

No.

2

Year 2
III 2009



FINANCIAL STABILITY

CROATIAN NATIONAL BANK

CROATIAN NATIONAL BANK

Financial Stability

No. 2, Zagreb, March 2009

PUBLISHER

Croatian National Bank
Publishing Department
Trg hrvatskih velikana 3, 10002 Zagreb
Phone: 385-1-4564-555
Contact phone: 385-1-4565-006
Fax: 385-1-4564-687

WEBSITE

<http://www.hnb.hr>

Those using data from this publication are requested to cite the source.

Any additional corrections that might be required will be made in the website version.

Printed in 450 copies

ISSN 1846-9264

Contents

Introductory Remarks	5
Overall Assessment of the Main Risks and Challenges to Financial Stability Policy	7
Macroeconomic Environment	11
Box 1 Preliminary Financial Accounts for Croatia	20
Household Sector	24
Real Estate Sector	27
Box 2 Determinants of Real Estate Prices	29
Non-Financial Corporate Sector	31
Banking Sector	35
Box 3 Reputation Risk and Cross-Border Contagion	43
Box 4 Prudential Regulations and Cyclicity of Bank Capitalisation in Croatia	47
List of Figures and Tables	52

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, as finance is based on confidence, it is inherently exposed to a high degree of uncertainty, i.e. cyclical swings in the perceptions and behaviour of financial market participants. 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 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 – 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

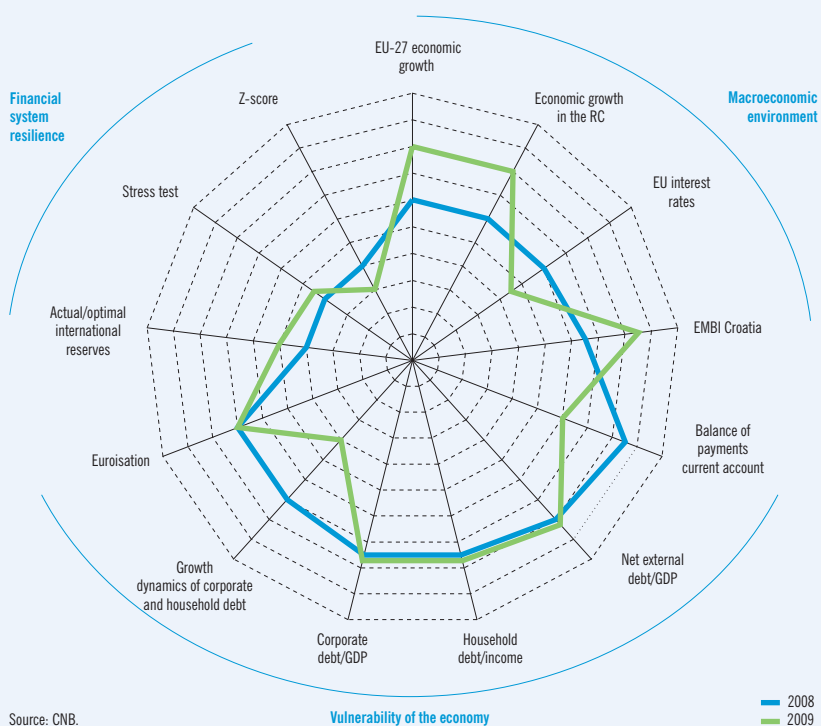
Services Supervisory Agency (HANFA), which are responsible for the regulation and supervision of non-banking financial institutions. Furthermore, owing to the high degree of banking system internationalisation, which is reflected in foreign ownership of the largest banks, the CNB also cooperates with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

The publication *Financial Stability* continues from the former publication *Macroprudential Analysis*, but puts more emphasis on future developments in assessing financial stability. It 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 the 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



A deterioration of the international and domestic macroeconomic environment, which is expected in 2009 due to the impact of the global financial turmoil, will considerably increase risks to financial stability this year. However, given the current relatively high financial system resilience and prudent economic policy, it is expected that the real adjustment needed to reduce external imbalances will take place in such a way that financial system stability is preserved.

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 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 re-

cent market developments or projections of selected indicators and their values in the comparable period, i.e. 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 lower and a decrease in the area suggests higher financial system stability.

In view of the relatively limited impact of the global financial turbulence on the domestic economy in the first three quarters of 2008, financial stability remained high. Slower aggregate economic growth in a setting of gradually slowing down foreign capital inflows and weakened export and domestic demand did not significantly lower the quality of bank assets. Foreign currency liquidity stayed at comfortable levels even in conditions of reduced external debt of banks and government, and exchange rate stability was preserved without central bank interventions in the foreign exchange market, while strongly capitalised banks ensured sufficient loan supply to domestic sectors.

In that period, the main spillover channel for the effects of the global financial turmoil was the fall in share prices of domestic corporates listed on the Zagreb Stock Exchange. However, it had no major direct impact on financial stability, given the marginal capital market role in financing the economy. Also, the stock market crash only slightly affected banks' profitability since credit portfolios account for the bulk of their assets. At the same time, banks recorded an exceptionally strong upturn in domestic deposits as households and corporates transferred their assets from the capital market into banks.

The escalation of the global financial crisis in September 2008, triggered by the collapse of the Lehman Brothers investment bank, led to a strong spillover of the crisis' impact to emerging markets, including the Croatian economy. Inflows of capital, particularly of long-term capital, virtually vanished, so that many countries were unable to refinance foreign liabilities. A sharp increase in risk aversion led to a major jump in risk premiums on capital markets and the seizure of interbank money markets in developed countries. This led to a credit slump and aggravated recessionary tendencies in developed economies, which adversely affected demand for emerging market exports. Against this backdrop, the Croatian economic recession deepened.

The escalating financial crisis produced losses for foreign parent banks of the leading Croatian banks, which activated an additional channel for the crisis spillover into the domestic economy. Uncertainties about the total level of potential losses hidden in these banks' balance sheets worsened the perception of their risk and decreased their share prices. In early October, this triggered an outflow of a portion of household deposits from several Croatian banks in their ownership. Considerably higher risk for banking sector stability provoked a strong reaction from the monetary and fiscal authorities, which restored confidence and stabilised the level of deposits by end-October. The central bank supported banks' foreign currency liquidity by abolishing the marginal reserve requirement on banks' foreign liabilities, which released a part of banks' foreign currency reserves accumulated on that basis in the previous period of abundant foreign capital inflows. Parent banks also provided a strong boost to banks' foreign currency liquidity by promptly providing credit lines to their Croatian subsidiaries. The amount of insured deposits held with Croatian banks was raised from HRK 100 thousand to HRK 400 thousand, which, coupled with the measures taken by the EU Member States to restore their own banking systems to health, also helped to

rebuild confidence in large Croatian banks and stabilise them. As most small banks, the majority of which are in domestic ownership, were not hit by the described indirect contagion effect, they recorded only minor outflows or even continued to attract domestic deposits.

Notwithstanding mounting depreciation pressures in the foreign exchange market against the backdrop of sharply reduced foreign borrowing of the non-financial sector late in 2008, proactive central bank policy to regulate kuna and foreign currency liquidity, including its foreign exchange market intervention, preserved the relative stability of the kuna exchange rate. This limited potential risks to domestic financial stability stemming from the wide-spread euroisation of domestic financial liabilities.

In addition to good profitability and capitalisation levels of banks, banking sector stability is supported by very limited reliance on wholesale funding, which has been largely due to macroprudential central bank measures implemented in recent years to curb banks' foreign borrowing. A relatively high level of financial stability is also suggested by indicators of banking sector resilience (Z-score for insolvency risk and stress tests).

Banking sector resilience will be put to a more severe test in 2009 as the CNB's baseline macroeconomic scenario projects a further slowdown in GDP growth, to around 1%, with stronger shocks becoming increasingly probable. Such shocks could also decelerate economic growth and add to depreciation pressures on the exchange rate, although performed stress tests suggest that system resilience should remain satisfactory.

Owing to the said release of part of total foreign currency reserves of the financial system and the increase in estimated potential outflows under the shock scenario, as well as liabilities due next year, CNB international reserves have fallen to somewhat below the optimal level. However, as foreign parent banks have already expressed willingness to provide additional emergency liquidity support to leading Croatian subsidiaries, the end-2008 reserve level should be sufficient to mitigate the impact of a possible prolonged halt in capital inflows in 2009.

A significant deterioration of the macroeconomic environment caused by the global financial turbulence will be the main source of risks to financial stability in 2009. The major risk will inhere in the considerably lower foreign capital inflows, which will create difficulties in refinancing of maturing foreign liabilities and limit the ability to finance the current account deficit. This will markedly reduce the financing options available to the economy from foreign and domestic sources, lead to a slump in domestic demand and slow down aggregate economic growth to some 1%, all of which will increase credit risk for banks. At the same time, the rise in the total debt of domestic sectors will slacken noticeably, while the gross external debt-to-GDP ratio will be slightly reduced. In such conditions, exchange rate depreciation pressures will increase, as will currency-induced credit risk, due to the wide-spread use of foreign currency-indexed loans to borrowers unhedged against currency risk.

The risk of weaker economic activity and the risk of a BOP and currency crisis will be enhanced by the financial crisis spillover

to the domestic economy via the real sector. The largest EU Member States entered into a recession by mid-2008, which could further deepen in 2009, throughout the entire EU. This will significantly depress export demand from major Croatian trading partners and strongly decelerate Croatian economic growth.

Notwithstanding drastic interest rate cuts by major global central banks and decreased interest rates in the European interbank market, a major decline in the interest rates that Croatian banks and corporates pay on external borrowing is not expected. This is due to the extreme increase recorded in September in risk aversion on the part of all global financial market participants and the expected maintenance of the risk premium, borne by domestic sectors on foreign borrowing in 2009, at a heightened level. Uncertainty related to the availability and price of foreign funding sources in 2009 is also the main reason for heightened risks of stronger adverse shocks to real activity. In such an environment, it is not to be expected that interest rates on domestic bank loans will decrease either.

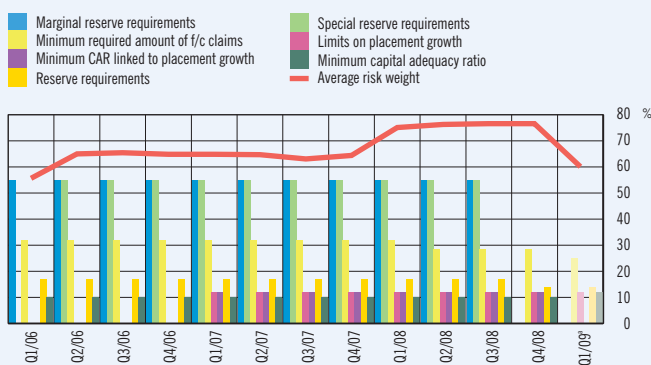
Considering the configuration of the main risks anticipated for 2009 described above and the high level of euroisation, which is an important structural feature of the Croatian economy, the main challenge to the policy of preserving financial stability is to maintain a relationship between foreign currency and kuna liquidity developments that will ensure exchange rate stability. In this sense, kuna liquidity supply, as well as the level of banking sector's funding of the real economy will be limited by foreign currency liquidity, which will in turn depend on foreign capital inflows, with only a moderate ability to use the foreign currency reserves of the monetary system.

In such conditions, CNB actions will in 2009, as in the year before, focus on mitigating the intensity of external adjustments to preserve financial stability so as to ensure that the process of reducing the Croatian economy's debt continues without a breakdown in economic activity. In 2008, such a policy was carried out through the cut in the rate of the minimum required foreign currency claims of banks from 32% to 28.5% (in May), the mentioned abolition of the marginal reserve requirement on foreign liabilities, at a rate of 55% (in October), the cut in the reserve requirement rate from 17% to 14% (in December) and a central bank intervention in the foreign exchange market that involved a foreign exchange sale amounting to EUR 270m (in late October).

In 2009, the CNB will continue with counter-cyclical policy by gradually releasing the immobilised foreign currency liquidity of banks and its own international reserves, simultaneously providing the system's foreign currency liquidity and maintaining exchange rate stability, while also ensuring that the creation of kuna liquidity does not worsen the risk perception by market participants or endanger the country's credit rating.

Also, a potential destabilising impact of the implementation of the Basel II prudential framework in 2009, which arises from reduced capital requirements due to the abolition of higher risk weights on bank assets exposed to currency-induced credit risk,

Figure 2 Changes in Key Monetary and Prudential Policy Measures



* Expectations.
Source: CNB.

has been mostly offset by increasing the banks' minimum capital adequacy ratio from 10% to 12%. This will help maintain high resilience and stability in the banking sector.

Owing to the limited availability of funding in foreign and domestic markets, the government and other domestic sectors will strive to narrow the savings-investment gap and the budget deficit. However, the risks of a shortfall in fiscal revenues in the event of greater negative shocks from the environment and activation of government guarantees threaten to further exacerbate financing problems and squeeze out other domestic sectors from the financial market. Hence, a much stronger fiscal adjustment would be needed should such risks materialise.

Macroeconomic Environment

The eruption of the global financial turbulence after the collapse of Lehman Brothers in September 2008 reinforced recessionary tendencies in the environment, which spread to the Croatian economy as well. Mounting risk aversion will significantly slow down capital inflows in 2009, which means that strong real adjustments of all domestic sectors will be needed this year to reduce the existing external imbalances. In efforts to encounter the risk of a sudden economic crash, monetary policy will focus on ensuring the country's external liquidity and maintaining exchange rate stability. At the same time, fiscal policy must be prepared for larger than anticipated adjustments in case measures of developed countries fail to limit the impact of the crisis on global financial markets.

Macroeconomic Risks

The financial crisis, which was triggered by the crash of the US subprime mortgage market in mid-2007, turned into a global crisis in 2008 and caused a global economic slowdown. This proved that, due to a high degree of global market integration, no region or group of countries can be spared the adverse effects of a financial crisis.

Almost all developed countries recorded much slower growth or went into recession in 2008, regardless of their current account balances. Neither did the countries with current account surpluses remain unscathed since their economic growth was largely fuelled by demand expansion of the group of

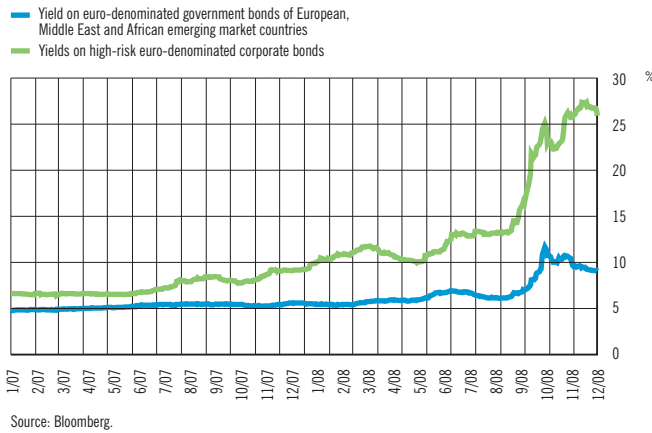
Table 1 Economic Growth in Selected Developed and Emerging Market Countries

	Annual GDP growth rate		Quarterly GDP growth rates, $\Delta Q/Q_{t-1}$		
	2007	2008 ^a	Q1/08	Q2/08	Q3/08
USA	2	1.5	0.2	0.7	-0.1
Japan	2.4	0.4	0.6	-1	-0.5
Eurozone (15)	2.7	1.1	0.7	-0.2	-0.2
EU (25)	2.9	1.3	0.6	-0.1	-0.2
Germany	2.5	1.3	1.4	-0.4	-0.5
Italy	1.5	0.0	0.5	-0.4	-0.5
Hungary	1.1	1.7	0.5	0.4	-0.1
Slovenia	6.8	4.4	1.9	0.5	0.7
Slovak R.	10.4	7.0	1.1	1.8	1.5
Estonia	6.3	-1.3	-1.2	-1.5	-0.9
Latvia	10.2	-0.8	-0.6	-2.9	-1.2
Lithuania	8.9	3.8	-0.3	1	0.3
Croatia	5.6	2.9	1.7	0.5	-0.3

^a Estimate.

Sources: Eurostat, CBS and CNB.

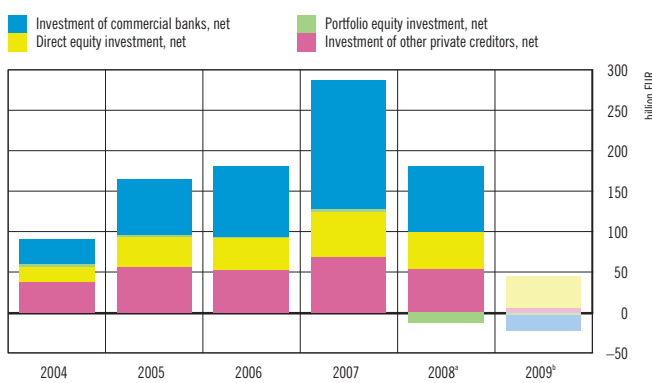
Figure 3 Yields on High-Risk Government and Corporate Bonds



countries with growing external imbalances. A similar scenario has been seen in the emerging market region, where countries with current account surpluses record much slower economic growth while those with large deficits have already entered recession.

While it was widely believed in the first half of 2008 that the financial turmoil would not strongly affect emerging markets in view of their solid economic fundamentals, such as dynamic economic growth and a relatively high degree of monetary and fiscal discipline, the drastic mid-September crisis expansion after the fall of Lehman Brothers showed that emerging market countries were to be exposed to shocks of a sudden reduction in foreign capital inflows (Figure 4). Particularly vulnerable will be the countries with substantial external financing needs arising from large current account deficits and sizable external debt falling due. Among European countries, in addition to the Baltics and Hungary, this group includes almost all Southeastern European countries.

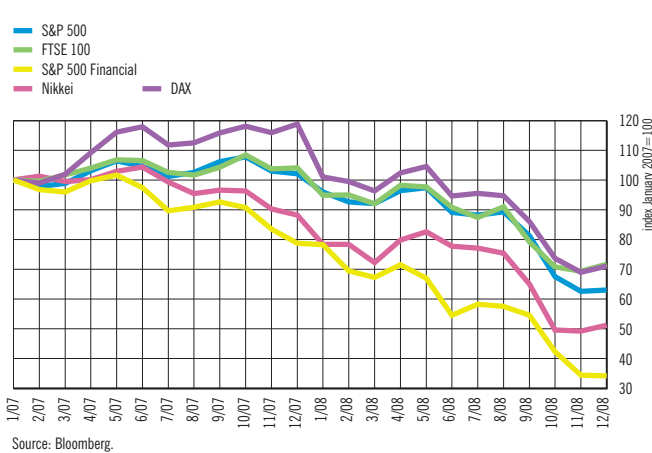
Figure 4 Capital Inflows to European Emerging Market Countries



More specifically, in the period before the Lehman Brothers failure, the process of reducing over-indebtedness of financial institutions developed under somewhat controlled conditions, aided by massive interventions on the part of the US monetary and fiscal authorities, i.e. the bailout of systemically important financial institutions. However, the decision to allow the mentioned bank's failure caused a dramatic jump in risk aversion and a financial market implosion, which drained capital from emerging market countries. Interbank markets in developed countries came more or less to a standstill, while risk premiums increased drastically (Figure 3).

Given this situation, capital inflows to emerging markets almost came to a halt in October 2008, while the share value of financial institutions in global stock markets plummeted (Figure 5).

Figure 5 Major Global Stock Exchange Indices

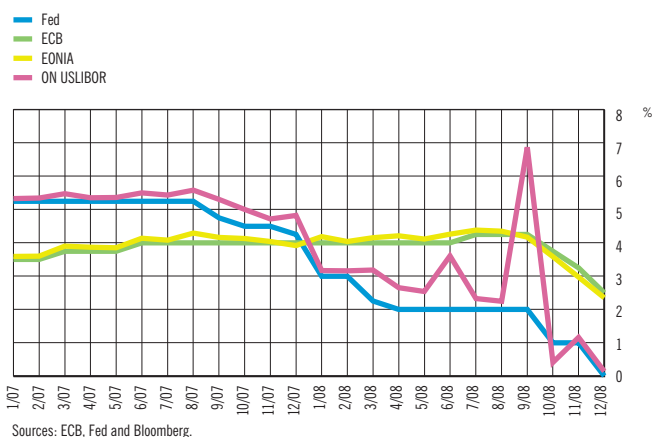


In developed countries, central banks responded by monetary easing on a scale unprecedented in recent history – considerably cutting interest rates and injecting liquidity into the financial system in efforts to revive the benumbed segments of financial markets (Figure 6). At the same time, governments committed substantial funds for new capital injections to the largest banks. Nevertheless, the credit crash was cushioned only slightly and the real economy continued to plunge rapidly, sliding deeper into recession, which started in many developed countries as early as mid-2008 and extended into 2009.

Although vulnerable, in view of its relatively high external debt and current account deficit, the Croatian economy entered 2008 with a good momentum, prudent monetary and fiscal policies, substantial international reserves and a well-capitalised banking system. Given the constraints arising from the highly euroised economy,¹ monetary policy strove to address domestic economic vulnerabilities to external shocks and maintain financial stability by unorthodox measures, such as penalising

¹ See Box 6 Monetary Policy Constraints in a Small Open and Euroised Economy, *Financial Stability*, No. 1, June 2008.

Figure 6 Fed's and ECB's Key Interest Rates and EULIBOR



excessively rapid credit growth and imposing marginal reserve requirements on banks' foreign funding. This has also been the direction of the policy of gradual fiscal adjustment, which aims to balance the government budget by 2010.

The first half of 2008 saw still solid economic growth of around 4% and somewhat slower foreign capital inflows. Owing to rapidly growing tax revenues, the fiscal authorities generated a budget surplus and reduced the country's external debt through domestic market refinancing. Banks' external debt was also cut in conditions of high capitalisation levels, limits placed on lending and the then current restrictions on foreign capital inflows. The corporate sector continued to rely heavily on foreign borrowing.

Hence, given the moderately deteriorated conditions in global financial markets, the real adjustment needed to reduce external imbalances was achieved through a gradual economic slowdown in the first half of 2008. Coupled with slightly tighter monetary and fiscal policies, this was supported by much quicker inflation under the impact of the external oil and food price shock, which transferred to a domestic price increase and noticeably slowed real personal consumption growth (Figures 7 and 8).

Still, as the intensity of real adjustment was insufficient to offset a deterioration in the trade balance, the current account deficit was financed at a relatively high level, of around 10% of GDP.

Due to falling domestic demand and stagnant goods exports, the economy in the third quarter of 2008 was marked by stronger recessionary tendencies. The October 2008 escalation of the global financial crisis led to an upsurge in risk premiums for European emerging markets to approximately 300 basis points. In terms of risk perception, financial markets make a clear distinction between countries with relatively minor imbalances, for which risk premiums grew some 150 basis points mostly due to a much lower yield on the benchmark German bond (which was affected by capital flight to safe government bonds) and countries with relatively large external imbalances, including Croatia, for which risk premiums grew to around 450 basis points due to a required yield increase of some 300 basis points (Figures 9, 10 and 11).

This virtually closed the long-term capital market to Croatia and the financial system was hit by contagion that spread from developed countries' markets via parent banks of the leading Croatian banks into the domestic market. More specifically, while the stock market tumble in the preceding part of the year led to fund outflows from investment funds and their transfer to safer bank deposits, frequent news of bank losses in developed countries created a negative perception on the part of depositors of Croatian subsidiary banks. Thus, the October announcement that the parent banks of Croatian banks had incurred substantial losses as a result of the Lehman Brothers failure triggered a deposit outflow from their Croatian subsidiaries (Figures 12 and 13).

The quick response from Croatian monetary and fiscal authorities, which released a portion of banks' foreign currency

Figure 7 Foreign Capital Inflows and GDP Growth in Croatia

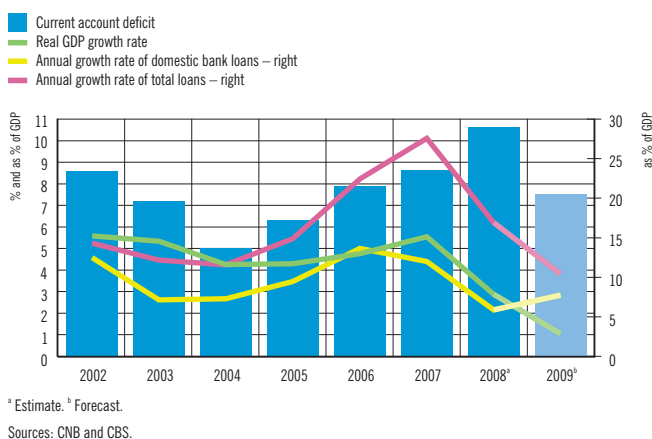


Figure 8 Food and Energy Prices and Total CPI, year-on-year rate of change

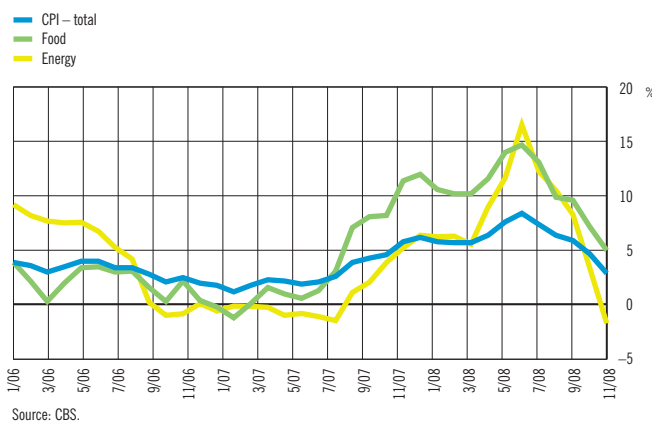


Figure 9 Yields on Croatian and Benchmark German Bonds Maturing in 2014 and Their Spread

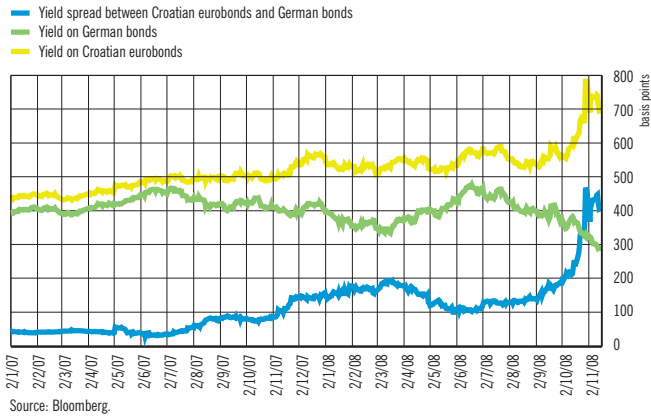


Figure 10 Spread on Benchmark Eurobonds of Selected Countries and Benchmark German Bonds DBR 5.25 1/4/11

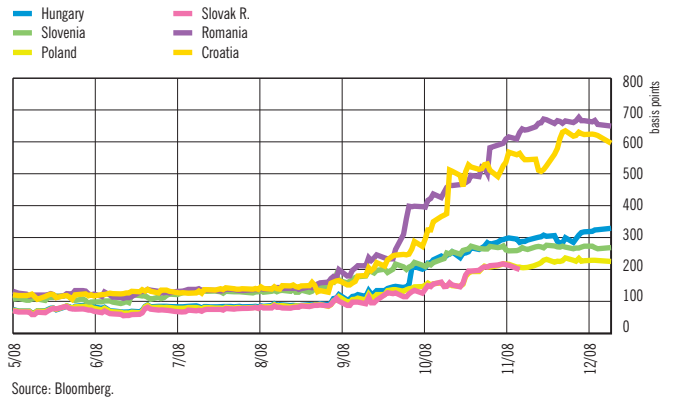


Figure 11 CDS Spreads for Selected Countries

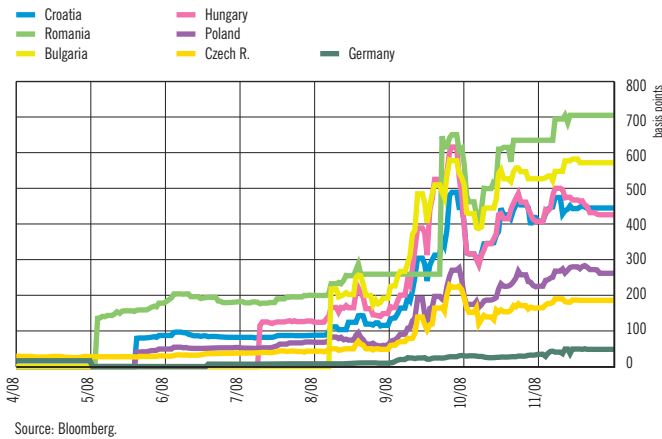


Figure 12 CDS Spreads for Parent Banks of Croatian Banks

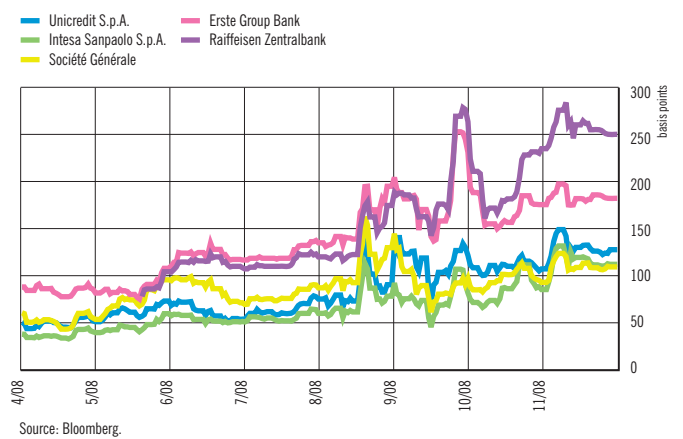


Figure 13 Foreign Currency Deposits, Net Assets of Open-End Investment Funds and CROBEX

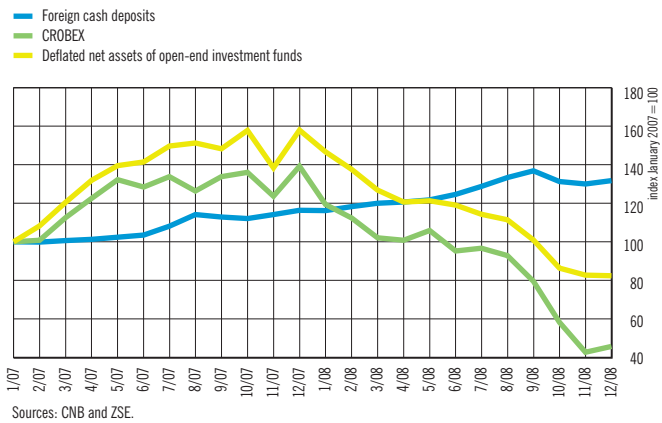


Figure 14 GDP Growth Pattern (contribution to growth)

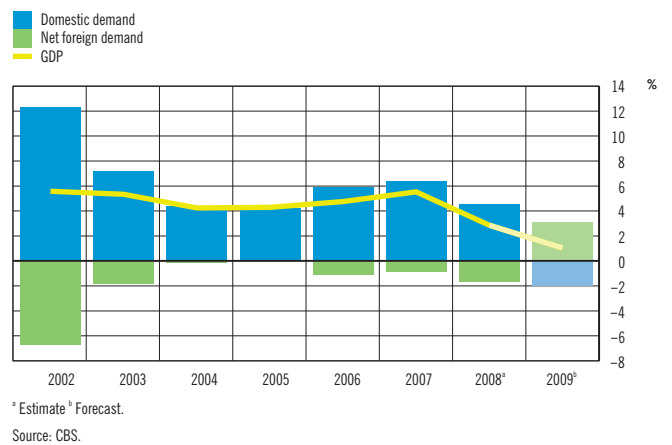
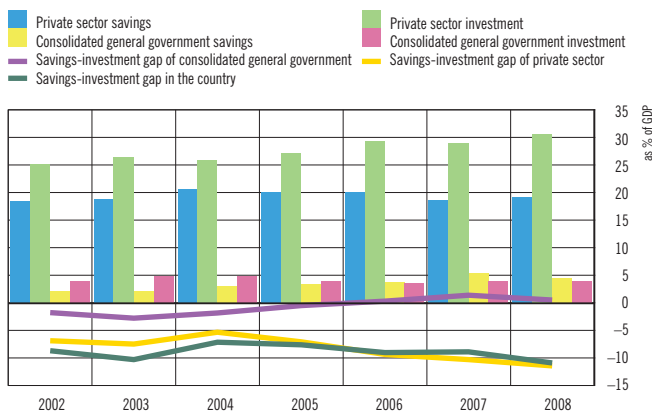
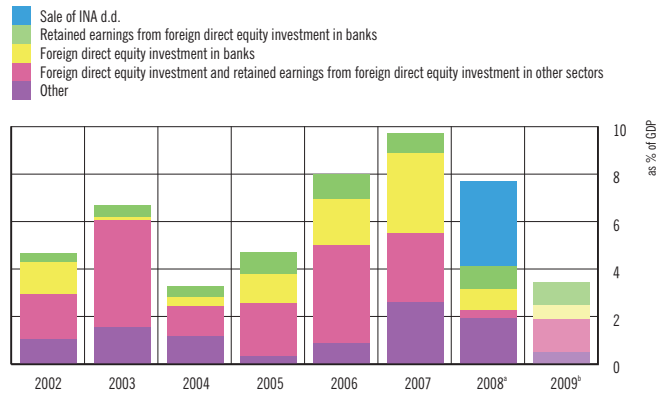


Figure 15 Savings and Investment – Total and by Sector



Sources: MoF and CNB (estimate).

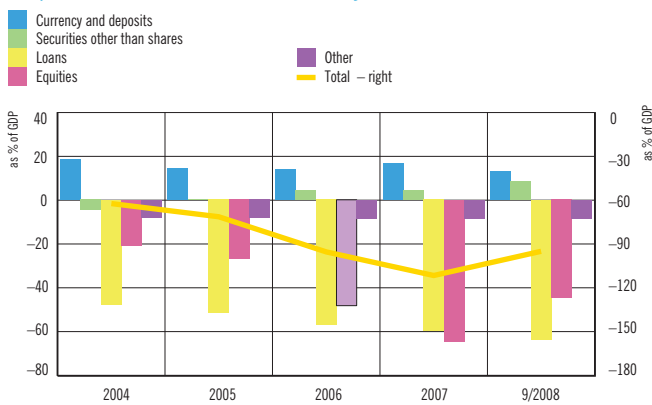
Figure 16 Structure of Foreign Direct Investment



* Estimate. * Forecast.

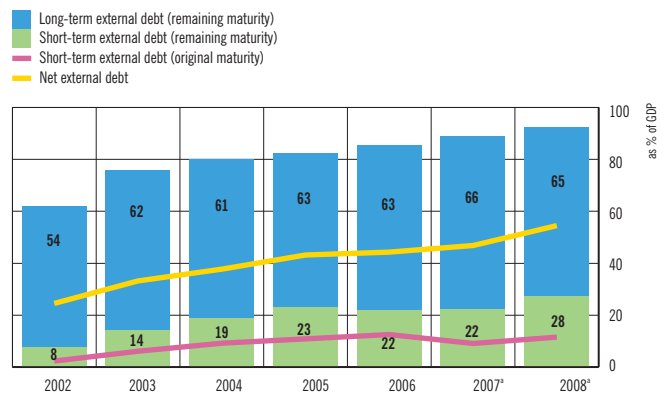
Source: CNB.

Figure 17 Net Financial Position of Domestic Sectors with respect to the Rest of the World by Instrument



Source: CNB.

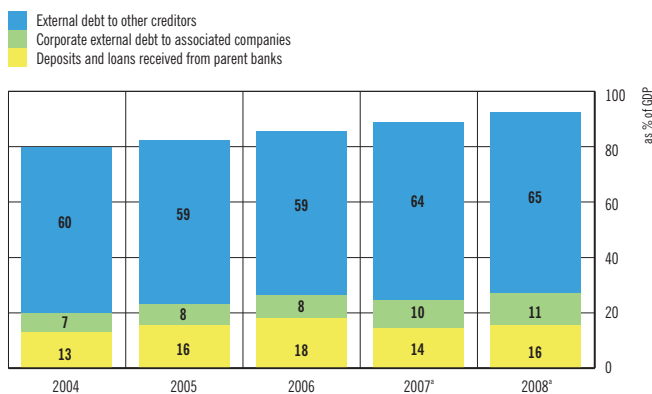
Figure 18 Maturity Breakdown of Total External Debt



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

Source: CNB.

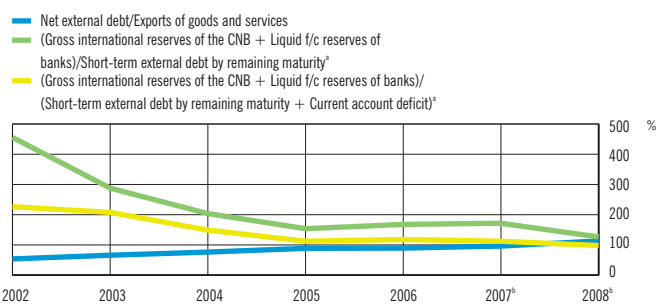
Figure 19 Total External Debt by Creditor



* See note under Figure 18.

Source: CNB.

Figure 20 Selected Indicators of External Vulnerability

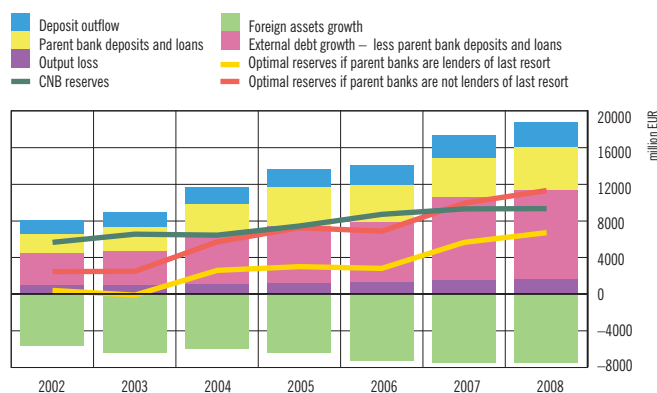


* Indicators represent the ratio of gross international reserves of the CNB increased by liquid f/c reserves of banks at the end of the current year to external debt obligations maturing in the following year increased by the projected current account deficit in the following year.

* See note under Figure 18.

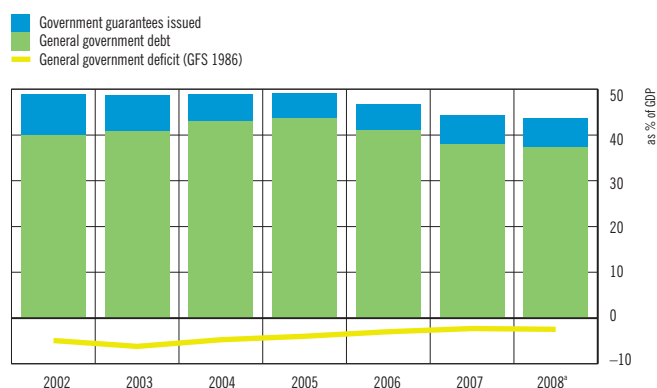
Source: CNB.

Figure 21 Contribution of Individual Components of Optimal International Reserves



Source: CNB.

Figure 22 General Government Fiscal Position



* Estimate.

Sources: MoF and CNB.

reserves and increased the amount of insured deposits to HRK 400,000 (EUR 50,000), proved to be efficient, and the household deposit outflow was stopped. In addition, liquidity of subsidiary banks was supported by parent banks' liquidity injections, with banks themselves also maintaining sizeable reserves of foreign currency liquidity. Overall foreign currency liquidity in the market was also boosted by a large foreign capital inflow in October, originating in the sale of a share package of the INA oil company by domestic investors to a foreign strategic partner, and a minor central bank intervention in the foreign exchange market.

As financial stability was preserved, growth in bank lending to corporates and households resumed in the fourth quarter of 2008, while monetary policy measures (a cut in the reserve requirement rate) and additional foreign capital inflows, which were intermediated by banks, left some room to fund growing public sector needs as well.

Nevertheless, a deepening recession in developed European countries, which are major Croatian export markets, further reduced exports. Coupled with a steady downward trend in investments, this was the reason why recessionary tendencies steadily gathered strength and GDP growth fell from 5.6% in 2007 to 2.0-3.0% in 2008.

Overall, the preceding years' growth pattern continued throughout most of 2008; corporate sector investment picked up further and offset slower consumption, while the overall aggregate savings-investment gap (i.e. the current account deficit) expanded to some 11% (Figures 14 and 15).

Although this deficit was largely financed by inward foreign direct investment flows (around 8% of GDP), which largely related to reinvested earnings and portfolio investment, substantial capital inflows came from foreign borrowing, particularly of the corporate sector (Figures 16 and 17).

The rise in external debt, which reached some 93% of GDP in late 2008, and a moderate fall in foreign currency reserves of the entire monetary system increased total net external debt, somewhat deteriorating external solvency and liquidity indicators (Figures 18, 19 and 20). Such trends contributed to the late 2008 decrease in total central bank international reserves to a lower than optimal level.² Nevertheless, assuming a continued readiness on the part of parent banks to provide foreign currency liquidity to their subsidiaries, these reserves are still sufficient to maintain external liquidity, even with much slower foreign capital inflows (Figure 21).

The expected deterioration in the international economic environment in 2009 will sharply tighten external constraints. This will necessitate a substantial real adjustment of the Croatian economy through a current account deficit cut, with the resulting slowdown in economic growth.

² For a more detailed description of a model of optimal international reserves see Box 2 Optimal CNB International Reserves, *Financial Stability*, No. 1, June 2008.

Figure 23 Average Interest Rates on T-Bills and in the Interbank Money Market

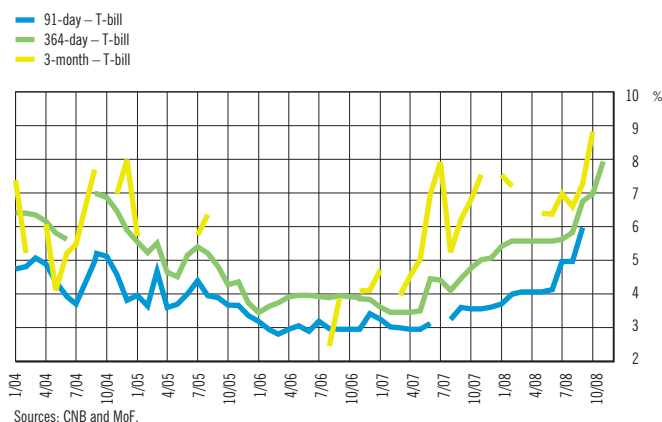
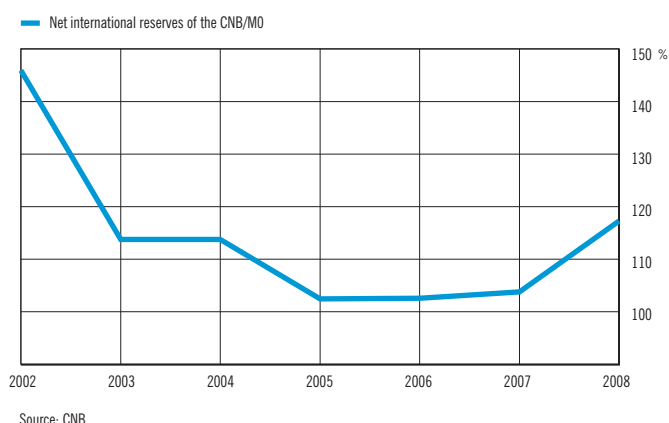


Figure 24 Ratio of Net CNB International Reserves to Reserve Money



Notwithstanding developed countries' efforts to overcome the financial crisis and avert its real economic consequences by strong monetary and fiscal stimuli, the prolonged recession in developed countries and noticeably slower growth in developing and emerging market economies will continue, at least in the first half of 2009; this slowdown will substantially curb export demand.

Lower capital availability and strong risk aversion will continue to persistently limit availability and drive up prices of funding in international capital markets for emerging market countries, particularly those with relatively large external imbalances and debt. This situation will be reinforced by much higher demand from the developed countries for capital because of the need to finance fiscal stimulus programmes.

Conditions in global financial markets could start to improve gradually in the second quarter of 2009 when effects of the said monetary relaxation will be felt to a greater extent. As monetary policy transmission to the real sector through the interest rate channel is ineffective at present, central banks, and the Fed in particular, resort to quantitative relaxation through monetisation of government and private sector securities.

At the same time, programmes of powerful fiscal stimuli to final demand are being put into effect or prepared in efforts to prevent the crisis deepening and its adverse feedback loop related to financial sector weakening.

As circumstances have radically changed from those in recent years, 2009 will likely witness stagnation or a fall in total Croatian exports of goods and services, which will, coupled with options for financing the current account deficit that are considerably constrained due to slower foreign capital inflows, require a sharp downturn in imports.

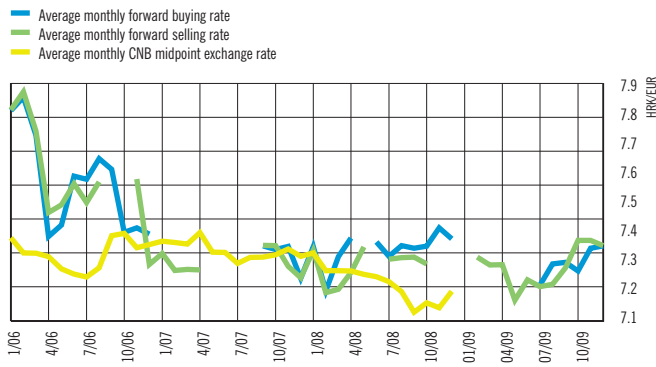
Hence, domestic final demand is expected to decline in real terms, particularly its highly import-intensive segments, such as investments and consumption of durable consumer goods.

Under these assumptions, the baseline macroeconomic scenario, which is the basis for monetary policy projections, forecasts that GDP growth will slow to around 1% in 2009. At the same time, the current account deficit-to-GDP ratio will fall from around 11% in 2008 to some 7.5%. Also expected are external debt growth several times lower than in 2008, FDI capital inflows twice as low, and somewhat reduced foreign currency reserves in the monetary system.

This scenario of relatively large real adjustment focuses on the maintenance of financial stability and requires adequate monetary and fiscal policy adjustments.

However, fiscal policy efforts to cut the general government deficit considerably are essentially limited by obligations to increase wages, pensions and other social benefits, which arise from current regulations and social agreements. In addition, public finances are burdened by substantial subsidies to certain economic sectors and liabilities under guarantees given to troubled public sector enterprises; these constraints make

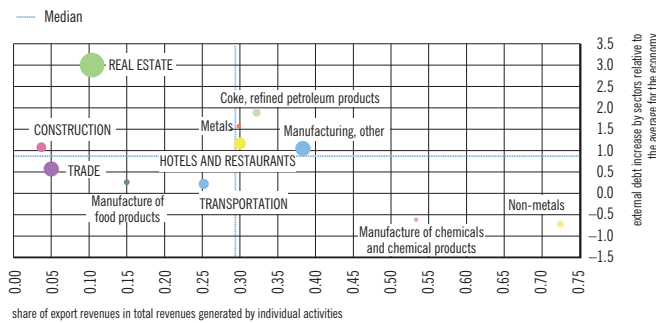
Figure 25 Kuna/Euro Exchange Rate – Spot and Forward



Note: The figure shows forward exchange rates according to the settlement dates that were contracted at least 270 days prior to that date.

Source: CNB.

Figure 26 External Debt Allocation by Sectors from end-2007 to September 2008



Note: The size of the circle denotes the significance of a particular activity's share in total external debt of non-financial corporations, with the average at end-2007 and September 2008 used as the debt indicator. Real estate activities include sub-categories of real estate industry, renting of machinery and equipment, computer and related activities, research and development and other business activities.

Sources: CNB (external debt) and FINA (export and total revenues).

sizable fiscal deficit cuts more difficult. In view of relatively moderate public debt and banking sector stability, which reduces the need for fiscal interventions, general government solvency is not threatened. However, in conditions when financing options are limited and considerable real adjustments necessary, even a relatively moderate fiscal deficit, which could, including all contingent liabilities, be some 3% of GDP in 2009, creates a pressure on the financial system and contributes to the crowding out of other sectors from the financial market (Figures 22 and 23).

As monetary policy implementation is rather constrained in a small, open and highly-euroised economy³ where monetary and financial stability maintenance critically depends on exchange rate stability, the circumstances that will prevail in 2009 pose complex challenges for the monetary authorities.

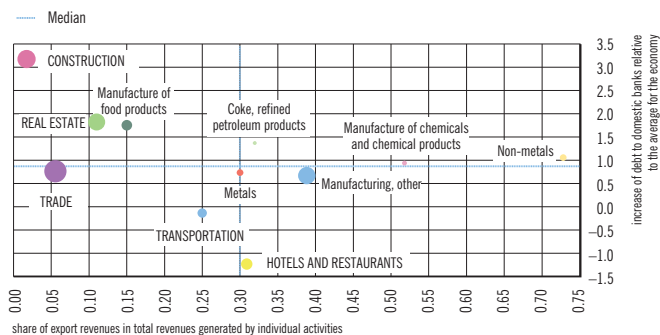
Due to reduced foreign capital inflows, some of the monetary system's foreign currency reserves will be used to finance a part of the current account deficit, while some of the total funds the government needs to refinance external debt falling due will be provided by releasing a portion of banks' liquidity reserves held abroad.

The monetary impact of reduced central bank international reserves on the withdrawal of reserve money will be sterilised through changes in several monetary instruments (repo loans, reserve requirements) so as to ensure that the reserve money supply is sufficient to support bank credit growth and total system liquidity in line with expected economic growth. It should be noted that a ceiling on monetary expansion is *de facto* the level of the central bank's net international reserves; it is this level that ensures full coverage of reserve money and thus exchange rate stability (Figures 24 and 25). Any domestic demand pressure that would lead to a relatively larger and faster decrease in international reserves and/or exchange rate depreciation would have to be sustained by monetary policy tightening. This would be achieved by lowering the degree of sterilisation of the monetary impact of a fall in foreign currency reserves, which would reinforce recessionary tendencies.

More specifically, a large decline in foreign currency reserves would increase the country risk and further decrease foreign currency inflows, while substantial exchange rate depreciation would strongly increase the external and domestic debt repayment risk of all sectors, and this in turn would threaten the country's external liquidity position and domestic banking sector stability and have an additional negative feedback on real sector activities.

³ See Box 6 Monetary Policy Constraints in a Small Open and Euroised Economy, *Financial Stability*, No. 1, June 2008.

Figure 27 Loan Allocation by Sectors from end-2007 to September 2008



Note: The size of the circle denotes the significance of a particular activity's share in total debt of non-financial corporations to domestic banks, with the average at end-2007 and September 2008 used as the debt indicator.

Sources: CNB (loans by activity) and FINA (export and total revenues).

The need for greater monetary restriction and a deeper recession may also be imposed by a deterioration of the environment if measures of developed countries fail to contain the financial crisis and the depth of their economies' recession. This means that fiscal policy would have to take on a much larger burden of real adjustment to alleviate negative external shock effects on the economy's financial and real sectors.

Real adjustment required due to lower foreign capital inflows also entails a change in lending policies of the leading domestic banks. In addition to efforts to secure sufficient additional capital inflows via parent banks, banks are expected, in contrast with recent years, to allocate more loans (and real resources) to export-oriented activities. This will lead to a relative decline in consumer loans, imports in consumer goods and activities in the non-tradable sector, which will help reduce external imbalances and maintain financial and overall macroeconomic stability (Figures 26 and 27).

Box 1 Preliminary 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 financial 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 text below presents the several-year dynamics of certain aspects of intersector financial relations that are particularly interesting for the analysis of financial system stability.

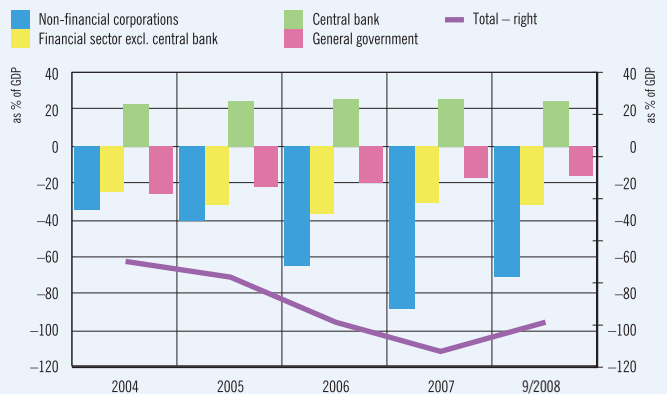
It should be particularly noted that these are the first preliminary results of experimental work on financial accounts compilation for the Republic of Croatia and that they still contain a number of open methodological issues. Although they are here presented only as a rough illustration of inter-sector relations, they can be useful in the detection of the main trends.

The overall net financial position vis-à-vis the rest of the world improved in the year from September 2007 to 2008 due to a fall in corporate sector's equity liabilities to non-residents, which was caused by a plunge in the market value of shares.¹ At the same time, equity liabilities of the financial sector increased due to capital injections. Total net debt liabilities also grew due to the increase in liabilities of the corporate sector, while debt liabilities of the government and financial institution sectors decreased (Figures 1 and 2).

In the first nine months of 2008, banks continued to reduce their net foreign liabilities. Their net financial position with respect to the household sector deteriorated due to strong deposit growth, while their net position with respect to the corporate sector improved due to a simultaneous increase in corporate loans and a fall in corporate deposits (Figure 3).

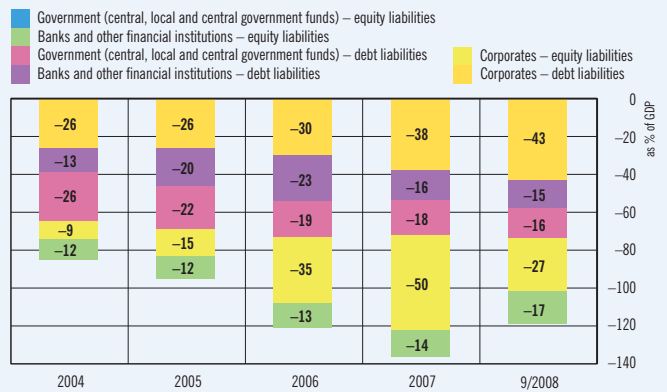
CNB measures led to a fall in foreign loan liabilities of banks and an increase in their equity liabilities due to capital injections by foreign owners. In the same period, net claims arising from securities decreased, while those arising from deposits and currency increased (Figure 4).

Figure 1 Net Financial Position of Domestic Sectors with respect to the Rest of the World



Source: CNB.

Figure 2 Net Financial Position of Selected Domestic Sectors with respect to the Rest of the World by Equity and Debt Instrument



Source: CNB.

¹ Domestic corporate equities held by non-residents are marked-to-market, which results in considerable volatility of their value. Accordingly, one may conclude that the net financial position of the corporate sector vis-à-vis the rest of the world deteriorated due to heavy borrowing from foreign banks, as evidenced by the increase in loan liabilities to that sector. The problem of evaluating equities is present in other sectors as well since the remaining portion of domestic corporate equities is carried at book value.

Table 1 Inter-Sector Claims and Liabilities at end-December 2007 and end-September 2008

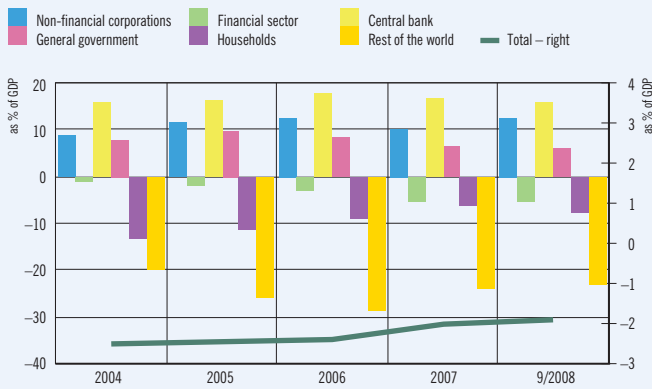
as % of GDP^a

Liabilities		Claims												Total liabilities	
		Domestic sectors										Rest of the world			
		Corporates		Financial sector		General government		Households		Total					
		2007	9/2008	2007	9/2008	2007	9/2008	2007	9/2008	2007	9/2008				
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	5	5	0	0	0	0	5	5	1	1	6	6
	Loans	38	40	38	39	0	0	0	0	75	79	32	38	108	117
	Shares and equity	40	54	7	5	23	21	27	36	97	117	57	33	154	150
	Insurance technical provisions	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other claims and liabilities	57	59	4	4	6	6	2	2	70	70	14	14	84	85
	Total	135	153	54	53	29	27	29	39	247	271	104	87	351	358
Financial sector	Monetary gold and SDRs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Currency and deposits	21	19	25	22	6	7	53	55	105	103	11	9	116	112
	Securities other than shares	0	0	1	0	0	0	0	0	1	0	1	2	2	2
	Loans	0	0	4	2	0	0	0	0	4	2	21	18	25	21
	Shares and equity	3	3	2	1	4	4	12	6	20	13	18	19	38	32
	Insurance technical provisions	2	2	0	0	0	0	13	13	15	15	0	0	15	15
	Other claims and liabilities	4	4	0	0	0	0	1	1	5	5	0	0	5	5
Total	31	29	32	26	10	10	78	74	151	140	51	48	202	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	7	5	12	11	0	0	0	0	19	17	9	8	28	25
	Loans	0	0	6	6	0	0	0	0	6	6	8	8	15	15
	Shares and equity	0	0	0	0	42	40	0	0	42	40	0	0	42	40
	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	11	9	19	18	42	40	0	0	71	67	18	17	89	83	
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	42	43	0	0	0	0	42	43	0	0	42	43
	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	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	42	43	0	0	0	0	42	43	0	0	42	43	
Rest of the world	Monetary gold and SDRs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Currency and deposits	3	3	25	18	0	0	0	0	28	22	0	0	28	22
	Securities other than shares	0	0	16	19	0	0	0	0	16	19	0	0	16	19
	Loans	0	1	1	1	0	0	0	0	1	1	0	0	1	1
	Shares and equity	7	6	4	2	0	0	0	0	10	8	0	0	10	8
	Insurance technical provisions	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other claims and liabilities	6	6	0	0	0	0	0	0	6	6	0	0	6	6
Total	16	16	46	40	0	0	0	0	61	56	0	0	61	56	
Total	Monetary gold and SDRs	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Currency and deposits	24	22	49	41	6	7	53	55	133	125	11	9	144	134
	Securities other than shares	7	5	34	36	0	0	0	0	41	41	12	11	53	52
	Loans	39	41	91	90	0	0	0	0	130	131	61	65	191	196
	Shares and equity	49	63	13	8	69	65	38	42	169	178	75	52	244	230
	Insurance technical provisions	2	2	0	0	0	0	13	13	15	15	0	0	15	15
	Other claims and liabilities	71	73	4	4	6	6	3	3	85	86	14	14	99	100
Total	192	207	192	179	81	77	107	113	572	576	173	152	745	728	

^a GDP is the sum of GDP in the last quarter of 2007 and the first three quarters of 2008.

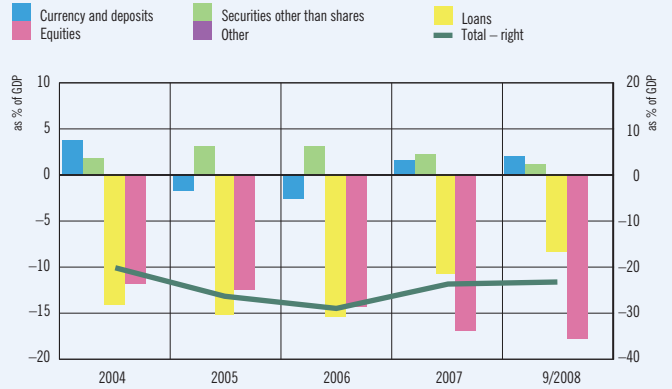
Source: CNB.

Figure 3 Net Financial Position of Commercial Banks with respect to Other Sectors



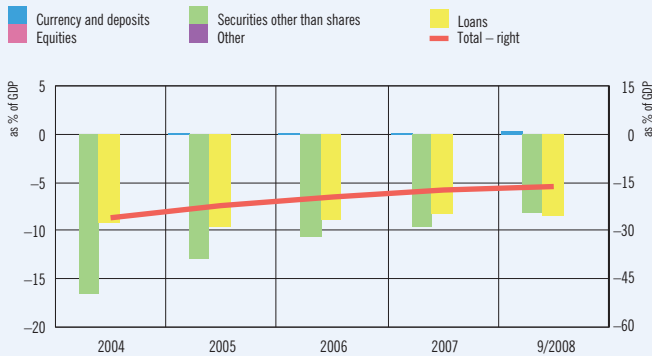
Source: CNB.

Figure 4 Net Financial Position of the Banking Sector with respect to the Rest of the World By Instrument



Source: CNB.

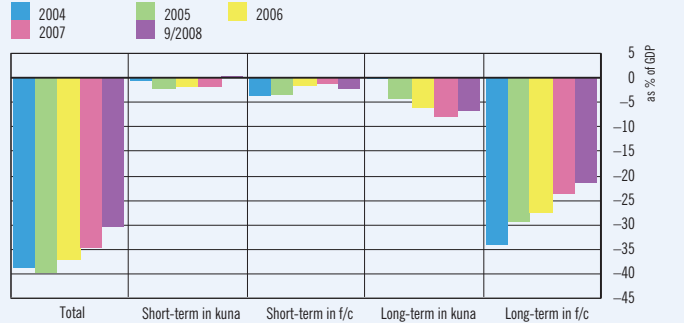
Figure 5 Net Financial Position of the General Government Sector^a with respect to the Rest of the World by Instrument



^a This includes central government, central government funds, local government and the CBRD.

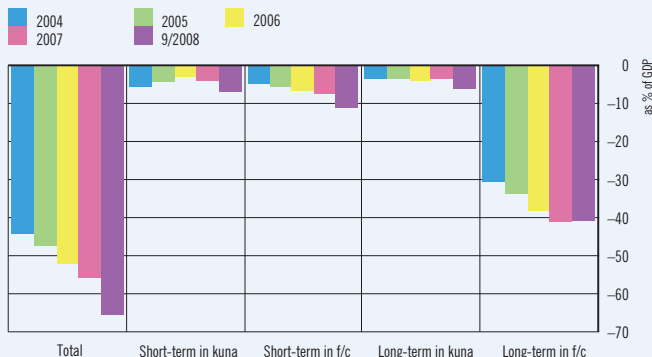
Source: CNB.

Figure 6 Net Financial Position of the General Government Sector by Maturity and Currency^a



^a The currency and maturity structure of domestic sector assets and liabilities is derived on the basis of cash, deposits (time, savings and demand deposits held with banks), securities (except equities), loans and other assets and liabilities in corporate balance sheets (to suppliers, workers and the government). Maturity has been determined on the remaining maturity basis. Kuna liabilities and assets indexed to foreign currencies are included in foreign currency assets and liabilities. Source: CNB.

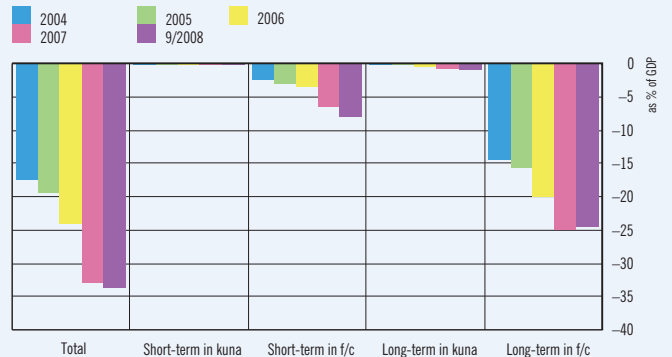
Figure 7 Net Financial Position of the Corporate Sector by Maturity and Currency^a



^a See note to Figure 6.

Source: CNB.

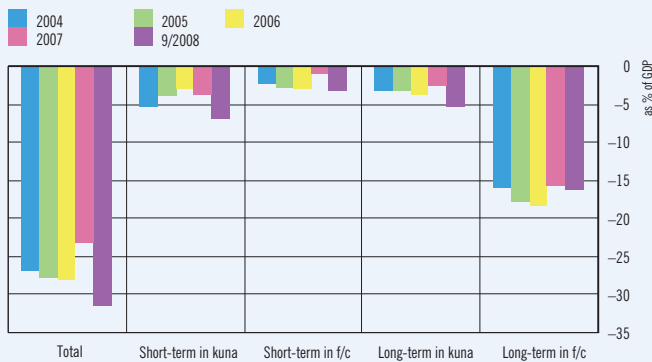
Figure 8 Net Foreign Financial Position of the Corporate Sector by Maturity and Currency^a



^a See note to Figure 6.

Source: CNB.

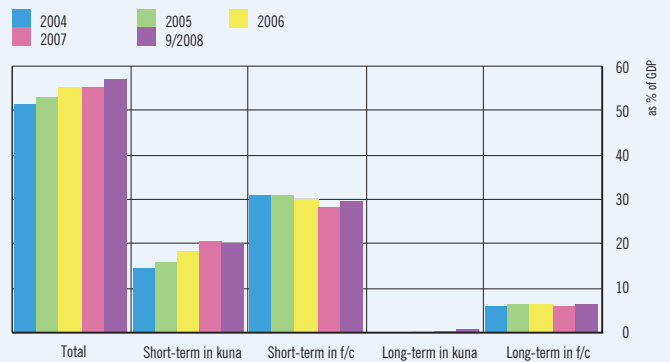
Figure 9 Net Domestic Financial Position of the Corporate Sector by Maturity and Currency^a



^aSee note to Figure 6.

Source: CNB.

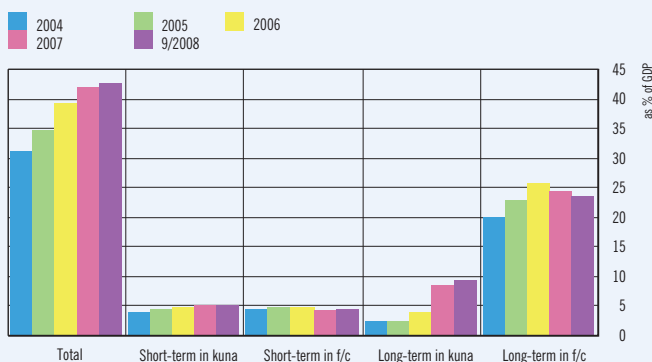
Figure 10 Household Sector Claims by Maturity and Currency^a



^aSee note to Figure 6.

Source: CNB.

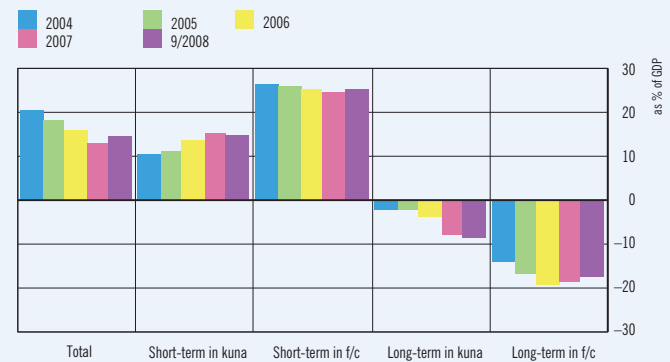
Figure 11 Household Sector Liabilities by Maturity and Currency^a



^aSee note to Figure 6.

Source: CNB.

Figure 12 Net Financial Position of the Household Sector by Maturity and Currency^a



^aSee note to Figure 6.

Source: CNB.

The falling trend in the country's net external deficit continued with the refinancing of eurobonds due in 2008 on the domestic market (Figure 5).

This led to a reduction in both long-term foreign currency liabilities and currency exposure of the government sector. Its overall financial position was also boosted by the rise in short-term kuna and foreign currency claims, which was largely due to favourable government budget trends in the first nine months of 2008 (Figure 6).

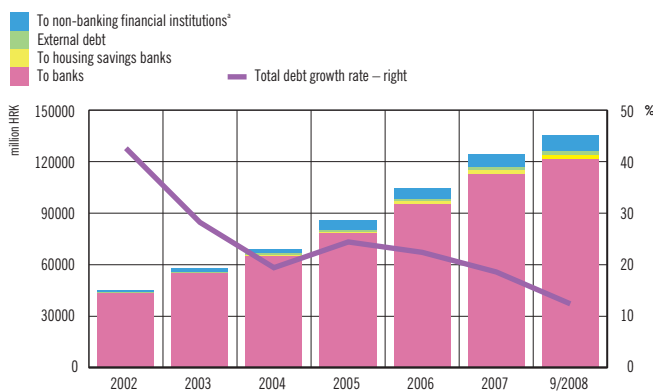
The upward trend in the net foreign currency exposure of the corporate sector came to a halt regarding its long-term segment, while it held

steady in terms of its short-term segment, with respect to both the rest of the world and other domestic sectors. The net position in kuna terms also deteriorated strongly, regardless of maturity. In addition to bank credit growth, this may be partly attributed to the rise in liabilities to domestic non-financial sectors (Figures 7, 8 and 9).

After deteriorating for several years, the net financial position of the household sector improved in the first nine months of 2008. This was largely due to the return of funds invested in the capital market to bank deposits, as well as slower growth in household liabilities, with long-term kuna liabilities still growing relatively faster than foreign currency-indexed liabilities (Figures 10, 11 and 12).

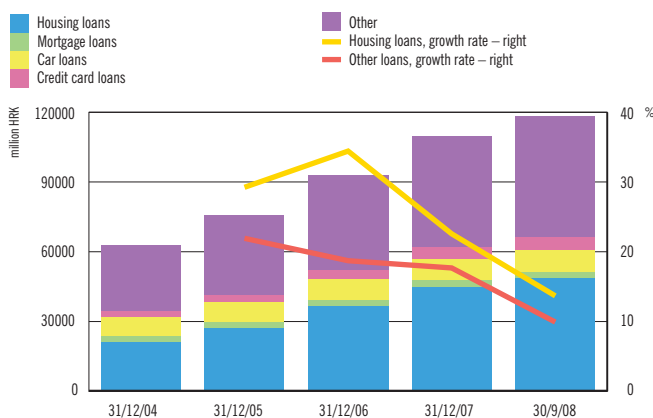
Household Sector

Figure 28 Household Debt



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

Figure 29 Household Loans by Purpose



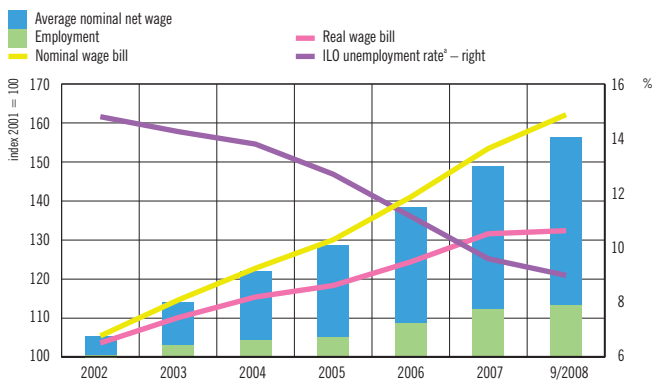
Source: CNB.

Household debt growth, which steadily lost speed in 2008 due to increasingly expensive and scarce loans, will continue to slow down in 2009. As lower economic growth and adverse labour market developments will continue to decelerate disposable income growth, household net debt and the debt repayment burden will stay on an upward trend. Considerable currency and interest rate exposure will be the main risk sources in conditions of deteriorating debt indicators and reduced household debt-servicing capacity in 2009.

The annual growth rate of household debt stood at 12% at the end of the third quarter of 2008 and was much lower than in the preceding year (19%). This was due to much lower growth in debt to banks and housing savings banks, which still account for more than 90% of total household liabilities (Figure 28). All types of bank loans grew slower, with the major slowdown being recorded by housing loans, the year-on-year growth rate of which stood at 14% in September 2008 (Figure 29).

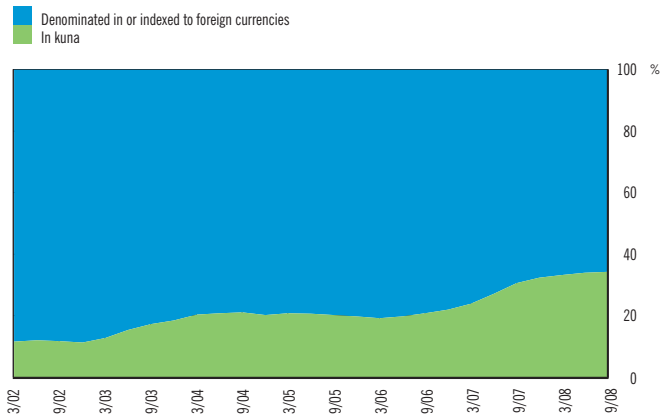
Such trends occurred in conditions where bank loan supply was still restricted by CNB regulatory measures, while lending rates and loan fees increased. At the same time, loan demand was restrained by stagnant real wages and heightened uncertainty in the labour market arising from slower economic activity (Figure 30). The increase in lending rates was largely due to rising interest rates on funding. Also, it was probably additionally supported by a more realistic evaluation of the risk premium on household lending prompted by the increase in capital requirements for currency-induced credit risk.

Figure 30 Unemployment, Employment and Wages



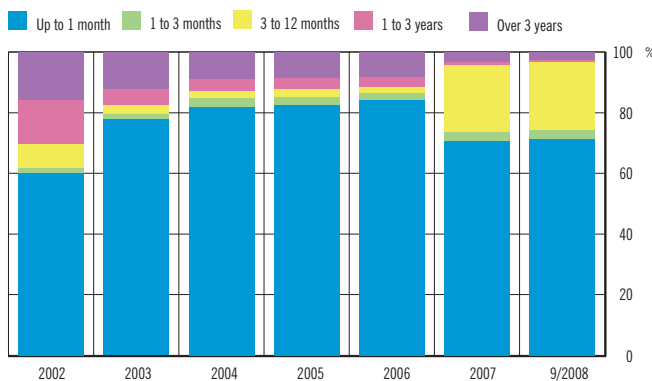
* Data on the ILO unemployment rate for September 2008 refer to the average for the first half of 2008.
Source: CBS.

Figure 31 Currency Breakdown of Household Loans



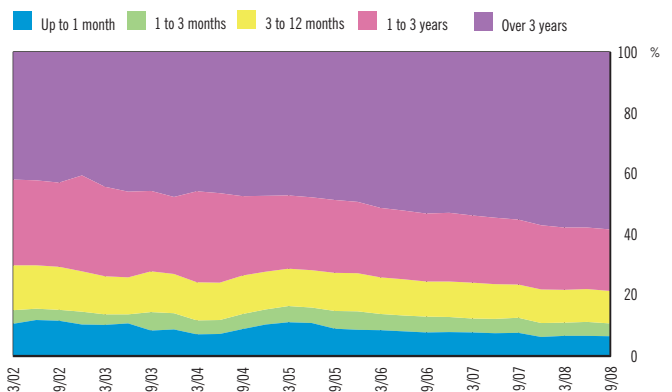
Source: CNB.

Figure 32 Household Loans by Interest Rate Variability



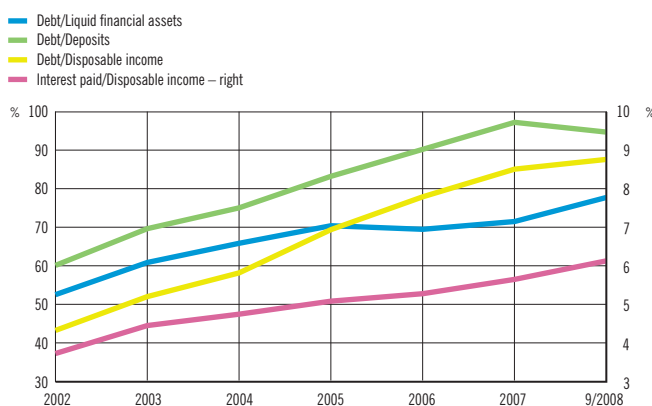
Source: CNB.

Figure 33 Breakdown of Household Loans by Remaining Maturity



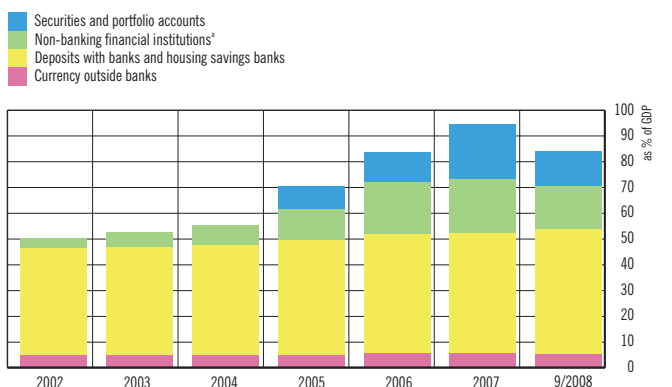
Source: CNB.

Figure 34 Household Debt and Debt Burden



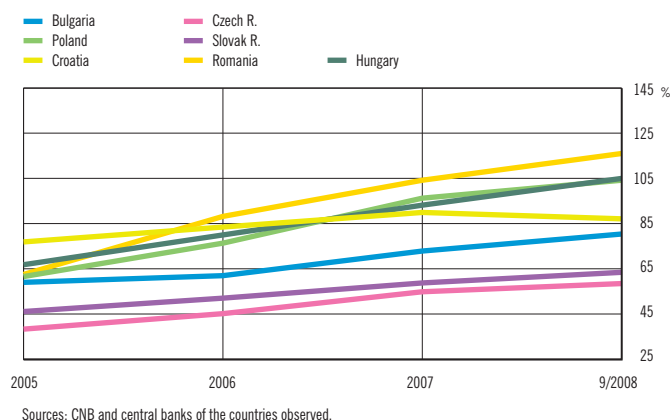
Sources: CNB, HANFA and CDA.

Figure 35 Household Financial Assets



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

Figure 36 Household Loan-to-Deposit Ratio in Selected Central and Eastern European Countries



The bulk of bank loans to households is still denominated in or indexed to foreign currencies (66%). A mild upward trend in the share of kuna loans in total loans, which was observed in the last two years, nearly came to a halt in March 2008 (Figure 31). This was likely due to the increase in household foreign currency savings over the first nine months of 2008, which was initiated by negative developments in the domestic capital market.

In 2008, banks continued to increase the share of household loans with interest rates variable within a year, thus transferring interest rate risk to their clients. This is why the interest rate risk exposure of households stayed relatively high (Figure 32). In the same period, a favourable upward trend in the share of long-term loans continued (Figure 33). However, most of these loans have, in addition to variable interest rates, been contracted with a foreign currency clause, which increases household exposure to currency risk as well.

Notwithstanding slower growth in total debt of households in the observed period, their debt indicators did not improve (Figure 34). The ratio of household debt to estimated disposable income further increased as disposable income grew much slower than debt. Interest burden also increased, which creates difficulties in regular loan repayment.

The ratio of household debt to total liquid financial assets⁴ also worsened in 2008. Negative trends in the domestic capital market, which began in late 2007, gained momentum in 2008. The price decrease of most shares listed on the Zagreb Stock Exchange reduced the value of financial assets that households had invested in securities and investment funds.

Domestic capital market trends also led to a drop in the total value of household financial assets (Figure 35). A major share of the funds withdrawn from the capital market has been invested in bank deposits. On the one hand, this led to a deterioration of the ratio of household debt to financial assets and, on the other hand, improved the ratio of household debt to bank deposits (Figure 34).

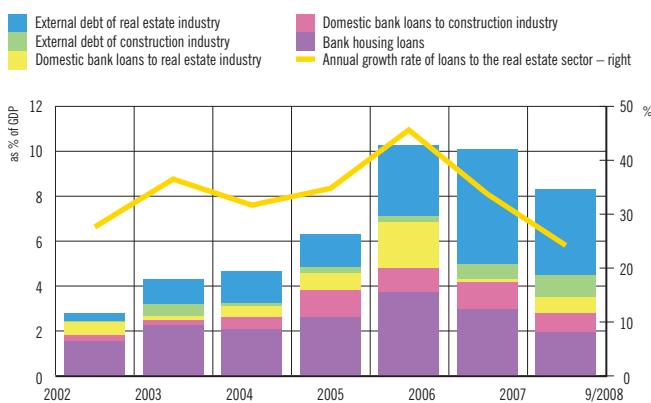
In terms of the household debt-to-deposit ratio, Croatia's position has additionally improved relative to other Central and Eastern European countries (Figure 36).

Household lending also slowed down in the last quarter of 2008 due to the deterioration of the global financial crisis, and is expected to exhibit similar trends in 2009. These trends will be determined by the limited bank funds available for loans, a decrease in household demand due to higher interest rates, slower wage growth and a possible decline in employment. All this could result in a deterioration of household debt indicators and increase debt service risk. In addition to the said trends in interest rates and income, the debt service burden will be affected by the recorded slight weakening of the exchange rate.

⁴ Household financial assets exclude foreign cash and deposits with foreign banks since their level cannot be precisely estimated.

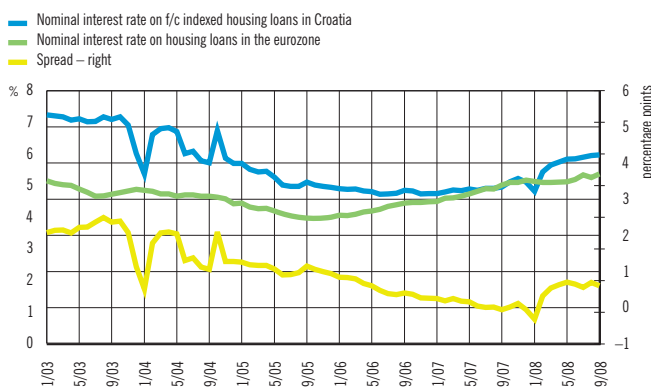
Real Estate Sector

Figure 37 Growth in Domestic and Foreign Loans to the Real Estate Sector



Source: CNB calculations.

Figure 38 Comparison of Interest Rates on Housing Loans in Croatia and the Eurozone



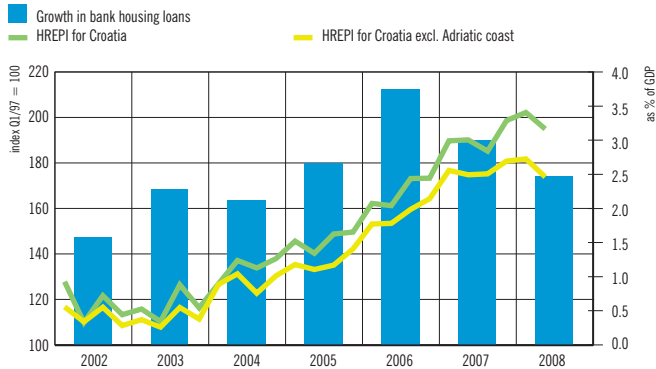
Sources: CNB and ECB.

Slower growth in lending to the real estate sector due to higher interest costs of domestic and foreign financing further mitigated the rise in real estate prices in the first nine months of 2008, and this is likely to continue in 2009. The overwhelming reliance on loans denominated in or indexed to foreign currencies in financing operations is the main risk to financial stability stemming from the real estate sector.

The rise in total loans to the real estate sector slowed down considerably in the first nine months of 2008. Their annual growth rate stood at 24% at end-September, 10 percentage points less than at end-2007 (Figure 37). Both domestic and external debt growth of the real estate sector decelerated, which was due to rising interest rates and reduced loan availability from both sources. The slowdown was more pronounced with regard to housing loans than to loans to corporates dealing in construction and real estate activities. The slowdown in housing loans was affected by lower demand, which was due to slower income growth and higher interest rates (Figure 38). At the same time, loan supply also diminished in relative terms, as evidenced by tighter credit standards of banks and the gradual redirection of funds available to more profitable types of loans.

Weaker demand for residential property led to a fall in housing prices in the first half of 2008. At end-June 2008, the hedonic real estate price index (HREPI), calculated on a quarterly basis, was 2% lower than in the last quarter of 2007. Excluding from its coverage residential property prices on the Adriatic coast, which are strongly influenced by non-resident demand, this index dropped by as much as 4% (Figure 39). The fall in residential property prices in the first half of 2008 slowed down the annual growth rate of the HREPI. This rate was 6% at the end of the first half of 2008 and was cut by more than half

Figure 39 Housing Loans and HREPI^a



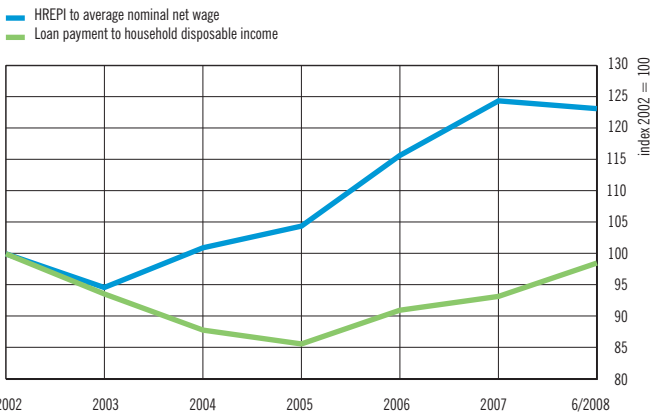
^a The hedonic real estate price index takes into account qualitative characteristics of the real estate.
Source: CNB calculations.

compared with that at end-2007. Excluding residential property prices on the Adriatic coast, the index slowdown was even more pronounced (3%).

Owing to the economic slowdown late in 2008, which will continue into 2009, the current residential property market trends in housing loans and real estate prices, which show that residential property prices came close to their equilibrium level in 2008 (see Box 2), are expected to continue or even accelerate.

Notwithstanding lower annual growth in prices of residential property, its financial availability, measured as the ratio of the HREPI to the average nominal net wage, did not markedly improve in the first half of 2008 compared with the previous year's average (Figure 40). At the same time, rising interest rates on housing loans lessened the financial availability of real estate measured as the ratio of the average loan payment to average household disposable income.

Figure 40 Financial Availability of Housing Loans



Sources: CBS and CNB calculations.

Harsher financing terms from both foreign and domestic sources in late 2008, which are likely to continue in 2009, will hamper both business activity financing and the capacity to service financial liabilities based on debt of the real estate sector as a whole, and residential property in particular. Such trends will put additional downward pressure on real estate prices, which will adversely affect this sector's operating income and weaken its financial position. Substantial currency exposure of the real estate sector poses another risk for servicing due liabilities. In particular, the mismatch between real estate sector loans, which are predominantly denominated in or indexed to foreign currencies, and this sector's income, which is mostly in kuna, could negatively affect its capacity to repay existing liabilities should there be a stronger exchange rate depreciation.

Box 2 Determinants of Real Estate Prices

Real estate price developments have numerous macroeconomic and financial implications. Starting from 2003, robust growth in demand for real estate in Croatia generated a marked increase in real prices of real estate and spurred construction, which gave a strong boost to GDP and employment growth thanks to substantial investments. As profitability of construction and other activities in the real estate sector directly depends on trends in real estate prices, their fall could negatively affect the sector's profitability and reduce its capacity to repay existing loan liabilities. As residential real estate also accounts for a major share in total household assets, developments in its prices directly affect the asset value of households and their consumer decisions. Loans for the purchase of real property account for the bulk of household debt so that real estate is most often used as collateral for bank loans. Hence, changes in real estate prices affect the possibility of banks' loan-related claims being met by means of collateral in the event of loan delinquencies. The level of and trends in residential property prices thus exert a strong impact on the net wealth, consumption and financial position of the household and construction sectors and, through these sectors, affect banks' credit risk and the overall economic activity level.

Robust foreign capital inflows and bank credit growth coupled with heightened competition in the domestic banking market have reduced interest rates and eased other terms for housing loans, which are the main funding source for house purchase in Croatia. Coupled with macroeconomic stability, higher living standards and decreased unemployment, this put strong downward pressure on real prices of real estate, which began in 2003. However, given their importance, one should establish the extent to which growth in real estate prices in Croatia deviated from the level determined by fundamental supply and demand factors, i.e. whether real estate prices are undervalued or overvalued relative to their long-run equilibrium level. The trend deviation of real estate prices from developments in their fundamental determinants increases the risk of real estate price correction, which may have major negative economic effects.

An error correction model (ECM) was used to estimate the long-run equilibrium level of residential property prices in Croatia and possible deviations from that level. The dependent variable in the model is the hedonic real estate price index deflated by the consumer price index. Among deterministic variables, statistically significant and with the expected sign were the following demand factors: real disposable income per capita and the real interest rate on long-term household loans with a currency clause.¹ Supply factors were not found statistically significant and with the appropriate sign, which shows that demand was the main determinant of real estate price trends in the observed period. The long-run equilibrium equation for residential prices was tested on quarterly seasonally adjusted data for the period between early 2000 and mid-2008² (Table 1).

1 Also tested were the following demand-side variables: gross domestic product, wage bill, CROBEX value, housing loans granted to households, total household loans and population factors.

2 Cointegration among the variables was tested by using the Johansen test.

Table 1 Determinants of Real Residential Property Prices^a

Independent variable	Coefficient
ln (household disposable income/consumer price index)	0.95 ^b
ln (interest rate on long-term household loans with a currency clause – inflation rate)	-0.04 ^b
Constant	-3.38 ^b
R ²	0.81

^a Measured as the natural logarithm of the ratio of the hedonic real estate price index to the consumer price index.

^b Significant at the level of 1%.

Source: CNB.

The analysis suggests that real estate prices are positively correlated with real disposable income and negatively correlated with interest rates. Growing disposable income boosts the purchasing power and creditworthiness of households. On the other hand, lower interest rates reduce borrowing costs and thus increase the availability of bank loans.

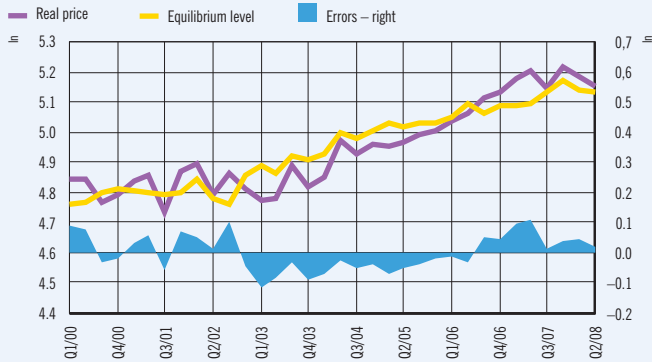
Figure 1 shows changes in the (logarithmed) index of residential property prices and its assessed long-term value. The unexplained part, i.e. error, can be explained as a sign of either overvaluation or undervaluation of real residential property prices relative to their long-run equilibrium level.

At the beginning of the eight-year observation period, residential property prices fluctuated around estimated equilibrium prices, with periods of longer and higher overvaluation of real property prices alternating with periods of shorter and lower undervaluation. Still, the model indicates end-2002 as the starting point of the period of prevailing real estate price undervaluation relative to the assessed long-run equilibrium level (by mid-2006, it averaged 5.3%). In this period, robust growth in equilibrium real estate prices was made under the impact of growing household disposable income in conditions of large economic expansion and rapid growth in increasingly favourable bank loans, which was due to mounting competition pressure coupled with a decrease in real interest rates. At the same time, due to the stated undervaluation, more dynamic growth in actual real prices had an equilibrium character.

Positive trends in fundamental factors affecting real estate prices in the context of a favourable macroeconomic environment fuelled expectations that the house price rise would continue in the following years. However, real interest rates on long-term household loans with a currency clause bottomed out in mid-2006, while real income growth decelerated sharply in the following period. For the period since the second half of 2006 the model indicates overvaluation of real prices of real estate relative to their assessed long-run equilibrium level (which averaged 5.3% between mid-2006 and mid-2008). Still, the assessed overvaluation of real estate prices in Croatia is relatively small in comparison with other European countries where real estate market prices ballooned and real estate overvaluation ranged between 10% and as much as 30%.³ Furthermore, the assessed overvaluation of real residential property prices in Croatia should be taken with a grain of salt

3 IMF, *World Economic Outlook*, April 2008.

Figure 1 Real Values of Real Estate Prices and Values Assessed by the Model



Source: CNB.

since the price analysis covered only a short period in which equilibrium prices were more affected by convergence factors than by long-term factors, which are key determinants of real estate price developments in Western European countries.

Real prices of real estate started drifting down in late 2007, which reduced their overvaluation, and came closer to their equilibrium level in mid-2008. This was due to a deflation of optimistic expectations under the impact of slower growth in real household income, which was further supported by the reversal of the downward trend in interest rates on housing loans.

Due to the impact of high interest rates and a prolonged economic slowdown, which could lead to negative labour market trends and a contraction in household real disposable income, 2009 is likely to see a stagnation or a modest fall in equilibrium residential property prices. At the same time, due to negative expectations, real prices of real estate could even fall short of their assessed equilibrium level.

Non-Financial Corporate Sector

Figure 41 Growth Rate of Non-Financial Corporate Debt

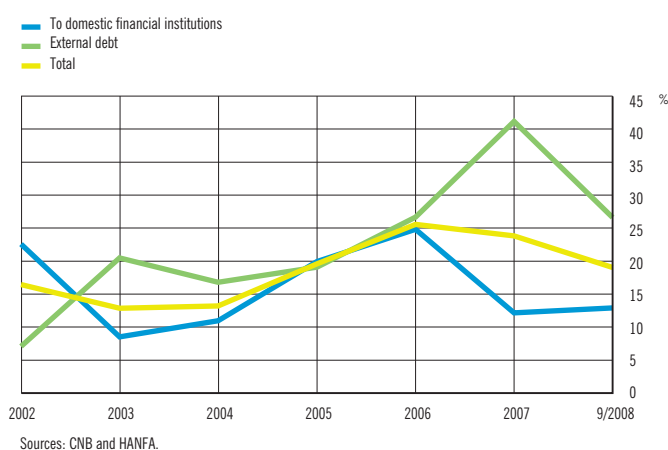


Figure 42 Non-Financial Corporate Debt



The growth in corporate sector debt continued to lose speed due to lower external debt growth, which reached a record high in 2007. Currency risk, which is particularly significant for this sector, additionally grew in most activities. Foreign investors' risk aversion could create difficulties in corporate debt refinancing in 2009. This would mostly hit the non-tradable sector, which still accounts for the major share of external debt.

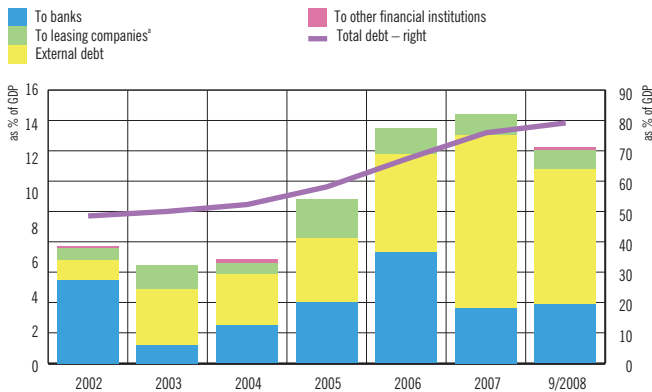
The slowdown in non-financial corporate debt growth became more pronounced in the first nine months of 2008. This was mostly determined by weaker corporate demand for loans, which was due to slower economic activity and higher interest rates. The annual growth rate of the total debt went down from 24% to 19%; the external debt growth rate fell from 41% to 27%, while that of the domestic debt stabilised at 13% (Figure 41). The increase in the debt-to-GDP ratio thus decelerated to 6 percentage points on an annual basis, after being 9 percentage points in 2007 (Figure 42).

External borrowing hence stayed the main funding source for non-financial corporations, accounting for more than half of their total debt growth in the first nine months of 2008 (Figure 43).

The tendency to rely on foreign funding, which characterises the non-tradable sector, persisted through the first nine months of 2008. Also observed in this period was the reallocation of domestic loans from the tradable sector to the non-tradable sector (Figure 27).

Currency risk of non-financial corporations remained high as more than three-quarters of their debt is denominated in foreign currencies (Figure 44). Owing to a significant

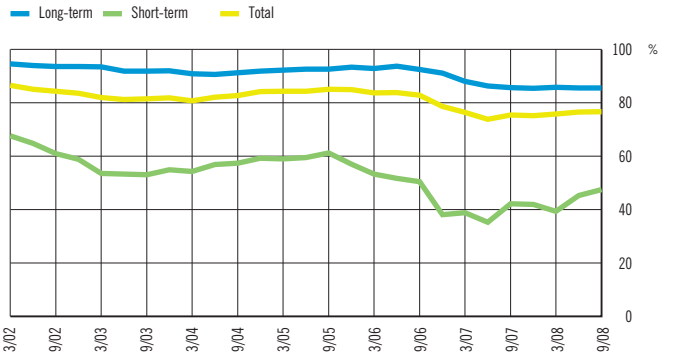
Figure 43 Change and Non-Financial Corporate Debt Stock



*Data on debt to leasing companies are based on estimates.

Sources: CNB and HANFA.

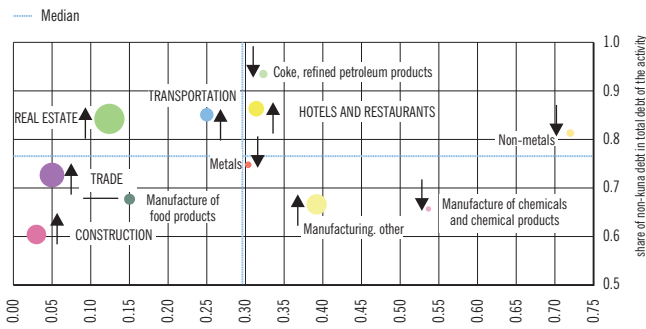
Figure 44 Share of Bank Non-Kuna Loans and Non-Financial Corporate External Debt* in Total Loans



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

Source: CNB.

Figure 45 Currency Exposure in September 2008

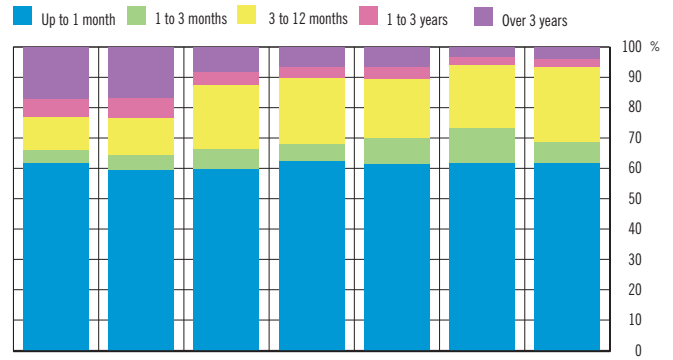


share of export revenues in total revenues generated by individual activities

Note: The size of the circle denotes a particular activity's share in total debt of non-financial corporations. Arrows pointing up denote an increase in currency risk exposure relative to end-2007.

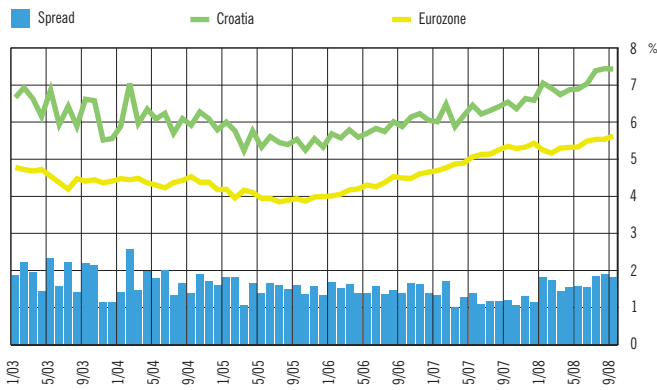
Sources: CNB (loans by activity) and FINA (export and total revenues).

Figure 46 Breakdown of Bank Loans to Non-Financial Corporations by Interest Rate Variability



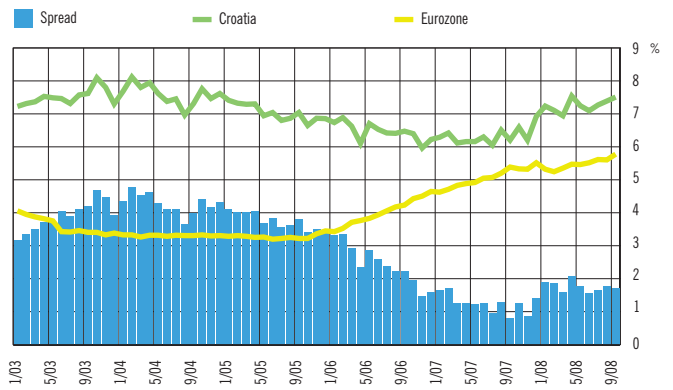
Source: CNB.

Figure 47 Interest Rates on Long-Term Loans to Non-Financial Corporations in Croatia and the Eurozone



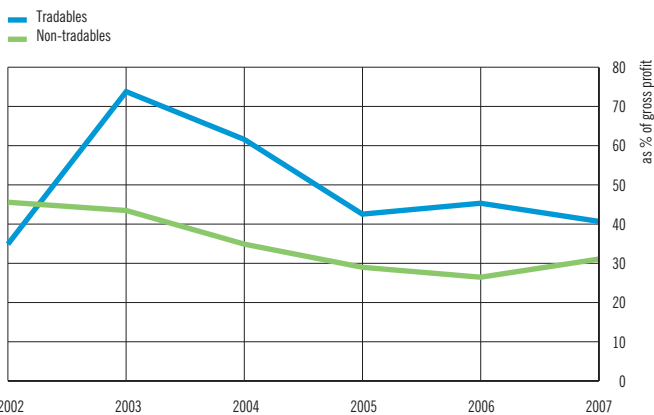
Sources: CNB and ECB.

Figure 48 Interest Rates on Short-Term Loans to Non-Financial Corporations in Croatia and the Eurozone



Sources: CNB and ECB.

Figure 49 Interest Burden



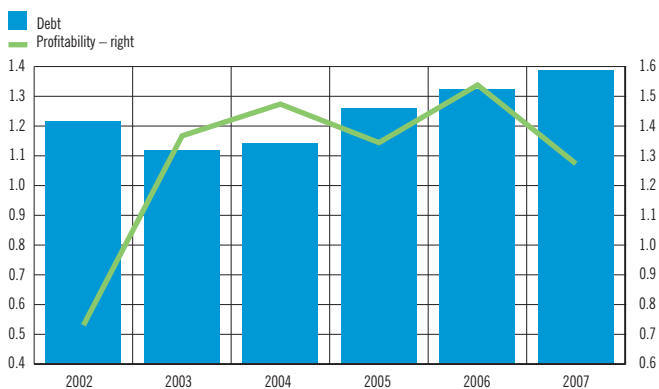
Sources: FINA and CNB calculations.

currency mismatch between liabilities and claims, the bulk of risk relates to the non-tradable sector, which could create loan repayment difficulties in the event of a larger domestic currency depreciation. This mismatch increased further in 2008 in most activities despite the fact that improvements were seen in several activities within the manufacturing industry where currency risk is otherwise much lower (Figure 45).

Sensitivity of non-financial corporations to interest rate risk is still high, although this risk was mitigated in 2008 by increasing the share of loans with longer periods in which interest rates are fixed. Some 70% of domestic bank loans were made with interest rates variable within three months (Figure 46). Interest rate risk is also increased by the fact that most foreign loans were issued at variable rates, often linked to benchmark interest rates in the eurozone (EURIBOR).

The interest rate hike, which began in early 2006, gained momentum in 2008, following the trends in benchmark eurozone interest rates, which hit their 7-year high in the first nine months of 2008. Furthermore, foreign investor's risk aversion climbed in October.

Figure 50 Profitability to Debt Ratio in Tradable and Non-Tradable Sectors

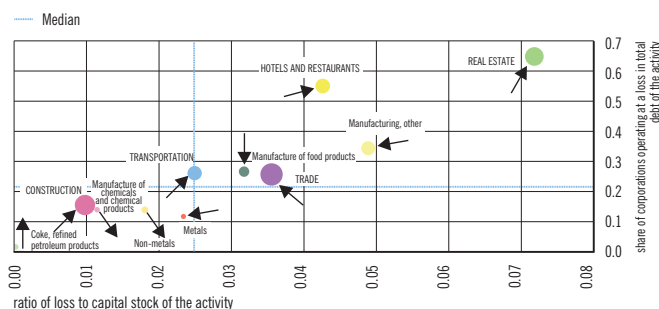


Sources: FINA and CNB calculations.

Due to the domestic banks' higher risk premium in the cost of foreign funding, interest rates on corporate loans grew faster in Croatia than in the eurozone (Figures 47 and 48). These trends were also affected by a more realistic evaluation of risks associated with foreign currency-indexed loans.

This added to interest burden, which is relatively heavier in the tradable sector (Figure 49). Still, the 2007 data show that the burden difference has become smaller, which is due to still faster debt growth and relatively slower profit growth in the non-tradable sector (Figure 50). This trend could persist under the impact of real estate price corrections (see Box 2). Notwithstanding the absence of structural reforms, this market mechanism could trigger the reallocation of loans to export-oriented activities, which are better protected against currency risk. This would reduce long-term risks to financial stability.

Figure 51 Importance of Non-Financial Corporations Operating at a Loss in 2007



Note: Real estate activities include sub-categories of real estate industry, architectural and engineering activities and related technical consultancy. Zagreb Holding and Croatian Motorways are excluded. The size of the circle denotes a particular activity's share in total debt of non-financial corporations. Arrows pointing up denote an increase in the share of corporations operating at a loss in total debt of the activity; arrows pointing right denote an increase in the ratio of loss to capital stock of the activity relative to 2006.

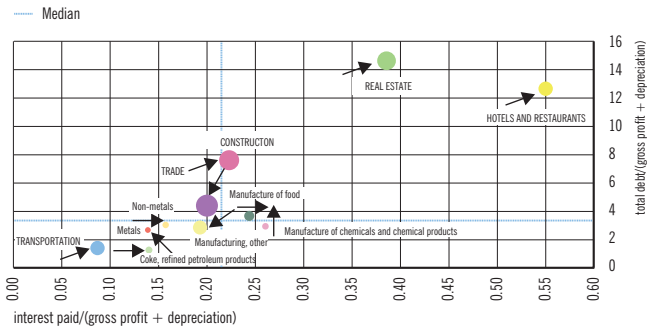
Sources: FINA and CNB calculations.

Corporate business performance in most non-tradable activities worsened as early as 2007, which increased the share of debt of corporations operating at a loss in this sector's total debt. The share of debt of corporations operating at a loss in total debt of the activity and the ratio of loss to capital stock were the highest in real estate activities, hotels and restaurants and a group of traditional manufacturing activities (Figure 51).

Positive steps made by other manufacturing activities could prove to be only transitory in view of the 2008 slowdown in this area of activities, which will continue into 2009.

The escalation of the global financial crisis near the end of the third quarter of 2008 considerably hampered the availability of foreign loans to the corporate sector, while the risk premium also grew strongly, which raised the price of foreign capital. Against this background, foreign borrowing of the corporate sector decelerated considerably in the last quarter of 2008. At the same time, the rise in domestic bank loans also slowed

Figure 52 Debt Indicators by Activity in 2007



Note: Real estate activities include sub-categories of real estate industry, architectural and engineering activities and related technical consultancy. Zagreb Holding and Croatian Motorways are excluded. The size of the circle denotes a particular activity's share in total debt of non-financial corporations. Arrows pointing up denote an increase in activity's dependence on foreign funding sources; arrows pointing right denote an increase in interest burden of the activity relative to 2006.

Sources: FINA and CNB calculations.

down as banks reoriented their loans to the government sector, with similar trends continuing into 2009.

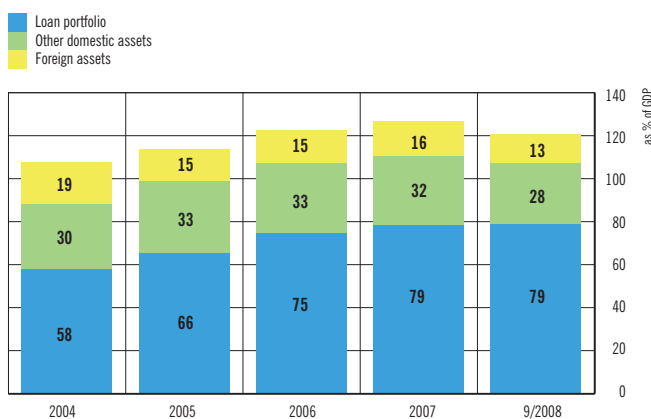
Increasingly scarce and expensive foreign funding sources will mark most of 2009 as well; this will disturb the financing of corporate activities and strongly increase refinancing risk on their maturing foreign liabilities.

Slower corporate activities and increased financing costs are expected heavily to increase the debt burden as well as the risk of its servicing.

Within the corporate sector, the main brunt could be borne by real estate and construction activities and hotels and restaurants, characterised by an extremely low share of own funds in operational financing, which could hinder their adjustment to new financing market conditions (Figure 52). Refinancing risk is somewhat alleviated by the fact that lenders of these corporations are often their foreign owners.

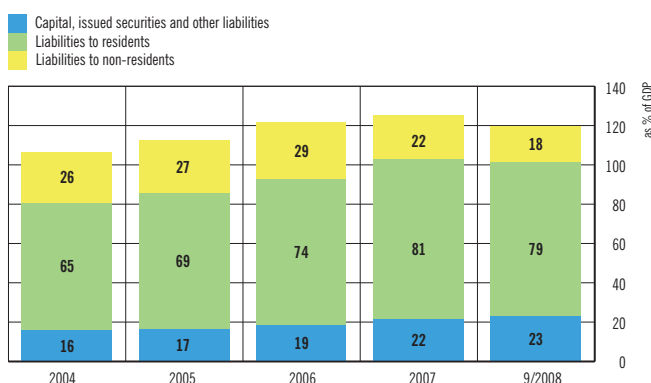
Banking Sector

Figure 53 Banking Sector Assets



Source: CNB.

Figure 54 Banking Sector Liabilities^a



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

Source: CNB.

In 2008, banks continued to restructure their assets and liabilities, while sustaining high profitability, which added to the rise in capitalisation levels. Notwithstanding slower credit growth, the predominance of loans in total bank assets increased. Slower economic growth will in 2009 adversely affect the quality of banks' credit portfolios, but their strong capitalisation will ensure banking sector stability.

Balance-Sheet Vulnerabilities

Bank assets grew much slower in the first nine months of 2008 and their ratio to GDP⁵ fell to 121% (Figure 53). Bank credit growth dipped to 8.2% in this period, from 14.7% in the same period of 2007,⁶ due to a reduction in demand, which was caused by slower economic growth and higher interest rates, as well as CNB limits on credit growth.

This loan dynamics and a parallel decrease recorded in other types of assets slightly increased the share of credit portfolios in total assets, which enhanced the dominance of credit risk.

Within other domestic assets, the domestic securities portfolio was substantially reduced due to lesser investment

⁵ GDP in a one year period through September 2008 is the sum of GDP in the last quarter of 2007 and the first three quarters of 2008.

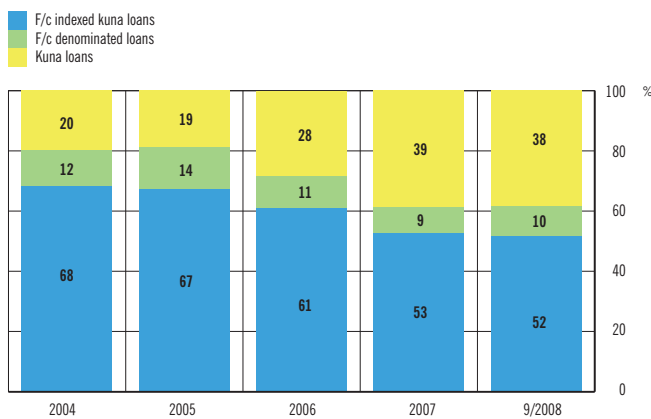
⁶ In bank reports, the value of loans and deposits is expressed in kuna, which means that exchange rate changes may decrease or increase non-kuna items. Since the kuna depreciated against the Swiss franc by some 4% and appreciated against the euro by some 1.5% in the first nine months of 2008, the loan increase was some 1 percentage point higher in effective terms than in nominal terms.

Figure 55 Annual Growth Rate of Major Banking Sector Balance Sheet Items



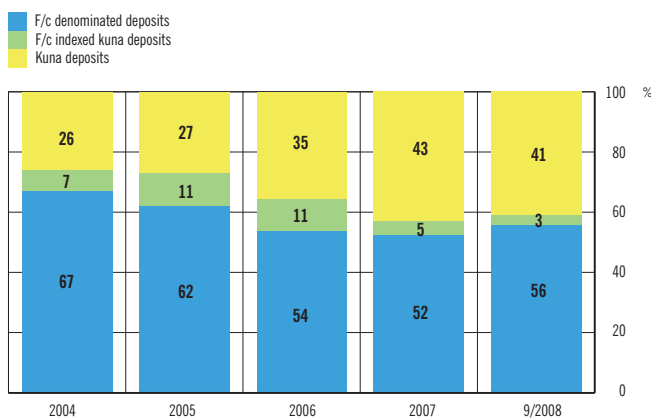
Source: CNB.

Figure 56 Currency Breakdown of Loans



Source: CNB.

Figure 57 Currency Breakdown of Deposits



Source: CNB.

in government securities, which was due to a considerably improved fiscal position. The fall in other domestic assets was also caused by a noticeable decrease in reserves with the central bank, particularly towards the period end, which also saw a large increase in foreign assets.

This mitigated the decrease in foreign assets in the period caused by a parallel fall in bank foreign liabilities and changes in regulations concerning their foreign currency liquidity, which narrowed the mandatory coverage of foreign currency liabilities by foreign currency claims (from 32% to 28.5%) in May 2008.

A decrease in the share of other domestic and foreign assets of banks reduced their exposure to market and other risks, which grew in the period of highly volatile securities markets and the uncertainty stemming from the global financial turmoil.

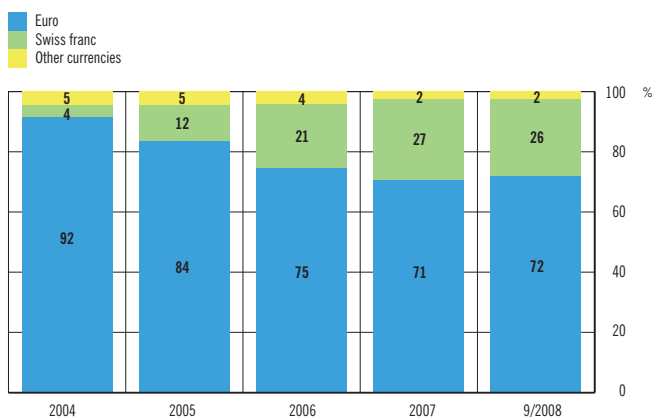
The escalation of the global financial crisis late in the third quarter of 2008 triggered major changes in monetary policy instruments and regulations concerning banks' foreign currency liquidity, as well as the dynamics of individual types of bank assets. To increase both foreign currency and kuna liquidity, the marginal reserve requirement on banks' foreign liabilities was abolished in October, while the reserve requirement rate was cut in December, which led to a fall in banks' reserves with the central bank. Banks simultaneously increased their foreign assets sharply and received ample support from parent banks in the form of loans and deposits received thus strengthening their liquidity. Parallel to this, moderate credit growth continued so that the credit portfolio maintained the largest share in bank assets.

The expected global and domestic financial and economic trends will limit bank funds available for lending in 2009, which means that the rise in banks' credit portfolios will be somewhat slower. Other forms of assets will be affected by the policy of kuna and foreign currency liquidity management on the part of both the central bank and the banks themselves, which could decrease the share of these forms of assets in total bank assets. Hence, credit risk will remain the dominant risk in 2009, particularly if macroeconomic factors deteriorate significantly.

On the liability side, banks continued to restructure their secondary sources in response to CNB measures aimed at reducing foreign borrowing by raising its costs (arising from marginal reserve requirements on foreign liabilities), which strongly reduced the share of foreign liabilities in total bank liabilities. At the same time, banks attracted considerable funds in the form of household deposits, which was due both to the rise in deposit rates and adverse capital market developments. However, as this period also saw a fall in loans from financial institutions, above all the central bank, the share of total liabilities to residents in GDP decreased in relative terms (Figure 54).

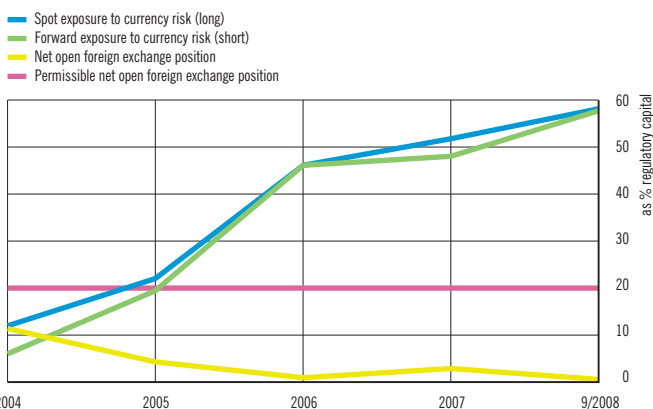
Banks' primary funding sources steadily trended up due to continued injections of new capital into banks, which were used to cut regulatory costs arising from foreign borrowing (Figure 55).

Figure 58 Currency Breakdown of Non-Kuna Loans



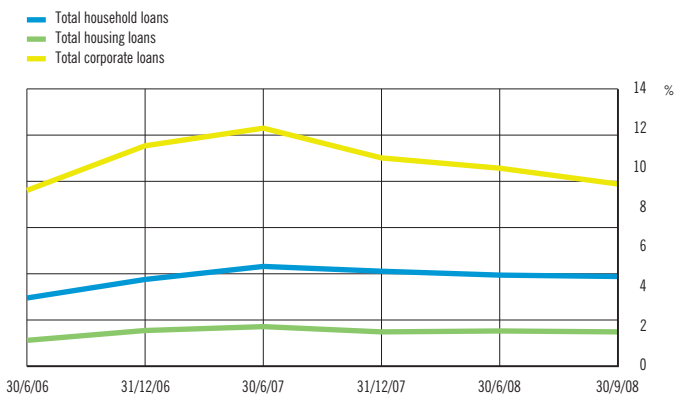
Source: CNB.

Figure 59 Bank Exposure to Currency Risk



Source: CNB.

Figure 60 Share of Hedged Loans in Total Loans Exposed to CICR



Source: CNB.

Given the escalated financial crisis, the last quarter of 2008 saw a marked restructuring of bank liabilities. The October decrease in deposits ran parallel to an increase in foreign liabilities, mostly in the form of parent banks' loans and deposits, and a rise in central bank loans, which were to keep banking sector liquidity at satisfactory levels.

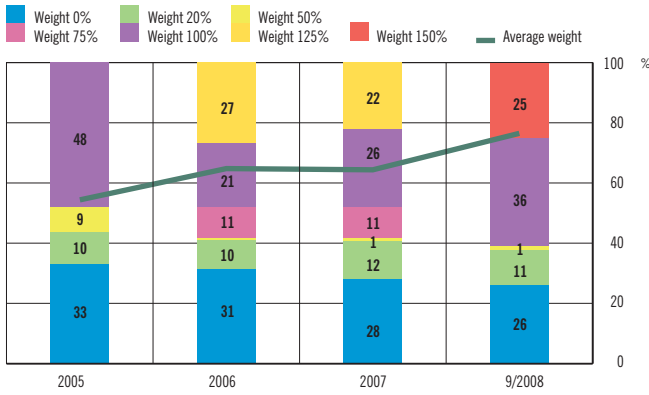
The year 2009, which will be marked by slower economic growth, is expected to witness slower deposit growth than in last year. At the same time, foreign liabilities will either stagnate or increase moderately in view of their huge jump in the last quarter of 2008. Also expected is continued strengthening of bank capital on the basis of retained earnings and an increase in share capital of those banks that have to adjust their operations to the requirements of new capital adequacy regulations, due to come into effect in 2009.

Bearing all this in mind, the main risks associated with bank liabilities will stem from a possible deepening of the financial and economic crisis.

In recent years, banks restructured their credit portfolios by increasing the share of kuna loans entailing lower regulatory costs, which was aided by kuna inflows based on capital-raising. This process was halted in the first nine months of 2008 due to a substantial increase in household foreign currency deposits and a slight fall in the share of kuna loans, to 38% (Figure 56). This means that foreign currency-indexed loans continue to predominate, particularly in the private sector.

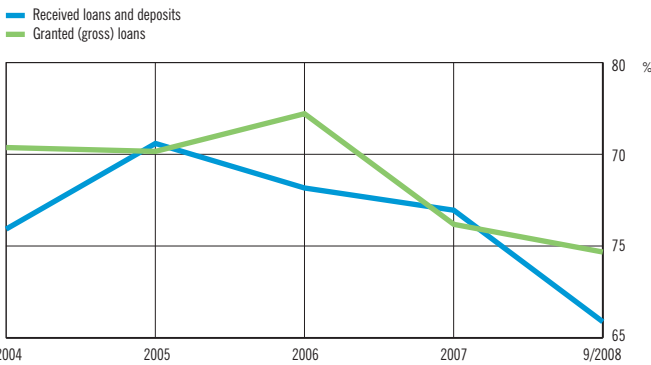
A several-year downward trend in the share of foreign currency deposits in total deposits came to an end in the first nine months of 2008 and this share grew to 56%. This was the outcome of the said transfer of household long-term investments from the capital market to foreign currency deposits (Figure 57).

Figure 61 Distribution of Bank Assets by Assigned Weight and the Average Weight



Source: CNB.

Figure 62 Share of (Gross) Loans and Liabilities of Banks with Interest Rate Variable within Three Months in Total Gross Loans and Liabilities of Banks



Source: CNB.

Figure 63 Structure of Total Income



Source: CNB.

As increased volatility in interest rates on the Swiss franc and the kuna/Swiss franc exchange rate brought to light higher risks associated with loans indexed to that currency, banks gradually stopped making such loans. Thus, the share of loans indexed to the Swiss franc was somewhat reduced. This reduction was even larger taking into account the changes in the Swiss franc exchange rate in the first nine months of 2008. The downward trend in the share of these loans is expected to continue in the forthcoming period (Figure 58).

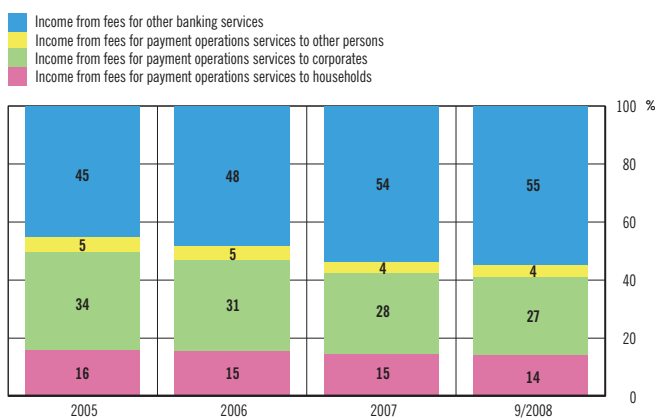
Lacking sources of Swiss francs in the form of deposits, banks reduced their long spot exposure in that currency, which arose from the extension of Swiss franc-indexed loans, by taking short positions in the forward market. As this created a major but steady upward trend in total spot and forward positions of banks, which started in 2005, their net foreign currency position was negligible (Figure 59).

On the other hand, as bank clients have no foreign-currency cash flows matching their foreign-currency liabilities, banks are exposed to indirect currency-induced credit risk (CICR). The share of household loans hedged against CICR is usually some 5%, while the share of hedged corporate loans has been mildly falling since 2007, standing at 9% in September 2008 (Figure 60).

In view of the significance of currency-induced credit risk for banking sector stability and the fact that banks failed to embed this risk in the loan price, the central bank began to tighten prudential regulations concerning this risk as of June 2006. The most recent tightening of March 2008 increased the average weight applicable to bank assets and imposed the requirement to strengthen capital reserves additionally, which spurred capital-raising by the banks (Figure 61).

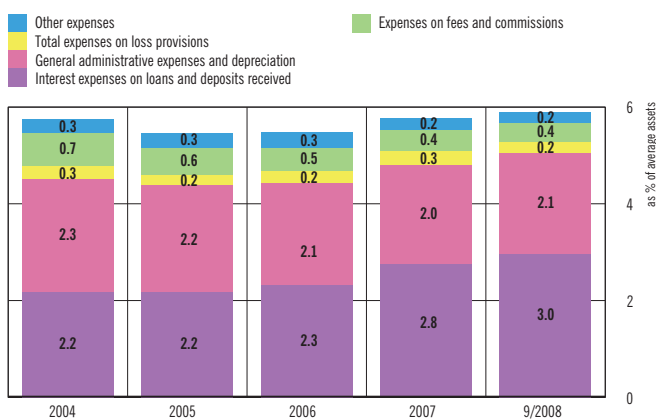
The systemically important credit risk is further induced through interest rate risk, which banks transfer to their clients. This is

Figure 64 Structure of Income from Fees and Commissions



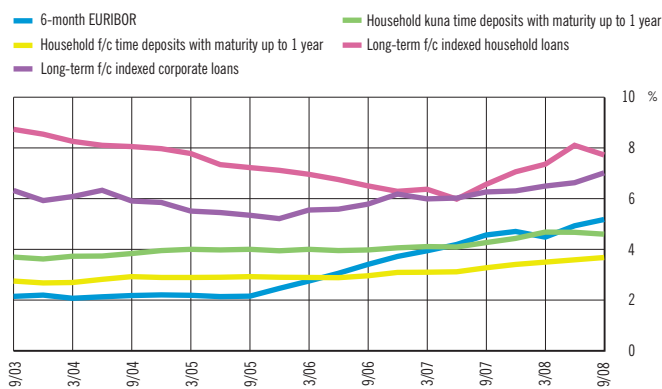
Source: CNB.

Figure 65 Structure of Total Expenses



Source: CNB.

Figure 66 Selected Interest Rates (quarterly average of monthly interest rates)



Source: CNB.

particularly important when domestic interest rates grow and recessionary tendencies in the economy become stronger. More specifically, banks have adjusted the structure of their assets and liabilities in line with interest rate variability. Hence, the share of loans with interest rates variable within three months is usually equal to or somewhat larger than the share of bank liabilities with interest rates variable in the same period. Still, recent years have seen a downward trend in both bank loans and liabilities with the described characteristic (Figure 62).

Strategic Risks

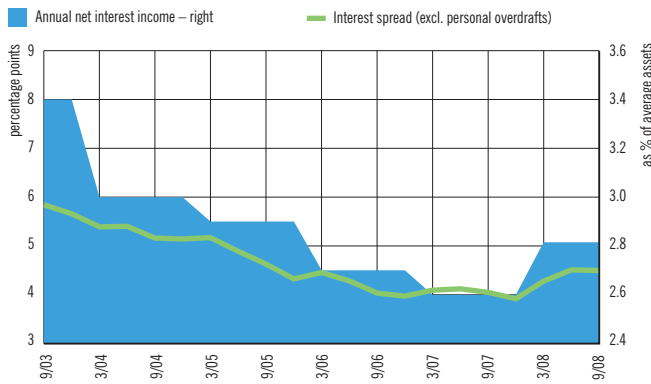
In the first three quarters of 2008, the share⁷ of interest income on loans in total income grew to 4.9% of average assets due to the interest rate increase in conditions of limitations placed on bank lending and higher risks, as well as a somewhat faster increase in interest-bearing assets than in total bank assets. In addition to credit growth being slightly faster than growth in other assets, this is also attributable to the asset restructuring aimed at increasing higher-return assets, which was prompted by regulatory changes (a decrease in required foreign currency liquidity reserves). At the same time, the banking sector incurred securities trading losses. The third quarter of 2008 also witnessed derivatives trading losses, which further reduced the annualised income from trading activities, though it still remains positive. Banks compensated for this decrease by other income, which grew largely due to rising foreign exchange gains⁸ (Figure 63).

The share of income from fees and commissions in average assets has not changed since 2007. Due to altered trends in the financial market, some forms of non-interest income were absent (e.g. securities underwriting), while fees for some other services were raised (e.g. account management and loan approval). The share of income from fees for payment

7 Income statement items for September 2008 were annualised to be comparable with those for preceding whole year periods. This was made by summing up banks' business results in the last quarter of 2007 and the first three quarters of 2008.

8 Banks made a one-time exchange rate gain by translating a large portion of claims at the contracted exchange rate.

Figure 67 Interest Spread (quarterly average of monthly interest rates) and Annual Net Interest Income



Source: CNB.

operations services in total income from fees and provisions has trended steadily down in recent years. This was largely due to a fall in income from fees paid by corporates, which is expected to continue (Figure 64).

Considering total expenses, banks' interest expenses grew due to the rise in eurozone interest rates and the risk premium, as well as banks' efforts to reduce foreign liabilities by increasing resident deposits (Figure 66). The increase in the share of general administrative expenses and depreciation, which are the second largest item in expenses, in average bank assets was mostly the outcome of relatively slow asset growth (Figure 65).

As the rise in lending rates outpaced the rise in deposit rates, the overall interest rate spread⁹ increased relative to the previous year, from 4 percentage points to 4.5 percentage points. This was also spurred by the rising share of shorter-term and more expensive loans in banks' credit portfolios. The interest margin, measured in terms of annual net interest income, also increased accordingly (Figure 67).

Figure 68 Growth in Selected Business Performance Categories



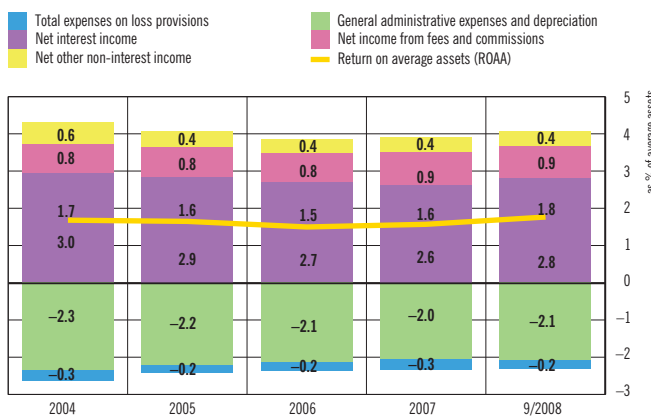
Source: CNB.

The rise in annual net interest income in the period to end-September 2008 was sufficient to enable banks to increase profits considerably and keep profitability at high levels despite somewhat slower growth in net non-interest income and a continued mild increase in general administrative expenses and depreciation (Figure 68).

The share of annual net interest income in average assets grew to 2.8% at end-September 2008, which means that its several-year downward trend came to an end. Due to this growth, gross profit grew some three times faster than average assets, which increased return on average assets to 1.8% (Figure 69).

Due to the huge wave of banks raising capital in recent years, which has been spurred by central bank measures, average equity of the banking sector grew faster than its net earnings,

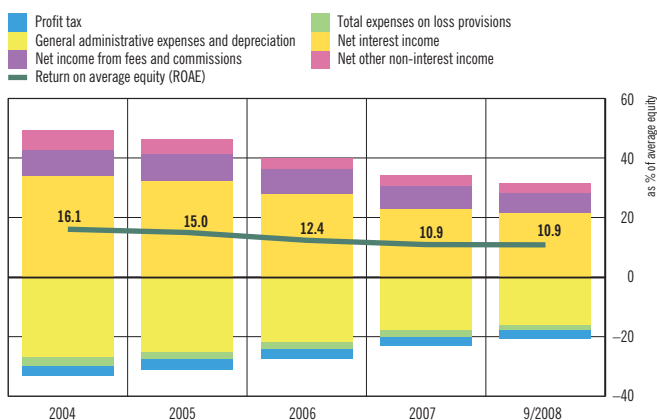
Figure 69 Contribution of ROAA Categories



Source: CNB.

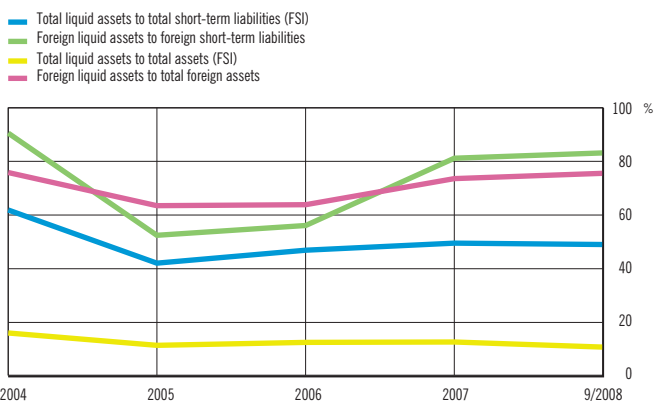
⁹ The interest spread is calculated as the difference between the interest rate on total loans and the interest rate on total deposits, with personal overdrafts being excluded from loans. In the interest rate statistics, they are recorded as newly-granted loans in each month, which overestimates their share in total loans. Together with high nominal interest rates, this artificially increases the interest spread by some 2 percentage points.

Figure 70 Contribution of ROAE Categories



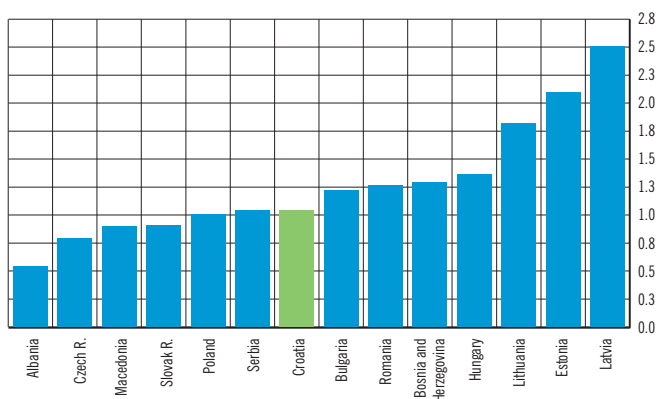
Source: CNB.

Figure 71 Liquidity Indicators



Source: CNB.

Figure 72 Loan-to-Deposit Ratio for the Private Sector in Selected Countries, as at 30 June 2008



Source: IMF, International Financial Statistics, September 2008.

which led to a fall in return on average equity (ROAE). Since capital growth lost momentum in the first nine months of 2008, while the rise in net earnings was approximately the same, annualised ROAE remained at its 2007 level (Figure 70).

In worsened macroeconomic conditions, the expected slowdown in loan growth in 2009, coupled with limited options for stronger growth in interest rates, will result in slower interest income growth than in 2008. Interest rates will, on the one hand, be affected by the anticipated fall in benchmark interest rates in foreign markets and, on the other hand, a gradual reduction in risk premia should the global financial crisis abate. Still, worsened macroeconomic conditions in Croatia will increase credit risk, which will put an upward pressure on interest rates. In the absence of additional major shocks in the financial market, the rising trend in trading losses should come to a halt. Adverse economic trends will also limit the increase in income from fees and commissions.

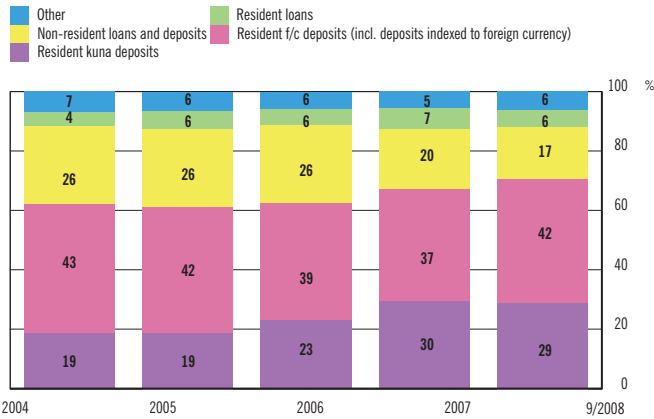
In contrast to the anticipated gradual fall in foreign capital costs, banks are expected to keep deposit rates at high levels to attract domestic savings. Such deposit rate trends, coupled with the assumed slower growth in bank liabilities, will decelerate the rise in interest expenses.

Given the sharp slowdown in economic activity, which began in the last quarter of 2008, expenses on loss provisions will rise. In such circumstances, banks will increasingly control costs and strive to keep the interest margin and income from fees and commissions at a level that will ensure satisfactory profitability.

Liquidity Risk

Due to the described movements in bank assets and liabilities, which show a relative decrease in the share of currency and deposits with the CNB in banks' credit portfolios and an

Figure 73 Structure of Liabilities



increase in the share of short-term liabilities in total liabilities (primarily deposits), indicators of overall bank liquidity slightly deteriorated. At end-September 2008, the ratio of total liquid assets to total assets stood at 10.8%, while overall liquidity, measured as the ratio of total liquid assets to total short-term liabilities, was 49.1% (Figure 71).

In contrast, external liquidity indicators of the banking sector slightly improved. Growing uncertainty in financial markets prompted banks to hold foreign assets in more liquid forms. Hence, in the first nine months of 2008, they reduced their liquid foreign assets more slowly than their total foreign assets and short-term liabilities to non-residents.

A fall in liabilities to non-residents was partly enabled by robust deposit growth. This helped maintain a high loan-to-deposit ratio in Croatia compared with the banking sectors of other Central and Eastern European countries, which rely more strongly on foreign funding sources and are hence exposed to higher financing risks in conditions of global financial crisis (Figures 72 and 73).¹⁰ However, it should be noted that domestic deposits also become more volatile in such circumstances (see Box 3).

Due to the October 2008 escalation of the global financial crisis, some deposits were withdrawn from banks. This prompted the central bank to intervene, i.e. release foreign currency liquidity reserves, and increased foreign currency inflows from parent banks. Bank liquidity was thus stabilised. Coupled with the increase in the amount of insured deposits, this helped restore domestic depositors' confidence in the banking system.

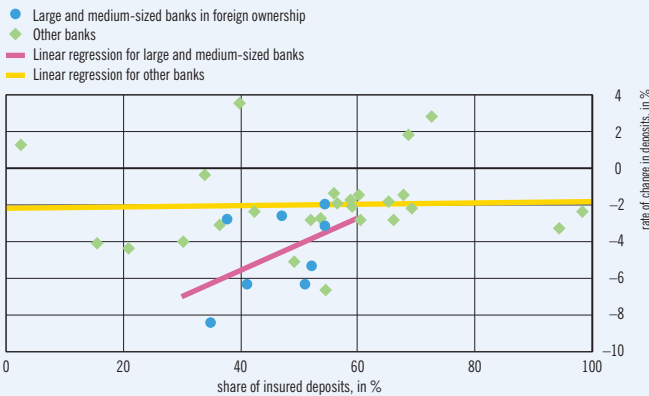
Due to lower foreign capital inflows to Croatia, pressures on foreign currency and kuna liquidity of banks are expected to mount in 2009, which will noticeably limit bank lending.

¹⁰ The ratios in Figure 72 are somewhat overestimated as the figure shows only loans and deposits of the private sector, which accounts for a much larger share in total deposits than in total loans.

Box 3 Reputation Risk and Cross-Border Contagion

Recent financial crises usually hit emerging markets and their financial intermediaries harder, while financial market participants in developed countries remained unscathed by their most severe consequences. Banks from developed countries were thus considered more stable than those from emerging market economies. From a host country perspective, these banks' branches whose operational stability was guaranteed by their owners' total capital were also seen as a more desirable organisational form of financial service provision than subsidiaries with their own capital. The financial turbulence triggered by the collapse of the US subprime mortgage market deviates from this pattern as it originated in and spread among developed countries' financial intermediaries and threatened their very survival. Ownership links between crisis-struck banks in developed countries and their dependent banks have thus emerged as a new and so far relatively unresearched contagion channel, regardless of whether we are discussing branches or subsidiaries with their own capital.

Figure 1 Changes in Household Time and Savings Deposits and the Share of Insured Savings (30 September-20 October 2008)

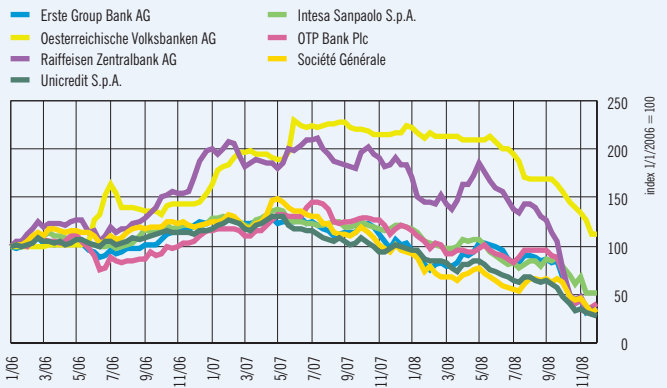


Source: CNB.

Parallel to a worsened perception of parent banks' stability, October 2008 saw a marked household deposit outflow from Croatian banks (linked in terms of ownership to these banks), most of which belong to the group of large and medium-sized banks. In contrast, small banks and several medium-sized banks recorded lower outflows or even increased their deposit base in the same period. The comparison of savings and time deposit outflows and the share of insured savings shows that the first bank group was exposed to reputation risk as outflows from this group were larger than outflows from the second group for a given level of insured savings and were linked with the share of insured savings in total savings in each bank, which was not the case in the second bank group (Figure 1).

A panel-regression model was used to estimate empirically the impact of higher risk perception regarding foreign parent banks on the deposit base of their subsidiaries. The model is assessed on 10-day data for parent banks of seven selected large and medium-sized banks and covers the period between 10 January 2006 and 10 December 2008. Household time deposits at selected domestic banks were used as the

Figure 2 Share Prices of Parent Banks



Note: Hypo Alpe-Adria-Bank International AG is not included in the analysis since its shares are not listed on the stock exchange. Source: Bloomberg.

dependent variable, while risk perception regarding parent banks was approximated by changes in their share prices (Figure 2). The drop in share prices of parent banks was particularly pronounced near the end of the period under review.

Under normal circumstances, there is no negative news that could seriously undermine confidence in parent banks so that their share prices and the deposit base of local subsidiaries are probably not related. Only the occurrence of bad news capable of increasing risk perception and reducing share prices of parent banks could disrupt the deposit base of local subsidiaries. Hence, a threshold model with two regimes was used. The first regime includes observations with share price changes below the given threshold and the second regime includes observations with share price changes above that threshold, as follows:

$$\Delta \text{ORDEP}_{it} = \alpha + D_{it} * \beta * \Delta P_{it} + (1 - D_{it}) * \gamma * \Delta P_{it}$$

where $D_{it} = 1$ if ΔP_{it} is below the threshold and $D_{it} = 0$ if ΔP_{it} is above the threshold. In this equation, ΔORDEP_{it} represents the change in the logarithm of the base index of time deposits with a local subsidiary in time period t , while ΔP_{it} represents the change in the average share price of a parent bank between two 10-day periods. Finally, indicator variables for two ten-day periods just before the public offering of T-HT shares in which bank deposit outflows were also recorded were introduced into the equation.

Table 1 Impact of Changes in Share Prices of Parent Banks on Time Deposits Held with Local Branches

Independent variable	Coefficient
Price change above the threshold	0.053 ^a
Price change below the threshold	-0.004
T-HT (-2)	-0.012 ^a
T-HT (-1)	-0.021 ^a
Constant	0.005 ^a
Adjusted R ²	0.18

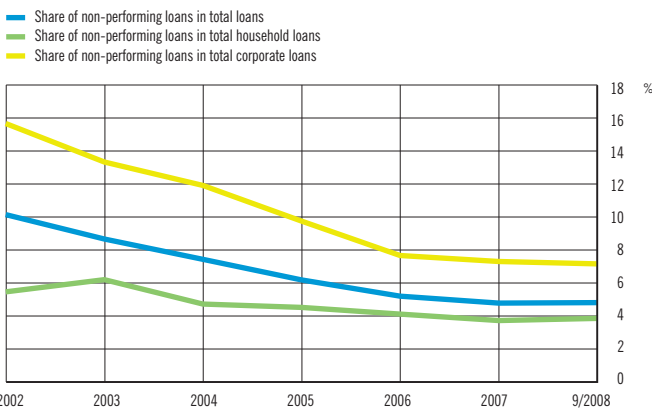
^a Significant at the level of 1%. Source: CNB.

The estimated model clearly confirms the impact of rising risk perception regarding parent banks on deposit outflows from their local branches. A series of models with different thresholds was estimated to determine the threshold giving the model with the best statistical properties (determination coefficient). This threshold was established to be approximately -12%, with a relatively broad range in which statistical characteristics of the model do not vary significantly (Table 1). In other words, an increase in risk perception that leads to an average ten-day decrease in parent banks' share prices exceeding 12% has the potential to undermine confidence in their local subsidiaries. The assessed model links such a price fall with a 0.7% decrease in household time deposits. The observed interval recorded a total of 21 episodes of a share price decrease exceeding the said threshold, mostly near the period end. The regression part that includes the episodes of above-threshold decreases

in share prices can account for almost one tenth of the total variation in household time deposits with selected banks over the observed period.

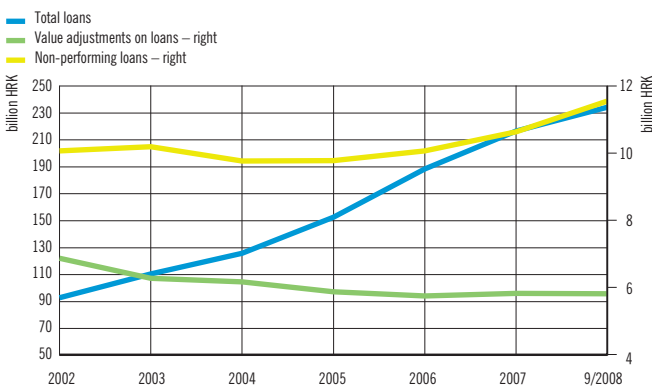
Accordingly, it is clear that home country efforts to raise capital and stabilise operations of parent banks have a positive effect on the perception of subsidiary banks. In addition, since the said indirect contagion channel can be affected by domestic economic policy instruments, central bank efforts to strengthen capitalisation of domestic banks also weaken the channel of contagion via reputation risk. The existence of subsidiary banks whose capital is separate from that of parent banks and which are subject to host country regulatory requirements was prerequisite for their capital strengthening. Finally, coordinated steps of EU Member States and Croatia to increase the amount of insured savings helped to halt deposit outflows and return savings to subsidiary banks.

Figure 74 Ratio of Non-Performing Loans to Total Loans



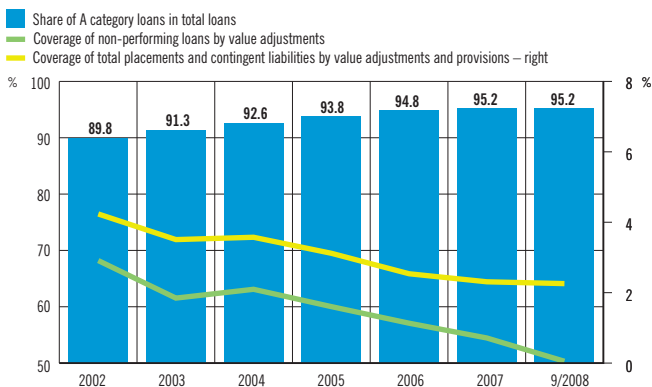
Source: CNB.

Figure 75 Changes in Loans, Non-Performing Loans and Value Adjustments



Source: CNB.

Figure 76 Loan Quality and the Coverage of Loans and Placements by Value Adjustments



Source: CNB.

Credit Risk and Bank Capitalisation

Assessed household loan quality reduced slightly in the first nine months of 2008, while assessed corporate loan quality continued to improve¹¹ (Figure 74).

As banks were extremely optimistic regarding the quality of their credit portfolios in the years of rapid credit growth, the absolute amount of value adjustments decreased, although non-performing loans started to grow in 2006. Slower growth in new loans, the real quality of which is still unknown, coupled with the rising debt service burden, will bring about a deterioration in banks' credit portfolios (Figure 75).

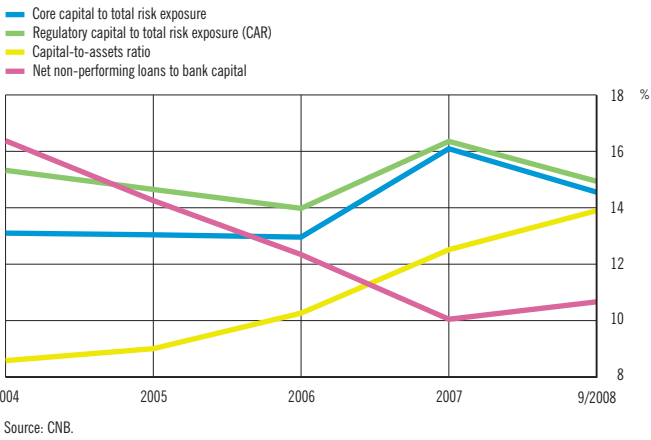
Coverage of loans as well as total placements and contingent liabilities of the banking sector has steadily decreased in recent years due to slower growth in value adjustments and provisions. Still, until end-2007, the fall in coverage of total placements and contingent liabilities was slowed by the rise in value adjustments for debt securities and other available-for-sale assets. This was due to an abrupt decline in creditworthiness of some EU financial institutions to which the Croatian banking sector does have a small direct exposure (Figure 76).

Slower economic and credit growth and "ageing" of the credit portfolio alter the picture of its quality. Banks have transferred market risks to their clients and market conditions have recently deteriorated significantly (due to higher funding costs and exchange and interest rate volatility). Nevertheless, banks still assess their credit portfolio quality as excellent, mostly due to the impact of accounting standards.

In the first three quarters of 2008, the capital-to-assets ratio increased further as capital growth outpaced asset growth (see Box 4). At the same time, capital adequacy decreased relative to end-2007 due to the increase in the risk weights applicable to

¹¹ The first data on deteriorated household loan quality suggest a deterioration in the quality of credit card and cash loans, overdraft facilities and other loans.

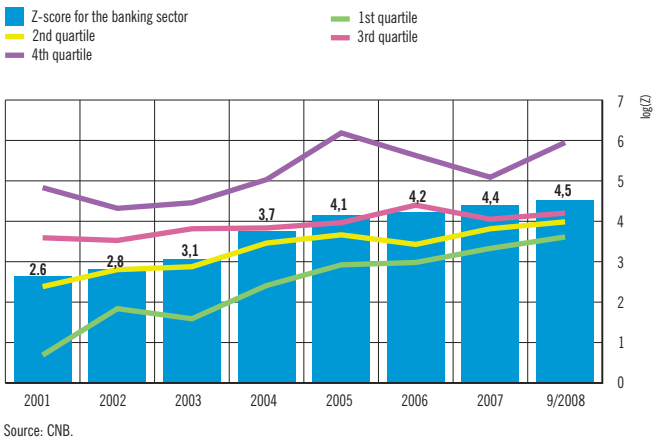
Figure 77 Capital Adequacy Ratios



assets exposed to currency-induced credit risk, which led to a 20% increase in risk-weighted assets (Figures 61 and 77). The fall in capital adequacy was partly due to the lack of inclusion of a part of net results from the regulatory capital calculation at a less-than-annual basis, which will be corrected on an annual basis.¹²

Banking sector stability in the observed period is also indicated by the continued increase in Z-score, which measures banks' insolvency risk (Figure 78). This was supported by the rise in banks' profitability and capitalisation and relatively minor ROAA volatility.¹³ This indicator could worsen in 2009 due to higher costs and declining quality of banks' credit portfolios, which will put pressure on their earnings and possibly on their capital.

Figure 78 Weighted Z-Score for the Banking Sector by Quartile



12 The inclusion of profit for the current year in regulatory capital at end-2007 increased the capital adequacy ratio of the banking sector by approximately 1 percentage point.

13 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 Prudential Regulations and Cyclicity of Bank Capitalisation in Croatia

Capital serves to cover unexpected losses. This is why banking sector capitalisation, measured as the ratio of total capital to total assets, is often used as indicator of banking sector stability. The advantage of this bank capitalisation indicator over the capital adequacy ratio is its insensitivity to changes in regulations and accounting standards, which makes it comparable across time and countries. In addition, statistical methods to assess the riskiness of assets are limited, particularly with regard to tail risk.

The level of a bank's capitalisation should correspond to long-term estimates of the risks to which it is exposed. However, in practice, bank capital fluctuates cyclically. This is due both to the regulatory framework, which sets out risk measurement procedures that are based on past events, and the manner in which banks themselves subjectively assess risks. In times of economic expansion, banks often assess the quality of placements and related collateral overoptimistically and do not set aside sufficient capital reserves, which is partly due to international accounting standards that forbid the creation of reserves for unidentified risks. Thus, during economic expansions, banks rapidly increase loans and decrease provisions for potential losses, thereby reducing capitalisation as well. Once the trend in the economic and credit cycle reverses, the quality of credit portfolios falls and banks have to make value adjustments or even write off parts of their portfolios at the expense of current earnings and eventually capital. In such periods, banks become pessimistic (often too late) as funding sources become increasingly limited and more expensive and strive to reduce their exposures and increase capitalisation. This means that during economic slowdown periods banks limit lending and amplify recessionary trends. Such pro-cyclical bank behaviour may, on the one hand, lead to excessive lending during economic expansion and, on the other hand, to a credit crunch, higher loan prices, shorter lending periods and insistence on additional or better collateral instruments during recession.

Cyclicity of bank capitalisation in Croatia was empirically studied by using a panel analysis of data for the nine largest foreign-owned banks (accounting for 88% of banking sector capital at end-September 2008) for the September 1999-September 2008 period. The analysis was performed separately for the whole period and for three sub-periods characterised by different configurations of monetary and prudential policies: September 1999-September 2002, September 2002-March 2006 and March 2006-September 2008.

Three types of variables were used: macroeconomic variables, individual variables by banks and dummy variables. Five variables were found significant for the entire period. As expected, credit growth is negatively correlated with capitalisation, which confirms its pro-cyclicality in Croatia. The ratio of non-performing loans to total loans (NPLR) describes the credit portfolio quality. The sign of the estimated parameter for this variable should be positive, i.e. banks should strengthen capitalisation as the riskiness of their credit portfolios increases. The sign of the estimated parameter with the variable for the assessed credit portfolio quality is negative, which is in line with expectations, but indicates relatively poor sensitivity of capitalisation to deterioration in the credit portfolio quality. Loans and deposits received from foreign financial institutions are the funds that banks raise mostly from their owners. An increase in the share of these secondary sources exposes banks to market liquidity risk, which the CNB strove to reduce, primarily by means of marginal reserve requirements (MRR). Since the MRR introduction and tightening made foreign secondary sources more expensive, banks reduced them and substituted capital for them, which is indicated by the obtained negative correlation between capitalisation and foreign secondary sources. The second important regulatory change, the introduction of CICR, is described by the average weight applied to bank assets in the calculation of risk-weighted assets and capital adequacy ratio. As the increase in this weight spurred banks to raise additional capital, this variable has, as expected, a positive sign. The analysis uses the average weight for the preceding two quarters since new regulations were always announced beforehand so that banks raised capital in anticipation of their entry into force.

Capitalisation Analysis by Sub-Periods

The analysis for the first sub-period alone shows pro-cyclical bank behaviour resulting in a strong negative correlation between credit growth and capitalisation growth. The correlation between capitalisation growth and the increase in deposits and loans from foreign financial institutions, which were used as a substitute to capital, is significant and negative. At the same time, strong fluctuations in the NPLR recorded in this period had no impact on bank capitalisation.

Such trends in the first sub-period were also due to the environment in which banks operated at the time. The beginning of this period was marked by strong bank capitalisation, which was generated during the late 1990s crisis, accompanied by credit stagnation. The gradual improvement in the macroeconomic environment and huge inflows resulting from the cash conversion of national currencies into the euro

Table 1 Significant Variables by Period

Variable	Coefficient			
	Entire period	Q3/99-Q3/02	Q4/02-Q1/06	Q2/06-Q3/08
Growth rate of total loans	-0.48 ^a	-0.65 ^a	-0.26 ^c	0.20
Growth rate of loans and deposits received from foreign financial institutions	-0.12 ^a	-0.12 ^a	-0.10 ^a	-0.17 ^c
Average weight for calculating risk-weighted assets in time (t+2)	0.10 ^b	-0.06	0.05	0.26
Change in NPLR	-0.01 ^b	-0.01 ^a	0.00	-0.03
Constant	-0.02	0.07	-0.01	-0.17

^a Significant at the level of 1%. ^b Significant at the level of 5%. ^c Significant at the level of 10%.
Source: CNB.

spurred rapid credit growth and weakened bank capitalisation by some 2 percentage points.

In the second sub-period, credit growth was still a significant variable with a negative sign, as was the increase in loans and deposits received from foreign financial institutions, which continued to be used as a substitute for capital. In this sub-period, NPLR was no longer significant.

Since the second sub-period was marked by the exhausting of credit potential developed in the cash conversion period, banks began to rely strongly on foreign sources, to which the CNB responded by imposing limits on credit growth in 2003. Slower credit growth in that period was not accompanied by an increase in capitalisation, which continued to decrease on the back of optimism in the period of faster economic growth. In 2004, limits on credit growth were lifted and the decision on the marginal reserve requirement came into effect. In conditions of growing competition for market shares, banks sustained rapid credit growth by substituting capital for foreign secondary sources, which was also due to increases in the MRR rate (to 40% in 2005 and 55% in 2006). Notwithstanding the wave of banks raising capital that began

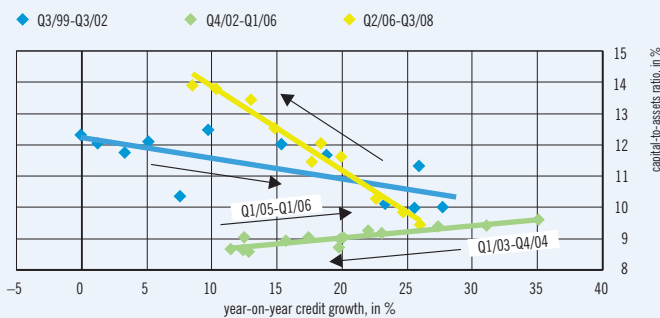
late in this sub-period, the capital-to-assets ratio increased by only 0.5 percentage points in 2005 and the first half of 2006.

The third and shortest period includes the smallest number of observations. The econometric analysis is additionally complicated by the fact that measures associated with CICR and unchanged MRR were in force during the whole period. The increase in loans and deposits from abroad is the only significant variable in this period and it has a larger coefficient than in any other period alone and all periods together. This means that the substitution effect was the strongest in this period.

The level of bank capitalisation steadily increased over this sub-period; growing by 4 percentage points, the capital-to-assets ratio reached a record high of 13.9% at end-September 2008. Although the strongest growth in capitalisation coincided with the introduction of CICR regulations in June 2006 and their tightening in March 2008, capitalisation growth was actually the combined result of several central bank measures. CICR-related regulations spurred banks to raise capital in efforts to maintain adequate capital adequacy ratios. Still, tightened MRR provisions also reduced the price of capital relative to debt. Finally, limits on credit growth in 2007 put banks in a situation where they had substantial funds coming from capital injections. Banks used these funds to lower regulatory costs by relying less on foreign secondary sources.

The analysis performed shows that the configuration of monetary and prudential policy measures played a major role in the observed period. In the first sub-period, banks were least regulated and they used it to substantially increase loans and decrease capitalisation, exhibiting a typical pro-cyclical behaviour pattern. The second sub-period was marked by relatively rapid credit growth and the rise in foreign secondary sources, i.e. a somewhat less pronounced pattern of pro-cyclical bank behaviour, coupled with growth in exposure to foreign funding sources, which was not curtailed by MRR implementation and tightening. Only in the third period did a combination of tighter MRR, the introduction of CICR and limited credit growth spur a major increase in the level of capitalisation. The pattern of bank behaviour in the third sub-period may be described as typically counter-cyclical. More specifically, capitalisation strengthening and slower credit growth would have probably occurred anyway due to unfavourable macroeconomic conditions, as evidenced by the late 1990s trends. However, in given circumstances, this would have reinforced recessionary tendencies in the economy. This is why in the period of robust economic growth the Croatian banking sector generated the all-time highest capital-to-assets ratio, which will enable it to pass through the period of adverse economic developments that began in the last quarter of 2008 without a major credit contraction. Banks are expected to continue to be increasingly cautious in the upcoming period. This will lead to slower credit growth, largely due to relatively diminished demand under adverse macroeconomic conditions, and not due to the banks' desire to increase capitalisation.

Figure 1 Bank Capitalisation and Credit Growth in Three Characteristic Periods^a



^a Arrows in the figure show the direction of credit growth trends and the capital-to-assets ratio within individual sub-periods. As the second sub-period is characterised by two movement directions, second period dates are indicated next to the arrows.

Source: CNB.

Figure 2 Substitution of Capital for Foreign Secondary Sources



Source: CNB.

Basel II Implementation and Capital Cyclicity

Basel II implementation by new regulations, which came into effect in early 2009, could present a challenge to the policy of maintaining financial stability. One of the initial motives for the formulation of Basel II was the desire to increase the risk sensitivity of capital requirements as compared with Basel I. This is why, parallel to changes in the perception

of economic conditions, Basel II could cause major changes in the calculated risk exposure as well as capital requirements. This could lead to larger falls in the capital-to-assets ratio during economic expansion, i.e. optimism, and efforts to raise capital during economic slowdown, i.e. pessimism, which would make the whole system inherently pro-cyclical. This is due to the fact that under Basel II risk is assessed either by external credit assessment agencies (the standardised approach) or the banks themselves (the internal approach), risk assessment of which relies too heavily on past events, as evidenced during the escalation of the global financial crisis.

This analysis suggests that capitalisation level has been mostly influenced by regulations, i.e. the central bank's ability to use such a

combination of measures that slows credit growth and spurs capital increases, while simultaneously decreasing banks' foreign exposure. With the implementation of the Basel II provisions, the CNB will lose the ability to affect banking sector capitalisation directly by changing weights used in the calculation of risk exposure as well as the possibility to link the pace of credit growth to capital adequacy.

Possible changes in the Basel II regulations, which would make capital formation less pro-cyclical, have been the subject of intense economic research. One of the solutions proposed is to make the perception of risk exposure more dynamic by taking into account the entire economic cycle so as to reduce the potential impact of one stage of the economic cycle on risk assessment.

Table 2 Impact of Regulatory Changes on Capital Adequacy Ratios According to September 2008 Data

	Basel I Methodology	Basel II Methodology	Change
Required CAR	10	12	2.0
CAR at the system level	14.9	16.6	1.7
CAR of the ten largest banks	14.9	16.6	1.7
CAR of the best capitalised bank	40.7	45.1	4.4
CAR of the worst capitalised bank	8.9	7.4	-1.6

Source: CNB.

Banking Sector Resilience

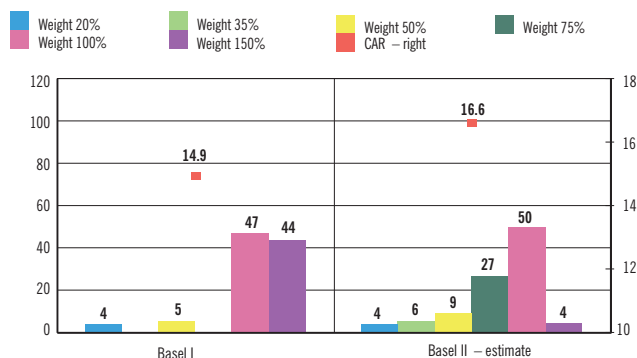
The early 2009 application of the Credit Institutions Act, which implements Basel II provisions, will bring considerable changes to the capital adequacy calculation. The changes refer both to own funds and overall risk exposure. Under the new methodology, own funds will decrease by some 1.5%,¹⁴ while overall risk exposure will change even more; it should fall by 21% according to the first estimates, which would increase the capital adequacy ratio (CAR) by slightly less than 2 percentage points¹⁵ (Table 2).

The rise in the CAR on the basis of Basel II implementation will be mostly the result of changes in the weights applied to calculate overall risk exposure, while the sharpest fall will be recorded by those positions that are currently heavily weighted due to currency-induced credit risk (Figure 79). To ensure continued solid capitalisation of the banking sector and offset the impact of changes in risk weights, the Credit Institutions Act, with the capital adequacy provisions of which banks have to adjust by July 2009, increases the CAR from the former 10% to 12%.

Banking sector resilience to shocks was assessed by using simulated data on bank assets adjusted to new regulations. The assessed credit risk model, which links economic activity and exchange rate with the dynamics of non-performing loans and changes in the banks' CAR,¹⁶ was used to examine the possible effect of the simultaneous emergence of several risks combined together in a consistent macroeconomic scenario. The 2009 dynamics of non-performing loans is forecast on the basis of two scenarios – the baseline scenario, which assumes GDP growth slowdown to 1% and the maintenance of a stable exchange rate, and a shock scenario, which assumes a major macroeconomic shock, the impact of which would be a 2% decline in GDP and a 10% depreciation of the exchange rate. The assessed impact of the baseline scenario shows an increase in the ratio of non-performing loans to total loans (NPLR) of 20%, while the shock scenario indicates an increase in NPLR of 120%.

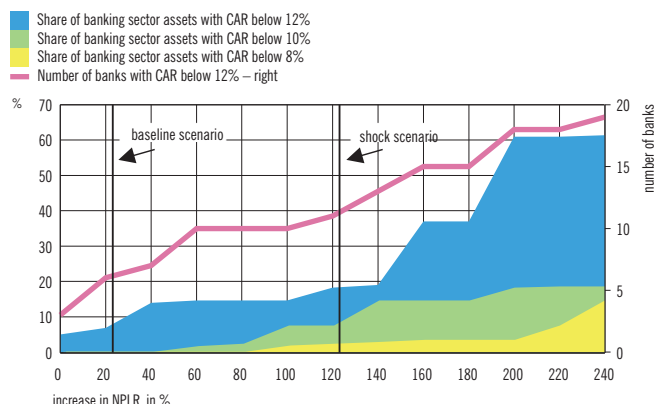
At the beginning, there are three banks with a CAR below the required 12%. Under the baseline and shock scenarios, this number would increase to six and eleven respectively, but no bank would become insolvent. At the same time, the share in

Figure 79 Comparison of the Capital Adequacy Ratio and Distribution of Total Risk Exposure for September 2008 According to Basel I and Basel II Methodology



Source: CNB.

Figure 80 Assets and Number of Banks after Shocks under Basel II Methodology of Calculating Capital Adequacy



Source: CNB.

14 Own funds calculated under the new methodology were approximated by excluding specific reserves for unidentified losses from additional own funds and items deducted from own funds.

15 The CNB has conducted a quantitative study of the impact of applying Basel II methodology (standardised approach) to capital adequacy, which is to be published. Approximations for September 2008 used here are based on that study, which was made for December 2007. It was assumed that the structure of banks' exposure has not changed in the meantime.

16 The macroeconomic credit risk model used is described in Box 4 Impact of Macroeconomic Environment on Credit Risk, *Financial Stability*, No. 1, June 2008.

Table 3 Bank Capital Adequacy Ratios Following the Shock Scenario According to September 2008 Data under Basel II Methodology

	Baseline scenario		Shock scenario	
	Position	Change relative to the initial position	Position	Change relative to the initial position
Banking sector	16.3	-0.4	14.4	-2.2
Ten largest banks	16.3	-0.3	14.5	-2.1
Best capitalised bank	44.5	-0.6	44.0	-1.1
Worst capitalised bank	6.5	-0.9	1.7	-5.7

Source: CNB.

total banking sector assets held by banks whose CAR would fall below the prescribed minimum is 7% under the baseline scenario and 18% under the shock scenario (Figure 80).¹⁷

Stress tests show that banking sector resilience to macroeconomic shocks is still strong (Table 3). Without doubt, this has also been supported by prudential measures that the CNB has implemented since mid-2006 and that spurred capital-raising by the banks. The banking sector was thus strongly capitalised in the period of favourable macroeconomic trends, which will boost its stability in times of economic slowdown and reduced capital availability.

¹⁷ For a more realistic assessment of banking sector resilience, the effect of the customary inclusion of profit in the calculation of own funds, which banks will make at end-2008, should be added to the calculated capital adequacy indicators. Realised net income will be higher in 2008 than in 2007 (probably slightly less than HRK 5bn), which means that banks could include HRK 2-4bn in own funds. This would be sufficient to increase the CAR at the system level by 0.75-1.4 percentage points.

List of Figures and Tables

Figure 1 Financial Stability Map	7	Figure 20 Selected Indicators of External Vulnerability	15
Figure 2 Changes in Key Monetary and Prudential Policy Measures	9	Figure 21 Contribution of Individual Components of Optimal International Reserves	16
Table 1 Economic Growth in Selected Developed and Emerging Market Countries	11	Figure 22 General Government Fiscal Position	16
Figure 3 Yields on High-Risk Government and Corporate Bonds	12	Figure 23 Average Interest Rates on T-Bills and in the Interbank Money Market	17
Figure 4 Capital Inflows to European Emerging Market Countries	12	Figure 24 Ratio of Net CNB International Reserves to Reserve Money	17
Figure 5 Major Global Stock Exchange Indices	12	Figure 25 Kuna/Euro Exchange Rate – Spot and Forward	18
Figure 6 Fed's and ECB's Key Interest Rates and EULIBOR	13	Figure 26 External Debt Allocation by Sectors from end-2007 to September 2008	18
Figure 7 Foreign Capital Inflows and GDP Growth in Croatia	13	Figure 27 Loan Allocation by Sectors from End-2007 to September 2008	19
Figure 8 Food and Energy Prices and Total CPI, year-on-year rate of change	13	Box 1	
Figure 9 Yields on Croatian and Benchmark German Bonds Maturing in 2014 and Their Spread	14	Figure 1 Net Financial Position of Domestic Sectors with respect to the Rest of the World	20
Figure 10 Spread on Benchmark Eurobonds of Selected Countries and Benchmark German Bonds DBR 5.25 1/4/11	14	Figure 2 Net Financial Position of Selected Domestic Sectors with respect to the Rest of the World by Equity and Debt Instrument	20
Figure 11 CDS Spreads for Selected Countries	14	Table 1 Inter-Sector Claims and Liabilities at end-December 2007 and end-September 2008	21
Figure 12 CDS Spreads for Parent Banks of Croatian Banks	14	Figure 3 Net Financial Position of Commercial Banks with respect to Other Sectors	22
Figure 13 Foreign Currency Deposits, Net Assets of Open-End Investment Funds and CROBEX	14	Figure 4 Net Financial Position of the Banking Sector with respect to the Rest of the World By Instrument	22
Figure 14 GDP Growth Pattern (contribution to growth)	14	Figure 5 Net Financial Position of the General Government Sector with respect to the Rest of the World by Instrument	22
Figure 15 Savings and Investment – Total and by Sector	15	Figure 6 Net Financial Position of the General Government Sector by Maturity and Currency	22
Figure 16 Structure of Foreign Direct Investment	15	Figure 7 Net Financial Position of the Corporate Sector by Maturity and Currency	22
Figure 17 Net Financial Position of Domestic Sectors with respect to the Rest of the World by Instrument	15	Figure 8 Net Foreign Financial Position of the Corporate Sector by Maturity and Currency	22
Figure 18 Maturity Breakdown of Total External Debt	15		
Figure 19 Total External Debt by Creditor	15		

Figure 9 Net Domestic Financial Position of the Corporate Sector by Maturity and Currency	23	Figure 46 Breakdown of Bank Loans to Non-Financial Corporations by Interest Rate Variability	32
Figure 10 Household Sector Claims by Maturity and Currency	23	Figure 47 Interest Rates on Long-Term Loans to Non-Financial Corporations in Croatia and the Eurozone	32
Figure 11 Household Sector Liabilities by Maturity and Currency	23	Figure 48 Interest Rates on Short-Term Loans to Non-Financial Corporations in Croatia and the Eurozone	32
Figure 12 Net Financial Position of the Household Sector by Maturity and Currency	23	Figure 49 Interest Burden	33
Figure 28 Household Debt	24	Figure 50 Profitability to Debt Ratio in Tradable and Non-Tradable Sectors	33
Figure 29 Household Loans by Purpose	24	Figure 51 Importance of Non-Financial Corporations Operating at a Loss in 2007	33
Figure 30 Unemployment, Employment and Wages	25	Figure 52 Debt Indicators by Activity in 2007	34
Figure 31 Currency Breakdown of Household Loans	25	Figure 53 Banking Sector Assets	35
Figure 32 Household Loans by Interest Rate Variability	25	Figure 54 Banking Sector Liabilities	35
Figure 33 Breakdown of Household Loans by Remaining Maturity	25	Figure 55 Annual Growth Rate of Major Banking Sector Balance Sheet Items	36
Figure 34 Household Debt and Debt Burden	25	Figure 56 Currency Breakdown of Loans	36
Figure 35 Household Financial Assets	25	Figure 57 Currency Breakdown of Deposits	36
Figure 36 Household Loan-to-Deposit Ratio in Selected Central and Eastern European Countries	26	Figure 58 Currency Breakdown of Non-Kuna Loans	37
Figure 37 Growth in Domestic and Foreign Loans to the Real Estate Sector	27	Figure 59 Bank Exposure to Currency Risk	37
Figure 38 Comparison of Interest Rates on Housing Loans in Croatia and the Eurozone	27	Figure 60 Share of Hedged Loans in Total Loans Exposed to CICR	37
Figure 39 Housing Loans and HREPI	28	Figure 61 Distribution of Bank Assets by Assigned Weight and the Average Weight	38
Figure 40 Financial Availability of Housing Loans	28	Figure 62 Share of (Gross) Loans and Liabilities of Banks with Interest Rate Variable within Three Months in Total Gross Loans and Liabilities of Banks	38
Box 2		Figure 63 Structure of Total Income	38
Table 1 Determinants of Real Residential Property Prices	29	Figure 64 Structure of Income from Fees and Commissions	39
Figure 1 Real Values of Real Estate Prices and Values Assessed by the Model	30	Figure 65 Structure of Total Expenses	39
Figure 41 Growth Rate of Non-Financial Corporate Debt	31	Figure 66 Selected Interest Rates (quarterly average of monthly interest rates)	39
Figure 42 Non-Financial Corporate Debt	31	Figure 67 Interest Spread (quarterly average of monthly interest rates) and Annual Net Interest Income	40
Figure 43 Change and Non-Financial Corporate Debt Stock	32	Figure 68 Growth in Selected Business Performance Categories	40
Figure 44 Share of Bank Non-Kuna Loans and Non-Financial Corporate External Debt in Total Loans	32		
Figure 45 Currency Exposure in September 2008	32		

Figure 69 Contribution of ROAA Categories	40	Figure 77 Capital Adequacy Ratios	46
Figure 70 Contribution of ROAE Categories	41	Figure 78 Weighted Z-Score for the Banking Sector by Quartile	46
Figure 71 Liquidity Indicators	41		
Figure 72 Loan-to-Deposit Ratio for the Private Sector in Selected Countries, as at 30 June 2008.	41	Box 4	
Figure 73 Structure of Liabilities	42	Table 1 Significant Variables by Period	47
Box 3		Figure 1 Bank Capitalisation and Credit Growth in Three Characteristic Periods	48
Figure 1 Changes in Household Time and Savings Deposits and the Share of Insured Savings (30 September-20 October 2008)	43	Figure 2 Substitution of Capital for Foreign Secondary Sources	48
Figure 2 Share Prices of Parent Banks	43	Table 2 Impact of Regulatory Changes on Capital Adequacy Ratios According to September 2008 Data	50
Table 1 Impact of Changes in Share Prices of Parent Banks on Time Deposits Held with Local Branches	43	Figure 79 Comparison of the Capital Adequacy Ratio and Distribution of Total Risk Exposure for September 2008 According to Basel I and Basel II Methodology	50
Figure 74 Ratio of Non-Performing Loans to Total Loans	45	Figure 80 Assets and Number of Banks after Shocks under Basel II Methodology of Calculating Capital Adequacy.	50
Figure 75 Changes in Loans, Non-Performing Loans and Value Adjustments	45	Table 3 Bank Capital Adequacy Ratios Following the Shock Scenario According to September 2008 Data under Basel II Methodology	51
Figure 76 Loan Quality and the Coverage of Loans and Placements by Value Adjustments	45		

Abbreviations and Symbols

Abbreviations

bn	– billion
CAR	– capital adequacy ratio
CBS	– Central Bureau of Statistics
CDA	– Central Depository Agency
CICR	– currency-induced credit risk
CNB	– Croatian National Bank
CROBEX	– Zagreb Stock Exchange Index
ECB	– European Central Bank
EMBI	– Emerging Market Bond Index
EU	– European Union
EUR	– euro
f/c	– foreign currency
Fed	– Federal Reserve System
FINA	– Financial Agency
FSI	– financial soundness indicators
GDP	– gross domestic product
HANFA	– Croatian Financial Services Supervisory Agency
HREPI	– hedonic real estate price index
HRK	– Croatian kuna

IMF	– International Monetary Fund
m	– million
MoF	– Ministry of Finance
MRR	– marginal reserve requirements
NPLR	– ratio of non-performing loans to total loans
RC	– Republic of Croatia
ROAA	– return on average assets
ROAE	– return on average equity
SDR	– special drawing rights
T-HT	– HT – Hrvatske telekomunikacije d.
ZSE	– Zagreb Stock Exchange

Symbols

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



ISSN 1846-9264