by current income and enabled the rise in household consumption based on optimistic expectations about future income. Still, these trends raised concerns about potential implications that strong household debt growth could have for financial stability.

In view of the initially low debt level in transition countries and the relatively high household debt in the EU, the standard macroeconomic approach to analysing household debt growth in transition countries explains the strong debt accumulation largely as an inevitable result of real convergence and the process of European integration. However, overall risk to which financial systems are exposed does not depend on the aggregate debt amount but on its distribution among particular segments of households. This is why the text below examines changes in the debt distribution within this sector based on the micro-data from the Household Budget Survey (HBS).³ Particular attention is paid to households with largest debt amounts to discern possible changes in determinants of their debt during the observed period and the resulting concentration of total household debt among potentially vulnerable households.

Figure 1 shows a natural logarithm distribution of individual loan amounts owed by indebted households in 2005 and 2008. In the observed period, the distribution of individual loan amounts granted to households moved in line with the increase in their aggregate debt, i.e. the amount of household loans grew. At the same time, the distribution became more asymmetric, which suggests an increase in the number of households with larger loan amounts and the consequent debt concentration among the most heavily indebted households. However, this does not necessarily imply an increase in banks' credit risk exposure arising from loans to these households, if their creditworthiness also increased. In analysing the debt distribution among households, one should also take into account the impact of changes in various socio-economic and demographic characteristics of indebted households that could approximate their creditworthiness.

Determinants of household debt were thus identified in the first step of the analysis in order to separate the effect of changes in household creditworthiness from the effect of changes in the estimated implicit credit policies of banks and of the possible higher propensity of some households to borrow on the increase in their debt over the period under review.

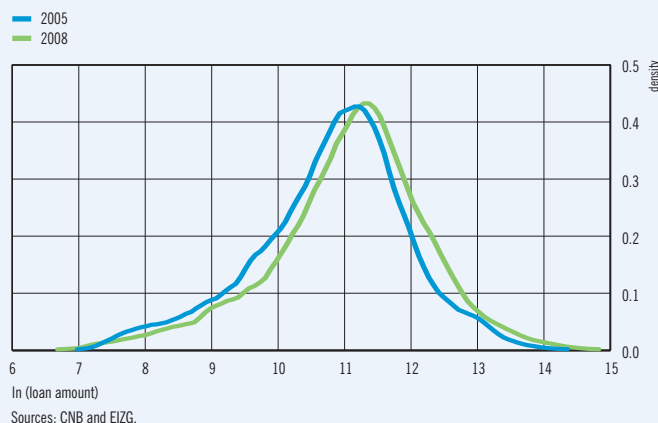
The impact of various characteristics of households on their debt amount along the entire debt distribution was determined by using quantile⁴ re-

1 *Household Credit Risk in Croatia: An Analysis Based on the Household Budget Survey (2009)* was prepared by the Institute of Economics, Zagreb and the Croatian National Bank.

2 World Bank, *The Crisis Hits Home: Stress-Testing Households in Europe and Central Asia*, 2009.

3 The Household Budget Survey (HBS) is carried out annually by the Croatian Bureau of Statistics and gathers data on individual types of household income, assets and consumption.

Figure 1 Changes in the distribution of individual household loan amounts between 2005 and 2008



gressions. Among explanatory variables,⁵ statistically most significant in estimating the amount of household debt, and with the expected sign, were the following: household disposable income, age of the household head, type of activity and working time of the household head, number of loans, possession of a real estate property for which a housing loan has been taken, and housing loan taken in the last 12 months.⁶ In the second step of analysing the increase in the household sector debt during the period under review, the effect of changes in the creditworthiness of indebted households was separated from the effect of looser credit policies of banks and/or the increased propensity of some households to borrow on the rise in their debt.⁷

4 Quantile is a general term used for statistical placement values that divide a data set ordered by size (in our case, the amount of household loans) into a specific number of equal parts. Thus, deciles divide an ordered data set into 10 equal parts and percentiles into 100 parts equal in number.

5 The following variables were used in quantile regression models: household disposable income, number of loans, number of children, number of employed members, age, sex, level of education, housing tenure, home loan taken in the last 12 months, employment status prevailing in the previous year, type of activity, working time and type of employment contract.

6 As expected, household disposable income, the number of loans and variables identifying households with household loan obligations have a positive effect on the amount of household debt, while the effect of employment in primary activities and part-time employment is negative. The effect of the household head's age on the debt amount depends on the household head's position in the life cycle; it is positive up to a certain age when it reaches its maximum and then becomes negative.

7 The Machado-Mata decomposition technique was used, presented in the following equation:

$$X^{08}\beta_{\theta}^{08} - X^{05}\beta_{\theta}^{05} = X^{05}(\beta_{\theta}^{08} - \beta_{\theta}^{05}) + (X^{08} - X^{05})\beta_{\theta}^{08} + \varepsilon_{\theta}$$

where:

X^{05} , X^{08} – characteristics of households in 2005 and 2008

β_{θ}^{05} , β_{θ}^{08} – estimated regression coefficients with corresponding characteristics of households in a particular quantile (θ) of the debt distribution

ε_{θ} – errors

The first component on the right side of the equation shows the impact of changes in the estimated regression coefficients with certain characteristics of indebted households that approximate a relaxation of banks lending policies and household appetite to borrow. The second component is the effect of changes in these characteristics, i.e. household creditworthiness. Errors ε_{θ} present the portion of the increase in total household debt that could not be explained by the model.

Figure 2 Decomposition of changes in household debt between 2005 and 2008

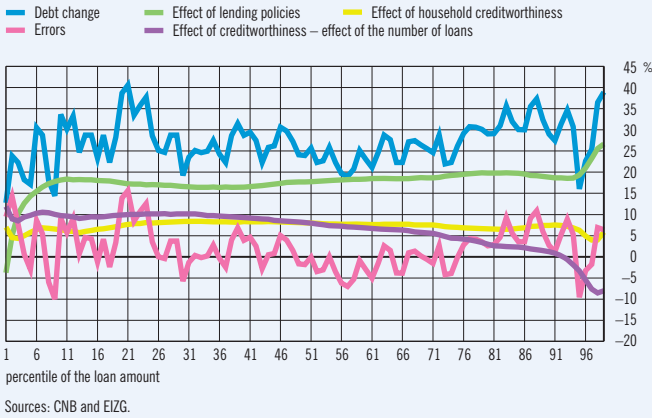


Figure 2 shows that the average loan amount increased at all household debt levels in the 2005-2008 period. As evident from the jump in the curve showing the overall debt level by individual percentiles of indebted households, the strongest debt build-up was registered among the most heavily indebted and thus most risky households. Characteristics of indebted households improved significantly in the period under review. Still, the improved creditworthiness of indebted households may explain only a minor portion of the overall debt growth in this period. The main impetus to household debt growth came from the easing of lending standards of banks and/or increased willingness of households to borrow. In the period under review, this impact was the strongest on the most heavily indebted households, while their characteristics improved the least. They even deteriorated, bearing in mind the negative impact of the banks' willingness to grant more loans for a given household creditworthiness.

The data on the overall amount of loans taken is available only for indebted households so that this sample is not randomly selected from the population of all households. The selection of the reviewed indebted households is not random but depends on a household's decision to apply for a loan and on a bank's decision to approve the loan application. This creates the problem of sample selection bias, which affects the results of the estimation of the effect of changes in the creditworthiness of indebted households and the effect of lending policies on household debt growth. The sample selection bias was corrected⁸ by including the estimated probability of a household having a loan in the decomposition of debt growth.⁹

The decomposition of household debt growth between 2005 and 2008 adjusted for the sample selection bias, which is presented in Figure 3, suggests that characteristics of indebted households would have improved much more in the observed period had they followed

8 The Heckman method using probit models in assessing the probability of having debt is commonly used to correct for the sample selection bias. To avoid an implicit normality assumption, a semi-parametric estimator was used to estimate the probability of household holding debt, more precisely, the Ichimura estimator.

9 In addition to variables used to estimate the loan amount payable by a household, another two explanatory variables were used to establish the likelihood of a household having debt: investment in life insurance and the level of urbanisation.

Figure 3 Decomposition of changes in household debt between 2005 and 2008 corrected for sample selection bias

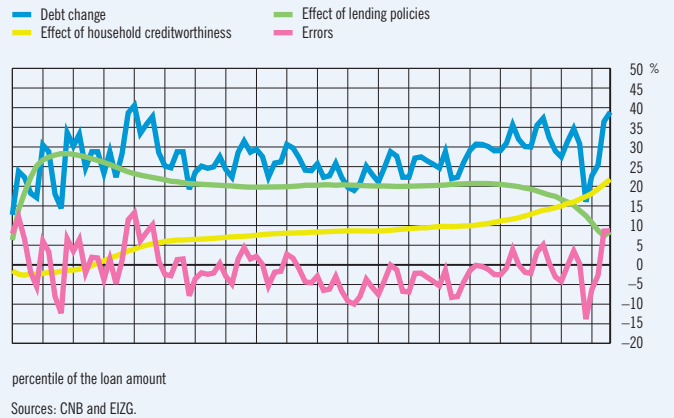
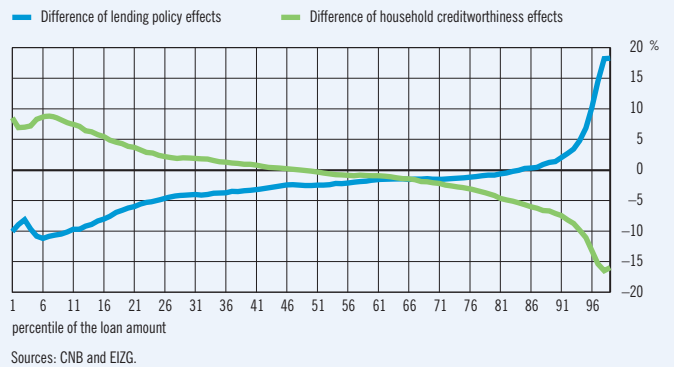


Figure 4 Difference between the effect of lending policies and household creditworthiness on household debt build-up estimated without the sample selection bias correction and with that correction

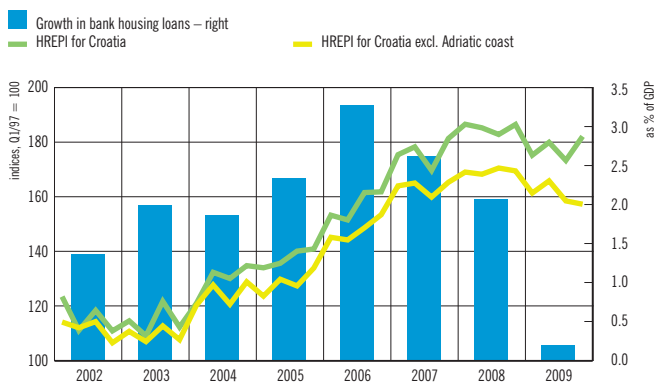


the changes in the creditworthiness of the entire population. Figure 4 presents the difference between the effect of changes in household creditworthiness on household debt build-up estimated without correction for sample selection bias and the effect estimated with that correction. It shows that the improvement in characteristics of indebted households was much less than the improvement in the creditworthiness of all households. This indicates that banks entered into more risky segments of population with new loans, while risks deteriorated the most in the segment of the most heavily indebted households.

The analysis of household debt build-up in the period before the financial crisis outbreak shows that although characteristics of most households improved, the major impact on the strong increase in household debt came from the easing of lending policies and procedures. This relaxation of lending standards was particularly pronounced in the segment of the most heavily indebted households. A deterioration in the creditworthiness of indebted households relative to the entire sector suggests that banks entered into relatively riskier segments of households in the period under review. This increased the risk of household loans, which has been materialised during the current crisis.

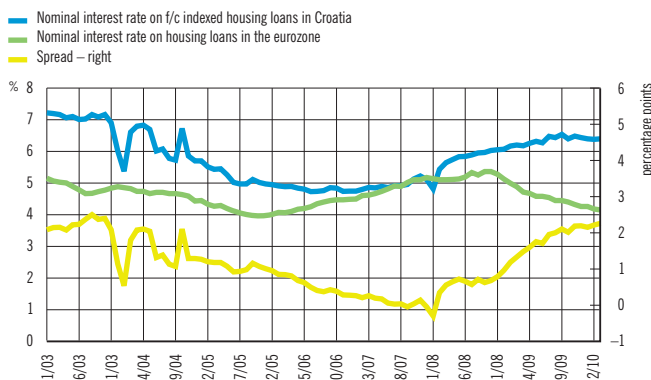
Real estate sector

Figure 33 Housing loans and HREPI^a on a quarterly basis



^a The hedonic real estate price index takes into account qualitative characteristics of the real estate.
Source: CNB calculations.

Figure 34 Comparison of interest rates on housing loans in Croatia and the eurozone



Sources: CNB and ECB.

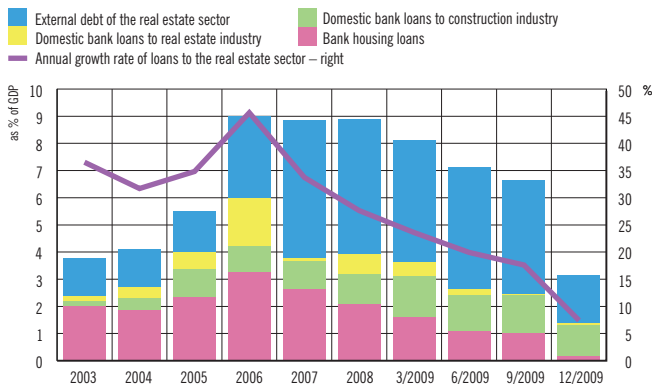
Stronger negative trends in the labour market will additionally weaken household demand for residential property in 2010. Coupled with increasingly less available funding for new building construction projects, this will reinforce downward pressures on prices of residential property.

The decline in residential property prices recorded in the first half of 2009 continued and even gained momentum in the second half of the year, although there were some fluctuations due to the rise in residential property prices on the Adriatic coast. The annual fall in prices, which was some 5% in the first half of the year, accelerated briefly in the third quarter and slowed to 2.6% in the last quarter of 2009. Still, excluding from the index residential property prices on the Adriatic coast, the annual rate of decline in residential property prices increased to 8.0% at the year end (Figure 33).

The steady drop in prices of residential real estate in the second half of 2009 can be accounted for by developments in fundamental demand factors. Deteriorating labour market conditions led to the drop in household disposable income in the second half of 2009. Together with a slight increase in real interest rates on housing loans and tightening of other lending terms, this added to the downward pressures on market prices of residential property (Figure 34).

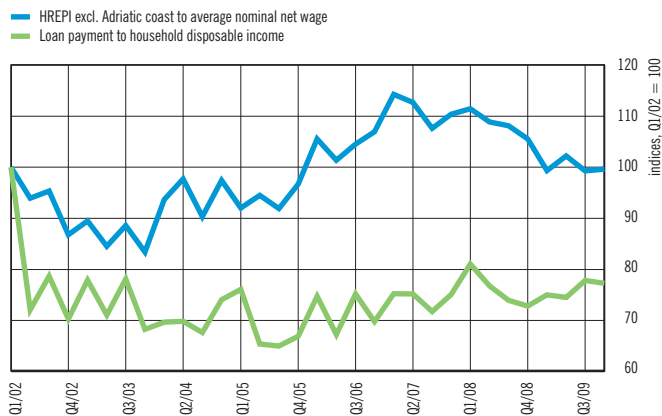
Domestic bank lending to corporates dealing in construction, which was very slow in mid-2009, picked up again towards the year-end. The annual rate of growth in domestic loans to the construction sector thus stood at a high 22.1% in late 2009. In the second half of 2009, loans from domestic sources to corporates dealing in real estate activities also gained momentum, while home loans were almost stagnant, particularly late in the year. Nevertheless, though the funding provided by domestic sources to the real estate sector was slightly larger than in the

Figure 35 Annual growth in domestic and foreign loans to the real estate sector



Source: CNB calculations.

Figure 36 Financial availability of housing loans



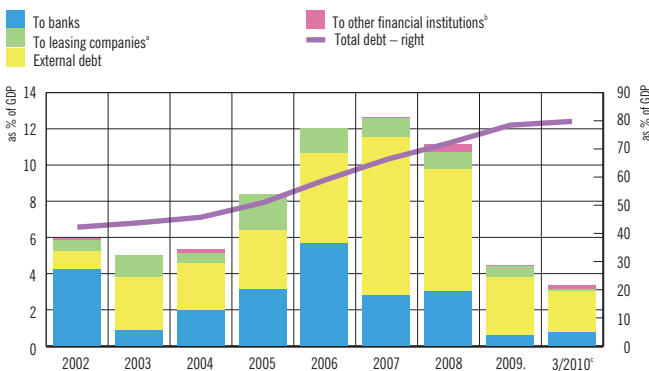
Sources: CBS and CNB calculations.

first half of the year, the 2009 annual increase in domestic loans was three times lower than in 2008. At the same time, foreign borrowing by the real estate sector, which until recently was its main funding source, almost came to a halt. By the end of 2009, the growth in total loans to the real estate sector decelerated markedly relative to the end of 2008. The annual growth rate of these loans was 7.4% at end-December 2009 (Figure 35).

However, the fall in market prices of residential property in the second half of 2009 did not improve indicators of its financial availability over those of mid-2009 (Figure 36). The drop in wages and the consequent decline in total household disposable income in the second half of 2009 offset the positive impact of lower residential property prices. Notwithstanding the announcement of measures to stimulate residential property sales, the persistently high uncertainty associated with the deterioration of the labour market could this year also prompt households to postpone large borrowing and the decision to purchase residential real estate. The difficult business conditions that the real estate sector faced as early as 2009 and that are likely to continue for most of 2010 will contribute to the steady decline of the income of this sector. In addition, the completion of projects started before the crisis could add to the supply of new real estate. In conditions of limited demand, this could reinforce downward pressures on prices and further impair the sector's debt-servicing capacity.

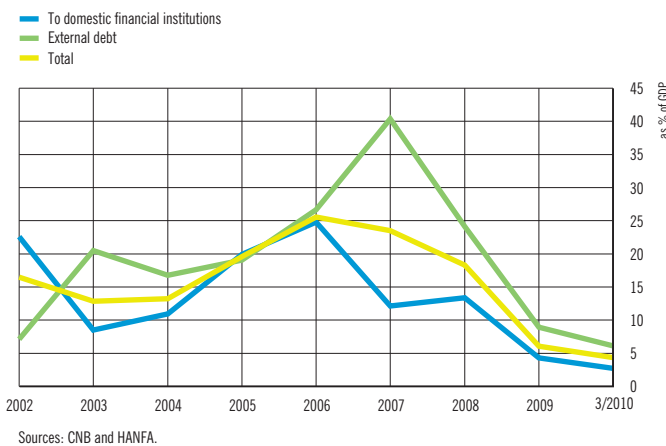
Non-financial corporate sector

Figure 37 Change and non-financial corporate debt stock



* Estimate. [†] The most recent available data on debt to insurance companies refer to December 2009 (approximated by loans, including interest). [‡] Year-on-year increase in debt as at end-March 2010.
Sources: CNB and HANFA.

Figure 38 Annual growth rate of non-financial corporate debt



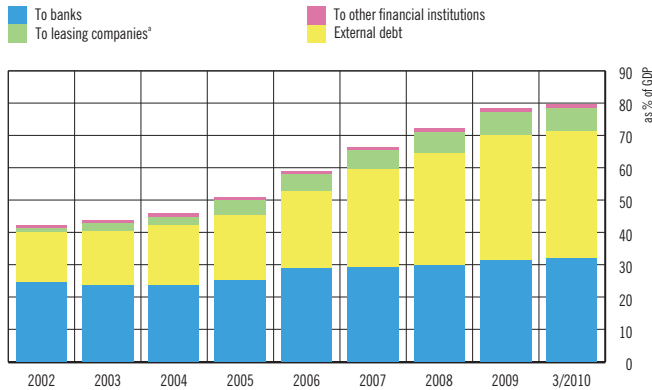
Sources: CNB and HANFA.

Weak economic activity increases the prospects for a further deterioration in the quality of banks' loan portfolio associated with non-financial corporations. The replacement of foreign funding sources by domestic sources in the non-tradable sector adds to credit and currency risks of the banking sector, while the rise in net borrowings increases the sector's total debt. Such a lending policy postpones the rise in the share of non-performing placements but is also slowing down the necessary reallocation of resources in the economy.

After a slump in mid-2009, lending to non-financial corporations slightly recovered in late 2009 and early 2010. The recovery was particularly noticeable in domestic borrowing, which also reacted more strongly to the crisis escalation. Nevertheless, the base period impact of the stagnant corporate debt in mid-2009 continued to slow down the annual dynamics of non-financial corporate debt growth. Data on newly-granted bank loans show that both short-term and long-term placements grew in late 2009 and early 2010. It should be borne in mind that the crisis hit the granting of new long-term loans particularly hard, and it has stayed at a relatively low level.

The change in the structure of non-financial corporate funding in the observed period was evident not only in a slightly stronger domestic market borrowing and less intensive foreign borrowing but also in changes within these sources. Debt growth stemming from foreign lending continued to slow down slightly at the end of 2009 and early in 2010. A noticeable pick-up in lending to affiliated enterprises (round-tripping transactions excluded), particularly large companies dealing in trade and production of beverages and oil, was offset by the reduction in exposure of other foreign creditors to domestic enterprises.

Figure 39 Non-financial corporate debt



*Data on debt to leasing companies are based on estimates.
Sources: CNB and HANFA.

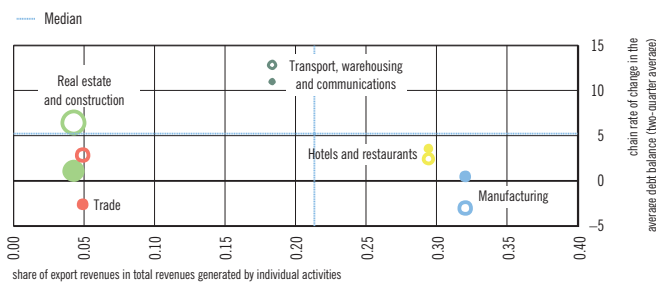
Among domestic sources, the strongest growth was recorded in corporate debt to banks and mandatory pension funds, which picked up momentum due to the very high financial system liquidity and a stable monetary environment in late 2009 and early 2010. What is more, after years-long fund withdrawals, investment funds also recorded a net increase in investment in corporate securities. At the same time, corporate borrowings from leasing companies dropped markedly, partly due to smaller needs for fixed assets. This may be partly attributed to the removal of credit growth limits that induced parent banks to direct some loans to leasing companies, as well as the increase in their risk perception due to the difficulties these companies face in the collection of their receivables (Figure 37).

The pace of non-financial corporate borrowing continued its deceleration (from 6.1% at end-2009 to 4.4% in the first quarter of 2010), while the annual rates of growth in domestic and foreign borrowing converged (Figure 38).

In view of the relatively low volume of lending to non-financial corporations, these trends did not significantly alter the structure of their debt, which stood at 80% of GDP at end-March 2010. The largest shares were still held by foreign creditors and domestic banks, accounting for one half and two fifths respectively of the total debt (Figure 39).

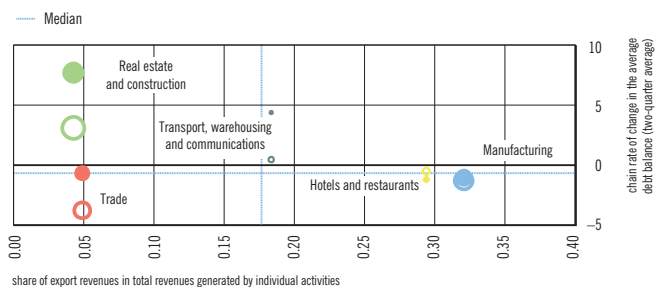
The process of external adjustments through a decrease in domestic demand could for some time impair the business performance of non-financial corporations and their debt-servicing capacity, which will be also hampered by the continuation of relatively high interest rates and the shortened maturities of new loans. Foreign creditors responded to this situation by re-directing newly-granted loans from the non-tradable sector to the tradable sector (Figures 40 and 41). Corporates in the former sector compensated their demand by stronger borrowing from domestic banks, which, however, did not increase their exposure to corporates in the tradable sector. Domestic banks

Figure 40 External debt allocation by sectors from September 2009 to March 2010



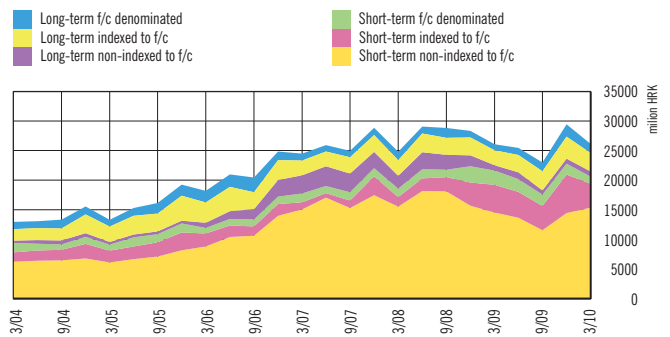
Note: A full circle denotes the debt dynamics in the last two quarters observed (average debt balance at end-December 2009 and end-March 2010 relative to the average debt balance at end-June and end-September 2009). An empty circle denotes the same change in the debt balance in the previous period (average debt balance at end-June and end-September 2009 relative to the average debt balance at end-December 2008 and end-March 2009). The size of the circle denotes the significance of a particular activity's share in total external debt of non-financial corporations, with the debt balance at end-March 2010 used as the debt indicator. Activities accounting for a relatively minor share in total debt are not presented.
Sources: CNB (external debt) and FINA (export and total revenues).

Figure 41 Allocation of domestic bank loans by sectors from September to December 2009



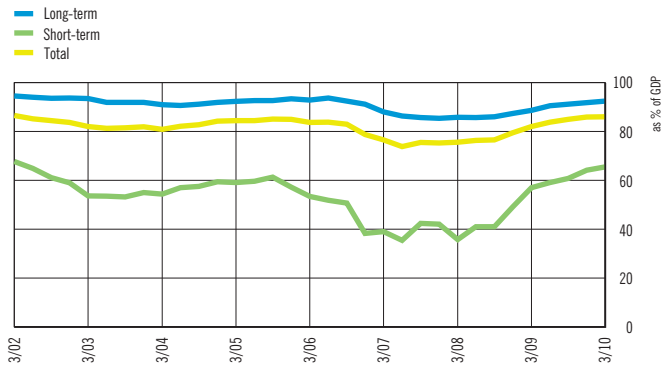
Note: A full circle denotes the debt dynamics in the last two quarters observed (average debt balance at end-December 2009 relative to the average debt balance at end-June and end-September 2009). An empty circle denotes the same change in the debt balance in the previous period (average debt balance at end-June and end-September 2009 relative to the average debt balance at end-December 2008 and end-March 2009). The size of the circle denotes the significance of a particular activity's share in total debt of non-financial corporations to domestic banks. Activities accounting for a relatively minor share in total debt are not presented.
Sources: CNB (loans by activity) and FINA (export and total revenues).

Figure 42 Breakdown of newly-granted loans to non-financial corporations by maturity and currency



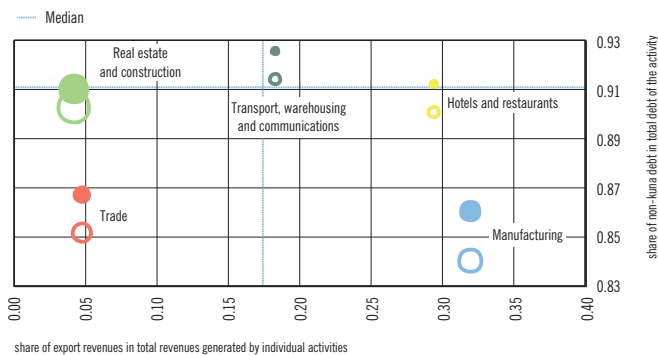
Note: Short-term loans comprise personal overdrafts, which are statistically recorded as newly-granted loans in each month.
Source: CNB.

Figure 43 Share of corporate non-kuna debt* in total loans



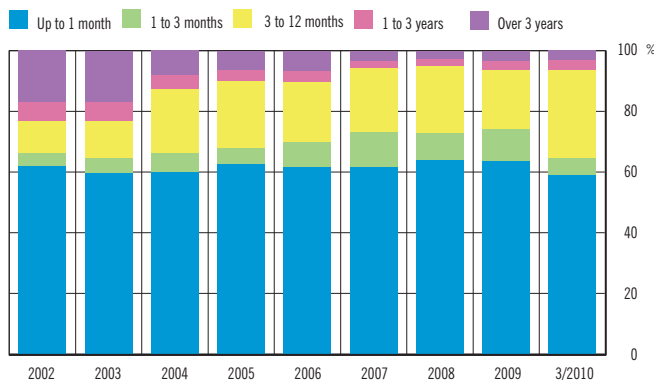
* It is assumed that total external debt is denominated in foreign currencies.
Source: CNB.

Figure 44 Currency exposure in March 2010



share of export revenues in total revenues generated by individual activities
Note: A full (empty) circle denotes the share of non-kuna debt in March 2010 (September 2009). The size of the circle denotes a particular activity's share in total debt of non-financial corporations. Activities accounting for a relatively minor share in total debt are not presented.
Sources: CNB (loans by activity) and FINA (export and total revenues).

Figure 45 Breakdown of bank loans to non-financial corporations by interest rate variability



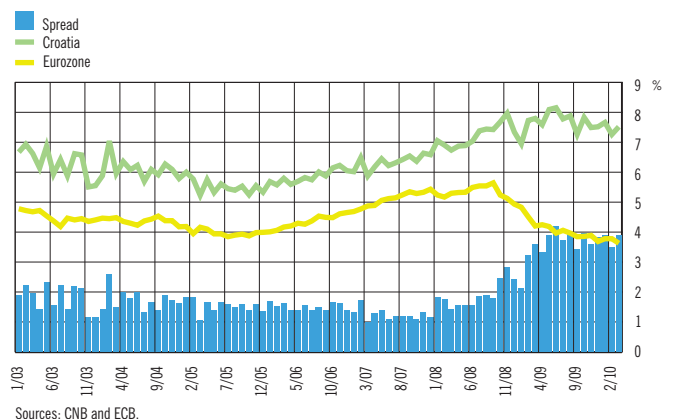
Source: CNB.

thus increased their exposure to the part of the portfolio that had previously been held by foreign creditors and that accounted for the dominant share of the total debt of domestic non-financial corporations, which are likely to experience a harder and slower recovery. Nevertheless, since it is currently impossible to gain any insight into the sectoral allocation of domestic loans in the first quarter of 2010 due to adjustments to EU reporting standards and consequent changes in statistical and supervisory forms, recent developments should be viewed with some caution.

Ever since the escalation of the global financial crisis and recession, corporates have obtained more domestic bank loans with a currency clause and shorter terms. This was due to the shift in corporate demand towards loans with shorter maturities, which was caused by the decline in investment, as well as the banks' desire to protect themselves additionally against currency and liquidity risk under conditions of the steadily rising share of foreign currency deposits and uncertainty about the availability of funding sources (Figures 42 and 43). The change in the currency structure of the debt was particularly evident in short-term debt; in early 2010, foreign currency loans accounted for two-thirds of total loans, while their share had been nearly two times smaller two years previously. Although the share of long-term loans in foreign currency or indexed to foreign currency also increased, their currency structure did not change much as most of such loans had been indexed to foreign currencies in previous periods as well.

While banks protect themselves from currency risk by indexing loans to the exchange rate, corporate exposure to currency risk is growing since new currency-indexed loans are largely granted to corporates in the non-tradable sector, which mostly generate income in kuna. This sector, which would be hit more by an exchange rate depreciation shock, accounts for the bulk of potential losses in banks' credit portfolios. On the other hand, corporates generating substantial foreign currency in-

Figure 46 Interest rates on long-term loans to non-financial corporations in Croatia and the eurozone



Sources: CNB and ECB.

Figure 47 Interest rates on short-term loans to non-financial corporations in Croatia and the eurozone

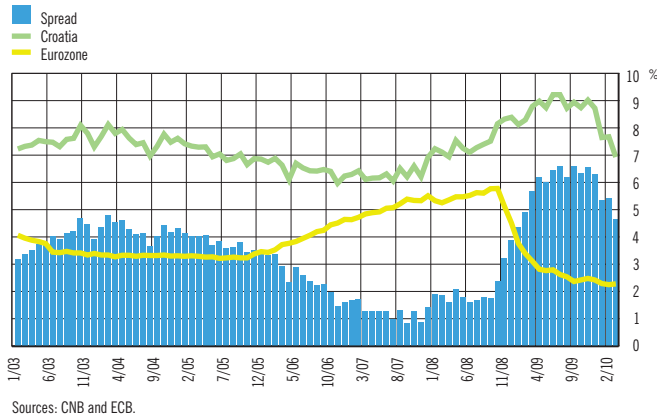


Figure 48 Ratio of corporate deposits to gross value added

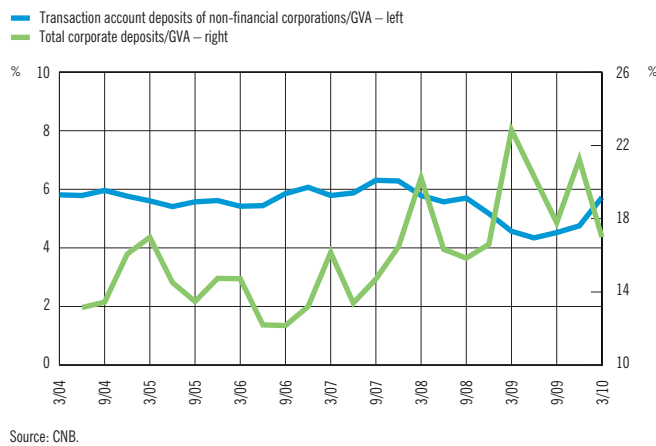
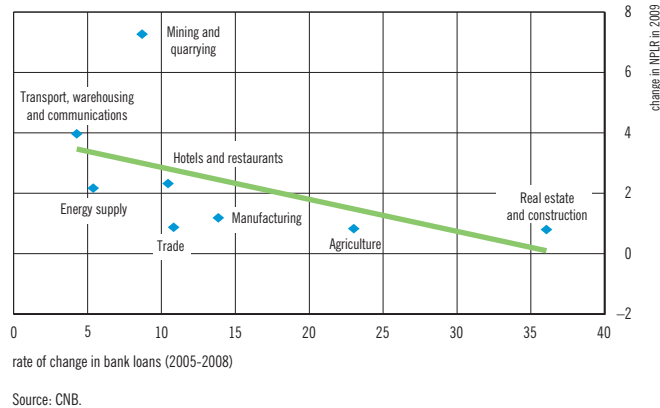


Figure 49 Sectoral dispersion of non-performing loans relative to the dynamics of borrowing from domestic banks



come turned to cheaper foreign funding sources in late 2009 (Figure 44).

Exposure of non-financial corporations to interest rate risk remained relatively high in early 2010. Ever since 2007, loans with interest rates variable within a year have accounted for 95% of all loans to non-financial corporations (Figure 45). Domestic bank loans made with interest rates variable within three months noticeably decreased (their share was 65% in the first quarter of 2010, while it averaged 73% in the previous four years), which may be explained by ample liquidity in the banking system and historically low interest rates in the money market.

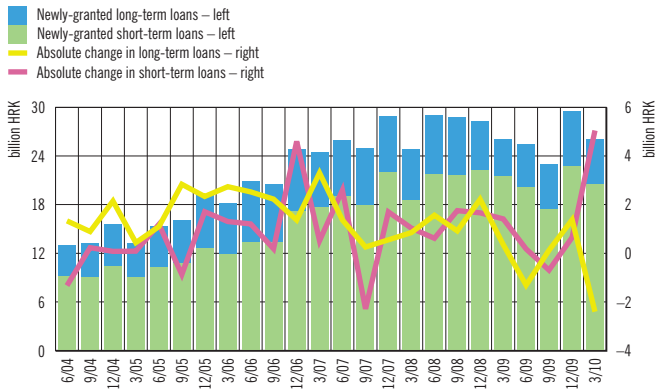
The reduction in the country risk premium and easier access to foreign funding sources prompted a slight decline in interest rates on long- and short-term corporate loans in late 2009. The downward trend in interest rates, which has been more prominent in short-term corporate loans, reflects above all cheaper kuna loans without a currency clause (including credit lines) that are frequently rescheduled and therefore strongly affect the overall interest rate dynamics. Corporate loan interest rates in the eurozone have held steady at record lows. The spread between interest rates on corporate loans in Croatia and the eurozone has thus continued to narrow after being at record wide in late 2009 (Figures 46 and 47). The remainder of the year should bring a further narrowing of this interest rate differential. However, due to the expected rise in foreign interest rates and the still relatively high country risk premium, one may hardly expect any significant fall in domestic interest rates.

The liquidity of non-financial corporations steadily deteriorated. The ratio of transaction account deposits of non-financial corporations to gross value added somewhat improved early in 2010, but non-financial corporate savings and time deposits continued to decline more rapidly (Figure 48). As these changes in aggregate liquidity ratios are linked to the reallocation of resources among corporations, the continued economic recovery in foreign markets will reinforce the segmentation of liquidity.

A vigorous credit expansion in previous years led to domestic debt concentration in corporates dealing in construction. In 2009, the share of non-performing loans to these corporations grew slowly, but their borrowing remained relatively strong. Opposite trends are evident in sectors that borrowed less in previous periods, like transport and communication, hotels and restaurants, and trade, while corporations from the tradable sector are positioned in the middle of this distribution (Figure 49). The relatively slow growth in non-performing loans to construction companies may be linked to the high value of collateral these companies pledged as security, which has enabled banks to keep these loans in the category of fully recoverable loans despite delays in loan repayment.

Banks have apparently been drawn into forced lending in which they strive to secure sufficient liquidity, mostly to corpora-

Figure 50 Newly-granted bank loans and absolute change in gross loans



Source: CNB.

tions whose debt accounts for a substantial share in the banks' portfolio. Hence, the exceptionally large growth in lending to some sectors has still not made any major impact on the rise in non-performing loans despite the fact that these sectors are deep in recession (Figure 49). Instead of helping the process of resource reallocation to export-oriented sectors, banks provide the refinancing and rescheduling of loans to existing debtors, thereby postponing the realisation of potential losses in this segment of the loan portfolio.

A part of this process has been reflected in increased short-term corporate lending, which early in 2010 was aligned with the repayment schedule for long-term loan liabilities to commercial banks (Figure 50).

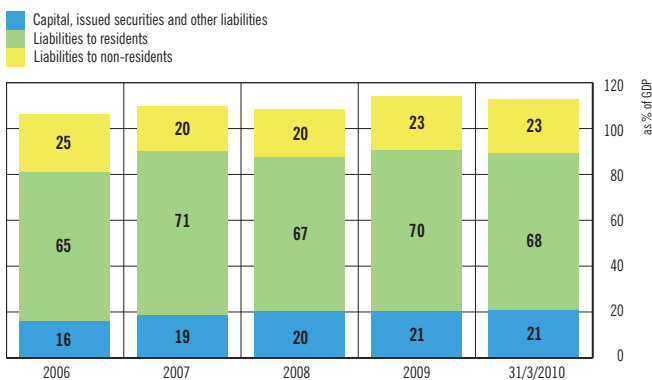
Banking sector²

Figure 51 Annual growth rate of major banking sector balance sheet items^a



^a An increase in balance-sheet items at end-March 2010 was calculated relative to March-2009.
Source: CNB.

Figure 52 Banking sector liabilities^a



^a Collectively assessed impairment provisions represent the difference between banking sector assets and banking sector liabilities and capital.
Source: CNB.

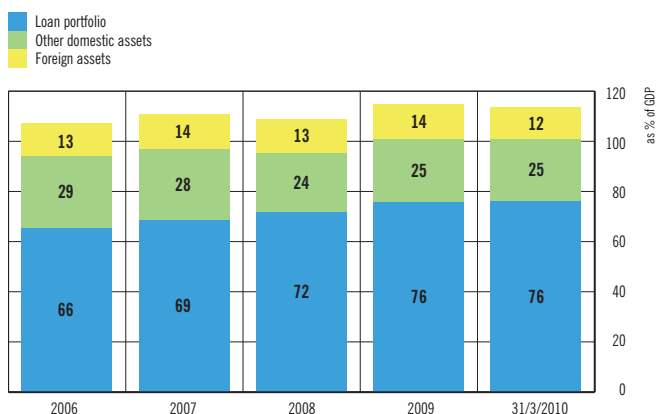
The long-awaited implementation of domestic banking regulations adjusted to relevant EU directives began in the period of the absorption of a powerful macroeconomic shock that affected bank earnings. As banks continued to act conservatively at a time of low economic activity, their balance sheets contracted. Conditions for the beginning of a new credit cycle have not been met, as banks have not yet completed the cleaning up of non-performing loans in their balance sheets. Still, regardless of the persistent pressures on earnings, the relatively high capital adequacy of banks should ensure their stability in the forthcoming period.

Balance-sheet vulnerabilities

Since the onset of the crisis, banks have gone through several periods of adjustment to changes in the structure of sources. These periods switched in relatively short intervals and overlapped, which hampers a clear identification of individual phases. On the liability side, after the outbreak of the crisis, banks faced an outflow of resident deposits, although these recovered somewhat in the second half of 2009. Resident deposits recorded a year-on-year increase in early 2010, but stayed below the pre-crisis

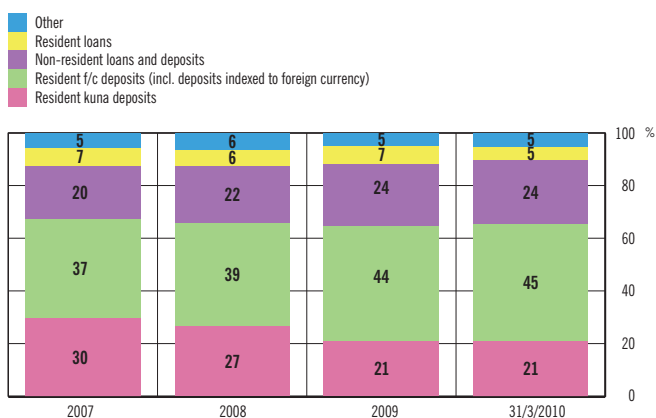
² New pieces of subordinate legislation adopted under the Credit Institutions Act (OG 117/2008, 74/2009 and 153/2009) entered into force on 31 March 2010. This completed the alignment of domestic banking regulations with relevant EU directives. The most significant change from previous regulations is the introduction of Basel II standards to the calculation of the capital adequacy ratio of credit institutions.

Figure 53 Banking sector assets



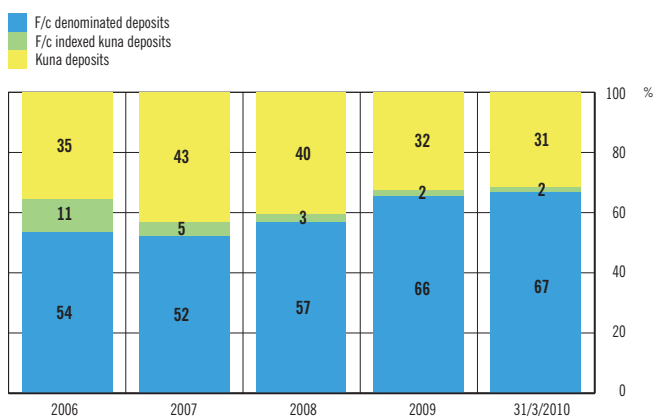
Source: CNB.

Figure 54 Structure of liabilities



Source: CNB.

Figure 55 Currency breakdown of deposits



Source: CNB.

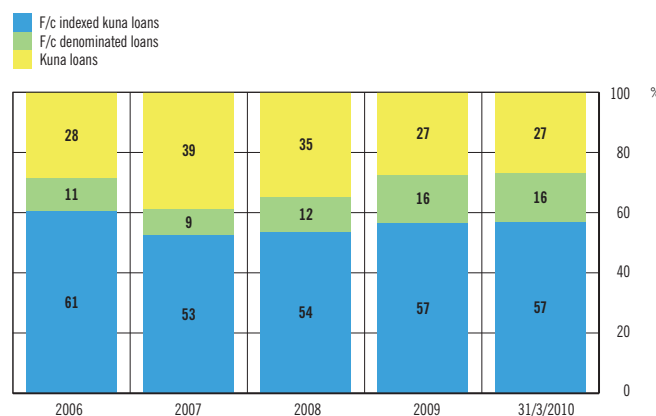
level. Deposits of non-financial corporations mostly decreased due to their weaker liquidity, while household deposits rebounded in the second half of 2009. Banks compensated for the fall in resident deposits in the first half of 2009 by raising more funds from non-residents, above all parent banks. Together with the recovery in domestic sources, this spurred the rise in bank balance sheets towards the end of 2009 (Figures 51, 52 and 53). Still, at the beginning of 2010, banks used accumulated reserves somewhat to reduce their liabilities to non-residents for the first time since the crisis began. A decline in risk perception enabled them to rely less on owners' deposits and increasingly obtain funds from other non-residents.

However, the base effect of the steadily rising foreign borrowing in 2009 led to a considerable year-on-year increase in non-resident loans and deposits at the beginning of 2010 (Figures 51 and 54).

On the asset side, bank lending to the government picked up strongly immediately after the crisis struck, but slowed down in mid-2009, when total loan growth also came to a halt. In the period of intensive lending to the government, banks also relied on free liquidity reserves to finance credit growth. After mid-2009, when credit growth was interrupted, the greater caution caused by the uncertainty about future funding sources coupled with a slump in demand for bank products induced banks to restore liquidity reserves and maintain them high above the prescribed minimum.

In late 2009 and early 2010, banks were still faced with an environment where demand for bank products was subdued, while previously assumed credit risks continued to materialise. Notwithstanding these unfavourable trends, there is evidence of a revival in lending, with banks reorienting themselves from the government to the corporate sector. At the beginning of 2010, banks created room for credit growth by relying on free liquidity reserves created in previous periods. On the asset side, banks

Figure 56 Currency breakdown of loans



Source: CNB.

Figure 57 Currency breakdown of non-kuna loans

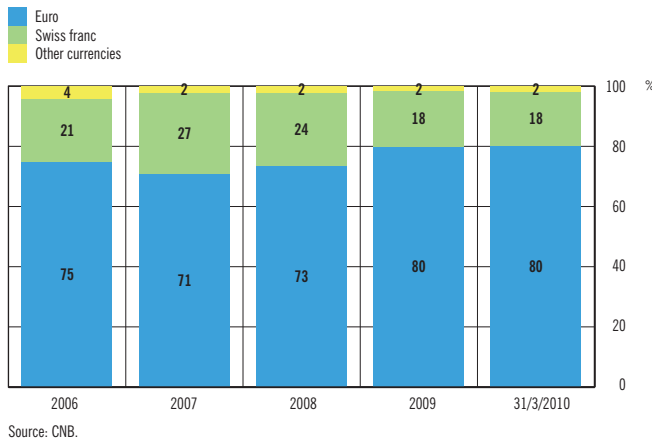


Figure 58 Bank exposure to currency risk

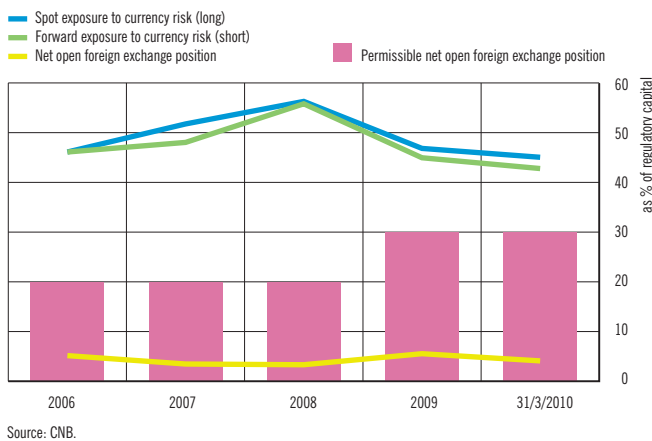
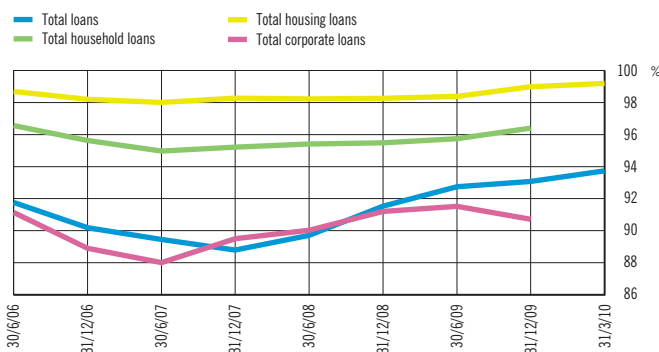


Figure 59 Share of unhedged loans in total loans exposed to CICR^a



^aUnder new rules, CICR and several other risks have been transferred to the second pillar of the new framework of capital calculation, i.e. regulations on internal capital of credit institutions.
Source: CNB.

decreased holdings of currency, domestic deposits and securities, due in part also to the cut in the reserve requirement rate,³ as well as holdings of foreign liquid assets (Figures 51 and 53).

These trends resulted in a contraction of bank balance sheets for the first time since the start of the crisis; balance sheets contracted by 1.1% from the end of 2009, growing only slightly on an annual basis (Figure 51). This fall in total bank assets and the parallel drop in GDP reduced the ratio of banking sector assets to GDP by 1.5 percentage points from the end of 2009, so that this ratio stood at 113% in March 2010. Relative to the same period of 2008,⁴ this ratio rose by nearly 5 percentage points due to the decline in GDP (Figures 52 and 53).

Banks stayed well capitalised and the stagnation and fall in their assets in 2009 and early 2010 respectively lowered their capital needs. Still, increased caution due to the still unknown costs of credit risk materialisation in the forthcoming period, prompted banks to transfer the bulk of profit to reserves, which positively affected their indicators of capital adequacy (Figure 75). As a result, an increase in bank capital of some 5% in 2009 and additional 2% in the first quarter of 2010 was almost entirely due to the rise in reserves allocated from profit. The capital growth in the period of lower activity and balance sheet contraction increased the relative indicators of banks' capital. The March 2010 increase in the minimum required capital adequacy ratio from 10% to 12% largely offset the effect of more lenient rules for the calculation of risk exposure due to implementation of Basel II, so that the capital needs of banks did not change significantly.⁵ Still, some banks will have to raise additional capital in the upcoming period as their capital adequacy ratios are close to the prescribed minimum.⁶

The 2009 change in the sectoral structure of deposits, which was triggered by the fall in demand deposits, also increased the share of foreign currency deposits due to the drop in corporate sector liquidity and the rise in the share of non-residents in

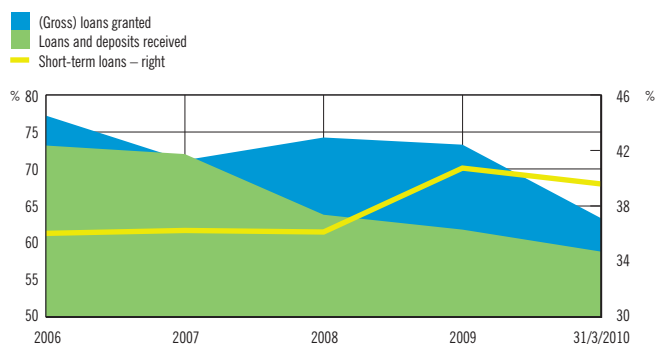
³ Under the Decision on amendments to the Decision on reserve requirements, which entered into force on 10 February 2010, the reserve requirement rate was reduced from 14% to 13% (OG 18/2010).

⁴ Year-on-year GDP for the first quarter of 2010 is the sum of GDP in the last three quarters of 2009 and the first quarter of 2010.

⁵ New subordinate regulations on the capital adequacy of credit institutions implementing the rules under Basel II international standards and relevant EU directives came into effect on 31 March 2010: the Decision on own funds of credit institutions (OG 1/2009, 41/2009, 75/2009 and 2/2010) and the Decision on the capital adequacy of credit institutions (OG 1/2009, 75/2009 and 2/2010). The new regulations aim at promoting the capital adequacy framework through two dimensions – development of regulations that, apart from the minimum capital requirements (pillar 1) as a quantitative dimension, include a qualitative dimension – supervisory review (pillar 2) and market discipline (pillar 3). The changed rules in the area of credit risk aim at increasing risk sensitivity either by relying on external credit risk assessments used in the standardised approach or by using own client data, i.e. an internal ratings-based approach (IRB approach). A credit institution may use the latter approach only if it meets a number of criteria and subject to approval of the supervisory authority. In addition to capital requirements for credit and market risks, the new regulatory framework for the first time introduces an explicit capital requirement for operational risk and sets the minimum capital adequacy ratio at 12% (it was 10%).

⁶ Five banks had capital adequacy ratios below 13% at the end of March 2010.

Figure 60 Share of (gross) loans and liabilities of banks with interest rate variable within three months and the share of loans with remaining maturity of up to one year in total gross loans and liabilities of banks



Source: CNB.

bank sources. As a result of the fall in kuna corporate deposits, total resident deposits in kuna continued to fall in early 2010, but the pace of their decline was equal to the rate of decline in total liabilities. In contrast to resident loans, which sharply declined at the beginning of 2010, the share of non-resident loans and deposits remained relatively stable as banks replaced owners' funds by funds from other non-residents (Figure 54).

The growing uncertainty surrounding economic prospects and the pessimism fuelled by unfavourable labour market developments prompted households to increase the foreign currency component of their savings in 2009. This means that the currency restructuring of sources, which ran parallel to the changes in the sectoral structure, also took place within individual sectors. This tendency slowed down at the beginning of 2010. Having steadily declined in 2009, the share of kuna deposits dropped only slightly in early 2010, to 31% (Figure 55).

Although the share of loans denominated in or indexed to foreign currency increased (Figure 56), a positive note is that the share of loans indexed to the Swiss franc dropped. The kuna/Swiss franc exchange rate, which has always been rather volatile, reached a historical high in mid-2010. It was almost 20% higher than in mid-2007, when the bulk of such loans had been granted, giving rise to currency-induced credit risk (CICR). Loans indexed to the Swiss franc are no longer granted, while some of them have been converted to other currencies. Hence, their share in total non-kuna loans went down from 24.5% in 2008 to 18.4% at end-2009. It stayed the same at end-March 2010, falling by about one-third from its peak in 2007. In consequence of such trends, the share of euro-indexed loans continued to grow and reached 80% (Figure 57).

The fall in foreign assets in the first quarter of 2010 and the continuously high share of loans denominated in or indexed to foreign currency slightly reduced the net open foreign exchange position, from 5.6% at end-2009 to around 4% of regulatory capital in March 2010, i.e. well below the 30% limit (Figure 58). In contrast with banks' exposure to direct currency risk,

their exposure to indirect currency risk (CICR) stayed high. Housing loans, which are mostly unhedged against CICR, were the only category of household loans that grew in late 2009 and early 2010. In late 2009, banks also increased their loans to corporates in the non-tradable sector (which are traditionally less protected against currency risk). This also increased banks' exposure to CICR as most of these loans are currency-indexed (Figure 59).

In a period of adverse macroeconomic conditions, banks continued increasingly to transfer liquidity and refinancing risk to their clients (in addition to currency and interest rate risk) by granting mostly short-term loans, partly in response to the fall in demand for long-term loans caused by the drop in investment (Figure 60).

Strategic risks⁷

Banks' interest expenses surged in the first half of 2009 due to the rise in expenses on received kuna loans that are linked to interest rates in the domestic money market. Stabilisation of the ZIBOR at low levels in the remainder of the year contributed to the fall in banks' interest expenses, with similar trends continuing into early 2010 (Figures 61 and 65). As banks use hedging instruments to reduce the impact of ZIBOR fluctuations on interest expenses, their profit from trading activities at times of large swings in benchmark interest rates is linked to the dynamics in interest expenses. The early 2009 increase in interest expenses was thus offset by larger earnings from trading. Due to the fall in benchmark interest rates and exchange rate stability in the rest of 2009, banks' profit from trading activities decreased and stayed low at the beginning of 2010 (Figure 62).⁸

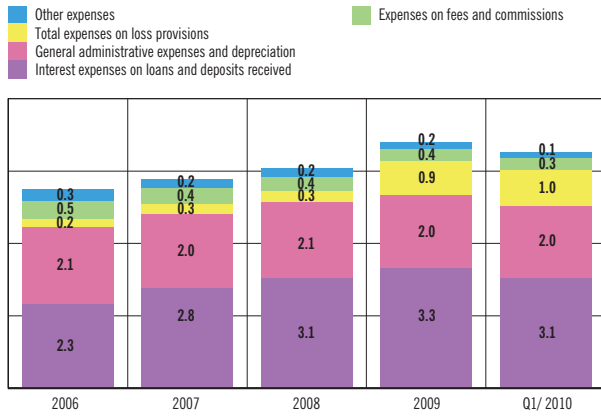
As banks managed to compensate for rising interest expenses by increasing lending rates, their interest income increased in 2009. The relative importance of interest income was positively affected by a persistently large share of short-term (more expensive) loans in total newly-granted loans and a further upward trend in the share of loans in bank assets, which has been seen for several years. The rise in the share of loans in bank assets was supported by the regulatory burden reduction efforts undertaken by the central bank since the onset of the crisis, the last in the series of measures being the February 2010 cut in the reserve requirement rate. After having peaked in late 2009, interest rates started to follow a slight downward trend, so that banks' interest income edged down in early 2010 (Figure 62).

The relative importance of income from fees and commissions rose slightly, but weak economic activity had a limiting effect on this type of bank income. This particularly relates to income

⁷ Income statement items for the first quarter of 2010 were annualised to be comparable with those for preceding whole year periods. This was made by summing up banks' business results in the last three quarters of 2009 and the first quarter of 2010.

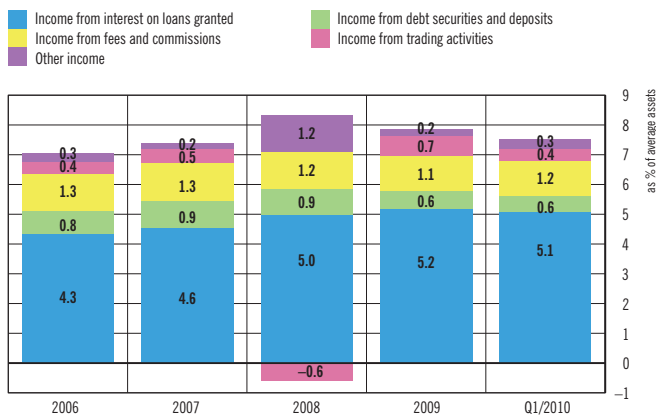
⁸ By entering into forward contracts, banks protect themselves from the volatility of exchange and interest rates. In this way, negative exchange rate differences and an increase in interest expenses are offset by higher income from trading activities.

Figure 61 Structure of total expenses



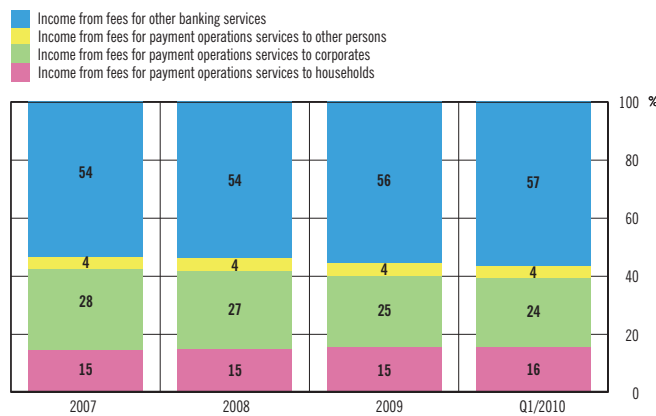
Source: CNB.

Figure 62 Structure of total income



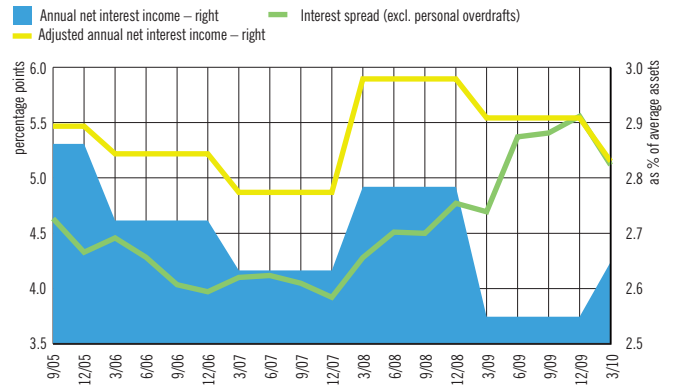
Source: CNB.

Figure 63 Structure of income from fees and commissions



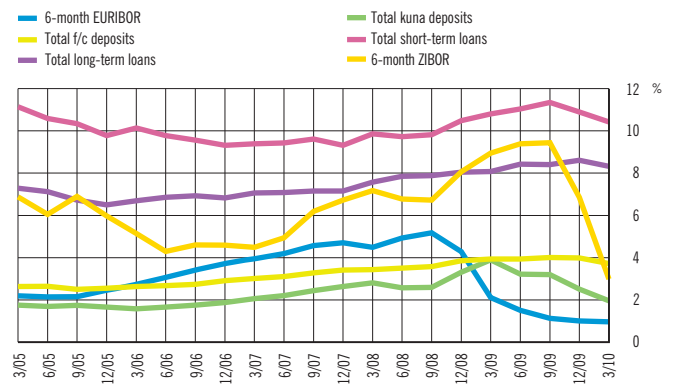
Source: CNB.

Figure 64 Interest spread (quarterly average of monthly interest rates) and annual net interest income



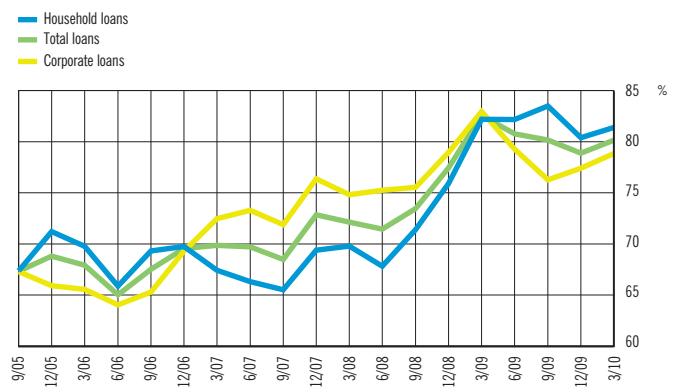
Source: CNB.

Figure 65 Selected interest rates (quarterly average of monthly interest rates)



Source: CNB.

Figure 66 Share of short-term loans in total newly-granted loans (quarterly average)



Source: CNB.

Figure 67 Change in selected business performance indicators

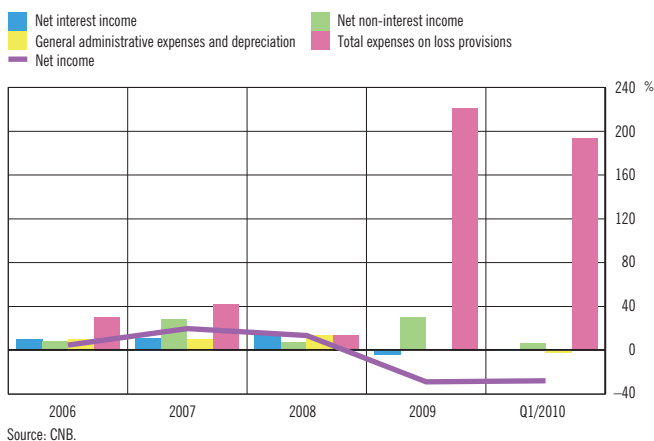


Figure 68 Contribution of ROAA categories

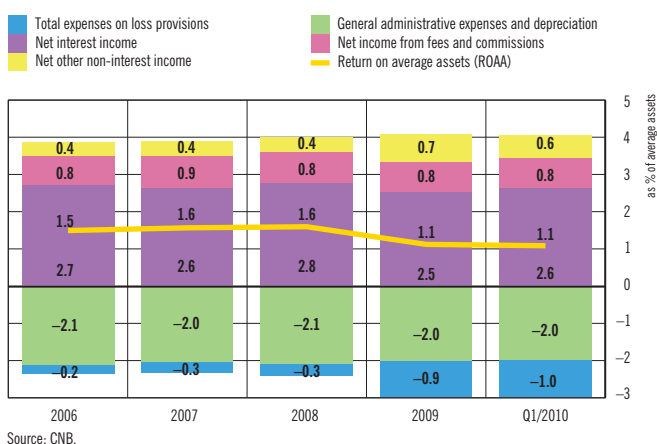
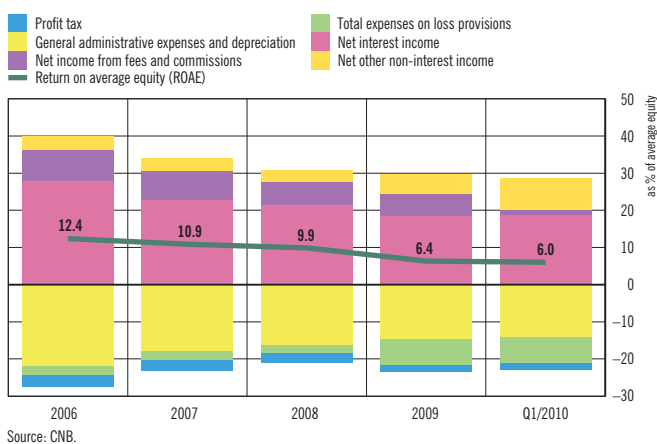


Figure 69 Contribution of ROAE categories



from fees for payment operations services to corporates, whose relative importance decreased in favour of other bank services (account management, etc.) (Figures 62 and 63).

Reflecting the deterioration in macroeconomic conditions in early 2010, the moving sum of value adjustments for the year up to March 2010 was the only bank expense that grew from 2009.⁹ Banks partly compensated for its negative impact on earnings by reducing expenses under their influence (general administrative expenses and depreciation), which slightly increased their net operating income from the end of 2009.

Lending and deposit rates were on a slight downward trend, after having culminated in late 2009. The drop in lending rates was particularly evident in short-term loans (mainly corporate loans), while interest rates on long-term loans stayed almost the same. In the same period, both short- and long-term interest rates on household loans edged lower. As a result, the interest rate spread stayed relatively high, falling only marginally from 2009 (Figure 64).

The interest margin, measured as the ratio of annual net interest income to average assets, slightly widened from 2009 to the beginning of 2010, when the rise in the benchmark interest rate (ZIBOR) triggered a sharp increase in interest expenses. Still, the adjusted net interest income of banks (for the impact of the trading activities that banks pursued to hedge against exchange and interest rate changes) was marginally lower. To an extent, this explains divergent trends in unadjusted net interest income and the interest spread in 2009 and early 2010 (Figures 64 and 65).

The escalation of the crisis had a particularly serious effect on long-term lending, which fell to its lowest relative level in mid-2009 and recorded no major increase in the first quarter of 2010 (Figure 66). This kept overall interest rates at a relatively high level, with only a slight decrease in the adjusted net interest income in the first quarter of 2010.

By maintaining the interest margin at a high level and by cutting down administrative expenses, banks managed to realise a somewhat higher net operating income in early 2010 relative to the same period of 2009. Still, as expenses on loss provisions were relatively low in early 2009, their tripling over the year reduced banks' net income by some 28% (Figure 67). The annualisation of such business results by the use of moving averages shows that ROAA levelled off due to the somewhat poorer business results of banks and a fall in their average assets. ROAE decreased in the same period, largely due to the slight increase in average equity (Figures 68 and 69).

Lending rates are expected to stay relatively high in the upcoming period as banks are still cautious and embed expected credit losses in the interest margin, thereby increasing their net operating income. In line with such expectations, charges for value adjustments will continue to exert downward pressures on bank earnings for some time.

⁹ The end-of-March 2010 data is annual and covers the preceding four quarters.

Liquidity risk

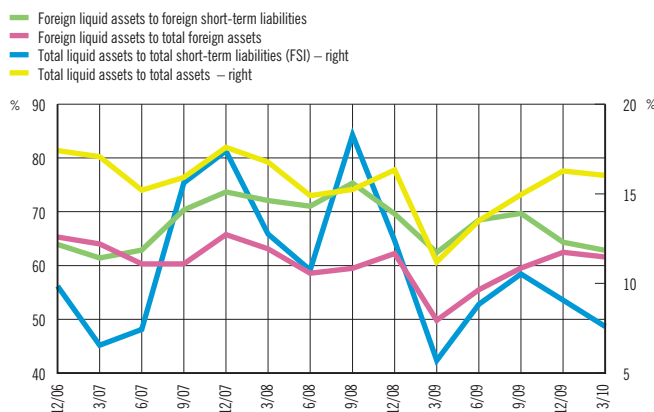
Banks entered the financial crisis with abundant reserves of immobilised liquidity, which the central bank released to a large extent at the crisis peak. The use of the previously accumulated reserves decreased bank liquidity in late 2008 (crisis peak) and early 2009. By the end of 2009, due to persistent uncertainty and a slump in lending, banks largely restored their liquid assets, so that liquidity indicators improved. Due to a heavier reliance on foreign funding, external liquidity indicators improved much less than indicators of overall liquidity in 2009 (Figures 54 and 70).

At the beginning of 2010, banks again reduced their liquidity reserves noticeably so that overall liquidity indicators deteriorated somewhat, while external liquidity indicators dropped markedly. This is explained by the fact that banks largely used the foreign component of liquidity to finance domestic lending. As external liquid assets decreased faster than total foreign assets, their ratio dropped to 62.8%. The ratio of foreign liquid assets to foreign short-term liabilities decreased even more, to 48.6% at end-March 2010. In addition to the fall in foreign liquid assets, the fall in this ratio was due to a mild increase in short-term foreign loans (Figure 70).

Credit risk and bank capital adequacy

The ratio of non-performing loans to total loans (NPLR) continued to grow strongly in late 2009 and early 2010 due to a further deterioration in economic indicators, which tightened corporate sector liquidity, reduced employment and household income. The pace of growth in NPLR was also affected by central bank orders to individual banks to increase the amount of recognised non-performing loans. NPLR was 7.8% in late 2009 and rose to 9.0% in March 2010. All sectors registered NPLR

Figure 70 Liquidity indicators



Source: CNB.

growth, but the most evident deterioration in quality was noted in corporate loans. The quality of all household loan categories continued to worsen, with the exception of car purchase loans. The improvement in their quality was probably due to the write-off of some car loans, as well as the decision of some households to use their savings for early loan repayment so as to reduce the loan burden (Figure 71).

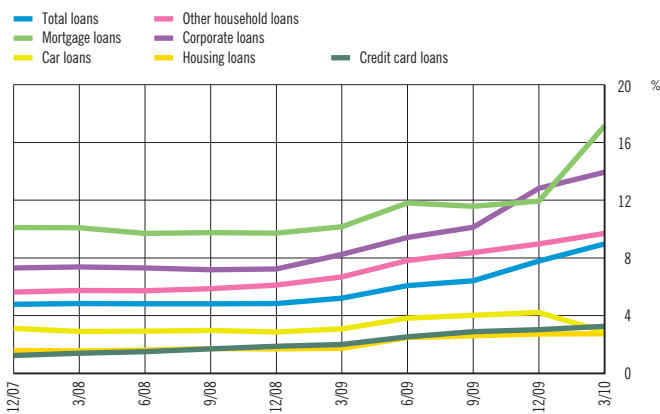
Value adjustments on loans also grew, but somewhat more slowly than non-performing loans. This further intensified the several-year downward trend in the coverage of non-performing loans by value adjustments and this indicator dipped to only 40%¹⁰ (Figures 72 and 73). The low coverage ratio was due to the strong increase in the category of non-performing loans. Initially, banks assess the probability of loan recovery as relatively high, while only time can show how realistic their initial expectations are. Also, trends in asset prices and trading volume suggest that caution is warranted in the evaluation of collateral. This particularly refers to residential real estate that is often pledged as collateral. Apart from the overly optimistic assessment of a degree of recoverability of some non-performing loans, additional pressures on non-performing loans and value adjustments could come from the rise in loans overdue for more than 90 days. As collateral on these loans has been activated, banks still estimate them as fully recoverable (A9-loans). Among these loans are those that on central bank order had to be reclassified as non-performing loans in late 2009, which additionally increased NPLR. In the first quarter of 2010, the amount of A9-loans more than doubled, with loans to the construction sector accounting for the bulk of them. The coverage of total placements and contingent liabilities by value adjustments and provisions continued to grow, which may be attributed to the parallel rise in non-performing loans and the share of loans in placements and contingent liabilities (Figure 73).

The profit made in 2009 and the first quarter of 2010 provided a slight boost to bank capital, leading to an increase in the capital-to-assets ratio of banks. In addition to capital growth, the capital adequacy ratio was positively affected by the 2009 changes in the asset structure, above all stronger lending to government units (which receive a risk weight of 0%) and stagnant growth in housing loans (a risk weight of 150%), which lowered the average risk weight applied to bank assets from 77% to 75% (Figure 74).

The capital adequacy ratio grew by another 2.5 percentage points in the first quarter of 2010 due to the application of lower risk weights under Basel II methodology. Items exposed to CICR that had previously received a 150% risk weight (uncollateralised) were mostly transferred to the 100% risk-weight category, while items that had previously received a 100% risk weight (collateralised) were assigned to the 75% risk-weight category (Figure 74). The ratio of non-performing loans after value adjustments to bank capital, unaffected by the changes in the methodology for calculating the capital adequacy ratio,

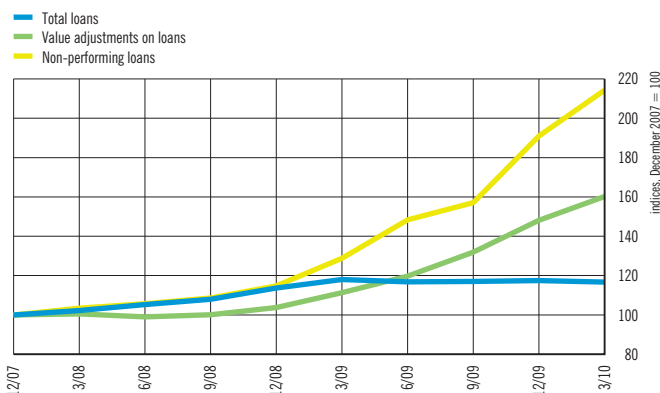
¹⁰ An international comparison of credit risk materialisation in CEE countries is given in Box 5 Credit risk materialisation in Central and Eastern European countries.

Figure 71 Ratio of non-performing loans to total loans



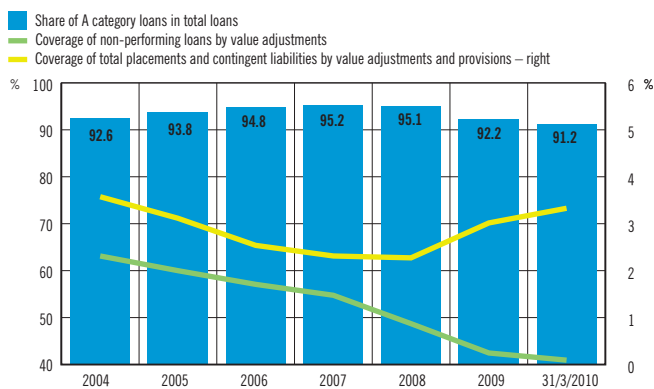
Source: CNB.

Figure 72 Growth in loans, non-performing loans and value adjustments



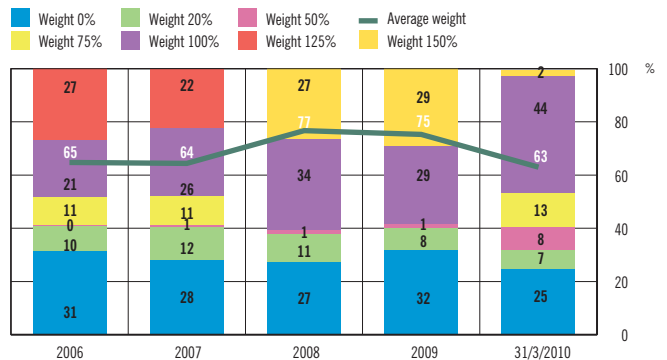
Source: CNB.

Figure 73 Loan quality and the coverage of loans and placements by value adjustments



Source: CNB.

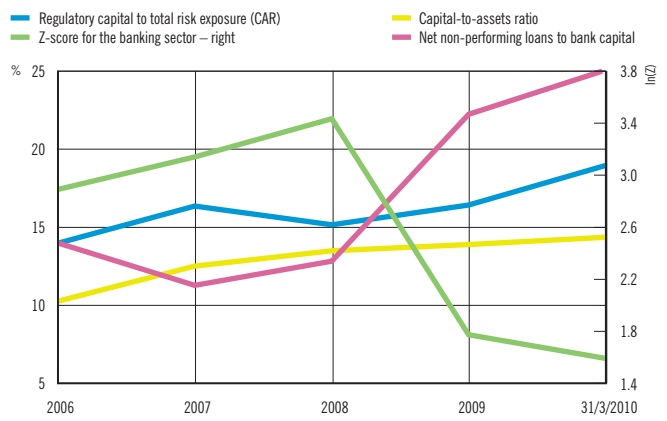
Figure 74 Distribution of bank assets by assigned weight and the average weight



* Due to changes in the methodology, data for March 2010 are not comparable with data for the end of 2009.

Source: CNB.

Figure 75 Capital adequacy ratios



Source: CNB.

steadily increased. This indicates that capital is more burdened by the portion of bank loan portfolio that has been recognised as non-performing. Adverse developments are also indicated by the Z-score of the banking sector; as the drop in earnings exceeded the positive impact of slightly higher capital levels, Z-score decreased (Figure 75).¹¹

The continuation of relatively negative macroeconomic conditions and the rise in the average age of the loan portfolio, which was due to the poor recovery in loans, will produce a negative impact on the dynamics of non-performing loans in 2010 as well. Although the pace of the deterioration in the quality of the credit portfolio will ease, only a definite economic recovery could slow it down considerably.

¹¹ For a more detailed description of Z-score see Box 5 Assessing banking sector stability in terms of Z-score, Financial Stability, No. 1, June 2008.

Box 4 Validation of placement classification systems by using data on multiple debtors

Banks have so far coped quite well with the loan quality deterioration and the surge in non-performing loan provisions brought about by the economic recession and even kept profitability at relatively high levels. Still, as the quality of placements deteriorated, it has become evident that banks increasingly relied on loan refinancing and rescheduling, thereby mitigating the deterioration in the loan quality and the drop in earnings. Since CNB decisions prescribe in detail the system of placement classification applied by banks,¹ they should not rely on discretion when assessing the quality of any placement. However, it is possible that some banks are stricter and some more lenient in the application of placement classification rules and non-performing loan recognition. This is sometimes evident in on-site examination findings suggesting that additional provisions are needed.

There may be several reasons for manipulation of figures on the share of non-performing loans and provisions, which may depend on the quality of processes and procedures in each bank, e.g. the risk management system, as well as its performance indicators. An increase in losses on loans may considerably reduce a bank's earnings or even impair its capital adequacy. A dramatic drop in earnings or loss generation may also threaten the status of a bank's management and ruin its reputation in the market, which will make it difficult for the bank to raise funds through deposits, in the capital market or the interbank money market. This is why banks sometimes tend to underestimate non-performing loan growth during bad years and to compensate for this during good years, thus avoiding excessive fluctuations in earnings and capital.

The described counter-cyclical behaviour of banks is not necessarily bad as it actually stimulates dynamic provisioning, the positive impact of which on the Spanish banking system during the current crisis has often been cited as a positive example of regulation. It is also one of the most prominent suggestions on how to stabilise financial systems in future crises. The literature on the smoothing of earnings confirms the widespread use of this practice among banks in some countries, even without regulatory incentives in the form of dynamic provisioning systems. A similar effect was produced by changes in accounting standards that enabled big European banks to cushion the blow on earnings and capital at the peak of the financial crisis. However, if the smoothing of earnings gains too much momentum during a recession and if adequate reserves are not made beforehand, particularly in large banks, the shattering of illusions about the solvency of individual banks may threaten the stability of the entire banking system. In addition, banks should generate counter-cyclical provisions by prudent operations in good years and not by being lenient to clients in distress.

Placement classification systems used by banks cannot really be checked without detailed knowledge of the actual quality of individual placements, and no regulator has the opportunity to gain such an insight into loan portfolios. This Box presents a somewhat roundabout approach, based on a comparison of differences in placement classification on a common portfolio, to assess the relative strictness of banks and, in particular, changes made after the crisis hit Croatia. Although

¹ Decision on the classification of placements and off-balance sheet liabilities of credit institutions (OG 1/2009, 75/2009 and 2/2010).

this approach cannot be used to assess absolute deviations of each bank's classification system from an "ideal" system, it provides an insight into each bank's strictness relative to the system as a whole.

Placement classification data from the available sample of companies to which two or more banks were exposed were used to assess the relative strictness of banks in placement classification. The sample size ranges from 2000 companies in 2006 to 3400 companies in 2009, which provides a solid basis to assess the strictness of placement classification systems in most banks. Two placements to one and the same company may be classified differently even by one bank. However, banks whose placement classification practices deviate systematically from the rest of the system may be seen as more or less strict in placement classification relative to the rest of the system. The estimated strictness indicators are shown in Figure 1.² Numbers above zero indicate that a bank is stricter than the average assessed bank, while numbers below zero indicate the opposite.³ Figure 1 shows constant differences among banks with regard to the strictness in the classification of exposures. These differences, which had been decreasing up to 2008, slightly increased in 2009.

Figure 1 Distribution of the number of banks according to the estimated strictness in risk assessment

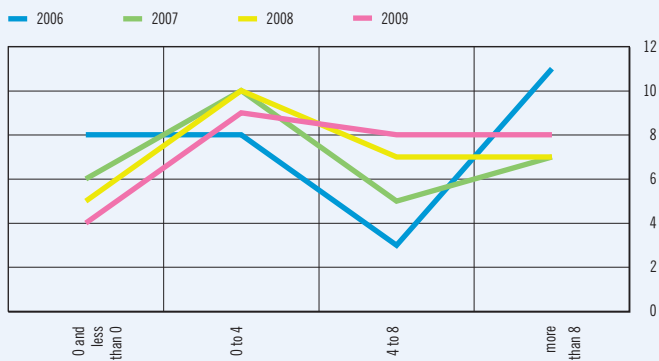


The presented measure of the strictness is an indicator relative to the average strictness of the system, which means that it is informative only in the context of the dispersion of the strictness of individual bank systems. The measures obtained were recalculated to approximate the absolute change in the strictness of individual banks over time. The recalculation was based on the strictness of one large bank whose indicator had been above average throughout the observed period, which lent support to the assumption that the bank had a satisfactory risk management system. In the second step, this difference in the strictness was used to correct the share of non-performing corporate loans for each bank (for which a strictness index was available). The share

² Strictness indicators are based on the Rasch model, originally applied in education research. Using sample data, the model allows an assessment of each bank's strictness.

³ The indicator itself denotes the logarithm of the ratio of the probability that a bank assesses a placement more strictly than the system average. This indicator should be interpreted as a measure of bank strictness with a given structure of placements rather than as a measure of strictness that would apply with a random structure of corporate loan allocation, which probably explains changes in the relative strictness.

Figure 2 Distribution of the number of banks according to the estimated corrections in the share of non-performing corporate loans

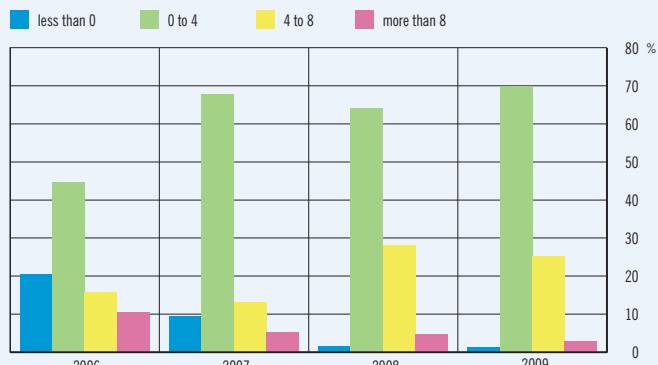


Source: CNB.

of non-performing loans was revised up for banks less strict than the reference bank, while it was revised down for stricter banks. Of course, it has to be borne in mind that this is actually a “moving” measure since the reference bank made its risk management system somewhat stricter over the period under review, which means that the corrections shown are relatively conservative.

The described correction in the share of non-performing corporate loans results in a relatively wide adjustment interval, shown in Figure 2. The ratio of non-performing corporate loans to total corporate loans was adjusted by 4 percentage points at most for the largest number of banks, although there are quite a few banks for which the methodology applied suggests necessary corrections of over 8 percentage points for all four years under review. Nevertheless, the banks for which such large corrections were estimated hold a relatively small share in total banking system assets. In 2009, the banks from the latter group (for which corrections of over 8 percentage points should be made) held 2.8% of total assets. Figure 3 shows that the distribution of suggested corrections was similar in previous years. For example, in all four years, most banking sector assets were held by the group of banks for which corrections of 0-4 percentage points are suggested. Also, in all four years, the group for which necessary corrections are the largest (over 8 percentage points) held the smallest share in banking sector assets for which upward corrections were required. The share held by the group for which corrections of 4-8 percentage points were required increased, while the

Figure 3 Distribution of banking sector assets according to the estimated corrections in the share of non-performing corporate loans



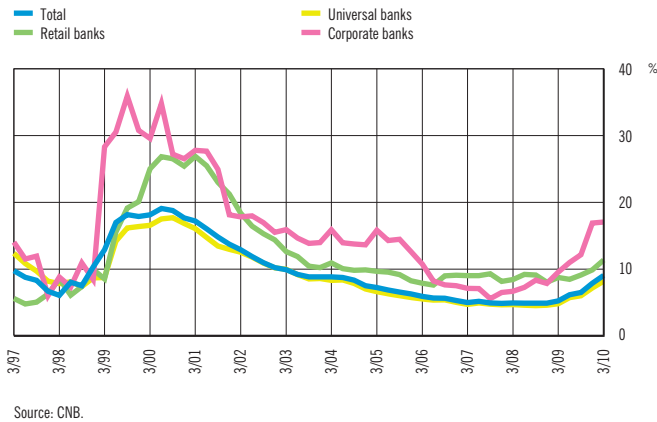
Source: CNB.

share held by the group requiring a negative correction in the share of non-performing loans decreased in 2008 and 2009.

Observed at the system level, the share of non-performing corporate loans for all banks with calculated strictness indices would increase from 10.1% to 13.3% in 2009 including the assumed correction. The analysis results suggest that the assessment of corporate credit risk at the banking system level could be improved. This primarily refers to small banks. Several small banks show significant departures in risk assessment from satisfactory practice and their shares of non-performing loans require large corrections. Although differences in the estimated strictness and corrections in the share of non-performing loans are smaller among large banks, these banks strongly contribute to the rise in the total ratio of non-performing loans as these corrections are applied to relatively large loan amounts. Still, even this increased share of non-performing corporate loans would not create systemic problems.

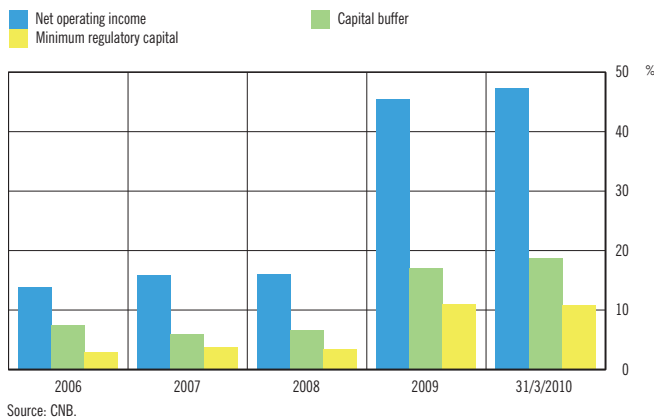
Findings of this analysis complement macroprudential risk assessment; they enable a better interpretation and understanding of non-performing loan amounts reported by banks in the context of their relative strictness. In addition, the findings form part of a set of instruments that could help the CNB in performing its on-site supervisory function.

Figure 76 Dynamics of NPLR by bank groups



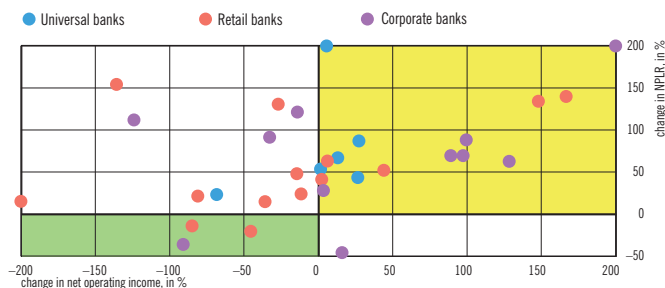
Source: CNB.

Figure 77 Relative importance of charges for value adjustments



Source: CNB.

Figure 78 Change in bank earnings and NPLR in the first three quarters of 2009 relative to the previous three years' average^a, as at 31/3/2010



^a The yellow shaded area shows banks with sounder business results and a more prudent risk assessment of the credit portfolio relative to the previous three years' average. The green shaded area encompasses banks in which earnings declined but which made more optimistic assessments of their credit portfolio quality despite a deterioration in macroeconomic conditions.

Source: CNB.

Banking sector resilience

A prolonged recession added speed to non-performing loan growth in late 2009, which continued at an equally rapid pace in early 2010, when economic activity weakened further. Although all bank groups¹² registered non-performing loan growth in that period, it was particularly strong in the group of corporate banks, which is in line with the sectoral structure of non-performing loans. Being most sensitive to various shocks, these banks had reported a rise in non-performing loans as early as in 2008. By the end of March 2010, their NPLR tripled relative to its lowest level in the second half of 2007, reaching 17.0%. NPLR for the group of universal banks has been trending up since early 2009, standing at 8.1% in late March 2010, somewhat below the sector average. Retail banks initially had the highest NPLR (some 10%), but the rise in non-performing loans registered by this group was very slight and their NPLR edged up slightly to 11.3% at end-March 2010 (Figure 76).

The acceleration of non-performing loan growth additionally burdened the operations of banks, but value adjustments on non-performing loans were still less than half of the net operating income of the entire banking sector in the first quarter of 2010, so that bank earnings played their role of a buffer to shocks well. This was also aided by the slight increase in aggregate net operating income in the first quarter of 2010. In addition to still solid profitability, the banking sector stayed very well capitalised, so that no noticeable capital injections were needed in 2009 and early 2010. Value adjustments for the year up to March 2010 accounted for less than one fifth of capital buffer and around one tenth of the total regulatory capital at end-March 2010 (Figure 77).

Aggregate bank capital adequacy and profitability indicators have been relatively favourable. However, they fail to reflect the dynamics of performance indicators of individual banks, which have been increasingly divergent. Universal (mostly large) banks increased their net income in the first quarter of 2010, while the group of six small banks (mostly retail banks) continued to register a negative net operating income. Still, due to the small size of these banks, this did not much influence aggregate indicators (Figure 78).

An improvement in loan quality, which some banks reported despite the continuation of negative macroeconomic developments, indicates that additional caution is warranted in interpreting their business performance due to potential weaknesses in the quality assessment of their loan portfolios (for more details see Box 4 Validation of placement classification systems by using data on multiple debtors).

Banks may substitute for a somewhat more optimistic assessment of the quality of placements by maintaining a higher coverage of non-performing loans by value adjustments. Indicators of

¹² The grouping of banks and expectations about future trends were explained in Box 6 Revision of the stress-testing methodology, Financial Stability, No. 3, June 2009.

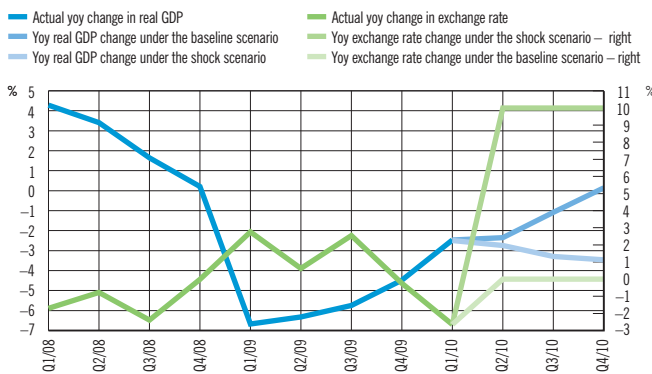
Figure 79 Coverage of non-performing loans by value adjustments and NPLR by bank groups, as at 31/3/2010^a



^a The green shaded area shows below average values.

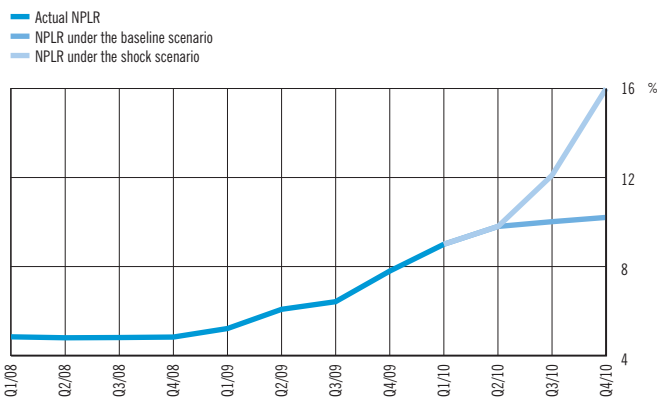
Source: CNB.

Figure 80 Projections of macroeconomic variables under various scenarios



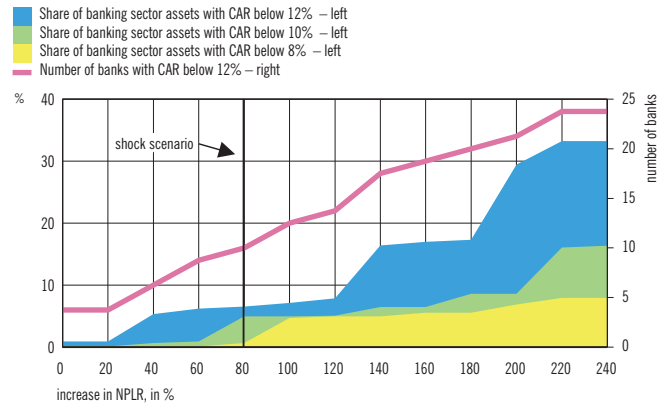
Source: CNB.

Figure 81 Projections of NPLR under various scenarios



Source: CNB.

Figure 82 Assets and number of banks after a shock under an aggregate credit risk model for 2010



Source: CNB.

the ratio of the share of non-performing loans to their coverage suggest that this really was the case. In terms of the dispersion of this ratio one may single out a small group of banks with relatively low shares and coverage of non-performing loans (Figure 79).

Previous stress testing exercises anticipated future developments relatively well and presented a favourable assessment of banking sector stability. However, in late 2009 and early 2010, NPLR for the first time began to grow more rapidly than projected by stress tests. Some of this more rapid growth may be attributed to the relative simplicity of the applied macroeconomic credit risk model, which does not fully account for the impact of a long-lasting recession on loan quality.¹³ Also, the CNB projection of the 2010 dynamics of economic activity, which is used in the baseline stress test scenario, has been revised downwards after poor performance in the first quarter of the year, so that current projections expect a 1.6% decline in GDP in 2010.

The impact of a shock scenario assuming much more unfavourable economic developments, such as a 3% decline in GDP and a 10% depreciation of the kuna exchange rate in 2010, was simulated to test banking sector resilience to highly unlikely but still plausible shocks (Figure 80).

A projection of the non-performing loan dynamics by the end of 2010 was prepared based on an improved macroeconomic credit risk model and the described assumptions on changes in macroeconomic variables. Under the baseline scenario, which assumes that economic recovery will begin in the second half of

¹³ To improve the forecasting ability of the model and to explain better the most recent dynamics of non-performing loans and thus improve projections, the model was re-estimated using a somewhat more complex structure of lags of independent variables. The independent variable used in the model was the quarterly growth rate of NPLR, while quarterly real rates of change in GDP and the nominal exchange rate of the kuna against the euro (all derived from seasonally adjusted series) were used as dependent variables.

Table 4 Dynamics of NPLR and CAR after shocks by bank groups under an aggregate credit risk model^a

| | 31/12/2010 Baseline scenario | | | 31/12/2010 Shock scenario | |
|-----------------|---------------------------------|---------|---|------------------------------|---|
| | CAR (%) 31/3/2010 | CAR (%) | Change in CAR relative to the initial level (pp) | CAR (%) | Change in CAR relative to the initial level (pp) |
| Banking sector | 19.0 | 20.3 | 1.3 | 17.3 | -1.7 |
| Universal banks | 19.3 | 20.7 | 1.4 | 17.8 | -1.5 |
| Retail banks | 17.9 | 17.8 | -0.1 | 14.2 | -3.7 |
| Corporate banks | 14.8 | 15.5 | 0.7 | 12.1 | -2.7 |

^a Both scenarios include the effect of net operating income, while the shock scenario also includes the immediate exchange rate effect.

Source: CNB.

2010 and that the exchange rate will be maintained at its end-of-March level, NPLR would grow slightly less in 2010 (12%) than in 2009, which means that it would stand slightly above 10% at end-2010. The shock scenario assumes that recession will continue and that the kuna will depreciate by 10% until the year-end. Under this highly unlikely scenario, NPLR would grow by some 80% in 2010, to around 16% at the end of the year (Figure 81).

Under the baseline scenario, the projected net income of banks is more than sufficient to absorb the entire shock. In the event that banks retained profit made, their capital adequacy ratio would continue growing, though at a slower pace than in 2009. Only retail banks would experience a fall in the capital adequacy ratio (CAR), largely due to their poor business performance even before accounting for the impact of non-performing loan growth.¹⁴

The rise in NPLR under the shock scenario coupled with lower projected bank earnings would decrease the capital adequacy ratio of the banking sector.¹⁵ The total decline in the capital adequacy ratio under that scenario, including the direct impact of exchange rate changes that emerges at the moment of depreciation, would be 1.7 percentage points at the end of 2010. However, even under that scenario, the sector as a whole would stay well capitalised and its CAR would stand at 17.3% at the end of 2010 (Figure 82).

Viewing stress test results by bank groups, it can be seen that the least sensitive are universal banks whose net operating income under the baseline scenario exceeds value adjustments by a large margin. Should these banks retain the entire net income made, their CAR would grow by 1.3 percentage points by the end of 2010. Corporate banks would record a some-

what lower increase in NPLR, while the CAR of retail banks would slightly fall even under the baseline scenario. The shock scenario assumes a significant decline in the capital adequacy ratio in 2010, largely due to the direct and indirect influence of the kuna exchange rate depreciation. Thanks to their relatively solid business performance and stronger resilience to macro-economic shocks, this decline would be much less in the group of universal banks than in other bank groups, standing at 1.5 percentage points. In contrast, the CAR of retail and corporate banks would drop by 3.7 percentage points and 2.7 percentage points respectively (Table 4).

Notwithstanding the sharp decline in the CAR of some banks, the CAR level of the entire sector remains sufficient even under the shock scenario. Nevertheless, by end-2010, the CAR could fall below 12% for eight banks holding 6.5% of banking sector assets and below 8% for four banks holding 5% of bank assets (Figure 82). These projections are based on the assumption that banks raise no additional capital. However, capital strengthening and/or bank mergers would be likely should the shock scenario materialise, which would bolster their capital adequacy.¹⁶

In contrast with the previous stress tests that singled out corporate banks as most likely to be adversely affected, the recent tests show that retail banks are currently the most vulnerable. This is due to poor business performance of these banks that, even without accounting for the value adjustments, has already burdened their capital. Also, after having held steady at somewhat below 10%, NPLR grew in the first quarter of 2010, which had an additional impact on the drop in earnings. In contrast, credit risk materialisation in corporate banks had begun much earlier and they recorded an upsurge in NPLR as early as mid-2007.

As the economic recovery will be slower than had been expected in late 2009, stress test results indicate that business performance of banks will be somewhat poorer in the upcoming pe-

¹⁴ Interest expenses of retail banks have strongly increased in the last two years.

¹⁵ Bank earnings were projected by using an internal model and on the basis of earnings made in the first four months of 2010.

¹⁶ Several small banks whose capital adequacy ratio is currently close to the minimum level of 12% are expected to raise capital.

riod. In addition to macroeconomic risks, one should mention the risks arising from delayed recognition of non-performing loans and from the relatively optimistic assessment of recoverability of loans that are already in serious default. The analysis of placement classification systems conducted shows that weaknesses of these systems, though unlikely to cause a major shock at the banking system level, could be significant for indi-

vidual banks. Also, the reclassification of some loans from the A9 category to the group of non-performing loans, which was made on order of the central bank, led to a strong increase in NPLR as early as late 2009. The on-site examinations of banks conducted have limited this risk, but have not fully eliminated its further pressure on bank earnings and capital.

Box 5 Credit risk materialisation in Central and Eastern European countries

On the eve of the financial crisis, banks in Central and Eastern European (CEE) countries heavily depended on foreign funding to finance the strong growth in domestic lending. Despite considerable differences among individual countries, the breakout of the financial crisis and increased perception of risk limited the credit potential of banks in all of them. Notwithstanding a stop in capital flows to some countries, there were no dramatic withdrawals of foreign capital thanks to coordinated efforts of international institutions and parent banks, which were particularly beneficial to the hardest hit countries (Figures 1 and 2).

Although much slower, credit growth remained in positive territory in most CEE countries in 2009, while banks responded in a similar way to unfavourable movements in the macroeconomic environment. This analysis provides a comparison of the course of credit risk materialisation in CEE banks to gain an insight into the relative resilience of the Croatian banking system and understand the risks that could materialise in the forthcoming period.

The Croatian banking sector entered the crisis with a relatively low dependence on foreign funding sources. This was aided by the reserve system that raised the cost of foreign funding and reduced external debt of banks in the period of strongest credit growth (Figure 2). Relatively weak use of foreign sources helped banks to draw additional foreign funds and enabled the CNB to improve banking sector liquidity at the crisis peak by releasing previously accumulated reserves.

The first indications of NPLR growth in CEE countries appeared in 2008. In 2009, a major slowdown in economic growth and ageing of bank portfolios prompted a strong increase in NPLR (Figure 3). The rise in non-performing loans in Croatia was one of the smallest among the countries reviewed, although its initial level had been somewhat higher. As in other countries, the coverage of non-performing loans by value adjustments decreased slightly in Croatia. Due to this, the coverage of non-performing loans by value adjustments in Croatia, which

Figure 1 Economic and credit growth in selected CEE countries

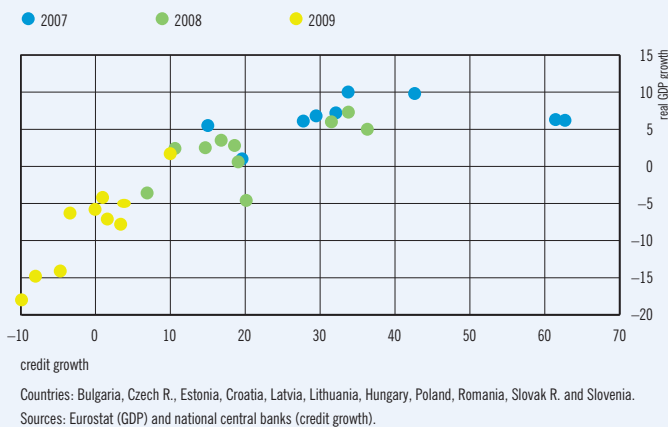


Figure 2 Loan-to-deposit ratio in selected countries and regulatory burden

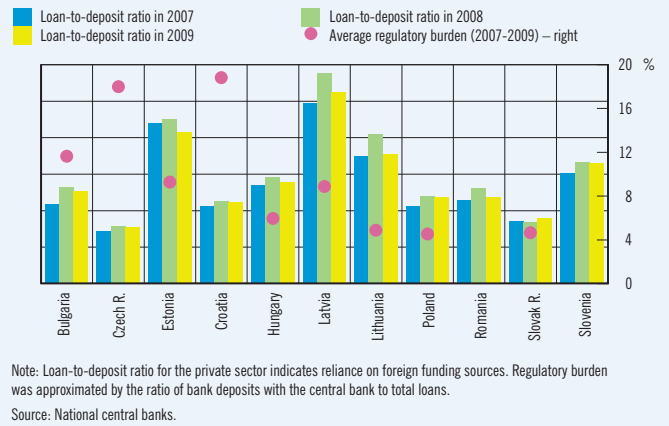


Figure 3 Non-performing loans ratio and coverage in selected countries

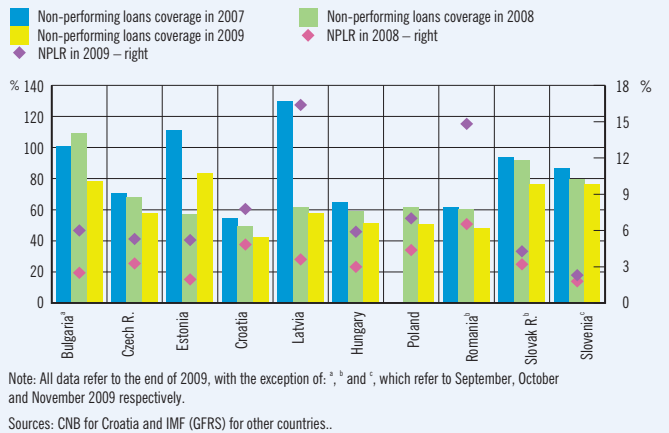
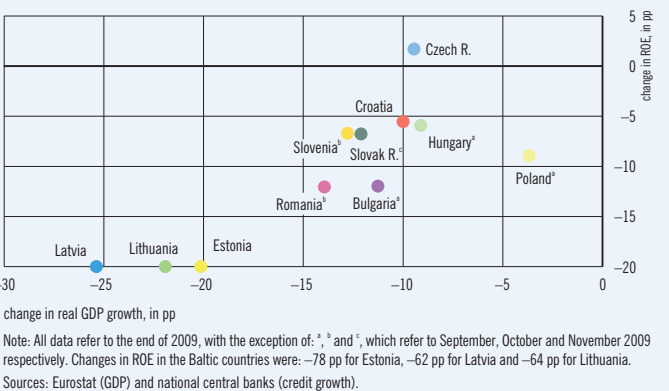


Figure 4 Economic growth and changes in bank profitability in selected countries (deviation from the five-year average 2004-2008)



had already been relatively low, stayed the lowest among the countries reviewed.

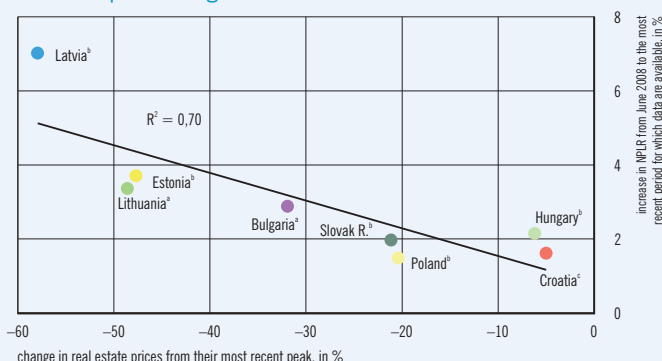
A combination of a slight increase in non-performing loans and their relatively low coverage led to a drop in the earnings and profitability of banks in Croatia similar to that in comparable countries (Figure 4). In most countries under review, the profitability of the system as a whole remained solid despite the decrease, while it dropped substantially in the Baltic countries.

Most banks in CEE countries responded to the strong credit portfolio deterioration and profitability decline by cutting down administrative expenses (under their autonomous control) in efforts to soften the pressure of value adjustments on earnings. In most countries, banks also resorted to the rescheduling of some loans and thus postponed some write-offs or the allocation of full reserves on loans, hoping that real sector developments would improve and that the creditworthiness of clients in default would gradually increase. Such management of value adjustments on loans may reduce volatility of earnings and mitigate the inherent pro-cyclicality of the financial sector. However, should high value adjustment costs continue to burden bank operations in the upcoming period and, particularly, should recovery fail to take hold in EU countries whose demand would provide a boost to small open economies of CEE countries, these loans will become non-performing loans.

Structural vulnerabilities, which are quite widespread in these countries, could induce a further materialisation of credit risk and put pressure on bank earnings. Currency-induced credit risk increased in the years of strong credit growth. Higher exchange rate volatility exacerbated the problems associated with this risk. In addition, economic growth in previous periods was generated in non-tradable sectors, particularly the construction sector, which was a large consumer of loans in the period

of economic expansion. In 2008 and 2009, construction growth came to a halt in all countries under review and real estate prices dropped, and price bubbles, which emerged in some countries just before the crisis due to strong economic expansion, suddenly deflated. As the construction sector accounted for a large share of banks' credit portfolios, difficulties encountered by construction companies prompted the banks to choose between "forced lending" to clients with considerably diminished creditworthiness and a deliberate deterioration of their credit portfolio quality, which would reflect on their profitability¹ in the short run (Figure 5). As changes in the growth pattern are necessary, in countries where banks have postponed credit portfolio clean-ups, the completion of this process will burden their operations for some time.

Figure 5 Relationship between changes in real estate prices and non-performing loans



Note: ^a March, ^b September and ^c December 2009.

Source: Based on De Haas, Knobloch, *In the wake of the crisis: dealing with distressed debt across the transition region*, EBRD, Working paper, 112, January 2010.

¹ The term "forced lending" has been increasingly used in the financial literature.

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Abbreviations and symbols

Abbreviations

| | | | |
|---------|--|------------|--|
| bn | – billion | HREPI | – hedonic real estate price index |
| CAR | – capital adequacy ratio | HRK | – Croatian kuna |
| CBS | – Central Bureau of Statistics | ILO | – International Labour Organization |
| CCE | – Croatian Chamber of Economy | IMF | – International Monetary Fund |
| CDCC | – Central Depository & Clearing Company | m | – million |
| CDS | – credit default swap | MoF | – Ministry of Finance |
| CEE | – Central and Eastern European | MRR | – marginal reserve requirements |
| CICR | – currency-induced credit risk | NPLR | – ratio of non-performing loans to total loans |
| CM | – Croatian Motorways | OECD | – Organisation for Economic Co-operation and Development |
| CNB | – Croatian National Bank | OG | – Official Gazette |
| EAD | – exposure at default | ON USLIBOR | – overnight US dollar London Interbank Offered Rate |
| ECB | – European Central Bank | pp | – percentage points |
| EIZG | – Institute of Economics, Zagreb | RC | – Republic of Croatia |
| EMBI | – Emerging Market Bond Index | ROAA | – return on average assets |
| EMU | – Economic and Monetary Union | ROAE | – return on average equity |
| EONIA | – Euro Overnight Index Average | RR | – reserve requirements |
| ERM | – Exchange Rate Mechanism | SDR | – special drawing rights |
| EU | – European Union | yoy | – year-on-year |
| EULIBOR | – Euro London Interbank Offered Rate | ZIBOR | – Zagreb Interbank Offered Rate |
| EUR | – euro | ZSE | – Zagreb Stock Exchange |
| EURIBOR | – Euro Interbank Offered Rate | | |
| f/c | – foreign currency | | |
| FDI | – foreign direct investment | | |
| Fed | – Federal Reserve System | | |
| FINA | – Financial Agency | | |
| FSI | – financial soundness indicators | | |
| GFS | – Government Finance Statistics | | |
| GDP | – gross domestic product | | |
| HANFA | – Croatian Financial Services Supervisory Agency | | |
| HBS | – Household Budget Survey | | |

Symbols

| | |
|-------------|--|
| – | – no entry |
| | – data not available |
| 0 | – value is less than 0.5 of the unit of measure being used |
| ∅ | – average |
| a, b, c,... | – indicates a note beneath the table and figure |
| * | – corrected data |
| () | – incomplete or insufficiently verified data |

