

FINANCIAL
STABILITY
REVIEW

2009

Abbreviations

CAD	current account deficit
CDS	credit default swap
CEE	Central and Eastern Europe
ECB	European Central Bank
EURIBOR	Euro Inter-bank Offered Rate
FDI	Foreign Direct Investment
FRS	Federal Reserve System
GDP	gross domestic product
HICP	Harmonised Index of Consumer Prices
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
ISC	Insurance Supervisory Commission
MFI	monetary financial institutions
n. a.	not available
OMXR	Riga Stock Exchange Index
OMXS	Stockholm Stock Exchange Index
OMXT	Tallinn Stock Exchange Index
OMXV	Vilnius Stock Exchange Index
p. p.	percentage points
RoA	return on assets
RoE	return on equity
SC	Securities Commission
VILIBOR	average inter-bank interest rates of Lithuania, for which banks wish (are ready) to lend funds in litas to other banks (Vilnius Inter-bank Offered Rate)
VILIBID	average inter-bank interest rates of Lithuania, for which banks wish (are ready) to borrow funds in litas from other banks (Vilnius Inter-bank Offered Rate)
Department of Statistics	Department of Statistics to the Government of the Republic of Lithuania

Country Abbreviations

AT	Austria	LT	Lithuania
BE	Belgium	LU	Luxembourg
BG	Bulgaria	LV	Latvia
CY	Cyprus	MT	Malta
CZ	Czech Republic	NL	Netherlands
DE	Germany	NO	Norway
DK	Denmark	PL	Poland
EE	Estonia	PT	Portugal
ES	Spain	RO	Romania
FI	Finland	SE	Sweden
FR	France	SI	Slovenia
GR	Greece	SK	Slovakia
HU	Hungary	UK	United Kingdom
IE	Ireland	US	United States
IT	Italy		

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Introduction

The financial system – and commercial banks in particular – is an important link in the Lithuanian economy. Only a stable and sound financial system effectively reallocates resources and contributes to long-term price stability and growth of the national economy. To ensure stable operation of the domestic financial system, the Bank of Lithuania conducts an ongoing supervision of credit institutions and oversight of payment systems and cooperates with other central banks and institutions supervising financial market participants.

As Lithuania's integration into the European Union and international financial markets gains momentum, owing to increasing inter-dependence among countries on international capital flows and global processes, it is impossible to ensure financial stability effectively without the coordination of actions on an international scale. Therefore, the Bank of Lithuania expands international cooperation with the central banks and supervisory authorities of other countries, above all with the countries whose banks are active participants in the Lithuanian market. The purpose of such cooperation is to pursue financial stability, ensure an effective coordination and decision-making process, improve risk management, exchange relevant information and prepare more adequately for potential crisis situations.

The main objective of the financial stability analysis is to identify both internal and external threats to the domestic financial system and to evaluate the system's ability to withstand the effects of unfavourable internal and external shocks and to foresee adequate response methods. Thus, the financial stability analysis differs from the ongoing supervision of credit and other financial market institutions.

The primary purpose of the Financial Stability Review prepared by the Bank of Lithuania and published once a year is to make an analytical assessment of the changes in the domestic financial system, the situation of the banking system and its debtors – households and non-financial enterprises – and their ability to withstand external and internal changes in the macroeconomic environment. Compared to previous Financial Stability Reviews, the current Review possesses several significant structural changes. First of all, the Review focuses on the banking system risk assessment and stress-testing. Second, household and enterprise risks are described alongside the banking system credit risk assessment. We hope that such integrated approach will facilitate a better disclosure and assessment of the situation and development trends of the domestic financial system and its most important element – the banks. The third chapter of this Review presents a quantitative assessment of the effects of the main macroeconomic environment changes on the banking system. The fourth chapter of the Review discusses the financial system risk mitigation measures. The second Annex of the Review introduces the household stress testing model applied at the Bank of Lithuania.

We hope that financial stability reviews will be helpful in identifying comprehensively potential risks to the financial system of Lithuania, and will also encourage discussions on the issues of financial stability by financial market participants, economists and all those interested in financial markets.

Vilnius, 11 June 2009

Reinoldijus Šarkinas
Chairman of the Board of the Bank of Lithuania

Summary of the Financial Stability Assessment

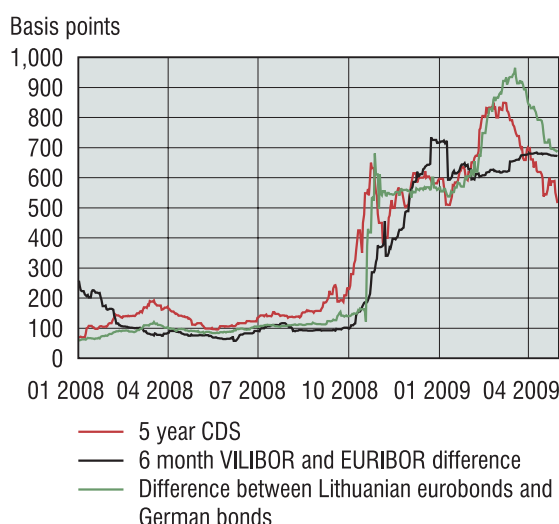
This year and the coming years will be full of challenges to the financial system of Lithuania. Falling economic activity in the country, still inadequate functioning of the global financial markets and falling risk appetite will have a large impact on the functioning of the Lithuanian financial system. Unfavourable domestic macroeconomic situation resulted in a deterioration of the situation of borrowers: the losses of enterprises and the number of bankruptcies increased and a larger share of households faced difficulties in meeting their liabilities to credit institutions, compared to the previous year. The situation in the global financial markets entailed higher risk premia on lending to new economies, including Lithuania. Although the risk premia of new economies remain elevated, the assessment of this risk has declined recently and will continue to do so, once the growth of the national economy stabilizes and returns to the path of sustainable development and the global economy recovers. The development of the domestic banking system changed its direction in 2008. The first signs of credit growth deceleration that appeared in the second half of 2007 became apparent in 2008, whereas at the end of the year and in the beginning of 2009 the bank loan portfolio started to shrink. In the second half of 2008, the bank loan portfolio quality also started to deteriorate. This deterioration was mainly determined by lending to corporate sector. However, the deterioration in the quality of loans to households is also likely in the future due to the growth of unemployment and a decline in household income. The banking system was profitable in 2008. On the other hand, the growth of loan impairment losses have started to increase and the banking system has already suffered losses in the fourth quarter of 2008 and the first quarter of 2009. Bank risks were reduced by a further increase of capital adequacy, which reflected better risk coverage by capital and hence higher loss absorption capacity. In terms of liquidity risk, the banking system's resilience to external shocks was ensured by the fact that the banks mainly borrowed in the domestic market and from parent banks. The liquidity risk associated with higher withdrawal of deposits, which increased at the end of 2008, subsided, and liquidity shortage was not observed in the domestic banking system. The reduction of the bank reserve requirement ratio from 6% to 4% and the increase of the maximum insurance coverage to EUR 100 thousand has made a positive contribution to the improvement of liquidity situation. In addition, parent banks fully covered liquidity shortage in the market by additional lending to their subsidiaries. The stress-testing results confirmed that liquidity tensions subsided in the market, whereas credit risk is the most important challenge to the domestic banking system in the medium term. The credit risk stress testing showed that the banking system has adequate capital resources to absorb expected loan portfolio losses. Capital buffers of the banking system used to cover unexpected losses increased in 2008 and in the beginning of 2009. In addition, banks have individual plans to increase capital. Further increase in capital is an important element in the strengthening of financial stability, ensuring adequate preparedness of banks to absorb probable, although unlikely, credit losses in case of highly unfavourable domestic and global macroeconomic environment.

Risk to stability of the domestic financial system grew consistently in 2008, compared to 2007, and remains at an elevated level in 2009. The financial system of Lithuania faces the challenges of the slowdown of the global economic growth and the global financial crisis. Capital flows to new economies reversed from positive to negative in the second half of 2008. This was determined by unwillingness of investors to take risk and increased demand for funds due to the liquidity problems in the markets of major industrialised economies. Poorer external financing possibilities, higher risk premia and

changes in the domestic macroeconomic environment increased the risk to the financial institutions in new economies and reduced the flow of loans as well as their availability.

Risk premia of Lithuania increased significantly at the end of 2008. This increase reflected concerns on the part of investors about uncertainty that emerged in September with regard to the situation of certain Swedish banks actively operating in the region as well as the impact of *AS Parex Banka* problems in October.

Fig. 1. Dynamics of risk premia indicators



Sources: Bloomberg and Bank of Lithuania calculations.

The banking system of Lithuania was affected by the global financial crisis directly through higher borrowing costs in international markets due to higher risk premia demanded by investors and lower market liquidity. Therefore, it became difficult for some banks to attract financial resources to finance their operations. In spite of that, the banking system was capable of maintaining the required amount of liquid funds and attracting the resources necessary for further credit expansion. Due to limited possibilities to borrow in the international markets, banks attempted to attract more resources in the domestic market. This resulted in a stronger competition for deposits and a rise in deposit interest rates. Domestic banks are more sensitive to this competition, since deposits are the most important source of financing for them. A declining and even negative growth of deposits shows that enterprises and households started to "use" the deposits accumulated in the banking system.

The shrinking of the loan portfolio observed since the end of the last year indicates the general downward trends of falling indebtedness and decreasing financial leverage in the domestic economy.

With the decline in the growth rate of the bank loan portfolio and a slowdown in the growth of domestic economy, the quality of the bank loan portfolio deteriorated. Lower demand for financial intermediation ser-

vices increased the bank income risk. Owing to the fall in the real estate prices, the solvency risk of enterprises related to this business grew, and the number of bankruptcies increased. Taking into account the fact that real estate companies and construction enterprises stand among the largest debtors of banks, the risk of the portfolio of loans to enterprises has increased.

The risk to the stability of the domestic financial system at the end of 2008 and in the beginning of 2009 increased, compared to the beginning of 2008. The main sources of risk arise due to the following reasons:

- higher credit risk, which was determined by: 1) a significant fall in the real estate prices, and 2) the recession of the domestic economy, rising unemployment and a decline in disposable income of households;
- higher liquidity risk, which was determined by the still limited access to financing sources in the international market and higher sensitivity in the domestic market;
- higher interest rates related to risk revaluation;

Risks to the banking system were reduced by the fact that capital buffers of the banking system increased significantly in 2008 and that it is based on a traditional banking model. In addition, the majority of funds to finance expansion were attracted from parent bank groups that use centralized capital, liquidity and risk management. The overall level of private sector indebtedness in Lithuania is the lowest among the Baltic States and one of the lowest in the European Union. According to the data of the household survey, the largest share of loans for house purchase is taken by households with higher than average income. Owing to the tightening of lending conditions by banks, the risk of a rapid growth of the loan portfolio on the basis of higher risk customers declined.

The recovery of the domestic economy is forecasted for the end of 2010 to 2011. It is likely that due to an increase in external demand and better borrowing conditions the loan market will recover and the operating conditions of banks will improve. This reduces the operating risk of the banking system in the medium and long term.

I. MACROECONOMIC ENVIRONMENT

External Developments

The global economy, as the financial crisis has grown into a real sector crisis, is experiencing a particularly pronounced downturn both in industrialised and developing countries. A number of regions across the world are experiencing unprecedented shrinkage of the economy, there was a particularly strong decline in international trade volume, the activity of many economic sectors, especially industry, is weakening, unemployment is rising. The data of the first quarter of 2009 suggest that the situation continues to be complicated. The rising impact of the financial crisis on the real economy further worsened the outlook for the economic development of both industrialised and new economies. Deteriorating situation of the real economy in its turn increases pressure on banks and negatively affect lending. The global real GDP is projected to decrease by 1.3%, of which the GDP of industrialised countries – by 3.8% in 2009.

*Table 1. Real GDP growth and inflation in selected regions of the world
(annual changes, percentages)*

	2007	2008	2009*	2010*
Real GDP				
Global	5.2	3.2	-1.3	1.9
Euro area	2.7	0.9	-4.2	-0.4
CEE countries	5.4	2.9	-3.7	0.8
US	2.0	1.1	-2.8	0.0
Japan	2.4	-0.6	-6.2	0.5
Russia	8.1	5.6	-6.0	0.5
Inflation (average annual change in consumer prices)				
Euro area	2.1	3.3	0.4	0.6
CEE countries	6.1	8.0	4.6	4.2
US	2.9	3.8	-0.9	-0.1
Japan	0.0	1.4	-1.0	-0.6
Russia	9.0	14.1	12.9	9.9

Sources: IMF and the European Commission.

* Forecasts.

A recovery in world economic growth is dependent on the stabilisation of the financial system. The economies of industrialised countries are expected to start recovering in late 2009 – mid-2010, which will foster a recovery of new economies as well. Large-scale support to the financial sector implemented by major world economies and measures for economic revival have had a stabilising effect on the international financial system and allowed avoiding a still deeper economic downturn, however the uncertainty surrounding the financial sector and economic development has remained very high. The financial performance of global large and complex bank groups published in the first quarter of 2009 was better than expected, but the situa-

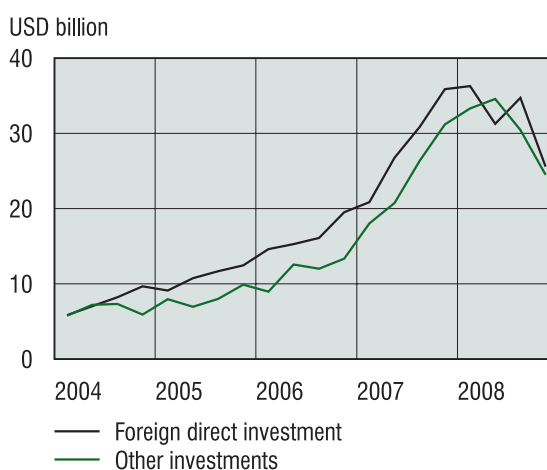
tion in financial markets is far from being stable. The achieved relative stability is still fragile and strongly relies on the development of the global real economy in the quarters to come.

In early 2009, the economic downturn in the euro area continued to strengthen. The real GDP in the euro area decreased by 4.8% in the first quarter of 2009 year on year. The economy was shrinking in all major and in most smaller euro area countries. Economic activity in the euro area was impeded by all major factors: a strong decrease in investment, export, and household consumption.

In the first quarter of 2009, the annual real GDP growth in nearly all countries outside the euro area was negative. A decrease in capital inflows, tighter credit conditions along with a decline in international trade volumes represented the main factors that impeded economic activity in CEE countries.

Developments in foreign capital inflows are exerting a particularly strong influence on the development of the financial system and economic activity of CEE countries. Over the past six years, fast growth in foreign capital flows to new economies was observed in anticipation of rapid growth in return on investment. Investments came to the region mainly through the following three channels: FDI (including establishment and acquisition of credit institutions), portfolio investments (including investments in stocks and bonds), and direct borrowing from foreign parent institutions through local subsidiaries and branches. The greatest impact on the loan portfolio development and formation of the asset price “bubble” in the region came from the inflow of foreign loans, which penetrated the CEE economies via the banking system.

Fig. 2. Foreign capital flows into CEE¹ countries



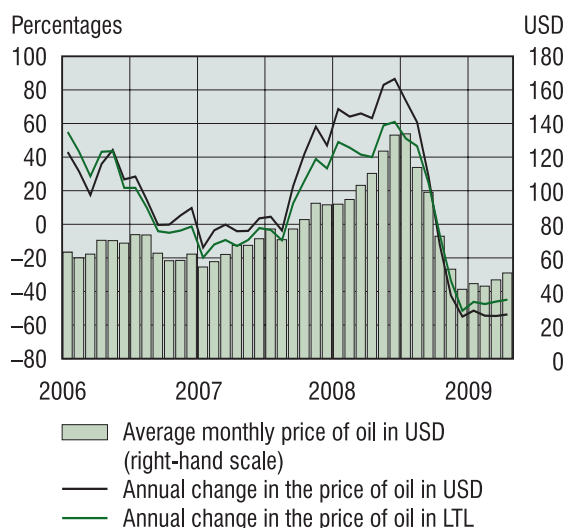
Sources: IMF and Bank of Lithuania calculations.

¹ CEE countries include Bulgaria, the Czech Republic, Estonia, Croatia, Latvia, Poland, Lithuania, Romania, Slovakia, Slovenia and Hungary.

With the emergence of the first signals that the CEE economies are overheated and asset price adjustment is pending, foreign investors reduced investment into the region markedly. In the third quarter of 2008, foreign banks started to lower the amount of lending in the CEE countries. It should be noted that the situation in Lithuania is different: in contrast to the general trends observed in the CEE countries, foreign parent banks supplied additional LTL 6.8 billion in the second half of 2008 in Lithuania.

In the first quarter of 2009, the prices of oil and other commodities stabilised. The price of *Brent* crude oil was USD 44 per barrel in the first quarter of 2009, i.e. more than 50% lower than a year earlier. In aggregate terms, the price index for non-energy commodities was 37% lower, and for food commodities – 28% lower in March than a year earlier.

Fig. 3. The price of Brent crude oil

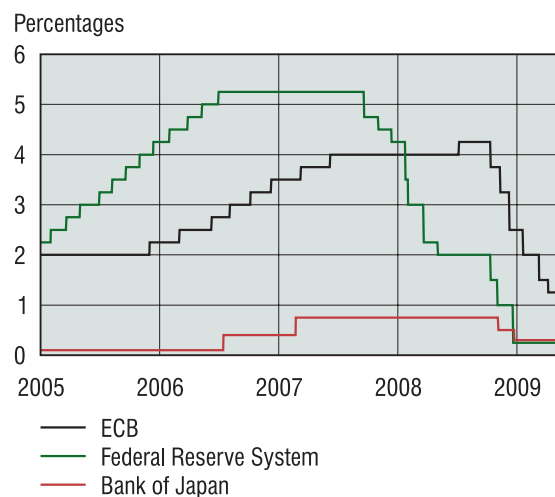


Sources: Bloomberg and Bank of Lithuania calculations.

In the first quarter of 2009, central banks lowered interest rates and applied unconventional quantitative monetary policy measures. In 2009, the ECB kept lowering base interest rates (in May, ECB interest rates dropped to the historically lowest level of 1.0%). Other major central banks, as base interest rates became close to zero, undertook unconventional quantitative monetary policy measures. The central banks of England and Japan increased money supply in the market by purchasing government securities. The US Federal Open Market Committee, too, in order to foster the economy, decided in March to start purchasing long-term State Treasury bonds and increased financing provided to FRS financial institutions by USD 1.2 trillion, bought mortgage-backed and other debt securities from financial institutions.

The foreign exchange market was characterised by particularly pronounced fluctuations. With the worsening outlook for economic development and due to quanti-

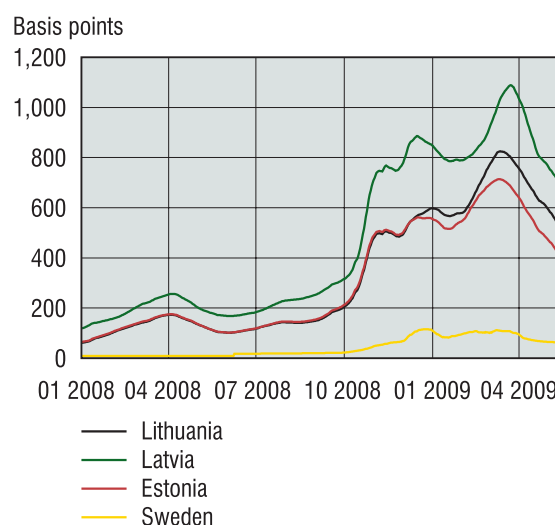
Fig. 4. Interest rates of major central banks



Source: Bloomberg.

tative monetary policy easing measures implemented by central banks, the currencies of the USA, Japan and some other major industrialised countries depreciated against the euro. The currencies of the CEE countries with floating exchange rate regimes, particularly Poland and Hungary, depreciated substantially against the euro. Seeking to discontinue the outflow of foreign capital from the country and trying to help the economy to adjust to the changed domestic and external conditions, the Central Bank of Russia conducted controlled devaluation of the rouble. The Belarusian rouble underwent very strong pressure and was devalued in early 2009, whereas Ukraine, meeting the IMF programme's conditions, shifted to a flexible exchange rate regime.

Fig. 5. Sovereign 5-year credit default swap spreads (four-week moving average)



Source: Bloomberg.

Concerns of investors over the increased risk of the Baltic States region is reflected in the price dynamics of credit derivatives. Investors were mainly concerned about the worse than

expected economic downturn in the Baltic States and the condition of public finances. Increased demand for the Baltic States' credit risk insurance resulted in increased sovereign credit default swap rates, although the rates declined in the first quarter of 2009.

The Baltic and Scandinavian Countries

The neighbouring Baltic States are important for Lithuania's financial stability in that the Baltic region is often perceived as an integral area, and all the three countries are undergoing a similar cycle of economic development.

A downturn in the Latvian and Estonian economies, which started a year ago, deepened still further in early 2009. According to preliminary estimates, in Latvia, the real GDP decreased by 18% in the first quarter of 2009, in Estonia – by more than 15% year on year. The fall in domestic and foreign demand resulted in sharp decline in the manufacturing, retail trade, construction, hotel and restaurant services activities, and rising unemployment. As the economy shrank and consumption weakened, prices began to fall (the decrease in inflation has been particularly strong in Estonia since early 2009). Weak demand substantially decreased foreign trade deficit and practically balanced the current account in Latvia in the first

quarter of 2009, and the current account deficit in Estonia narrowed to 3% of GDP.

With a decrease in investors' risk tolerance and the economic situation worsening in late 2008, Latvia sought financial assistance from international institutions. The IMF approved for Latvia a 27-month Stabilisation Programme in the approximate amount of EUR 1.7 billion, with a major requirement of tightening budgetary policy. The joint loan package for Latvia of international institutions and the Scandinavian countries makes up EUR 7.5 billion.

Credit flows continued to decline in Latvia and Estonia in the first quarter of 2009. In Latvia, the annual growth of the overall bank loan portfolio stood at 6.4%, of household loans – at 2.3% in March. In the first quarter of 2009, the bank loan portfolio shrank by 1.5% in Latvia. The private sector debt declined, only general government financing increased to a minor extent. In Estonia, annual growth rates of the bank loan portfolio were even lower than in Latvia (3.6% in March), credit volume contracted into the first quarter. This was mainly driven by a decline in lending to non-financial institutions and falling household borrowing. Loans overdue over 60 days increased to 4.5% of total loans in Estonia in March.

Economic downturn in the Nordic countries started in the second half of 2008. Among the Nordic countries, Norway and Finland retained positive growth rates, however in the first quarter of 2009 their real GDP began abating as well. The Danish and Swedish economies had shrunk most since mid-2008, however economic stimulation measures implemented in these countries are expected to help stabilize household consumption and stop further weakening of economic activity as early as in the first half of 2009. The Finnish economy is mainly connected with foreign trade; therefore its recovery is more heavily dependent on the external environment and export market recovery.

Developments in the Scandinavian Banking Groups

The Baltic States financial system's shareholder composition remained broadly unchanged over the year: five major Scandinavian investors held the largest share of the share capital. The banks governed by major Scandinavian bank groups held 84% of the total credit market and earned over 92% of the profit of the entire banking system in Lithuania. In Estonia, the same investors practically held the entire banking system, whereas in Latvia their share was substantially smaller on account of quite a large market share held by domestic capital banks.

Table 2. Main economic indicators of the Baltic States and the Nordic countries (percentages)

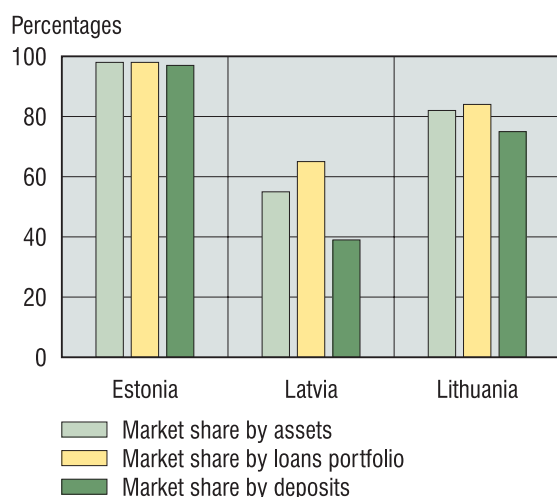
		GDP	CAD	Inflation	Unemployment level
Estonia	2007	6.3	-18.1	9.7	4.7
	2008	-3.6	-9.2	7.5	5.5
	2009				
	Q1	-15.6	-3.0	2.5	11.1
Latvia	2007	10.0	-22.6	14.0	6.0
	2008	-4.6	-13.2	10.4	7.5
	2009				
	Q1	-18.6	0.1	7.9	16.1
Denmark	2007	1.6	0.7	2.4	3.8
	2008	-1.1	0.5	2.4	3.3
	2009				
	Q1	...	...	1.6	5.7
Norway	2007	3.1	15.9	1.9	2.5
	2008	2.0	18.4	2.6	2.6
	2009				
	Q1	-0.3	...	2.6	3.1
Finland	2007	4.2	4.1	1.9	6.9
	2008	0.9	2.5	3.4	6.4
	2009				
	Q1	...	...	2.0	7.4
Sweden	2007	2.6	8.6	2.5	6.1
	2008	-0.2	8.3	2.1	6.2
	2009				
	Q1	...	...	1.9	8.0

Sources: Eurostat and the national central banks.

Notes: Annual change in real GDP; CAD compared to GDP; inflation – annual change in consumer price index, end-of-period; unemployment rate, end-of-period.

Fig. 6. Market share in the Baltic States of five most important investors in Lithuania's banking system

(end of 2008)

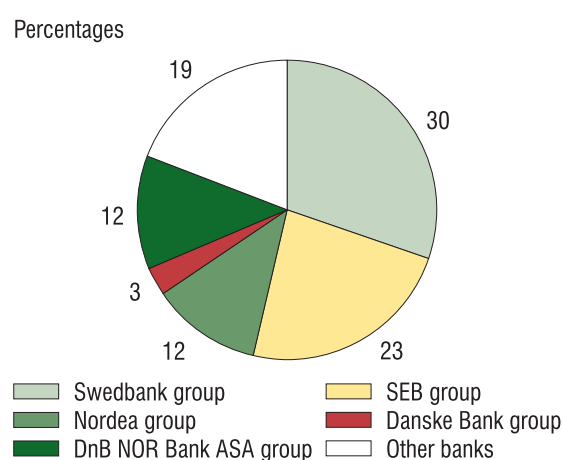


Sources: Bank of Estonia, Bank of Latvia and Bank of Lithuania calculations.

Major investors in the Baltic States' banking system are two Swedish bank groups – SEB and Swedbank. In Lithuania, these banks hold the biggest share of the credit and deposit market, although this share contracted respectively by 5 p. p. and 3 p. p. – to 51% and 56% over the year. In the other Baltic States, a decrease in the market share held by the two banks was also observed, however these banks still hold over 50% of the Baltic States' total credit market. Due to this reason, the financial state of the main Scandinavian parent bank groups is important for the stability and further development of the banking system of Lithuania and of the other Baltic States.

Fig. 7. Loan market share of five most important Nordic bank groups in the Baltic States

(end of 2008)



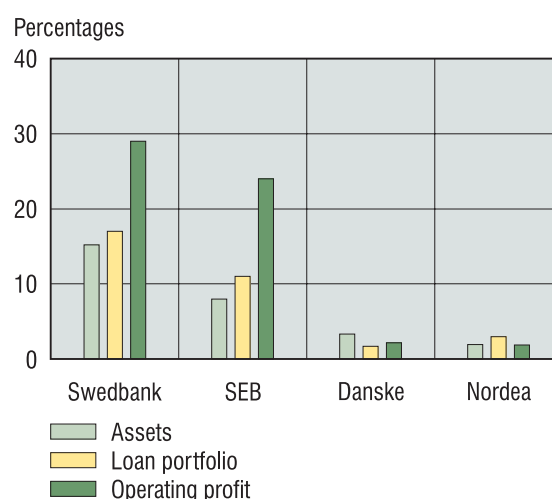
Sources: Bank of Estonia, Bank of Latvia and Bank of Lithuania calculations.

The share of the Baltic States' subsidiaries in the Scandinavian bank groups holding them was relatively small, however quite a substantial share of operating profit and

loan portfolio losses was incurred from operations in the Baltic States. The bulk of the Baltic subsidiaries' assets were within the Swedbank and SEB parent bank groups. Loans granted in the Baltic States accounted respectively for 17% and 11% of the total loan portfolio of these bank groups, whereas the share of other Scandinavian parent bank loan portfolio in the Baltic States was insignificant. The impact of operations in the Baltic States on the profitability of these parent bank groups was higher owing to the strong growth of the bank loan portfolio and high levels of profitability in the region. As much as 29% of the operating profit of the Swedbank and 24% of that of SEB were earned from operations in the Baltic States².

Fig. 8. The share of Baltic banks in their Scandinavian parent bank groups

(end of 2008)



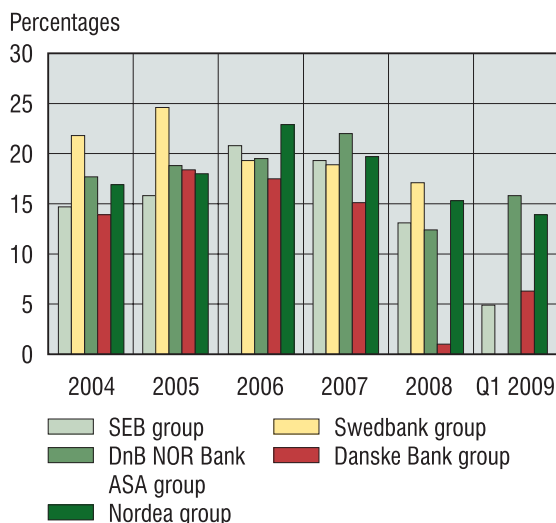
Sources: Financial statements of the bank groups and Bank of Lithuania

The financial situation of individual largest investors in the Lithuanian banking system remained robust in 2009. The profitability of all Scandinavian parent bank groups decreased, but has continued to be positive. The curtailed profitability was mainly driven by strong growth in loan portfolio losses with the substantial share of provisions for loan losses made for loans granted in the Baltic States and Eastern European countries. Lower turnover in the stock market and falling equity prices also contributed to a strong decline in net commission income. However, a decrease in the price of short-term financial resources resulted in an increase in the real interest margin, which increased net interest income of banks.

The operating efficiency of the Scandinavian banking system decreased. The main reason behind the deterioration in the operating efficiency ratios was a decline in com-

² Annual reports of Swedbank and SEB bank groups of 2008.

Fig. 9. Profitability ratios (RoE) of the most important foreign investors in Lithuania's banking system

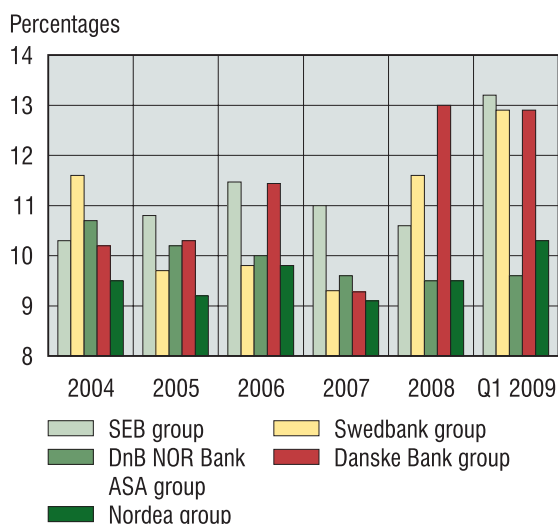


Sources: Financial statements of the bank groups and Bank of Lithuania calculations.

mission income and higher loan portfolio losses and impairment of goodwill³.

Capital adequacy ratios improved in all major Scandinavian parent bank groups, which improved the possibilities for these banks to absorb large-scale loan portfolio losses.

Fig. 10. Capital adequacy ratios of the most important foreign investors in Lithuania's banking system



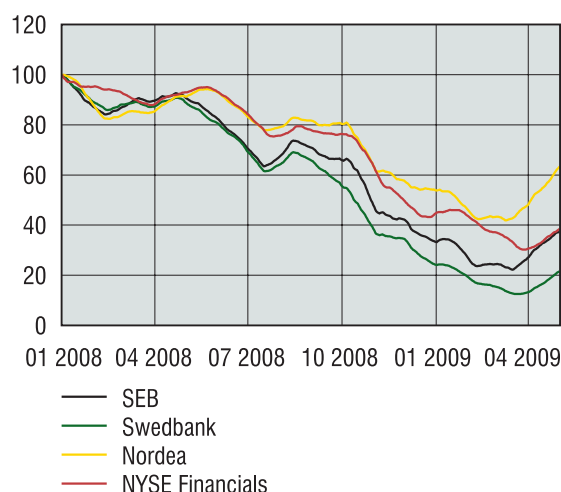
Sources: Financial statements of the bank groups and Bank of Lithuania calculations.

Equity prices of all parent institutions of banks operating in Lithuania went down, and the extent of the decline was similar to equity price developments of other European and US banks. From the start of 2008 equity prices of the two largest inves-

³ Swedbank and SEB bank groups reduced good will in Ukraine – by SEK 1,403 million and SEK 594 million respectively.

Fig. 11. Equity price dynamics of the parent banks

(four-week moving average of the index)
(01 01 2008 = 100)



Source: Bloomberg.

tors in the Baltic States' banking system, Swedbank and SEB, lost respectively above 60% and 80% of their value.

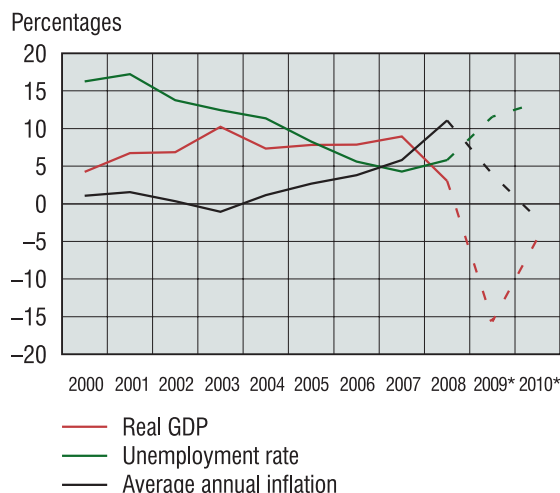
However, as investors began assessing the financial sector enterprises and the Baltic States' risk somewhat more positively in the second quarter of 2009, a positive adjustment of Scandinavian bank prices was observed.

Domestic Economy

The growth of Lithuania's economy decelerated in 2008. According to preliminary estimates, the annual change of the real GDP made up 3.0% (8.9% in 2007). The growth of economic activity was only strong in the first quarter of the year, mainly driven by higher final consumption expenditures. From the second quarter, with an unfavourable turn in the domestic and international markets, the trends of domestic demand changed. The greatest impact on the shrinking of domestic demand came from falling investment, which became particularly strong in the fourth quarter of 2008. Shrinking investment is mainly associated with the deteriorating performance of manufacturing industry and worsening expectations, as well as tighter borrowing conditions. The growth in real private consumption declined as well in 2008, especially due to the labour market developments, such as weaker wage growth and rising unemployment. At the end of the year, real net export was the only factor behind the GDP growth and is expected to further exert a positive influence on the GDP in the short-term.

Preliminary data of the first quarter of 2009 show a stronger economic downturn – real GDP contracted by 12.6% year on year. According to the Bank of Lithuania, the GDP is likely to go down for the two years ahead

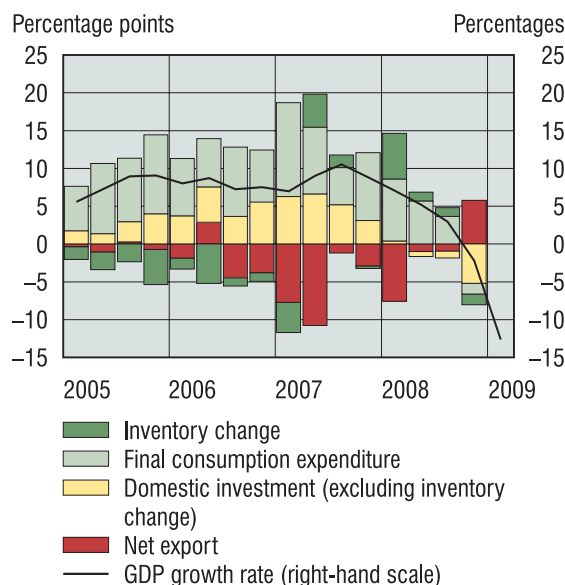
Fig. 12. Changes in GDP, unemployment rate and average annual inflation



Sources: Department of Statistics and Bank of Lithuania calculations.
* Bank of Lithuania forecasts of 14 May 2009.

and reach its lowest point in the first half of 2010. The assessment is based on the assumption that external demand will recover at the end of 2009. Unfavourable assessments of the overall economic situation will most affect the development of investment. Investment is expected to decline further in the quarters ahead with stagnation in the construction business exerting an increasingly stronger impact. Private consumption will decline too as, with the easing of labour market tensions and real estate and financial asset prices going down, pessimistic expectations about disposable income developments begin to prevail.

Fig. 13. Contributions to real GDP growth (by expenditure approach) (annual changes)



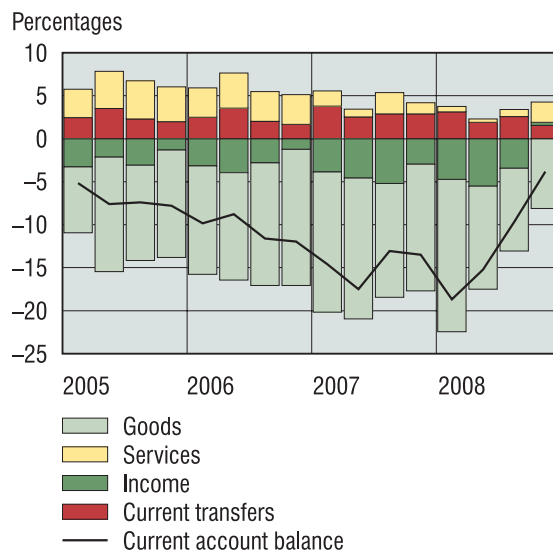
Sources: Department of Statistics and Bank of Lithuania calculations.

Major indicators of the labour market remained broadly unchanged in the first half

of 2008. Declining employment and the rising unemployment rate decelerated wage growth. This was particularly pronounced in the private sector: in the first quarter of 2008, annual wage growth rate was 24.3%, in the fourth quarter – 8.2%. In the last quarter of 2008, in some activities, such as production of articles of metal and the construction sector, wages were already lower than a year earlier. On account of the flexibility of the Lithuanian labour market, a decline in nominal wages in other activities, too, is expected in the quarters to come.

After increasing for several recent years, the Current Account Deficit (CAD) reached its peak (18.8% of GDP) in the first quarter of 2008, and by the end of the year it narrowed almost five times. In the course of the year, CAD accounted for 11.6 % of the GDP (14.6% in 2007). CAD developments were mainly driven by sharp changes in trade deficit as the economy started to slow down and import demand fell significantly. Trade deficit stood at 8.1% of the GDP in the fourth quarter of 2008 and nearly disappeared in early 2009. Income balance turned positive in the fourth quarter on account of the negative reinvestment flow, whereas other components of the current account balance remained broadly unchanged.

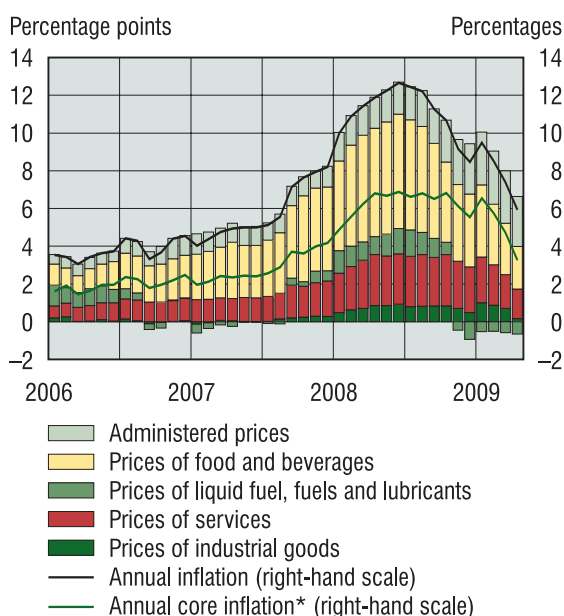
Fig. 14. Composition of the current account balance (compared to GDP)



Sources: Department of Statistics and Bank of Lithuania calculations.

The overall annual inflation, after increasing strongly until mid-2008, started to decrease. In April 2009, annual HICP inflation stood at 5.9% (12.7% – at the peak in June 2008). The lower overall annual inflation during the recent months resulted mainly from weaker growth of food prices and the decline of core inflation.

Fig. 15. Contributions to HICP dynamics
(annual changes)



Sources: Department of Statistics and Bank of Lithuania calculations.
* Change in HICP, excluding prices of food, fuels and lubricants, and administered prices.

Annual core inflation⁴ started to decrease from November 2008 in Lithuania. After standing at above 6.5% for most of 2008, it was already slightly below 4% in April 2009.

In the context of moderating economic activity, core inflation did not drop at once – it was supported by the impact of the previous long-term growth in demand and supply factors, such as robust wage growth, continuous growth in import goods prices, and transfer of the previous input price growth into consumer prices. Declining retail trade at constant prices reflects the easing pressure of demand on the prices of services and industrial goods.

In the assessment of the Bank of Lithuania, a decline in demand should trigger a decline in average annual inflation in 2009–2010. It is likely that the growth of food prices will keep moderating, but the excise duty for cigarettes to be increased from March and September should exert upward pressure on annual inflation in 2009. With a decrease in consumer purchasing power, a significant decline in core inflation is also expected. Some administered prices will not rise as strongly as expected earlier. The price of electricity is expected to fall to the levels observed in 2008; moreover, it should not increase as much as expected in 2010 after the closure of Ignalina nuclear power plant. Heating energy for individuals may become cheaper in the autumn of 2009.

⁴ Change in HICP, excluding the prices of food, fuels and lubricants, and administered prices.

II. FINANCIAL SYSTEM DEVELOPMENTS

Changes in the Structure of the Financial System

After a period of a very rapid growth, the Lithuanian financial system⁵ assets grew by 8% in 2008. The growth of the banking assets was the major driving force behind the growth of the financial system assets, while the growth of assets of other market participants was less prominent. In 2008, the value of financial system-controlled assets became smaller compared to GDP.

The banking sector remained the most important for the financial system and its stability. Banking assets accounted for slightly more than four-fifths of the Lithuanian financial system assets, increasing moderately compared with 2007 (see Table 4). This led to a further deceleration in the development of other financial system sectors such as leasing companies, insurance and capital market participants. Last year, foreign bank branches-controlled assets enjoyed the highest growth rate, but this was largely due to the change of the legal status of Danske Bank AB's Lithuanian branch (formerly AB Sampo bankas) from a joint stock company into a branch of a foreign bank.

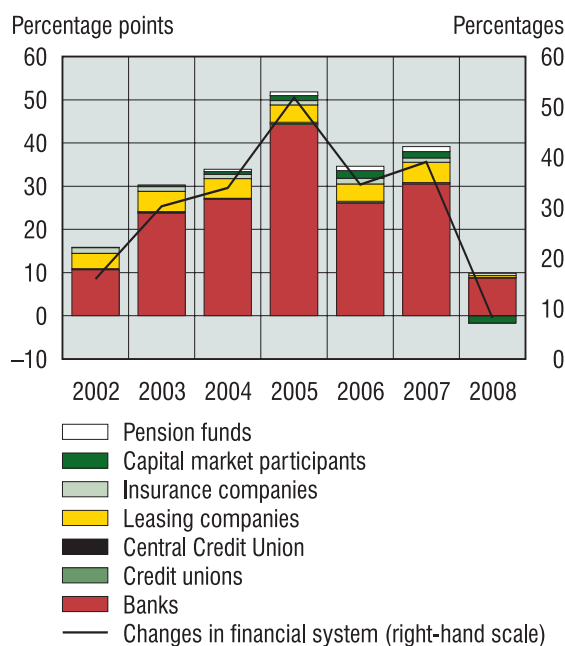
After one commercial bank and two new foreign bank branches started operating in 2008, the number of banks operating in Lithuania grew to 17 (9 commercial banks and 8 foreign bank branches). In 2008, the following credit institutions launched their operations in Lithuania: *AB bankas FINASTA* - a local capital bank, a Lithuanian branch of *Allied Irish Banks, p.l.c.* and Vilnius branch of *Skandinaviska Enskilda Banken AB*.

Three largest Scandinavian capital banks (AB SEB bankas, Swedbank AB and AB DnB NORD bankas) not only controlled the largest share of the assets of the Lithuanian banking system, but also played an important role in the country's non-banking sector – leasing and insurance markets. Their asset holdings accounted for 85% and 42% of the total assets of the domestic leasing and insurance markets, respectively.

Three leading banks (the largest portion of the entire Lithuanian financial system) were under control of foreign banks with high credit ratings. This is an important indicator of the financial system's creditability.

The assets of non-banking financial institutions, following their rapid development in recent years, continued to decline in 2008. This was largely due to the assets of capital

Fig. 16. Financial system growth factors (annual change)



Sources: ISC, SC, Lithuanian Leasing Association and Bank of Lithuania calculations.

Table 3. Ratings of the Lithuania's leading banks and of their foreign parent banks

Banks	Ratings assigned by Fitch Ratings Agency*		Market share by assets of the banking sector**, %
	long-term borrowing rating	perspective	
AB SEB bankas	A	negative	28,8
SEB AB (Sweden)	A+	stable	
Swedbank AB (Sweden)	A	stable	
AB DnB NORD bankas	A	negative	14,6
DNB NOR Bank (Norway)	A+	stable	
AB bankas SNORAS	B+	negative	6,3
AB Ūkio bankas***	B+	negative	4,7

Sources: rating agencies Fitch Ratings and Standard & Poors, web sites of commercial banks and Bank of Lithuania calculations.

*As at end-of April 2009.

**As at end-of 2008.

***Rating agency's Standard & Poors ratings.

market participants that have fallen nearly threefold in line with global market trends.

Management companies were the only ones among capital market participants, the assets of which remained unchanged. Investment funds and foreign collective investment undertakings seem to have been affected the most because of the economic downturn. A slowdown in the economic growth had a negative effect on the demand for motor vehicles leading to a slowdown in operations of leasing companies. In the

⁵ In this report, the term „financial system“ comprises banks, credit unions, Central Credit Union, leasing companies that are members of the Lithuanian Leasing Association, insurance companies, capital market participants, and pension funds.

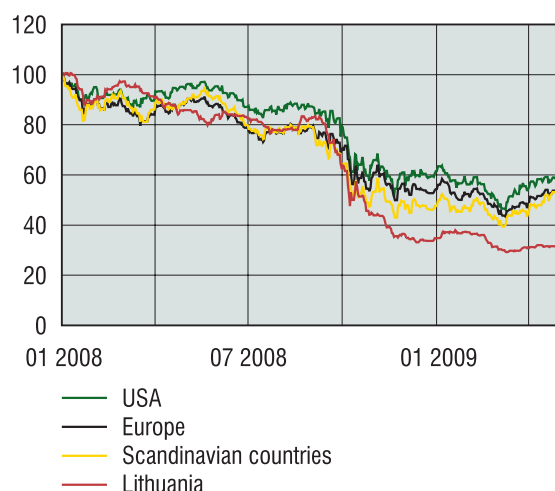
Table 4. Financial system of Lithuania

	2005				2006				2007				2008			
	number	LTL million	%	as % of GDP	number	LTL million	%	as % of GDP	number	LTL million	%	as % of GDP	number	LTL million	%	as % of GDP
Banks	12	44,849	83.4	63.2	11	58,914	81.4	72.2	14	80,990	80.5	83.8	17	89,785	82.5	80.5
Banks, excluding foreign bank branches	10	40,661	75.7	57.3	9	54,655	75.5	67.0	9	74,334	73.9	76.9	9	73,729	67.7	66.1
Foreign bank branches	2	4,188	7.8	5.9	2	4,258	5.9	5.2	5	6,656	6.6	6.9	8	16,057	14.8	14.4
Credit unions	64	301	0.6	0.4	66	462	0.6	0.6	67	655	0.7	0.7	67	795	0.7	0.7
Central Credit Union	1	79	0.1	0.1	1	110	0.2	0.1	1	142	0.1	0.1	1	137	0.1	0.1
Leasing companies	12	5,320	9.9	7.5	12	7,481	10.3	9.2	11	10,857	10.8	11.2	11	11,337	10.4	10.2
Insurance market	24	2,047	3.8	2.9	23	2,746	3.8	3.4	18	3,497	3.5	3.6	17	3,492	3.2	3.1
Life insurance companies	8	814	1.5	1.1	8	1,241	1.7	1.5	6	1,716	1.7	1.8	6	1,537	1.4	1.4
Non-life insurance companies	16	1,233	2.3	1.7	15	1,506	2.1	1.8	12	1,781	1.8	1.8	11	1,955	1.8	1.8
Capital market participants	70	710	1.3	1.0	98	1,656	2.3	2.0	118	2,696	2.7	2.8	124	993	0.9	0.9
Financial brokerage companies	13	109	0.2	0.2	12	156	0.2	0.2	13	141	0.1	0.1	12	54	0.0	0.0
Management companies	9	29	0.1	0.0	12	54	0.1	0.1	13	83	0.1	0.1	14	83	0.1	0.1
Open-ended investment companies	1	56	0.1	0.1	1	35	0.0	0.0	1	21	0.0	0.0	1	6	0.0	0.0
Investment funds	18	342	0.6	0.5	27	797	1.1	1.0	33	1,241	1.2	1.3	34	381	0.4	0.3
Foreign collective investment undertakings	29	174	0.3	0.2	46	614	0.8	0.8	58	1,211	1.2	1.3	63	470	0.4	0.4
Holding investment companies	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pension funds	36	443	0.8	0.6	36	979	1.4	1.2	37	1,791	1.8	1.9	38	2,311	2.1	2.1
Pillar II pension funds	30	406	0.8	0.6	30	905	1.3	1.1	28	1,687	1.7	1.7	29	2,251	2.1	2.0
Pillar III pension funds	6	36	0.1	0.1	6	74	0.1	0.1	9	104	0.1	0.1	9	61	0.1	0.1
FINANCIAL SYSTEM	219	53,747	100.0	75.7	246	72,348	100.0	88.7	266	100,629	100.0	104.1	275	108,850	100.0	97.6
Stock exchange capitalisation	–	28,207	–	39.7	–	30,004	–	36.8	–	26,950	–	27.9	–	11,999	–	10.8
Listed equities	–	23,953	–	33.7	–	26,684	–	32.7	–	23,796	–	24.6	–	9,004	–	8.1
Listed debt securities	–	4,254	–	6.0	–	3,320	–	4.1	–	3,154	–	3.3	–	2,995	–	2.7

Sources: ISC, SC, Lithuanian Leasing Association and Bank of Lithuania calculations.

Fig. 17. Changes in world stock market indices

(2008 01 01 = 100)



Sources: Bloomberg and Bank of Lithuania calculations.

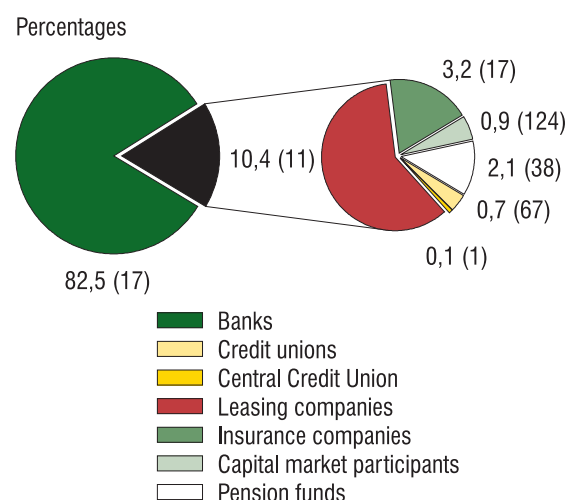
course of the year, the growth of the leasing companies' assets decelerated by 40.7 p. p. to 4.4% in 2008.

A slight decrease occurred in the assets held by insurance market participants when following a rapid growth of the insurance market in previous periods it contracted in 2008. During the above mentioned period, the assets of non-life insurance companies hiked by one tenth. Some non-financial enterprises and households because of deteriorating financial situation have abandoned services provided by insurance companies. The insurance premium amount signed up by these enterprises and a number of new insurance contracts made have been declining in 2008.

The assets held by Pillar II Pension Funds have climbed. In 2008, the average value of fund units went down, but a growing number of participants and notable preference of a conservative investment trend led to an increase in Pillar II pension funds-controlled assets by one third. A decline in the value of Pillar III pension fund unit and a number of the scheme participants resulted in a lower value of the funds' assets.

Lithuania's financial markets did not escape a deterioration of investment environment due to the economic recession. OMXV index had lost 65% of its value in 2008. The securities market capitalisation fell due to a sharp decline in prices for listed shares. This fast fall was driven by a decline in operational indicators of enterprises and changes in the risk assessment that made investors to step up their investments into less riskier securities.

Fig. 18. Assets and participants of the Lithuanian financial system in the end of 2008



Sources: ISC, SC, Lithuanian Leasing Association and Bank of Lithuania calculations.

Note: Figures in brackets stand for the number of participants.

Developments in the Banks⁶

Bank Assets and Loans

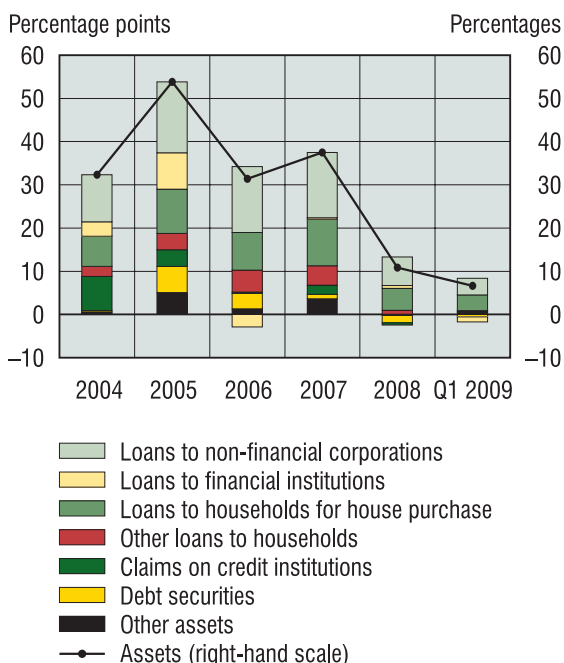
Against the backdrop of major economic changes the development of the domestic banking system changed its direction in 2008. Increasing imbalances of the Lithuanian economy evolving a hard landing scenario, a downward revision of investor and consumer expectations, an increase in the borrowing risk premiums, and tightening of credit standards, all led to a decline in the demand and availability of loans. In 2008, bank assets grew by 11% although a slowdown trend could be observed since the mid-2008 and bank assets began to shrink at the end of the year and at the beginning of 2009.

In 2008, the biggest share of the banking assets and loans was concentrated in a few largest banks. In view of the domestic economy's slowdown and heightened concerns over the prospects of economic development three largest banks, as well as other domestic banks, have curtailed their development plans by a similar amount. As a result, the banking system concentration in 2008 and early 2009 was similar to that in late 2007. The market share of three

⁶ In this chapter bank operations are analysed on the basis of financial and supervisory data. The banks were divided into two groups to show better the development of the banks operating in Lithuania. The first group includes banks with a major (over 50%) share of equity capital in hands of other foreign banks or financial institutions, and foreign bank branches. Such a division was done based on the banks' shareholding structure at the end of 2008. The second group includes banks with a major share of capital equity owned by natural persons and non-financial corporations. In some cases three largest (by assets) banks are distinguished. They are: AB SEB bankas, "Swedbank", AB, and AB DnB NORD bankas. The three belong to the first group. The second group includes: AB bankas Snoras, AB Ūkio bankas, AB Šiaulių bankas, UAB Medicinos bankas, and AB bankas "FINASTA".

largest banks in the country in terms of assets contracted by 2 p. p. to 66%, while the Herfindahl-Hirschman index⁷ decreased by 71 points to 1,786.

Fig. 19. Contributions to the growth of the banking system assets
(annual change)



Source: Bank of Lithuania calculations.

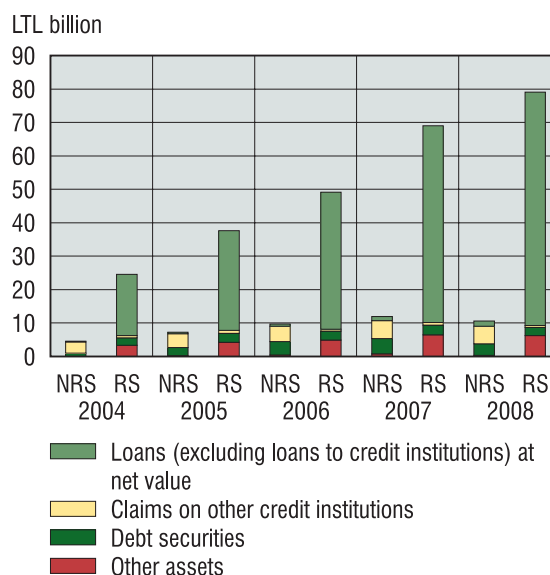
Banks in Lithuania have stuck to traditional banking practices by concentrating their investments into lending. A huge share of the loan portfolio in the total asset structure has made banks less dependent on adverse developments in securities markets, but added to an increase in credit risks. The loan portfolio contribution to the annual assets gain increased significantly and made up 98% in 2008. This was largely due to a decelerated growth or even a decline of other assets components. As in previous years, the growth of the banking system assets was mostly driven by lending to non-financial corporations and households for house purchase. At the end of the first quarter of 2009, the banking system's loan portfolio accounted for 78% of its total assets. The loan portfolio of the Lithuanian banking system as a share of its assets was among the largest, compared with other European Union

⁷ Hirschman-Herfindahl index is a commonly accepted measure of market concentration. This index is computed as follows:

$$HHI = \sum_{b=1}^n (x_b)^2,$$

where: x_b – b is the bank's market share by assets, and n is a number of banks. Values of the Herfindahl-Hirschman index are varying in an interval of $(10,000/n) \leq HHI \leq 10,000$. This index value would be the smallest if all components of the structure were equal, i. e., every bank had an equal market share. And the index value would be the highest, if one of the components accounted for 100% of the entire structure, i.e., there was only one bank operating in the market. In practice, the value of the Herfindahl-Hirschman index above 1,800 usually shows large concentration.

Fig. 20. Structure of the banking system assets
(end of period)



Source: Bank of Lithuania calculations.

Note: RS – residents, NRS – non-residents.

member states. In the European Union member states loans to customers on average accounted for 50% of their banks' assets⁸.

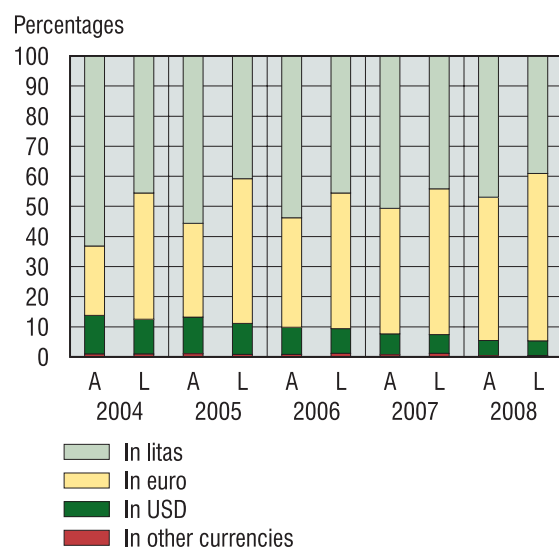
Credit risk of the banking system is concentrated inside the country. The activity of the Lithuanian economy and activity developments are of a major importance to the country's banking system. Foreign assets that historically account for a relatively small share of the total banking system's assets became even lower in 2008. In addition, Lithuanian banks had neither investments into the highest risk bearing financial instruments related to the USA sub-prime mortgage market, nor investments related to the banks that went bankrupt in 2008, such as Lehman Brothers, banks in Iceland, etc. The composition of the banking system assets held in Lithuania differed from that kept abroad. The loan portfolio accounted for the largest share of the asset holdings in Lithuania. Investments into debt securities issued by foreign governments and banks, as well as short-term funds held in other banks make up the major share of the banks' assets abroad.

The major share of bank's investments into securities consisted of low-risk investments. Firstly, the largest share of bank investments accounted for investments into debt securities. At the end of the first quarter of 2009, the share of debt securities compared with total assets of the banking system accounted for 7% (down by 1 p. p. compared with the beginning of 2008). It could be noted that after a decrease in liquidity in global financial markets banks used debt securities as one of the sources for securing liquidity

⁸ EU Banking Structures, ECB, October 2008.

(for three consecutive years until 2007, debt securities accounted for 11% of the banking system assets). Secondly, government debt securities – mainly of Lithuania, European Union and countries with high credit ratings⁹ – grew over the year by 9 p. p. points to 49% of the total debt securities portfolio. Thirdly, risks related to prices of equity securities were insignificant as the portfolio of such investments was rather small (at the end of the first quarter of 2009, it accounted only for 0.1% of the banking assets).

Fig. 21. Structure of the banking system¹⁰ assets and liabilities by currencies (end of period)



Source: Bank of Lithuania calculations.
Note: A – assets, L – liabilities.

Foreign exchange rate risk in the banking system remained broadly unchanged, at a subdued level. As in previous years, the banking system assets and liabilities were mainly in three currencies – litas, euros and US dollars. Approximately 95% of the system's assets and liabilities were in litas and euros. A significant increase in interest rates on loans in litas in the second half of 2008 entailed an increase in the volume of euro loans, while some debtors decided to convert litas loans into euro loans. Moreover, amid a volatile US dollar exchange rate, a decline occurred in the value of both, dollar denominated assets and liabilities. As a result, in 2008, for the third consecutive year, the growth of euro-denominated assets and accordingly the drop in litas and US dollars-denominated assets was observed. The bank system assets and liabilities denominated in US dollars accounted for about 5% of the system's assets and liabilities, and the

US dollar open position was long although insignificant (0.2% of the assets). Open positions of all other foreign currencies were even lower. As a result of borrowing in euros from parent banks¹¹, which supplied funds to finance the biggest share of loans granted in 2008, a significant increase in euro-denominated liabilities could be observed. With Lithuania's aim to join the euro area¹² by keeping the litas exchange rate fixed against the euro, euro positions in Lithuanian banks should be broadly treated as denominated in the future national currency¹³. At the end of the first quarter of 2009, the overall open position in foreign currencies was long and remained low accounting for 0.3% of the banking system's capital.

Loan Portfolio

The very first signs of the credit decline that emerged in the second half of 2007, became evident in 2008. Changes in the loan portfolio growth were driven both by both, demand and supply factors. Credit demand was shrinking largely due to enterprises abandoning their investment plans because of the economic downturn, and household's aversion to additional financial liabilities. On the other hand, banks tightened credit standards for enterprises and households further, which resulted in supply constraints (see annex 1).

As investor concerns over the macroeconomic situation in the Baltic States were increasing, incentives of foreign banks to continue an intensive financing of the domestic economy have weakened noticeably. The turmoil in global financial markets also contributed to this. Diminishing liquidity within international and domestic markets pushed the prices for banking financial resources up. In response to tensions in global financial markets, liquidity shortages and a slow down of the economies, central banks in many countries have cut key interest rates and put in place various measures to stimulate the economic activity and support banks. The conditions for borrowing in international financial markets began to stabilize, but possibilities for banks of the first group to attract financial resources in foreign markets were very complicated due to a strict assessment of risks in Baltic States, as well as downgraded credit ratings.

⁹ Higher credit rating countries are those countries that have been assigned a long-term rating by international rating agencies, such as *Moody's Investors Service* (not lower than A3) or *Standard & Poor's*, and *Fitch Ratings* (not lower than A- inclusive).

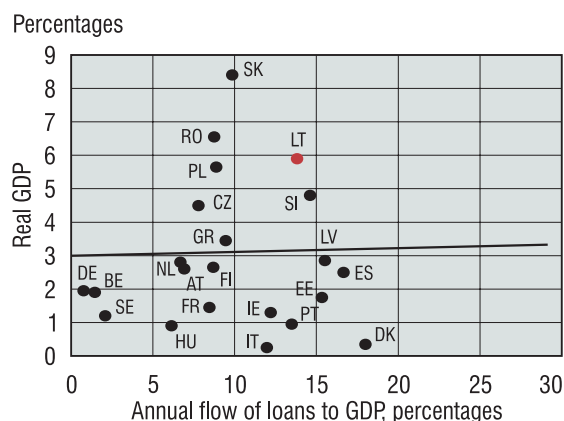
¹⁰ Foreign bank branches are excluded.

¹¹ Here and elsewhere in the text the term "parent banks" refers to all banks of the foreign bank group to which a subsidiary bank in Lithuania belongs.

¹² Lithuania entered ERM II on 28 June 2004 and since then it keeps its national currency rate litas fixed tightly to euro.

¹³ Pursuant to the decision of the Board of the Bank of Lithuania, as from December 2004 the open position in euro has not been limited.

Fig. 22. Average real GDP and average flow of MFIs loans to the non-financial sector in 2007–2008



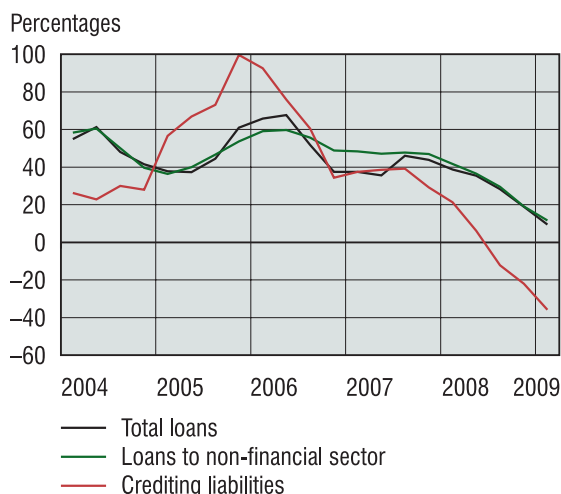
Sources: ECB, Eurostat and Bank of Lithuania calculations.

In 2008, the loan flow into domestic economy declined significantly compared with 2007. In 2008, loans to non-financial sector accounted for 10% of GDP created that year¹⁴ (in 2007, it accounted for 18%), while the outstanding loan balance went up to 60%, an increase of 2 p. p. during the year. The loan flow and GDP comparison suggests that intensive crediting in the Baltic States in recent years, which was an important driver of the economic growth in these countries, have noticeably declined in 2008. As a result, 2008 should be considered as the year of change in the crediting and economic cycle. In other words, a buoyant economic growth until the end of 2007 entailed easier lending requirements due to a better financial stance of borrowers, while growing lending continued to push the economic development up. Starting with this period the economic development began to decelerate, banks were more conservative about the borrower-related risks, while credit flows, which contracted significantly in the second half of the year, became another reason for the economic downturn to gain speed.

Although the annual growth rate of the banking loan portfolio remained high in 2008, a decline in the loan demand was clearly seen in the second half of the year. The entire bank loan portfolio grew by 19% during the year. The loan growth was driven by both, a robust economic activity in the first half of the year and agreements from previous period, according to which loans were issued in 2008 (particularly in the segment of loans for house purchase, because the period between signing of a new agreement on loan for house purchase and gran-

¹⁴ It is worthwhile for the loan portfolio growth to be assessed not only in terms of absolute loan growth rates but also in terms of a relative loan flow to GDP ratio. In this way, a comparative base growth problem that typically occurs in such a case is avoided, i.e., the growth of the loan portfolio is followed by the growth of the comparative base. The growth of loans therefore may decelerate, while the flow will be growing.

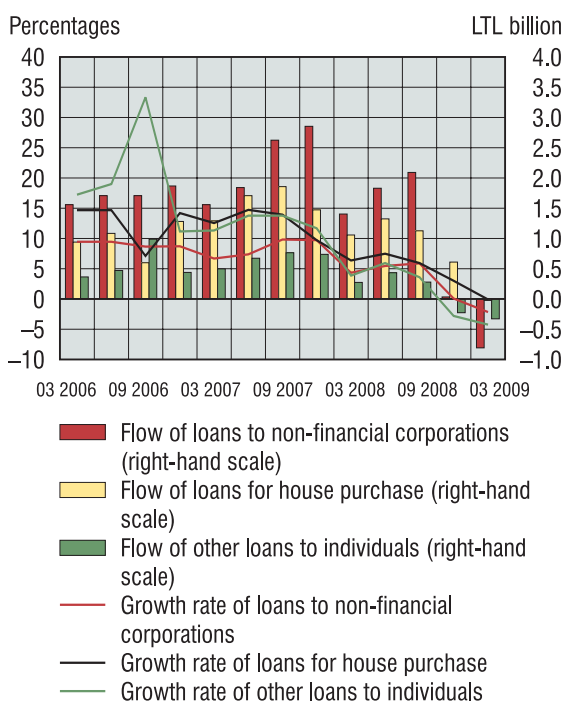
Fig. 23. Changes of the banking system loans and crediting liabilities (annual change)



Source: Bank of Lithuania calculations.

ting the loan may take from several months to one or even several years). A rapidly decreasing crediting could be seen from off-balance sheet credit-related liabilities of banks¹⁵, which contracted year on year by 22% at the end 2008. In early 2009, crediting liabilities continued to decline rapidly.

Fig. 24. Changes of the banking system loans (quarterly change)



Source: Bank of Lithuania calculations.

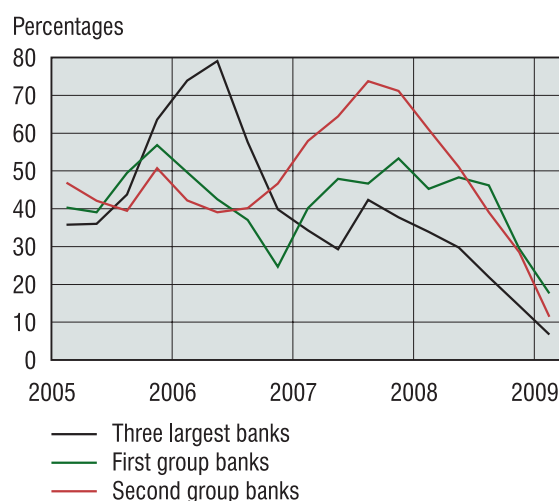
In 2008, the banking loan portfolio was characterised by an uneven development. In the first three quarters, the credit flow was lower by 23% compared with the same

¹⁵ A significant share of crediting liabilities includes bank liabilities to issue loans, and therefore they may be considered as a preliminary indicator of future changes in the loan portfolio.

period in 2007, but in the last quarter, the growth of the loan portfolio to enterprises and natural persons almost halted – the flow of granted loans fell 12 times compared with the fourth quarter of the previous year.

Data of the beginning of early 2009 showed negative relative growth indicators and a negative credit flow which meant that the banking loan portfolio started to decline. The biggest fall was registered in the portfolio of loans to enterprises and other loans to natural persons (consumer and other loans). In the first quarter of 2009, the portfolio of loans to enterprises contracted by 2%, although in the same period a year ago it grew by 4%. At the end of March 2009, the quarterly flow of consumption loans and other loans to households was also negative.

Fig. 25. Change of the bank loans (annual change)

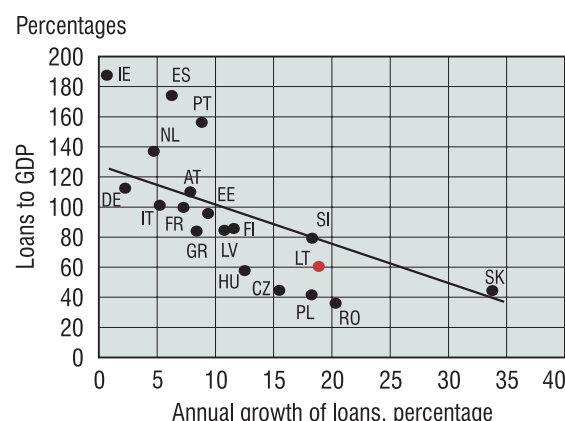


Source: Bank of Lithuania calculations.

The loan portfolio growth analysis by separate bank groups suggests that loan portfolios of the first group banks and the second group banks were increasing at a similar rate. In absolute terms, three largest domestic banks were the biggest lenders to the national economy. In 2008, the share of these three banks in the annual loan flow declined by 10 p. p. to 52%. Most likely this was due to tightened crediting requirements in these banks. In the first half of 2008, the loan portfolio of the second group banks grew faster than the loan portfolio of the first group banks; however the credit growth rates in both groups were similar at the end of the year.

In the European Union Member States the ratio of loans to non-financial sector and GDP was about 107% at the end of 2008; in Lithuania it was about 60%. Compared with other European Union countries, the loan portfolio of Lithuanian banks was relatively larger than the loan portfolios in some other CEE countries (Romania, Slovakia, Poland, Czech Republic, and Hungary), but significantly lower than loan portfolios in

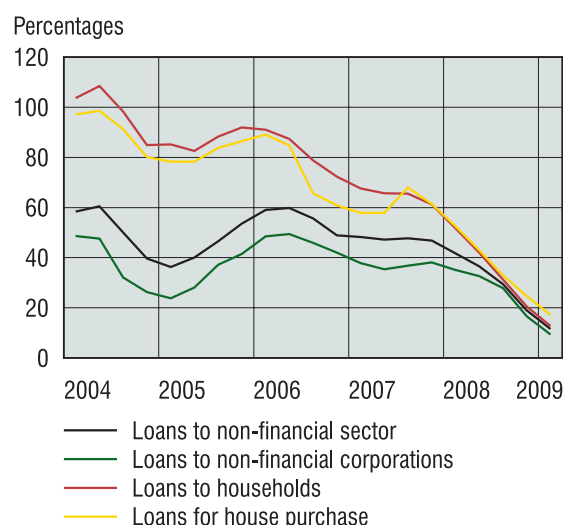
Fig. 26. MFIs loans to the non-financial sector in 2008



Sources: ECB, Eurostat and Bank of Lithuania calculations.

neighbouring Estonia and Latvia or Sweden and Denmark – investors in Lithuania's banking system. In 2008, the nominal growth rate of Lithuanian banks' loan portfolio was close to the nominal growth rate of the country's economy, whereas the comparison of granted loans and the country's economy size has revealed that Lithuania's debt level is still among the lowest in the European Union.

Fig. 27. Changes of the banking system loan portfolio by borrowers (annual change)

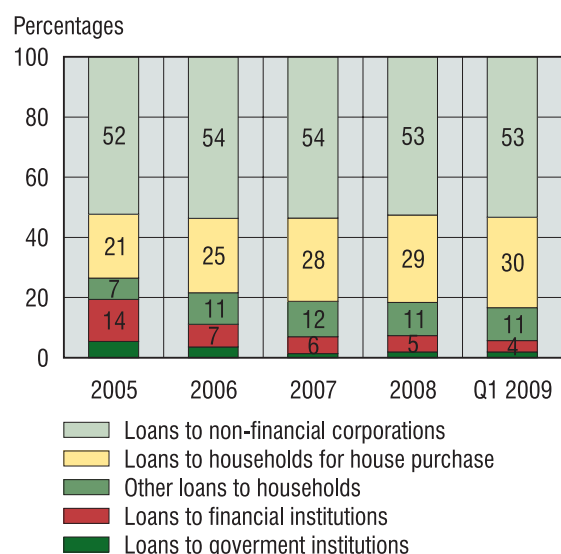


Source: Bank of Lithuania calculations.

The loan portfolio growth by borrower groups suggests that the crediting went down at the end of the year to a similar level in all groups. Credits to the non-financial sector became the major driver for the growth of banking loan portfolios. In absolute terms the increase in loans to enterprises was slightly higher than that of loans to households. The growth rate of loans to non-financial corporations was also gradually decreasing during the course of 2008 to 12% at the end of the first quarter of 2009 (from 47% at the end of 2007). From the end of 2007, the growth rate of loans to house-

Fig. 28. Structure of the banking system loan portfolio

(end of period)



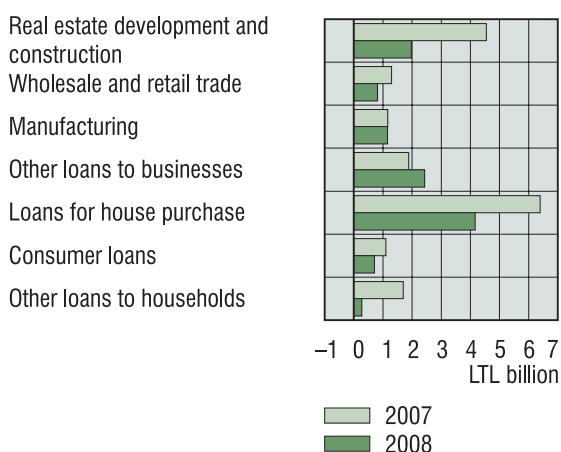
Source: Bank of Lithuania calculations.

holds fell by 48 p. p. to 13% at the end of the first quarter of 2009.

The breakdown of banks' loan portfolio by groups of borrowers remained broadly unchanged during the year. In 2008, loans to households hiked by 1 p. p. to 40%. In Lithuanian banks, loans for house purchase on average accounted for 29% of total loans, while loans to non-financial corporations accounted for slightly more than half of the total loan portfolio.

Fig. 29. Changes in the banking system loan portfolio by economic activities

(annual change)



Source: Bank of Lithuania calculations.

Due to the fact that a significant portion of loans is associated with real estate activities, the banking system remained sensitive to adverse changes in the real estate market. In 2008, the crediting priorities (by type of economic activity) by banks remained broadly unchanged compared with 2007: the credit flow to economic activities that are closed to foreign trade, such as real estate and lending

to households activities constituted the largest share of the total credit flow. However, credit volumes for these sectors declined significantly during the year. The overall level of sensitivity was contained by the fact that loans for house purchase made up the largest share of bank loans to households in Lithuania, whereas the quality of such loans is higher than the quality of other types of loans as many of individual borrowers for house purchase have on average higher income and higher qualification skills, and eventually, less chances to lose their jobs in the period of a decelerating economic activity.

As in previous years, the biggest portion of loans to businesses in 2008 went to enterprises related with the real estate market¹⁶, however a relative share of loans to this type of economic activities went down following the changes in real estate market development prospects. Last year, the loan flow to economic activities related with real estate and construction activities accounted for 30% of the total loan flow to the business sector (in 2007, they accounted for 51%). The share of bank loans to business, associated with real estate has not changed during the year and made up 21% of the total loan portfolio (or 52%, including loans for house purchase). At the beginning of 2009, the credit flow to real estate and construction activities became negative, like the total credit flow. This was due to a continued decline in credit demand and supply.

With regard to individual borrowers, the portfolios of domestic banks were well diversified. At the end of the first quarter of 2009, an average large exposure ratio¹⁷ indicating credit risk concentration, which formed due to connected lending to individual borrowers, was 118% of total capital, decreasing by 35 p. p. from early 2008¹⁸.

Situation of Bank Borrowers

Households

In the second half of 2008 and in early 2009, the financial situation of households continued to worsen. The economic cycle in the country running into a recessionary phase led to a slower growth of the household income, a rise in unemployment and a decrease in the value of real estate owned by the country residents, whereas a fall of the consumer confidence suggested deteriorating expectations of the population with regard to economic development prospects in the future. Nonetheless, risks related with

¹⁶ Loans to construction and real estate enterprises, as well as leasing and other types of economic activities.

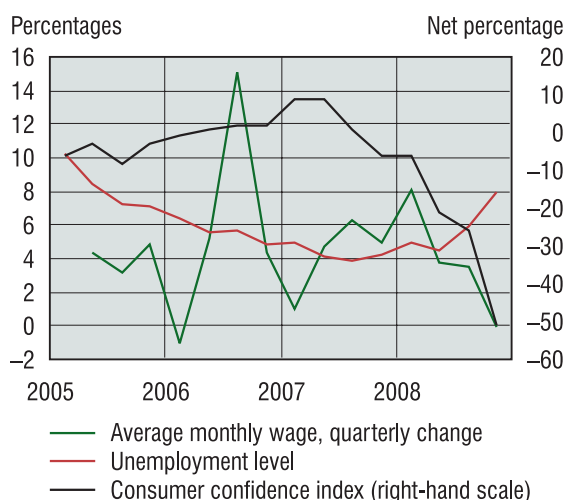
¹⁷ The ratio of total bank loans to connected borrowers that exceed 10% of the capital, and the bank's capital.

¹⁸ In Lithuania, same as in the EU, a large exposure ratio required stands at 800%.

households' debt to financial institutions have remained under control.

The situation of households turned out much worse than expected compared to the projections in the Financial Stability Report of the last year. It was determined by a more rapid growth of unemployment and a faster decline in nominal income. Looking ahead, the financial situation of households is expected to worsen further due to increasing unemployment and decreasing wages. However, a decline in interest rates on euro loans led to an easing of the debt burden for the majority of households.

Fig. 30. Average wage, unemployment level and consumer confidence index (quarterly data)



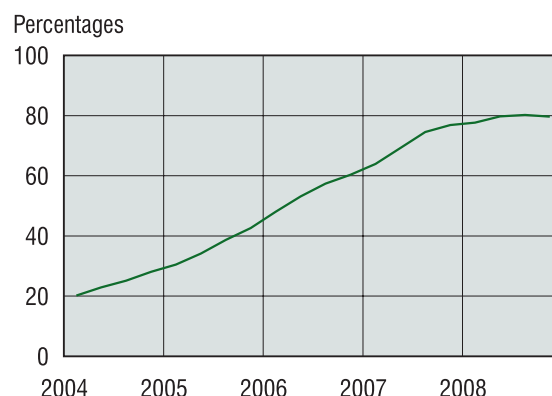
Source: Department of Statistics.

Household Indebtedness

Worsening expectations of the country's population and tightening of credit standards led to a slower growth of the household loans portfolio, while the rise of interest rates and deteriorating financial situation of households have pushed insolvency risks for households up. The financial leverage of households, measured as the indebtedness to disposable income ratio, has increased to 80% in 2008 as compared with the previous year. On the other hand, a moderate decrease in the ratio of household indebtedness to disposable income was recorded in the fourth quarter of 2008. In the coming years, the indicator of indebtedness may rise amid a decrease in disposable income of households; albeit a trend of an indebtedness growth deceleration can be observed.

The household indebtedness level in Lithuania remains relatively low, compared with other European countries. Although the ratio of net indebtedness (loans and deposits) of households to GDP continued to grow, it was still among the lowest in Europe and considerably lower than in the neigh-

Fig. 31. Ratio of household indebtedness to disposable income (end of quarter)



Source: Bank of Lithuania calculations.

bouring Baltic countries. It is worth mentioning that risks related with a fast growing indebtedness of households remain at the downside owing mainly to the fact that net indebtedness of households is declining slower than GDP (see Fig. 101).

Loans accounted for the largest share (77%) of households' liabilities. Also, it should be noted that amid a considerable increase in other accounts payable by households the share of loans contracted by 18 p. p. as compared with households' liabilities. The remaining share of liabilities practically was made of the households' debt to non-financial corporations.

Approx. 11.2% of households have taken loans for house purchase. In 2008, the number of households with loans for house purchase continued to increase, although the growth rates were lower, compared with previous years. The share of households with consumer or other loans declined in recent years by more than 7 p. p.

Table 5. Indebted households

	2005	2006	2007	2008
Share of households with loans for house purchase, %	6,0	8,7	10,3	11,2
Share of households with consumer of other loans, %	18,1	22,3	21,2	14,0

Sources: Department of Statistics and Bank of Lithuania calculations.

The average amount of a loan for house purchase in Lithuania, compared with the results of the survey¹⁹ carried in 2008, shrank by LTL 30,000 to approximately LTL 145,000.

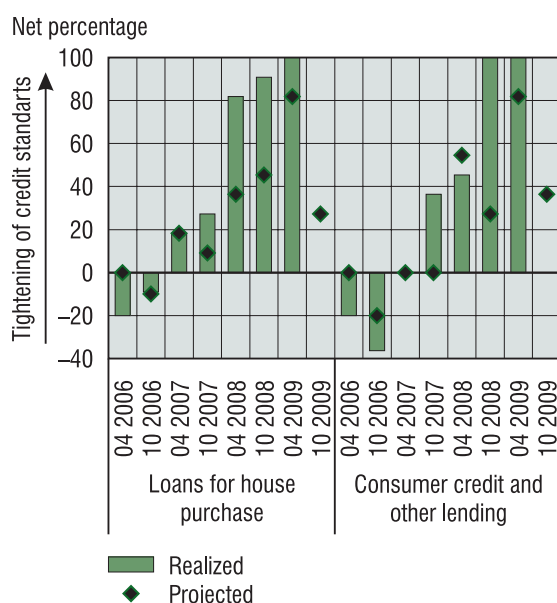
The survey of households' with loans for house purchase revealed that income of households with loans for house purchase

¹⁹ The survey on behalf of the Bank of Lithuania was conducted by Baltic Surveys, a Lithuanian – British market and public opinion Research Company in February–April 2009. 715 Lithuanian households with bank housing loans participated in the survey. For more detailed survey results visit the Bank of Lithuania's website http://www.lb.lt/lt/ekonomika/fin_stabilumas/fin_paskola.htm.

were almost twice the average household income in Lithuania. The average income of their families makes up LTL 4,540 (the Lithuanian average is LTL 2,422). The average income of households with loans for house purchase declined slightly, compared with the results of the analogous survey last year.

Almost 24% of the portfolio of households-owned loans for house purchase has insurance from UAB "Būsto paskolų draudimas". The bank lending survey²⁰ revealed, that half of the respondents noted an increasing share of insured loans for house purchase in the total portfolio. Thus banks are better secured against the customer default risk.

Fig. 32. Changes in banks' credit standards for household loans



Sources: Bank Lending Survey conducted by the Bank of Lithuania and Bank of Lithuania calculations.

Many of the banks reported a progressive tightening of credit standards in recent years as well as their intentions to leave the terms and conditions on lending for house purchase unchanged or slightly mitigated in next 12 months.

Banks reported having tightened the credit standards applied to loans for house purchase and consumer loans by increasing the required income level of a borrower (in view of increasing living costs) and the down-payment by the borrower.

²⁰ Bank lending surveys are organised in order to obtain information on non-interest bearing credit standards, lending costs and market expectations. This survey was conducted in April 2009. Its respondents were 9 commercial banks and 3 foreign bank branches. For more detailed survey results visit the Bank of Lithuania's website http://www.lb.lt/lt/ekonomika/fin_stabilumas/apklausa0904.pdf.

Table 6. Net tightening of credit standards
(according to net differential between banks that tightened and eased credit standards, percentages)

	04 2007	10 2007	04 2008	10 2008	04 2009	10* 2009
Changes in standards applied to loans for house purchase	18	27	82	91	100	27
Due to changes in macroeconomic environment	18	45	82	100	100	–
Due to housing market prospects	18	45	73	100	100	–
Changes in standards applied for consumer loans	0	36	45	100	100	36

Source: bank lending surveys.

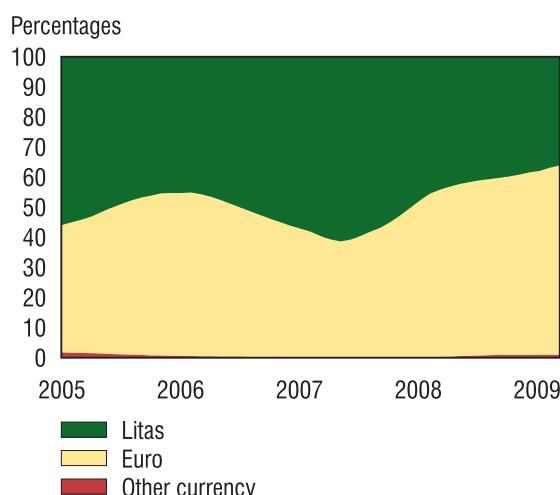
Note: positive or negative differentials mean that majority of banks raised or lowered crediting standards respectively.

*Expectations of the respondent banks.

The share of euro loans in the total loan portfolio continued to grow in recent years driven by lower interest rates on loans in euros and confidence in the fixed exchange rate of the litas. The share of loans in other currencies than litas or euro remained moderate in Lithuania, and individuals that have such loans, i. e. borrowers that hold assets or income in this currency, the so called hedged borrowers, are usually safe against the risks associated with currency exchange rates. As of March 2009, the share of such loans accounted for 1% of the total portfolio of loans for house purchase. Bank deposits in other currencies than litas make up a similar percentage. Loans issued in Japanese yens or Swiss francs, traditionally with a very low interest rate, make up a very small part of the loan portfolio. It should be noted that in this case banks pursue a conservative lending policy and turn down requests to issue loans in other currencies if a borrower does not receive income in respective currency. Such policy safeguards debtors of Lithuanian banks against foreign exchange rate risk, which grew significantly in CEE countries that have a fluctuating currency exchange rate.

The Lithuanian households' response to changes in loan interest rates was fast enough in recent years. In 2008, the cost of litas loans grew faster than that for loans in euros, which led to a decline in borrowing in litas. In autumn 2008, with interest rates on loans in litas rising and those on loans in euros falling, demand for new loans in litas decreased critically and some households that had taken loans in litas applied for changing the loan currency from litas into euro. The same trend could be observed in early 2009. Since the beginning of 2008, the share of litas loans for house purchase has shrunk by 11 p. p. to 37%. Similar trends were also observed in the neighbouring Latvia and Estonia. In 2008, the

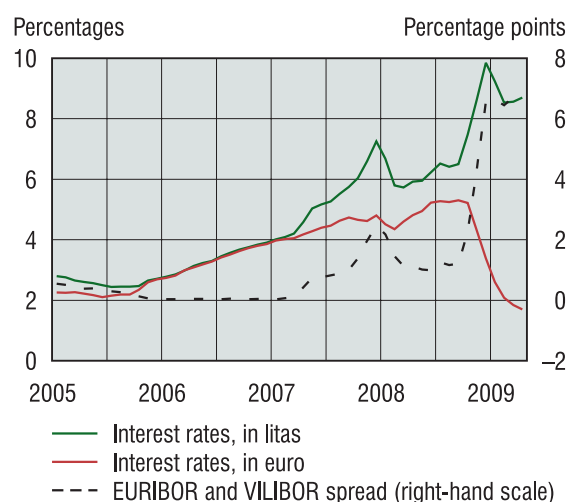
Fig. 33. Breakdown of household portfolio of loans for house purchase by currency (end of period)



Source: Bank of Lithuania calculations.

share of new loans in national currency made up 12.2% in Latvia, and 16.6% in Estonia.

Fig. 34. EURIBOR, VILIBOR and spread between them (monthly data)



Sources: Bloomberg and Bank of Lithuania calculations.

Most popular among Lithuanian households are loans with a short initial interest rate fixation period (up to one year). Around 69% of new loans issued to households during the year were loans with the initial interest rate fixation period of up to one year. This short interest rate fixation period determines a fast response of households to interest rate changes. Short-term rate fluctuations are fast enough and basically in full scope forwarded into banks' debtors' debt repayment expenses, and thus have a negative effect on their financial status. Increasing inter-bank rates in national currency may lead to an increase in the interest payment burden, but banks are offering a possibility to their customers to change their loan currency under market conditions;

moreover, a big portion of loans taken by households are in euros.

The consumer and other loan portfolio began shrinking following a continued increase until autumn 2008. In the first quarter this year, however, the consumer and other loan portfolio grew year on year by 7%. The survey of households with loans for house purchase revealed that households with consumer or some other loan paid for their financial commitments LTL 530 a month on average.

An increase was observed in the share of indebted households with a negative margin²¹. The declining trend in the number of households with a negative margin, which was observed from 2004 to 2006, changed in 2007 to remain at the same level until now. This change was largely driven by an increase in interest rates paid on loans for house purchase. Due to a complicated financial standing, a number of households with a negative margin are more often incapable to settle their debts with credit institutions on time. However, a negative gap from the average living standard in most cases is moderate.

Table 7. Share of households delaying loan for house purchase payments (percentages)

	2005	2006	2007	2008
Households with positive margin	3,7	5,0	8,9	10,0
Households with negative margin	13,8	20,0	17,2	27,2

Sources: Department of Statistics, Survey of Households with a Housing Loan conducted on behalf of the Bank of Lithuania and Bank of Lithuania calculations.

In 2008, the household sensitivity to negative development changes in the financial and macroeconomic environment increased. The sensitivity of debtors to negative developments is best revealed by micro data showing which income groups of households borrowed most and how the ability of households to service debt was affected by changes to interest rates and consumer spending. Such data also enables to assess the level of savings – as means of a precaution against negative developments – of indebted households. As may be judged by these criteria, the sensitivity of indebted households to negative shocks increased in 2008.

Households' Ability to Service Their Debt

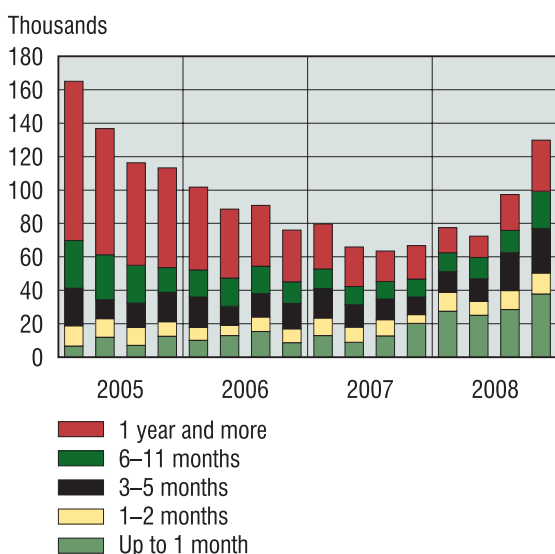
Households' capability to fulfil their liabilities to credit institutions in Lithuania is still considered to be good. Household credit risk dynamics, however, will depend on how the unemployment level, interest rates and housing prices will evolve in the future.

²¹ The difference of household income and expenses makes up a balance of free income. For more information see Annex 2.

In autumn 2008, conditions in the domestic labour market after a prolonged period of improvement notably worsened. A fall in the demand for labour force in separate fields of economic activities (particularly in construction, transportation and retail industries) made wages to go down. A growing number of bankruptcy cases and massive layoffs led to a notable increase in the unemployment. The highest unemployment risk is faced by employees participating in the creation of a relatively lower value added process and with lower wages. The Bank of Lithuania²² forecasts nominal and real wages to fall in 2009 respectively by 7% and up to 12%²³.

According to the data from the Lithuanian Labour Exchange, an increase was registered in the number of jobless for more than 3 months as compared with 2007. These changes signal about an increase in the period during which an individual can find a job. However, with the growth of the economy, a decelerating long-term unemployment is likely to grow too, as it becomes increasingly difficult for people to find work.

Fig. 35. Breakdown of the number of jobless by the unemployment period (quarterly data)



Source: Department of Statistics.

When assessing the solvency of individuals after they lose their job, it should be noted that according to currently effective laws unemployment benefits to individuals that lose jobs cannot exceed LTL 1,041.6. This benefit makes up around 60% of average net earnings per month and it is not enough to cover an average payment for a mortgage loan²⁴. Since in 2008 it was LTL 1,142, losing

a job for households with financial liabilities could lead to insolvency problems.

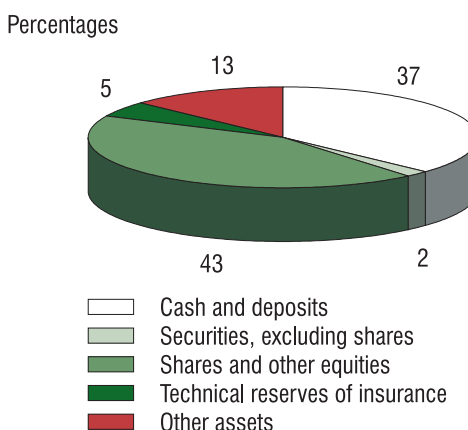
A deteriorating situation in the labour market in other European Union countries led to a decrease in migration prospects; consequently, a continued slowdown of the country's economic growth may end in a further increase of the jobless. Deteriorating employment prospects in Lithuania and other countries will probably lead to a worsening of the financial situation of households. However, the labour market flexibility allows enterprises to more rapidly adapt to changes in the economic environment and mitigate negative effects of the crisis on the economy, as well as fuel the growth after the recovery of domestic and external demand.

Falling wages and growing unemployment led to a decrease in disposable income of households, while falling stock prices and value of investment units led to a decrease in financial assets.

Despite of a household deposits drop observed in the fourth quarter of 2008, the total result for 2008 showed that household deposits increased by 4.3%. Almost all household deposits were held in domestic financial institutions, except for an insignificant part held in other countries.

Until the first quarter of 2008, the biggest share of financial assets was held in banks in the form of deposits, but investment of households into shares and other equity significantly increased in the second quarter.

Fig. 36. Financial assets of households (fourth quarter 2008 data)



Source: Bank of Lithuania calculations.

The value of non-financial assets, the real estate in which accounts for the biggest share, declined due to a decrease in real estate prices.

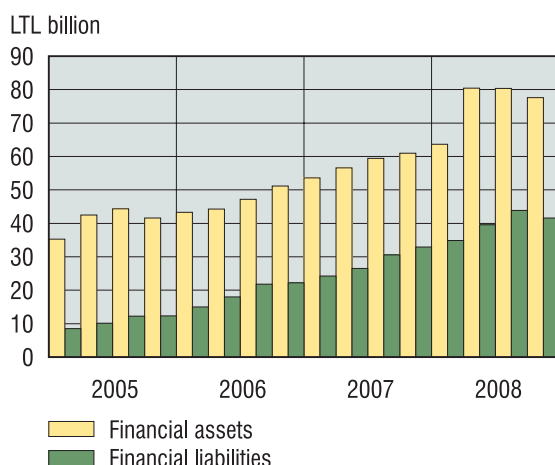
In recent years, net assets of households remained broadly unchanged since financial liabilities were increasing at the same speed as financial assets. The ratio of financial liabilities to financial assets remained quite moderate (54%), similar to the last year.

²² Macroeconomic forecasts by the Bank of Lithuania, May 2009.

²³ Taking into account the impact of projected inflation on individual income.

²⁴ Calculated based on household survey conducted on May–April 2009.

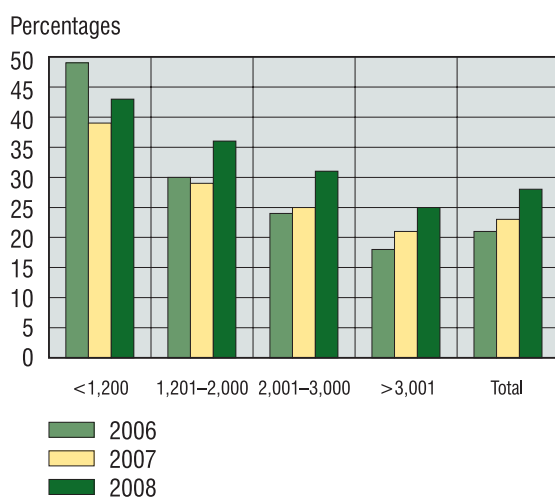
Fig. 37. Financial assets and financial liabilities of households
(end of quarter)



Source: Bank of Lithuania calculations.

The bank survey, carried in 2009 showed that on average 30% of household income were used for debt servicing. This indicator shows a good lending practice, although it is worth mentioning that in some cases the part of income used for loans for house purchase servicing was significantly higher. Respondents from the lowest income (below LTL 1,200) category reported they use on average 43% of their income to service loans for house purchase. The level of loans for house purchase servicing in 2008 was lower than in 2006, although it remained slightly above the level in 2007. In other income categories, the part of households' income, which is used for debt servicing, has grown in recent years.

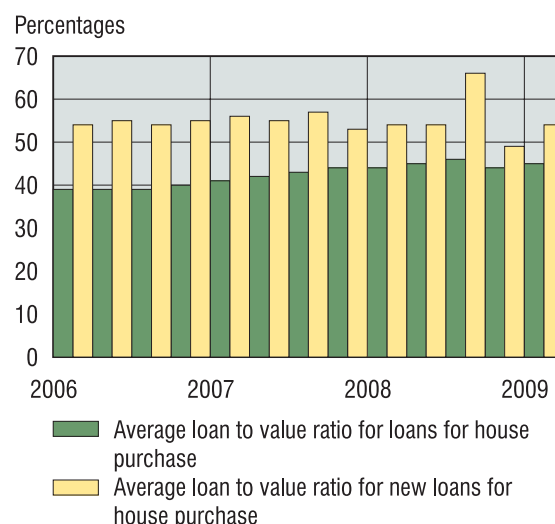
Fig. 38. Share of households' income used for servicing loans for house purchase



Source: Survey of Households with a Housing Loan conducted on behalf of the Bank of Lithuania.

No significant changes in loan-to-value ratio with regard to the entire system were registered in previous years.

Fig. 39. Dynamics of loan-to-value ratio
(quarterly data)



Source: Bank of Lithuania calculations.

The number of individuals with loans for house purchase, who save, decreased marginally, although accumulated assets helped to contain the risks. The number of households that is not saving increased by 7 p. p. to 66% over the year. Households that are saving, save on average LTL 995 a month, although their savings amount varies from LTL 30 to LTL 10,000. Already accumulated liquid assets, such as deposits, and securities, help to mitigate risks for households that cannot afford to save. The highest risk category of indebted individuals includes households that do not save and failed to accumulate at least some assets. Such households accounted for 15.7% of households with loans for house purchase. The number of households that is not saving and that has failed to accumulate assets increased by more than by 3 p. p.

A recently observed fall of real estate prices contributed to an increase of risks that financial institutions may face because of individuals with loans for house purchase, since fluctuations of real estate prices in the context of household insolvency may turn into higher losses for creditors; however, the fact that a big part of households with loans for house purchase have income higher than average continues to be a risk mitigating factor.

Table 8. Share of indebted households that do not save
(percentages)

	Do not save	Do not save and have no liquid assets	Do not save and delay payments
2006	53,2	n. a.	4,0
2007	58,9	11,1	7,3
2008	66,0	15,7	11,9

Sources: Department of Statistics, Survey of Households with a Housing Loan conducted on behalf of the Bank of Lithuania and Bank of Lithuania calculations.

In the view of the current forecasts of the economic development, the capability of a larger part of households to repay their debts do not pose any significant risk to domestic credit institutions; but the risk may grow in case of the country's economic growth slowdowns or if it persists longer than forecasted. The households that have taken loans for house purchase with a high loan-to-value ratio when the real estate market reached its peak pose a larger threat, since the loan amount may exceed the collateral value if property prices go down. In such a case negative dynamics of housing prices may cause problems for those households that were forced to sell their houses in order to pay their debts to credit institutions.

The Bank of Lithuania's calculations showed that nearly 71% of household liabilities can be covered by the most liquid assets, i.e. cash holdings and deposits of households. Capability of households to cover liabilities with liquid assets went down by 15 p. p. in 2008 as compared to 2007. However, in 2008, households' capability to cover current liabilities with any sort of financial assets increased year on year by 2 p. p. to 187%. This adds to a reduction of banking risks, since probable losses in case households turn insolvent will be limited.

Stress Testing of Households

Stress testing results showed that a shock of rising interest rates may have a more significant impact on the financial status and solvency of households than a shock of a rising unemployment level. This may be explained by the fact that rising interest rates leads to increasing debt repayment costs for all households that have chosen interest rates with a short fixation period, whereas an unemployment level affects only some of the households. However, the risk related with a shock of rising interest rates decreases because of a possibility by credit institutions to temporarily postpone the loan payments, extend the loan repayment period, etc.

Stress testing results showed that falling housing prices have the biggest affect among all the modelled shocks on losses of credit institutions in case of their default. Compared to the last year stress testing results, the impact of respective shocks on the banking loan portfolio remained unchanged. This indicated quite conservative lending policies in banks.

For more detailed information on the household budget research and stress testing model, assumptions and results see Appendix 2.

Corporate Sector

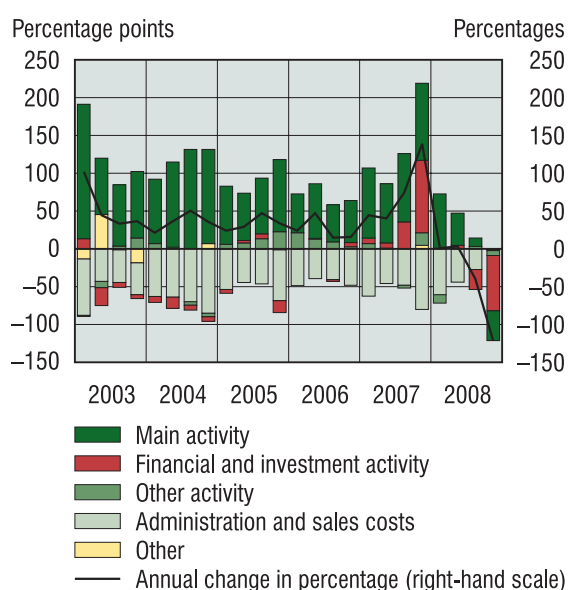
Financial Condition of Corporate Sector

A faster than expected deceleration of the economic activity has lead to significant changes in the standing of non-financial corporations. This resulted in worsening of non-financial corporations' financial situation and a growing number of bankruptcies. Income from sales experienced the same decline as business confidence indicators. However, in view of profit accrued in the previous years of economic growth and a relatively insignificant total debt level (32% of GDP), the financial standing of companies remains satisfactory. Nonetheless, some more indebted non-financial corporations found themselves in a deteriorating financial situation due to delayed payments between non-financial corporations, which lead to an increase in debt repayment risk, limited possibilities for borrowing and investing.

There were less profit earning opportunities for non-financial corporations in 2008 as a result of demand that narrowed both, in domestic and foreign markets. Corporate profit before taxes started to decline compared to GDP. With sales decreasing and costs increasing, the operations of non-financial sector were loss-making in the fourth quarter of 2008, and the average annual profitability (4%) approached the year 2002 level. Losses of loss-making non-financial corporations increased threefold, while only a half of all non-financial corporations were earning profits, i.e. a decrease of 15 p. p. year on year. The number of profit earning non-fi-

Fig. 40. Factors contributing to the change in non-financial corporations' profit before taxes

(annual changes)



Sources: Department of Statistics and Bank of Lithuania calculations.

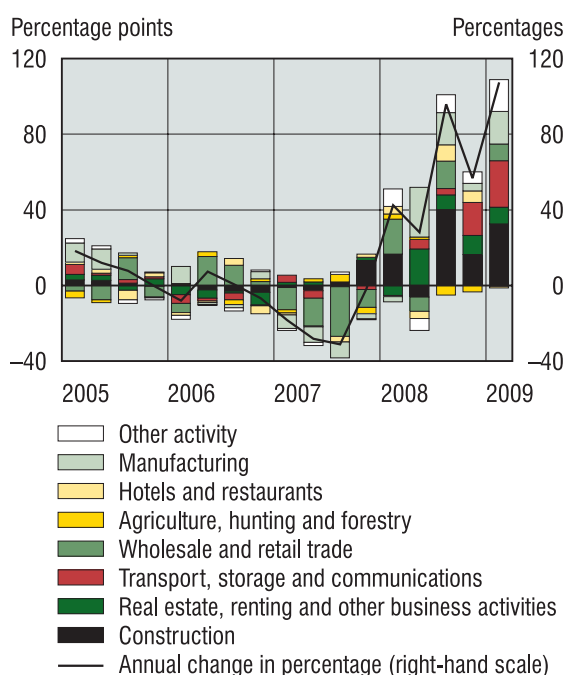
nancial corporations came close to the level in 1999–2000, when operational results of non-financial corporations had deteriorated as a result of the economic crisis in Russia.

The decline in corporate earnings was driven largely by poor results of financial and investment operations because of a fall in security and property prices, as well as losses related to foreign exchange rate variations. Some years ago, a significant portion of the corporate profit gain accounted for the property revaluation in the context of rising property prices, whereas the fall of prices later led to financial and investment losses of some non-financial corporations as they revaluated the property they had for sale. Decreasing security prices reflected global trends with regard to the fall of investment capital value.

A decreasing number of new businesses and a significant rise in the number of bankruptcies reflected a flagging business activity. The largest changes occurred in the domestic consumption-oriented economic activities, such as construction and real estate. A decreasing demand for real estate led to a notable decrease in the number of new construction and real estate non-financial corporations, while deteriorating financial status led some of operating non-financial corporations to bankruptcy. In 2008, the number of bankruptcies in this field of economic activities was twice higher as compared to the same period a year ago.

Fig. 41. Factors contributing to change in number of bankruptcies in the end of quarter

(annual change)



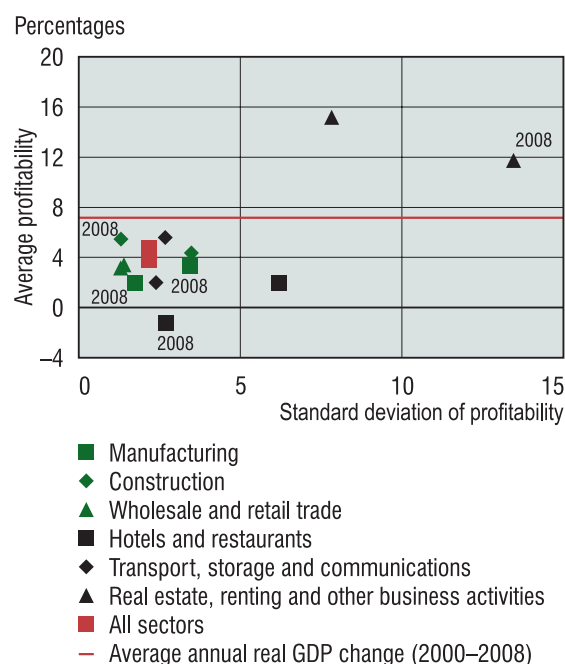
Sources: Department of Statistics and Bank of Lithuania calculations.

The impact from the economic downturn will be felt unevenly across non-financial

corporations in separate economic activities. The situation of those economic sectors, the output demand in which are more related to a business cycle, will deteriorate relatively more than in those economic sectors where the demand for goods produced and services rendered is relatively less elastic. The first group includes such economic activities as construction and real estate (the profitability of the latter declined by 25 p. p. in the course of the year), and the second group includes non-financial corporations in agricultural, food processing and partly chemical industries (gross profitability of industrial non-financial corporations went down by 4 p. p. in the course of the year). In view of the said above, domestic commercial banks were most conservative when estimating the situation in such economic activities as construction, real estate and transport. Banks forecast further deterioration of the financial situation both, in the said and other economic activities²⁵.

Fig. 42. Average profitability of non-financial corporations and standard deviation in profitability of non-financial corporations

(2000–2007 and 2008; quarterly data)



Sources: Department of Statistics and Bank of Lithuania calculations.

Economic activities open to foreign trade may recover more rapidly. Since export markets are expected to start growing earlier than in Lithuania, non-financial corporations engaged in agricultural, fishing, mining, quarrying and manufacturing, transport and storage non-financial corporations activities are likely to show better results in the future than non-financial corporations in other economic activities.

²⁵ Bank Lending Survey conducted by the Bank of Lithuania in April 2009.

Box 1. Earnings of non-financial corporations in the Baltic countries

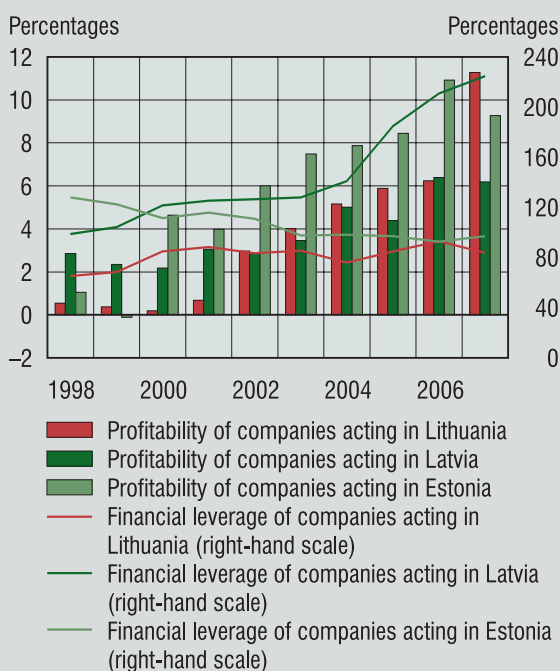
Growing sales and earnings of non-financial corporations in years of the economic upturn had strengthened their balances and provided possibilities for external financing of business development: in 2006–2008, non-financial corporations' debts to banks in the Baltic States grew threefold. Consequently, the financial leverage of non-financial corporations was increasing.

The following regularities of the development of non-financial corporations in the Baltic countries could be observed: a fast development of real estate and related economic activities, which was several times above the total average profitability, was observed over the past few years. This contributed significantly to the strengthening of the financial standing in the system of non-financial corporations. However, the earning structure shows an increased sensibility to changes in the value of different assets that are to lead to a deterioration of operational results of non-financial corporations and the growth of losses for the banking system.

Enterprises in the Baltic States reached the highest level of profitability in 2006–2007. The highest profitability, compared to Lithuania and Latvia, was in non-financial corporations operating in Estonia*. Since 2000, the profitability in this country was on average by 3 p. p. higher than in Latvia or Lithuania.

Profitability of real estate companies exceeded gross profitability of non-financial corporations a few times, while sales and earnings were growing in such economic activities as trade, manufacturing and transport. Positive future expectations of households and increased financing possibilities contributed to an increase in real estate demand, thus allowing real estate non-financial corporations to earn large profits. Starting with 2002, as a rise in the value of real estate holdings pushed operational income and earnings up, the profit earned from financial and other activities, rather than from main operations, increased. However, changes in the value of assets (in April 2009, real estate prices in the Baltic countries fell on average by 40% year on year, and financial market indicators dropped on average by 58%) led to a respective decline in earnings, which is to lead to the deterioration of the financial situation of real estate and other related economic activities.

Fig. 43. Annual profitability and financial leverage of non-financial corporations operating in the Baltic countries

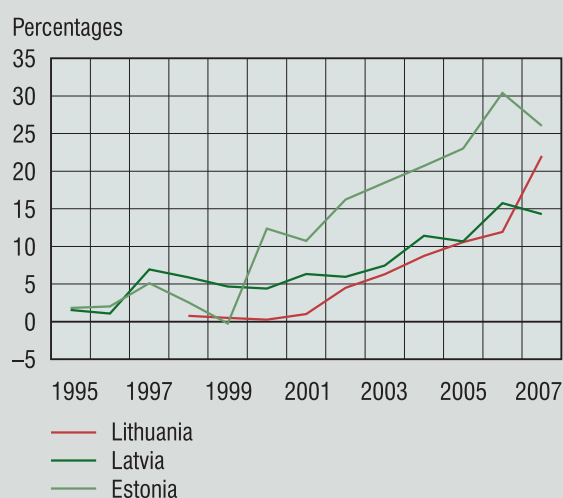


Sources: Department of Statistics, Central Bureau of Statistics of Latvia, Statistics Agency of Estonia and Bank of Lithuania calculations.
Note: Profitability is profit before taxes divided by revenue.

The financial leverage of Lithuania-operating non-financial corporations remains the lowest. They were using their own funds to finance their needs more often as compared to non-financial corporations in other Baltic States, which showed that the risk posed by non-financial corporations to financial institutions was lower. The profitability of Lithuania-operating non-financial corporations was close to the profitability of non-financial corporations in Latvia, whereas a steep increase of it in 2007 should be treated with caution due to the inclusion of the assets value increase into their balances. Since its peak in 2006, the profitability of real estate non-financial corporations declined, while remaining at its high level. With the demand for real estate shrinking, these non-financial corporations are facing the challenges of decreasing sales, which may lead to losses and weaker possibilities to repay loans.

* For more details, see Box 3 in the Financial Stability Review of the Bank of Lithuania for 2008.

Fig. 44. Ratio of the Baltic countries operating non-financial corporations' profit before taxes to GDP



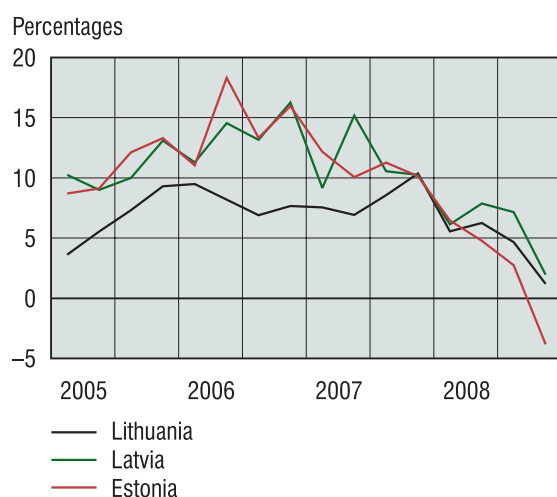
Sources: Department of Statistics, Central Bureau of Statistics of Latvia, Statistics Agency of Estonia and Bank of Lithuania calculations.

Financing of Non-financial Corporations and Capability to Service Debt

Shrinking profit and cash flows from the main activities led to an increase in demand for financial recourses. However it was limited by tight credit standards by banks, increased interest rates on new loans and soaring risk premium. Commercial bank lending survey revealed that banks are not to tighten credit requirements for non-financial corporations for the next six months. However, in view of the deteriorating economic situation in the country, declining income, and companies abandoning their investment plans, banks expect the credit demand to decrease. This trend emerged in early 2009, when in the first quarter the domestic banking system's portfolio of loans to non-financial corporations declined by almost 3% or LTL 0.9 billion.

In 2008 the lending of banking system to non-financial corporations was the lowest during recent three years. The lower loan to collateral ratio of new loans (the biggest drop was registered in the most risky economic activities, such as construction and real estate) reflected deteriorated borrowing possibilities and a stricter risk management.

Fig. 45. Ratio of credit flow to non-financial companies and GDP
(flow per quarter)

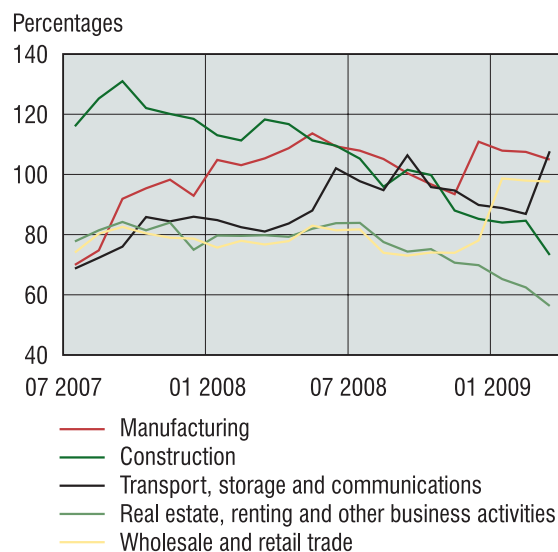


Sources: ECB, Eurostat and Bank of Lithuania calculations.

Some larger non-financial corporations made attempts to borrow in the securities market to compensate for restricted possibilities to get bank loans. Although the cost of market-based financing was higher, non-financial corporations borrowed by 56% more in 2008 through the issuance of bonds for LTL 145 million. This type of borrowing is more attractive since it does not require securing of debt. However, companies that used market-based financing did not escape the economic downturn either: some of them failed to redeem the issued bonds in time due to solvency related problems.

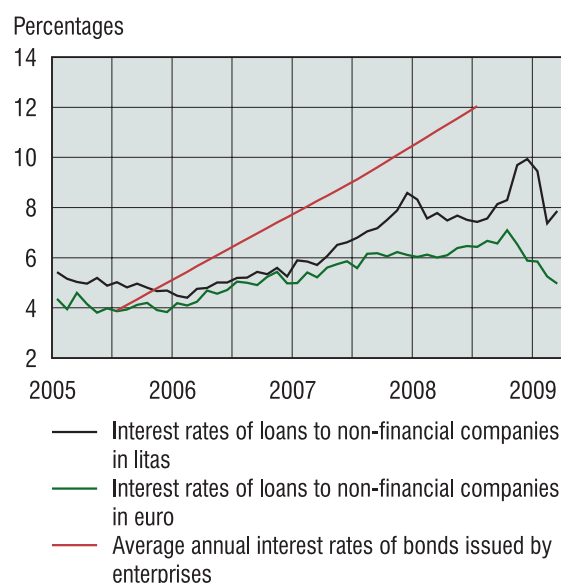
Fig. 46. Loan-to-value ratio of new loans to selected activities

(12 months moving average)



Source: Bank of Lithuania calculations.

Fig. 47. Financing cost of non-financial corporations in market and interest rate of new loans to non-financial corporations issued by MFI



Source: Bank of Lithuania calculations.

The problem related to the scarcity of financial recourses and an increase in their cost had a significant effect on investments by non-financial corporations. Tangible investments declined across almost all economic activities. Restrictions in the balance-sheets of non-financial corporations and strict crediting policies by banks may have a significant effect on the reduction of tangible investments in the coming periods, as one fifth of them used bank financing in 2008. Moreover, foreign parent companies were cautious with regard to the prospects of Lithuania-operating companies: the decline of their funds for financing tangible investments of their subsidiaries in Lithuania

was one of the fastest. This could have been related with a deteriorating situation in the real estate market that had been financed by foreign companies most intensively.

In 2008, the liquidity situation of non-financial corporations faltered and a decline was registered in deposit and cash holdings. It also could be seen from a deteriorating value of the coefficients for current and critical liquidity. A diminishing coverage of liabilities by cash contributed to increasing problems related to delayed payments between non-financial corporations. An increase in amounts receivable within one year and debts reflected a deteriorating solvency of non-financial corporations. In late 2008 and early 2009, the situation regarding the solvency of non-financial corporations became complicated also due to government debts to non-financial corporations.

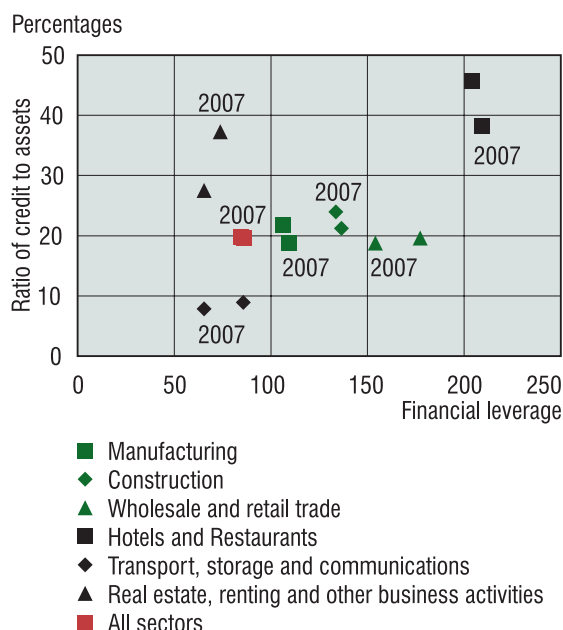
The growth of debt and its cost meant an increase in the loan and interest payment burden for non-financial corporations. Since the beginning of the year the interest coverage indicator²⁶ continued to decline reflecting difficulties of non-financial corporations to meet their financial liabilities.

Activities that are particularly sensitive to changes of the economic cycle were the first to encounter difficulties during the current economic recession. A good financial standing of these economic activities during the economic upturn in preceding periods allowed an increase of the financial leverage, but flagging consumption led to poor operational results and rapidly decreasing bank lending. In view of the said, non-financial corporations with the biggest debts to banks and relatively most sensitive to changes in a business cycle posed the highest risk for the domestic financial system.

The financial leverage, which indicates the ratio of gross debt of a company to its equity, reached its peak (94%) in the middle of the 2008. An increase in costs for and limited availability of financial recourses may have led to a decline in external financing in non-financial corporations, which became more pronounced in the second half of the year. Based on this indicator, trade and some other small economic activities, such as hotels, restaurants, fishing, were facing the highest risk.

Credit risk stress testing showed that most sensitive to unfavourable macroeconomic shocks in economic activities are real estate and trade of non-financial corporations. Moreover, loans to these economic activities account for a significant share of the credit institutions' portfolio. Consequently, operational prospects of these economic activities pose the highest risk to credit institutions.

Fig. 48. Change in the ratio of loans to non-financial corporations and assets and financial leverage of non-financial corporations (2007–2008)



Sources: Department of Statistics and Bank of Lithuania calculations.

The risk assessment in real estate market, presented in preceding Financial Stability Reviews have materialized – the profitability of construction and real estate non-financial corporations declined along with a rise in the number of bankruptcies.

In future we would hardly avoid losses by non-financial corporations and further deterioration of the financial situation, but the government-proposed economy stabilization measures and expected recovery of foreign markets should help to stabilize the situation in the medium-term. Besides, the competitiveness of the Lithuanian non-financial corporations in global market may increase due to the flexibility of the Lithuanian labour market, which is relatively higher; this would help to reduce costs and the layoff of less productive workers. The banking system resilience to a worsening loan quality has been analysed in detail by applying a stress testing model (see p. 55).

Real estate market

Changes in the supply-demand ratio led to a correction of prices for real estate and a decrease in the number of transactions. A slowdown in the real estate market was driven by deteriorating expectations regarding a further decrease of real estate prices (the construction confidence and economic sentiment indicators are the lowest during the time the indicators have been estimated) and tightening of credit standards for house purchase loans.

²⁶ The interest coverage ratio is defined as operating profit/loss plus financial income in relation to financial costs.

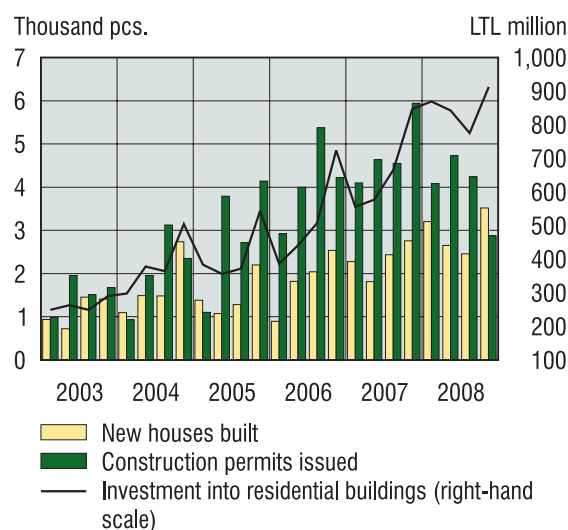
In the context of a sharp fall of the demand and a continued growth of the supply, a supply surplus has been observed in the real estate market at the present time. The demand growth was supported by a number of new residential property objects that were completed by now and the construction of which was started after housing prices had reached their peak. A growing number of advertisements about property sales indirectly reflected an increase in the demand as well.

The number of construction permits shows that construction companies have postponed a further increase of the supply for 2009; many projects have been suspended or abandoned for an indefinite period. This is corroborated both by data for the fourth quarter of 2008 (in 2008, the number of construction permits went down year on year by 17%) and the construction confidence, which reached at the end of 2008 its lowest level since the start of its record in 2003. Such a pronounced decline suggests a persistent downward trend in construction activities and a significant decrease in the volume of work. Nonetheless, the supply is expected to stabilize in one year and the housing supply may grow up in the future when the domestic economy stabilizes and housing affordability increases (see Box 3).

The expansion of commercial construction went on quite rapidly too (in 2008, the space of administrative premises increased by 32%). Almost absolute occupancy rate in the office segment in a few consecutive years started to deteriorate. The economic situation was the major reason behind this. In recent years, the demand for large leased areas was lower. Consequently, the number of commercial property transactions started declining, while the majority of leasing contracts were only signed as large leased areas were exchanged by enterprises for smaller and cheaper premises.

After the economy growth decelerated in 2008, only conservative investing instruments, such as deposits and most reliable bonds yielded a positive return, while the return on real estate in all Baltic countries was negative.

Fig. 49. Number of new houses built, construction permits and investment into residential buildings (end of quarter)



Sources: Department of Statistics.

Table 9. Return on investment in the Baltic countries (end of period, percentages)

		2004	2005	2006	2007	2008
Lithuania	Shares	68,2	52,9	9,8	4,4	-65,1
	Deposits	1,2	2,1	2,5	3,9	5,7
	Bonds*	4,5	3,7	4,1	4,5	5,6
	Housing**	29,2	61,1	28,8	20,9	-15,0
	Pillar III pension funds	0,7	11,8	5,5	7,5	-22,9
Latvia	Shares	43,5	63,5	-3,1	-9,2	-54,4
	Deposits	1,9	1,7	1,7	2,6	3,0
	Bonds*	4,9	3,9	4,1	5,3	6,4
	Housing**	24,3	61,5	69,0	-1,7	-35,0
Estonia	Shares	57,1	48,0	28,9	-13,3	-63,0
	Deposits	2,1	2,2	3,2	5,0	5,9
	Bonds*	4,4	4,2	5,0	6,1	8,2
	Housing**	23,9	37,8	37,3	-5,9	-21,0

Sources: national central banks, OMXV, OMXT and OMXR.

*Return on government bonds, used for convergence evaluation purposes.

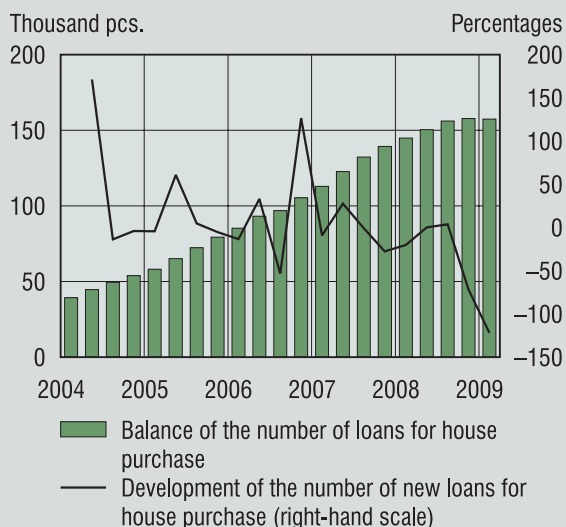
**Only housing price increase evaluated, without housing rent income.

The level of investment into commercial and residential property depends largely on current profit, and the profit expected in the future. In view of this factor, investing into real estate in the nearest future would be slow. The likelihood of declining interest rates to outweigh negative profit expectations is low.

Box 2. Life quality indicators and prospects of the real estate market

Judging by the area per capita, which is one of the smallest among the European Union Member States, and an increasing number of the most active house purchasers (population aged 20 to 35) in the nearest decade, housing demand is likely to recover in Lithuania in the medium term. With the recovery of the national economy, the real estate market situation is likely to improve shortly as well. On the other hand, with the population's increased uncertainty surrounding future prospects, labour possibilities and income, the bulk of the population's assets are now held as savings. Moreover, as the housing market experienced a great shock, the approach to housing as a particularly attractive investment is going to be much more cautious.

Fig. 50. Number of loans for house purchase dynamics
(quarterly data)

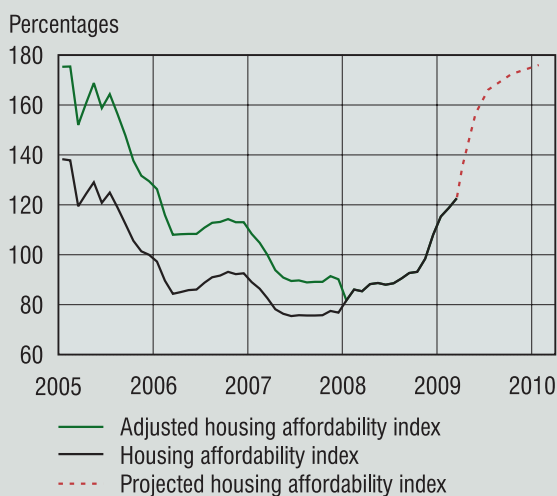


Source: Bank of Lithuania calculations.

The improvement of economic situation, growth in the populations' income and purchasing power results in an increase of the populations' welfare and demand for better quality and more spacious housing. The monthly net wages to average 1 sq m house price ratio basically reflects welfare developments. In recent years, as real estate prices went down and wages of individuals were still on a rise, this ratio increased markedly and reached the level recorded in 2005. This indicator, similarly to the housing affordability index, shows the population's possibilities for house purchase, however when calculating the latter, financing conditions are also taken into account.

The housing affordability index* increased last year, i.e. the possibilities for households to purchase a dwelling improved. Falling house prices increased the affordability index, rising interest rates and the beginning of a decline in household net wages lowered it. However, the population's expectations about falling house prices in the future lowered demand. This encouraged a part of households to postpone a decision to purchase a dwelling. First, demand was lowered by a worsening financial situation of households; second, expectations that in the near future quite a lot of real estate overtaken from insolvent customers will be on sale at low prices; and third, the start of discussions regarding the real estate tax to be applied.

Fig. 52. Housing affordability index in 2005–2010
(monthly data)



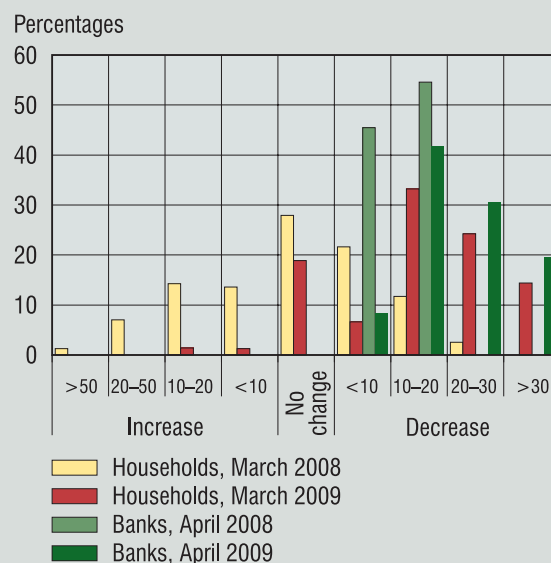
Source: Bank of Lithuania calculations.

Fig. 51. Monthly wages to the average 1 sq m house price ratio
(monthly data)



Sources: Department of Statistics, UAB "Ober-Haus Real Estate" and Bank of Lithuania calculations.

Fig. 53. Expectations of the house price developments (in percentages) over the next 12 months



Sources: Survey of Households with a Housing Loan conducted on behalf of the Bank of Lithuania and Bank Lending Survey conducted by the Bank of Lithuania.

Given the credit standards for loans for house purchase observed until now, the calculated historic housing affordability index should be noticeably different from the real situation, because in many cases even 100% of the value of the housing being acquired was financed. Moreover, the period of loan was 30 or 40 years, and the restriction on household expenditure for the repayment of the loan was up to 50%. Therefore an adjusted housing affordability index** showing more liberal credit conditions is given in Fig. 52.

One could claim that until the autumn of 2008, when credit standards began to be tightened markedly, the housing affordability index had not revealed the actual market situation. Recently, even with house prices declining and the housing affordability index increasing, the population is not in a position to purchase a house as a result of deteriorating credit standards and income decreases. Having analysed the index development contributions it is obvious that the greatest contribution to the housing affordability index comes from interest rate developments; a lesser contribution comes from household income developments and house price developments.

The survey of households with a loan for house purchase shows that due to the start of price declines and further prevailing expectations of price decreases, housing demand will continue to be sluggish in 2009. Only 4% of all respondents indicated that they intended to purchase a dwelling over the next 12 months, and only a half of them was going to apply to banks for a loan for house purchase. Moreover, in comparison with the results of an analogous survey conducted in 2008, the households' assessment of the price developments of real estate over the next 12 months was much more pessimistic. Households expect that house prices would go down for another 14% on average.

This year, the banks' assessment of the housing market outlook was slightly more conservative than that of households and worse than the assessment in October 2008. All banks that participated in the survey stated that house prices would keep declining moderately in 2009. The bulk of the respondents (42%) indicated that real estate prices would go down on average from 10 to 20%. This view should result in a further maintenance of credit standards and in the reduction of volumes of lending for house purchase, thus limiting the housing demand through the credit channel. Furthermore, with a decline in the house value, speculative transactions are likely to disappear in the market (according to the State Enterprise *Centre of Registers*, most speculators withdrew from the market in the first half of 2008).

Based on the Bank Lending Survey, respondent banks were equal in number in their forecast that stagnation in the domestic real estate market would last from 1 to 2, from 2 to 3, and longer than 3 years. Compared to the results of the survey conducted in October 2008, respondents stating that the real estate market activity would recover only after 3 years grew markedly in number.

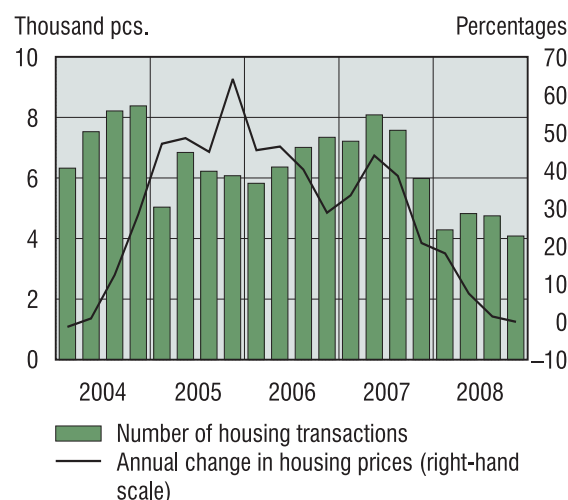
* It is assessed to what extent a household of two persons earning average income satisfies the conditions of lending for the purchase of an average dwelling (when calculating, an assumption is made that an average price 60 sq m dwelling is purchased, the debtor's down payment is 20% and the lending period is 25 years; in addition, a restriction is imposed that only 40% of the household's income can be allocated for the monthly debt servicing. In 2008, the housing affordability index increased as a result of house price declines and persisting wage increases.

** When calculating, an assumption is made that an average price 60 sq m house is purchased, there is no down payment, the projected lending period is 40 years, and 50% of the household's income can be allocated for the debt servicing.

According to the economic theory, the house price is determined by three factors: household income, interest rate, and the existing housing fund. Once the price is established, the volume of investment in real estate becomes clear in the current period, which influences the housing fund of the next period. This dynamic process takes place as long as house prices foster the construction of such a level which covers depreciation and a constant level of the housing fund is maintained. Even if in the short term the housing demand would increase and the entire demand growth would be transferred into the price, this could increase the housing fund and thus reduce house price increases in the long term.

In many economies, including Lithuania, an adjustment of real estate prices took place. Over a year, housing demand prices fell 18%, and in the commercial premises sector they dropped by 23%²⁷. Rent prices did not avoid trends of a decline either, falling 5%

Fig. 54. House price and number of transactions dynamics
(quarterly data)

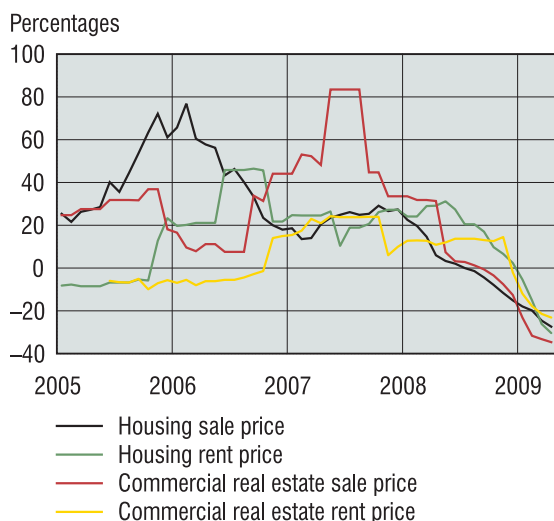


Source: State Enterprise Centre of Registers.

²⁷ According to the UAB Ober-Haus Real Estate.

in the housing sector and 12% in the commercial premises sector. On the other hand, the price level of actually concluded house purchase/sale transactions, according to the State Enterprise *Centre of Registers*, did not change over a year²⁸. While house prices and house rent prices developed in the same direction, house prices declined relatively more than rent prices. This reflected a consistent shrinkage of the house price "bubble".

Fig. 55. Real estate sale and rent price dynamics
(monthly data)



Sources: Data of real estate agencies, Department of Statistics and Bank of Lithuania calculations.

The price adjustment shows the real estate market tensions and, with prices approaching the level reflecting the domestic macroeconomic situation²⁹, the uncertainty surrounding the potential further scope of adjustment remains high. Looking ahead, real estate price dynamics will be driven by the market supply/demand ratio, which depends on the general domestic economic situation and changes in the credit standards for real estate companies and households.

Recently, a tendency of cutting prices of houses for sale and offering various additional things by many real estate companies has been observed. This suggests that construction companies have been facing difficulties and are determined to surrender part of their profits or even sell houses at their cost price in order to be able to repay loans

taken for the construction of the objects. At the end of the year, the size of profit margins in the construction and real estate economic activities was still sufficiently large (10% and 22% respectively). This suggests that companies are able to absorb relatively sizeable drops in house prices without incurring substantial losses.

As the economy is switching to a recession phase, companies are acquiring a higher bargaining power. It has been increasingly the case that they try to negotiate rent conditions more actively or move out to cheaper premises. Increasing competition in the commercial real estate market encourages lessors to react more flexibly to lessee requirements or take alternative decisions that would ensure a sufficiently large flow of customers.

Risk to Credit Institutions

Financing of the development of real estate projects and housing needs of the population was among key directions of the bank lending until 2008. Regardless a moderate curtailment of loan flows, financing of real estate development and acquisition was made in 2008 as well, particularly in the first quarter. At the end of 2008, loans for house purchase accounted for about 30% of the total loan portfolio, and loans for the activity related with real estate economic activity made up more than 20%.

Because of a conservative policy of banks in terms of real estate projects, the planned construction process of the majority of commercial buildings may cease due to the fact that in the context of contradictory prospects of the national economy and real estate market, the banks are cautious in lending for real estate projects. By doing this, they aim to reduce the concentration of loans related with real estate and diminish associated risks.

In the environment of higher uncertainty in the market, all domestic commercial banks tightened credit issuing standards to be protected against increasing risk of insolvent customers. However, banks are not interested in limiting the issue of loans for house purchase because there are still substantial reserves of new housing for sale the construction of which was financed by bank loans as well. By continuing to issue loans for house purchase, credit institutions would substitute corporate credit risk by household credit risk. Given historical loss data of loans for house purchase issued by Lithuania and other countries, this would imply a lower bank risk. Moreover, in the case of loans for house purchase, banks would apply smaller risk weights and this would allow to increase the current capital adequacy ratio. However, it should be noted that the tightening of credit standards in many cases is just their re-

²⁸ In some cases, real estate sellers did not hurry to decrease offered price for 1 sq m for the buyer, offering extra services: interior decoration, parking space, and other discounts. This is not reflected in the official price of transactions, although represents a qualitative change in the housing being sold and implies extra costs and lower profit for the seller. Furthermore, the house price index overall does not reflect qualitative changes in the housing being sold, i.e. where during one quarter more of luxury housing is sold, the index rises, and vice versa. Due to these reasons, an adjustment of a larger scope may have taken place in the housing market than indicated by the index.

²⁹ Judging by the house price to annual income ratio.

turn to normal standards typical for mature financial markets, and it consolidates the stability of the domestic banking system.

Because of assets taken over from insolvent customers, domestic commercial banks may be more active in forming real estate market. The impact of this action on the market will depend on a chosen price policy and sales strategy. Here two scenarios are possible: the banks will pursue to get money back as soon as possible and will sell taken over assets at small prices or they will try to retrieve as large as possible amount of money and will be determined to wait until the recovery of the market. The choice of strategy in its turn will depend on the liquidity situation in the financial market. In the environment of an improved liquidity situation, the banks are likely to avoid a necessity to sell taken over real estate held by them at low prices.

In response to deteriorating forecasts of the loan portfolio quality, near a half of the banks that participated in the bank lending survey indicated that they had already established or intended to establish in the coming half-year specialised companies for the management of assets taken over from insolvent customers. Based on the experience of other countries in this field, the activities of such specialised companies limit bank risk of possible losses.

A significant drop of real estate prices would have a direct impact on the financial situation of banks through a higher loan to value ratio. This is particularly important in respect of loans issued when real estate prices had reached their peak. However, loans for house purchase historically have been and are among the loans of the lowest risk to the banking sector.

Box 3. Vacant dwelling statistics – a leading indicator of the economic cycle direction

In academic literature indicators showing economic cycles are classified into three categories by the time of their change: leading, coinciding and lagging. Although indicators coinciding with the business cycle, such as GDP, the unemployment level, disposable income, indicators of production and trade are at the highest focus of the Lithuanian society, they only state the current economic situation. Certain economy regulating actions in response to these indicators may be too late. It is natural that such leading business cycle indicators as average working hours, new orders, consumer expectations, prices of securities, interest rate spreads and various housing market indicators provide more information on the direction of the future economic development. Therefore, they are widely used for the business cycle analysis and for building of forecasting models.

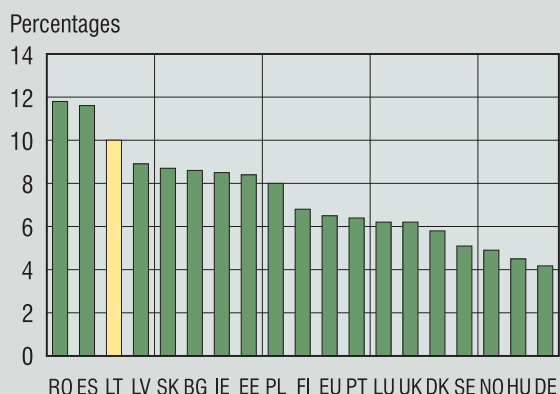
Different housing market indicators stand among the most informative indicator groups of the leading business cycle. It is agreed in the academic literature that the real estate market development has a substantial influence on the economic activity. The growth of the Lithuanian economy in an upturn period was inseparable from developments in the real estate market. A buoyant economic development was largely driven by high domestic demand supported by an active bank lending, low interest rates and easier bank credit standards. In the context of non-reducing bank crediting, real estate prices and investments into the real estate sector rose markedly. Real estate and construction economic activities were characterised as being highly active. This made a significant impact of the growth of domestic economy. According to the data of the Department of Statistics, the value added created by real estate and construction economic activities taken together comprised 22% of Lithuania's GDP. Moreover, the development of real estate market stimulated the growth of other economic activities, such as trade and manufacturing.

Real estate sector financing accounts for a substantial part of commercial bank assets. As from 2004, the bank loans for house purchase portfolio boosted by 5.5 times and at the end of 2008 made up 29% of the total loan portfolio. Moreover, bank business loans for real estate projects and constructions were soaring intensively. At the end of 2008, such loans made up approximately 23 % of the total loan portfolio. An expanding usage of real estate as a collateral also strengthened a return process of the real estate market development and economic activity.

One of the most important leading housing market indicators is the number of new dwellings for sale (dwellings intended to be built, the construction of which has already started or is finished but not yet sold), although sales of new dwellings make up only 15% of the total number of housing transactions. The significance of this indicator is strengthened by the fact that the construction of new dwellings stimulates the economic activity by the help of created job opportunities, investments and consumption. It possibly can be stated that the information on unsold new dwellings under construction shows the current situation in the real estate market, warns about a future economic activity and allows the planning of possible business cycle developments. In addition, comprehensive new housing statistics would enable the assessing of the activity of profiteers in the market. It should be noted that the majority of real estate projects are financed by bank funds. Therefore, the indicator of new dwellings for sale is also a leading indicator of the quality of the bank loan portfolio.

Also, a new housing stands out by its higher price than that of an old dwelling and is the main and most expensive investment for the majority of households. This is becoming especially important at the present moment expecting a marked boost of the price spread between new and old construction housing. A decision on the acquisition of new housing highly depends on consumer expectations. A

Fig. 56. Value added created by the construction economic activity in the European Union Member States in 2008



Sources: Eurostat and Bank of Lithuania calculations.

vanishing optimism of households for the future, wages or economic prospects in general make a fairly substantial decline of the demand of constructed new housing. A weaker demand drives a negative impact on the real estate economic activity and other related businesses. Expecting a slowdown of the economic growth and increasing risk, the banks make credit for house purchase issuing standards more stringent, thus narrowing real estate demand and consumption even more. The entire chain of these economic factors closes the economic impact circle and supports a slower growth of economy.

Usually the demand of new housing increases at the very beginning of the business cycle's rising phase. Real estate prices that reduced during the economic downturn, savings accumulated in the course of a recession and cheaper lending stimulate households to acquire new housing. Within this period, the banks are also interested in pushing up the loan portfolio growth that declined during the cycle of an economic downturn. Higher demand supports the growth of real estate and all related economic activities. In this case the chain of economic factors promotes the transfer of the economy into the cycle of growth.

According to the data of the Conference Board, the economic research organisation uniting a lot of major enterprises and research institutes in the world, changes of the leading indicator of new dwellings for sale in the USA are observed 22 months on average before peaks of economic cycles. This indicator is one of economic cycle indicators that occur at the earliest.

Another important leading statistical indicator of business cycles is data on the vacancy rate. This indicator shows the quantity of unused dwellings offered in the country for sale or rent at a definite time.

Periodical statistics of the vacancy rate from the existing fund of housing allows to assess the balance of housing demand and supply in the real estate market. Also, such statistical data reveal in part the consumers' financial standing and expectations, and similar to the above discussed indicator, allows forecasting of possible future changes of construction and real estate economic activities and envisaging a possible direction of the economic cycle. In Lithuania the information related to the fund of vacant dwellings was collected during the 2001 census of population. However, these data are not collected periodically. Based on the data of this census, the vacancy rate in Lithuania made up 3.7% of the available total housing fund. It should be stated that the information content of the indicator collected at such a frequency is very low. However, even if these data had been collected during the 2011 census of population and housing, an adequate comparability of these indicators should be impossible due to a substantially long time period within which the Lithuanian economy underwent a fundamental change.

At the present time, quarterly statistical data on the scope of construction works, number of issued permissions, space and number of housing to be constructed or finished, as well as other data are collected in Lithuania. In the majority of the European Union Member States, statistics of the vacancy rate and housing for sale is collected during censuses or when conducting surveys. The frequency of data presentation fluctuates from once a year (Great Britain, Denmark, Sweden, etc.) to once in ten years (Czech Republic, Estonia, Lithuania, etc.).

It is evident that an effective, comprehensive and reliable housing statistics is highly important for the assessment of the real estate market situation and also future changes of the economic development and prospects of the financial stability. The bulk of currently collected indicators associated with the real estate market are coinciding indicators. Besides, the majority of these indicators only state a situation registered in an equilibrium point but provide little information about demand and supply changes in the market. It should be noted that a comprehensive housing statistics is very important and useful not only for analysis specialists in many fields but also for market participants forming the supply of this market.

Presently the Bank of Lithuania is making attempts to initiate the collection of the described vacant dwellings statistics. In the context of an intensive cooperation with the Department of Statistics, various institutions and organisations, a project of vacant dwellings statistics is under preparation. If the project is going to be affirmed it is planned to collect information about newly constructed dwellings for sale.

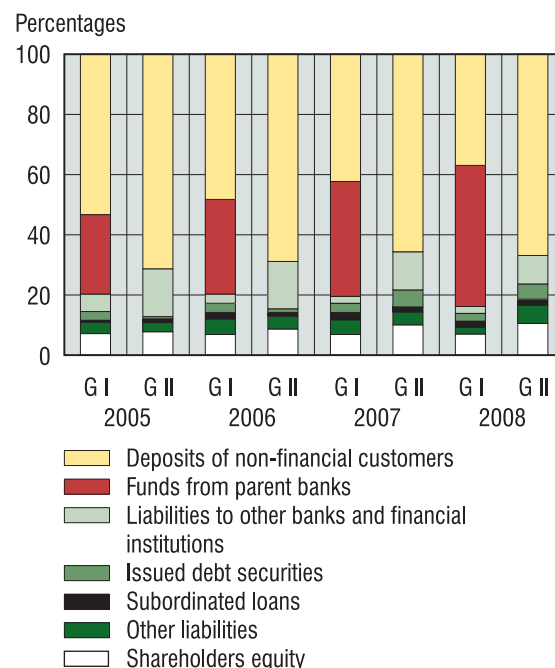
In performing a function of funds reallocation in the economy, banks are exposed to liquidity risk caused by the mismatch of maturities of the bank assets and liabilities. Bank assets the largest part of which is composed of the loan portfolio tend to have a longer maturity than assumed liabilities. However, the management of liquidity risk is a much broader subject, not limited only by the matching of maturities of assets and liabilities. Some long-term assets may be used for getting additional liquidity within a rather short time period. For example, due to their high security and developed secondary markets, debt securities of the majority of governments are realised quite easily. And on the contrary, a part of attracted short-term liabilities is used for investments into long-term assets. For example, regardless their short term, deposits of non-financial customers in terms of their size in a bank, usually change insignificantly and are considered as quite a stable funding source of banking activities. Because of an aggravating turmoil in global financial markets in 2008, the subject of liquidity and financial risk management became particularly urgent for the domestic banking system.

Lithuania's banking system was capable to adequately respond to an increase of liquidity risk registered in the fourth quarter of 2008. Because of the turmoil in global financial markets in October 2008, the deposit portfolio shrank by 6% in Lithuania. The major share of curtailed deposits was compensated by funds of parent banks. Abated pressure in domestic deposit and global financial markets and reduced crediting at the beginning of 2009 formed preconditions for the improvement of the liquidity situation of domestic banks.

In terms of liquidity risk, the bank system resilience to external shocks is ensured by the fact that the largest share of liabilities is composed of funds attracted in the domestic market and from parent banks. Customer deposits (of households, non-financial corporations and general government) are usually a stable and low volatility source of bank financial resources. In October 2008, driven by the turmoil in global financial markets, Lithuania's deposit portfolio shrank in a month by LTL 2.6 billion (6.4%). The first group banks that suffered most of all from an abrupt shrinkage of deposits did not encounter liquidity problems as parent banks fully compensated the deposit curtailment in the banks they manage. The response of the second group banks to the liquidity shock was a more active aspiration for borrowing in the domestic market by offering substantially higher deposit interest rates. In

Fig. 57. Structure of the banking system liabilities

(end of period)



Source: Bank of Lithuania calculations.

Note: G I – first group banks; G II – second group banks.

recent years, the share of resources attracted in the domestic market was gradually decreasing as a proportion of the banking system balance sheet liabilities³⁰, and at the end of the year made up less than a half (48%) of liabilities.

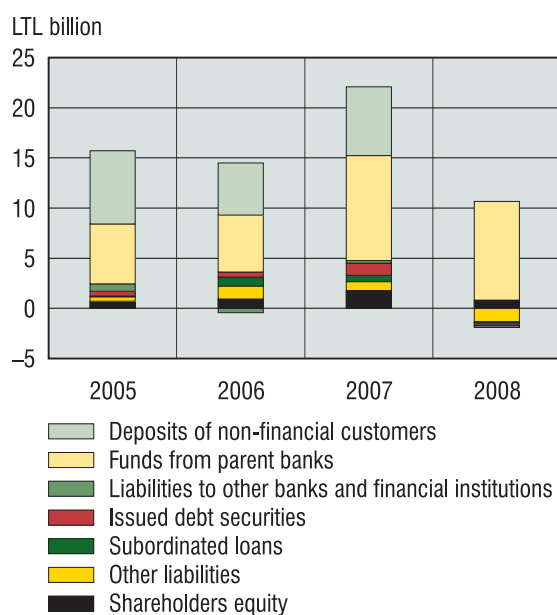
It should be noted that the liabilities composition of the banks of the first and second groups was different. The second group banks funded their activities largely by non-financial sector deposits covering about ¾ of balance sheet liabilities. The main funding resources of the first group banks were deposits of the non-financial sector and funds attracted from parent banks (37% and 47% respectively of balance sheet liabilities). It is worthwhile noticing that the share of funds attracted by the first group banks from parent banks increased by 9 p. p., while the part from deposits of the non-financial sector dropped by 5 p. p. on an annual basis.

In 2008 the role of parent banks in funding the expansion of the bank assets and ensuring the banking system liquidity increased. The banking system foreign liabilities grew by LTL 9 billion or 28% per annum, while domestic liabilities curtailed approximately LTL 1.5 billion. Decreased deposits were behind the shrinkage of domestic liabilities in Lithuania. An absolutely largest share of the increase of foreign liabilities came as borrowing from parent banks. In 2008 the banking system debt to parent banks soared by 38% – to 43% of total balance sheet li-

³⁰ Balance-sheet liabilities are the difference of banking assets and shareholders equity.

bilities. The funds provided by parent banks were used to finance almost the whole annual increase of the banking system assets.

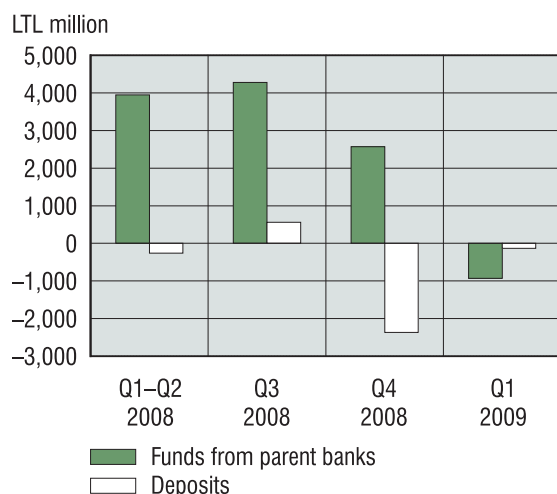
Fig. 58. Funding sources of the annual increment of the banking system assets (annual change)



Source: Bank of Lithuania calculations.

In the context of close links between parent banks and their subsidiaries (joint business), funds from parent banks are treated as a stable funding source of the banking system. Usually, liquidity of foreign banks operating in Lithuania is managed at the whole bank group level. According to the results of the Bank Lending Survey, April 2009, borrowing from parent banks and customer deposits are regarded as the main source for the coverage of liquidity shortage. High parent banks' credit ratings and broad experience in banking activity and

Fig. 59. Changes of deposits and liabilities to parent banks of the first group banks (change per period)

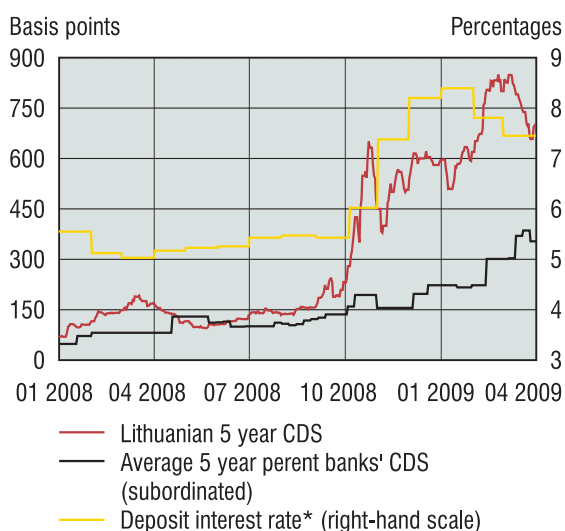


Source: Bank of Lithuania calculations.

risk management reduce the likelihood that Lithuania's banking system would face funding problems. This is approved by the fact when the shrinkage of customer deposits in the fourth quarter of 2008 had been compensated by the funds from parent banks. At the start of 2009, about 40% of debts to parent banks were longer than 1 year, and the average duration until the fulfilment of liabilities, although slightly curtailing within a year, remained longer than 2 years.

Rising liabilities to parent banks increased the dependence of Lithuanian banks on activities of particular foreign banks. Thus, the overall liquidity stance in the domestic banking system is largely subject to the situation in financial markets in which parent banks operate. In the context of a further turmoil in global financial markets in 2008, the borrowing price in money and capital markets increased. Given higher borrowing rates of parent banks, the price of funds provided by these banks to their subsidiaries in Lithuania rose as well. An increasing price of borrowing encouraged subsidiaries to borrow for a shorter period expecting a more favourable situation in the global money and capital markets.

Fig. 60. Dynamics of banks' funding costs (end of period)



Sources: Bloomberg and Bank of Lithuania calculations.
* 6 months duration households deposit rate.

Regardless a higher borrowing price, the banks are expecting to expand the volume of financial resources attracted in the domestic market within the next 6 months. According to the results of the Bank Lending Survey 2009, April, the majority of banks is planning to widen the deposit share of non-financial customers in the overall composition of liabilities within the coming 6 months. An increasing competition for deposits attracted in the domestic market is reflected by rising interest rates of different terms deposits.

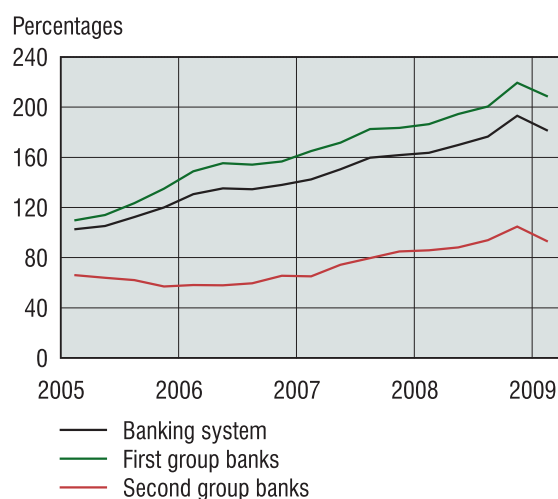
Fig. 61. Dynamics of Lithuanian inter-bank interest rate spread
(end of period)



Source: Bank of Lithuania calculations.

The rise of pressure observed in the inter-bank lending market in Lithuania at the end of 2008 subsided somewhat at the beginning of this year. In October-December 2008, VILIBOR and VILIBOR-VILIBID spread advanced robustly because of a substantial deceleration of the economy growth in Lithuania and other Baltic States and a deteriorating assessment of future prospects. At the end of December 2008, pressure in the inter-bank lending market slightly weakened when markets started to positively assess actions taken by the Government of the Republic of Lithuania in stabilising public finances and when the borrowing in public and non-public issues of Government Securities not only in litas but in euro as well became more successful. A positive effect on Lithuania's inter-bank market was also exercised by the December 2008 IMF and European Union financial support to Latvia which had committed to maintain a fixed exchange rate – the same as other Baltic States.

Fig. 62. Banks' loan to deposit ratio
(end of period)



Source: Bank of Lithuania calculations.

Having advanced for several years until the end of 2008, the ratio of the banking system loans to deposits started to decrease at the start of 2009. The increase of the ratio was driven by a more robust growth of loans issued by banks compared to accepted deposits. In other words, a continuously smaller share of issued loans was funded by deposits attracted from customers. A more intensive growth of the indicator at the end of 2008 was caused by a decreased deposit portfolio in the fourth quarter. The second group banks offered higher than average deposit interest rates for attracted deposits. Banks of this group are sensitive to a strengthening competition in the domestic deposit market because deposits comprise the major share of the liabilities of these banks, while borrowing possibilities in international markets are limited. Advancing deposit rates generate a material increase of borrowing costs and contribute to a decreasing profitability. At the beginning of 2009, the loan and deposit ratio of the banking system started to shrink due to a curtailing loan portfolio. In terms of financial stability, changes of this ratio are treated positively because in the context of a larger share of loans to national entities being financed by attracted deposits, the redistribution of financial resources in Lithuania becomes more balanced.

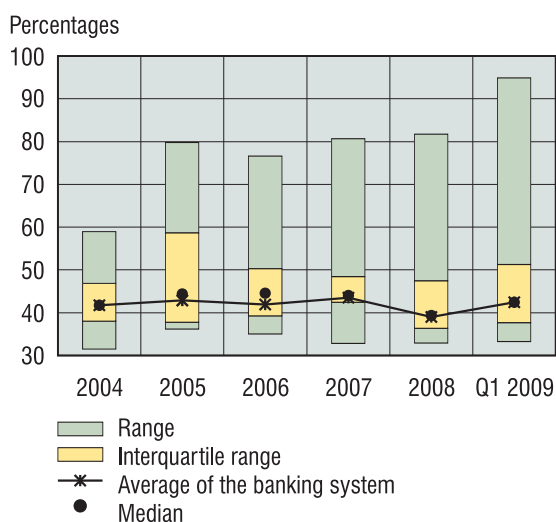
The banking system liabilities to other (not parent) banks and financial institutions were insignificant and basically used for the balancing of short-term liquidity fluctuations. A somewhat larger share of such liabilities was observed in the second group banks, and at the end of the year which amounted to 10% of total liabilities.

The banks attracted a part of funds for the funding of the loan portfolio growth in the capital market, however not so much as in 2007. Financial resources attracted in the form of debt securities issued by banks narrowed by 7% on an annual basis.

A higher than required (30%) the banking system liquidity ratio suggests that the banking system had a sufficient amount of reserves of liquid assets and a good banking system financial stability stance in terms of liquidity risk. The average liquidity ratio³¹ of the banking system has been fluctuating since 2002 at around 43%. At the end of the first quarter of 2009, the liquidity ratio of the banking system stood at 42.4%, i.e. by almost 12 p. p. above the liquidity requirement (30%) established by the Board of the Bank of Lithuania.

³¹ Liquidity risk of domestic banks is managed by both, quantitative and qualitative requirements. The liquidity ratio requirement is calculated as the ratio of liquid assets and current liabilities according to Liquidity Requirement Calculation Rules approved by the 29 January 2004 Resolution No. 1 of the Board of the Bank of Lithuania. The bank liquidity ratio cannot be less than 30%.

Fig. 63. Dispersion³² of banks' liquidity ratios (end of period)



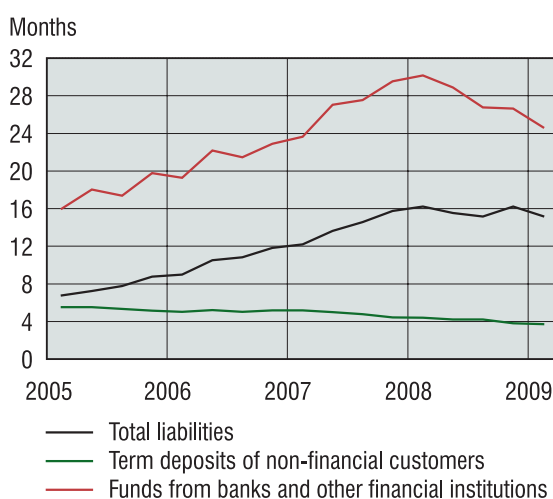
Source: Bank of Lithuania calculations.

Note: Liquidity ratios of three foreign bank branches that started their operations in 2007 and have liquidity ratios over 100 per cent are excluded.

Liquidity risk sources of the first and second bank groups differ. Because of a large share of deposits in the total structure of liabilities, the second group banks are more sensitive to the situation in the domestic deposit market. In addition, it is complicated for these banks to attract additional financial resources in money and capital markets. Higher liquidity risk of the second group banks is reflected in the dynamics of liquidity indicators. In the context of a long-term fluctuation around 40% of the average liquidity indicator of the banking system, the average liquidity ratio of the second bank group dropped by 9 p. p. to 40% on an annual basis. In other words, their chances to ensure the fulfilment of short-term liabilities on account of liquid assets reduced but are still rather sizeable. The first group banks comprising the major part of the banking system may borrow from parent institutions and are less dependent on recourses attracted in the domestic market and their volatility.

In 2008 the average maturity of total balance sheet liabilities of the banking system remained almost unchanged and was the longest within several recent years. The analysis of the banking system liquidity position in respect of liabilities showed a slight shrinkage of the medium-term liabilities maturity. In 2008 the average maturity of the liabilities became shorter by 1 month and stood at 15 months. This was mainly driven

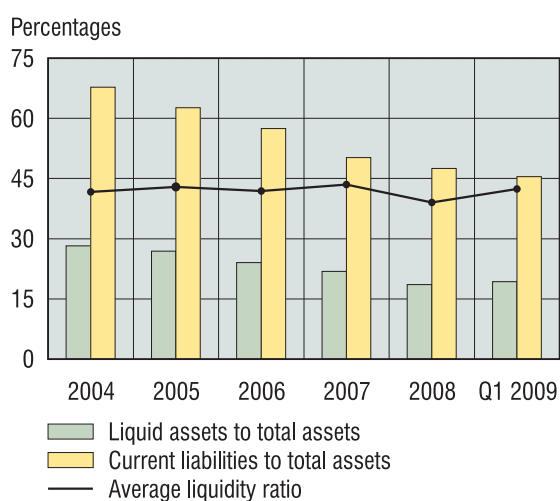
Fig. 64. Average maturity of the banking system liabilities



Source: Bank of Lithuania calculations.

by a somewhat lower long-term borrowing from banks (largely from parent banks) and from financial institutions. Over recent years, the average maturity of fixed-term deposits of non-financial customers was rather stable. Throughout 2008 it shrank by less than 1 month and stood at 3.7 months in the first quarter of 2009.

Fig. 65. Liquidity of the banking system (end of period)



Source: Bank of Lithuania calculations.

Following a decrease within several years, the ratio of liquid assets to total assets grew slightly in the first quarter of 2009. The largest share of the banking system liquid assets was composed by government debt securities issued by Lithuania, European Union countries and countries with higher credit ratings and funds with the maturity of up to 1 month held in the banks and other financial institutions of Lithuania, European Union and states with higher credit ratings.

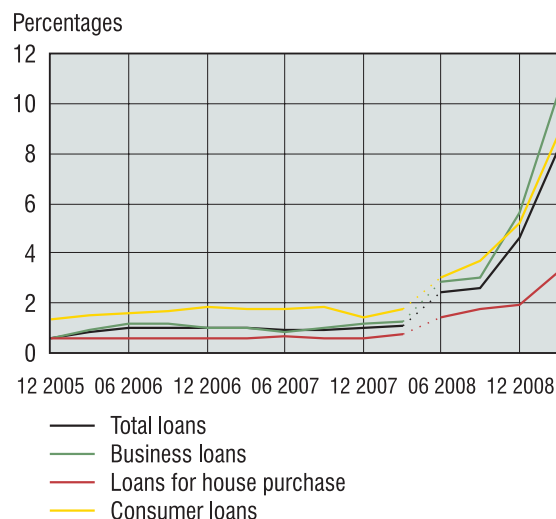
³² The range is the difference between the largest and smallest value from the set, indicating the total dispersion of values. A quartile is any of the three values dividing a sorted set of values into four equal parts in a way that each value shows 1/4th set of values. The second quartile or median is the central value dividing the set of values by half in a way that a half of values is bigger than the median and the other half is smaller than the median. The first (third) quartile divides the set of values in a way that 25% (75%) of values are smaller than the first (third) quartile and the other part is bigger. The difference between the third and the first quartiles is inter-quartile.

Given that loans comprise the major share of bank assets, credit risk is the main individual source of risk. The economy development and, consequently, the financial standing of borrowers are crucial to the bank loan portfolio quality and suffered credit risk losses. The principles for the assessment of bank loans and loan impairment losses (specific provisions) are based on the current financial standing of borrowers and their capability to repay the debt. Specific provisions therefore show the current credit risk assumed by banks and incurred losses. As a result, indicators that are used to define the loan portfolio quality, for example, a ratio of non-performing loans³³ to total loans or a ratio of loan impairment losses to total loans, reveal the present loan portfolio quality. Credit risk is characterised by a strong cyclical, while indicators defining the loan portfolio quality are lagging indicators. This part of the Review presents the analysis of actually observed indicators of the bank loan portfolio quality. Potential losses in case of unfavourable and sudden events in the future, such as a material change of interest rates or a marked slowdown of the economic growth may be assessed best of all by stress testing. The results of stress testing are provided in Chapter III.

In the second half of 2008 and the first quarter of 2009, the bank loan portfolio quality deteriorated significantly. With the occurrence of the first signs of credit cycle change in the end of 2007, the bank loan portfolio quality started worsening little by little. Notwithstanding this, until the mid-2008 the loan quality kept to be high and slight fluctuations were basically caused by a change of the business loans quality. In the context of a deepening economic downturn and real estate market stagnation in the second half of 2008, some enterprises and households confronted financial difficulties. In response to falling future expectations, banks assessment of the loan portfolio turned to be more conservative than usual. These changes were quickly reflected in financial results of the banks and deteriorating quality of assets. In the second half

Fig. 66. Non-performing loans of the banking system

(compared to a respective loan portfolio)



Source: Bank of Lithuania calculations.

Note: Due to the change in the definition of non-performing loans, break in data time series since mid-2008.

of 2008, the ratio of non-performing loans grew by 2.1 p. p. compared to a 3.7 p. p. (to 8.2%) increase in the first quarter of 2009³⁴. Although the ratio of non-performing loans to total loans was rising rapidly in Lithuania, the loan portfolio quality is similar to or better than in many other CEE countries.

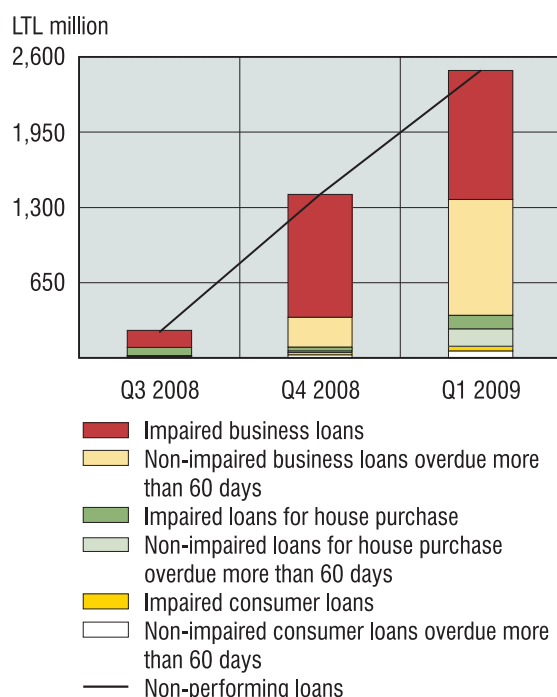
Changes of the banking system loan portfolio quality were largely driven by the quality of business loans. In the first quarter of 2009, non-performing business loans accounted for approximately four fifths of non-performing loans. The share of non-performing business loans expanded to 10.5% of the respective loan portfolio and was larger than the average of the total loan portfolio. The business loan quality started worsening rapidly in the fourth quarter of 2008. A material increase in the contribution of overdue business loans into the overall quality of loans was observed in the first quarter of this year, suggesting maturing liquidity and solvency problems in enterprises. It is worthwhile to note that business loans are usually larger than, for example, loans for house purchase; therefore, the influence of an individual borrower on the overall portfolio quality indicator is stronger.

The quality of loans to households was noticeably better than the average of the total loan portfolio. This was largely driven by a high and rather stable quality of loans for house purchase. Regardless an observed trend of deterioration, the share of non-performing loans for house purchase made up 3.2% of the respective loan portfolio in

³³ In view of the requirements of International Financial Reporting Standards and requirements of European Union Financial Reporting framework (FINREP), the definition of non-performing loans was changed and, from the middle of 2008, non-performing loans are defined as the sum of non-impaired loans overdue more than 60 days and impaired loans (the ones for which specific provisions were made). Until the first quarter of 2008, non-performing loans in Lithuania were defined as loans with regular payments overdue more than 60 days (including the impaired loans overdue more than 60 days). Therefore, there is a break in the time series of non-performing loans, and current data is not comparable with previous. In addition to this, the definition of non-performing loans of the Bank of Lithuania is substantially tighter than that used in other countries because it includes all the impaired loans.

³⁴ Given the change of the definition of non-performing loans, in this Financial Stability Review, bank loan portfolio quality data is basically analysed and provided as from the mid-2008. Indicators for previous years and their analysis are given in the Financial Stability Review of 2008.

Fig. 67. Contributions to changes in non-performing loans of the banking system (quarterly change)



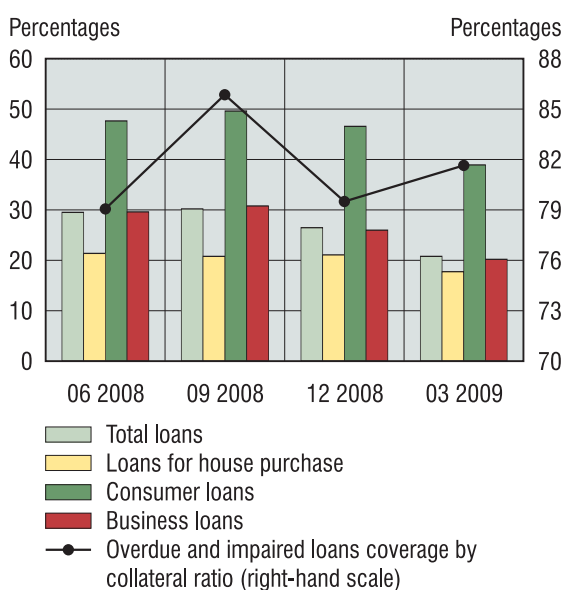
Source: Bank of Lithuania calculations.

the first quarter of 2009, or was by 2.5 times better compared to the average of the total loan portfolio of the banking system. A relatively better quality of loans for house purchase was entailed by both, generally higher requirements to borrowers for house purchase and a more stringent discipline and responsibility of such borrowers because of the possibility to lose housing in case of a failure to fulfil their obligations.

The quality of consumer loans was aggravating at a much more intensive rate. From the middle of 2008, the share of non-performing consumer loans boosted almost thrice to 8.8%. Consumer loan risk is generally assessed as higher because consumer loans are not pledged while individuals' income is the only source for the loan repayment and currently is at elevated risk due to threats because of rising unemployment and reduction of wages. On the other hand, consumer loan risk is compensated by higher interest rates.

The repayment of the banking system overdue and impaired loans is well pledged by a collateral, while a potentially non-repayable share of loans is written-off to bank losses. In the first quarter of 2009, 82% of the banking system overdue and impaired loans were secured by a collateral. Moreover, on an average, specific provisions made up 21% of the value of non-performing loans assessed on an individual and collective basis. So, one fifth of potentially non-repayable loans has already been written-off and thus would have no impact on the profitability of the banking activity in the future. However,

Fig. 68. Specific provisions to non-performing loans and the loan coverage ratio (end of period)



Source: Bank of Lithuania calculations.

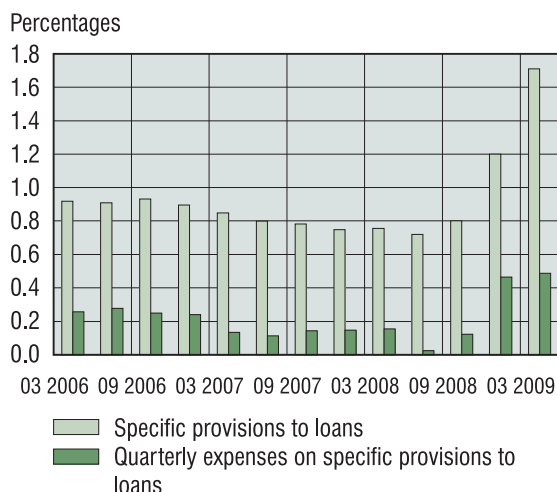
from the mid-2008, the coverage of non-performing loans by specific provisions shrank by 8.7 p. p. One of the reasons behind this change was intensively increasing non-performing loans that were late more than 60 days but not impaired yet. This fact suggests that bank loan impairment losses may grow because, with longer terms of the loan repayment delay, specific provisions will have to be formed against these loans as well. It is worthwhile noticing; that the coverage of non-performing loans by specific provisions was in line with the risk of the loan portfolio segment, i.e., riskier segments of the loan portfolio incurred relatively more impairment losses. Here it is possible to single out one of the riskiest loan portfolio segment – non-pledged consumer loans – specific provisions for which made up 39% of the respective non-performing loans.

In other European Union Member States, the ratio of specific provisions to non-performing loans fluctuated between 50 and 80%³⁵. A lower value of the respective indicator in Lithuania was mostly caused by technical factors, such as tightening of the definition of non-performing loans³⁶. Given the trends of deceleration of Lithuania's economy, it is becoming crucially important for the banks to further increase capital reserves to cover loan impairment losses.

³⁵ Global Financial Stability Report, IMF, April 2009.

³⁶ The ratio of specific provisions to non-performing loans diminished in Lithuania as tightening of definition of non-performing loans entailed the increase of the denominator of the ratio.

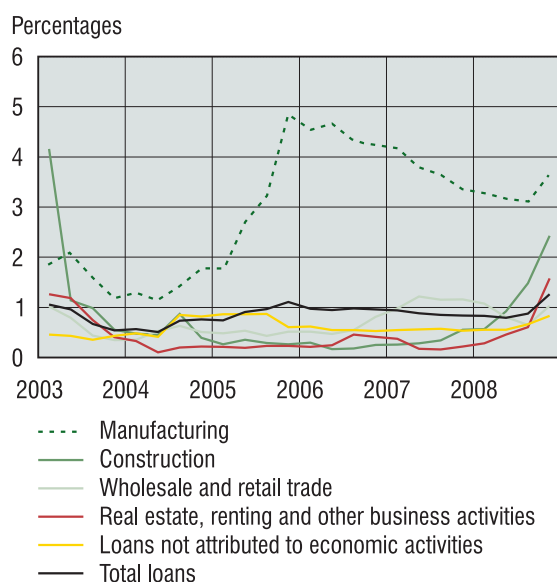
Fig. 69. Impairment loss on loan portfolio of the banking system
(end of period)



Source: Bank of Lithuania calculations.

In the second half of 2008, loan impairment losses increased. Compared to 2007, loan impairment losses of the banking system boosted approximately 5 times in 2008, while in the second half of 2008 these losses exceeded 10 times the level reached at the beginning of the year. The loan impairment losses experienced a particular growth in the last quarter of 2008 and at the start of 2009. The ratio of expenses of specific provisions to the loan portfolio, reflecting the scope of credit risk losses borne within a quarter, increased on average from 0.1% (2005–2007) to 0.5% (in the first quarter of 2009). The gross loss of the loan portfolio to the non-financial sector measured as the ratio of stock of specific provisions to loans grew from the end of 2007 by 1.0 p. p. to 1.7% at the end of the first quarter of 2009.

Fig. 70. Specific provisions to loans of five largest banks (by economic sectors)



Source: Bank of Lithuania calculations.

Gross loss of the loans by economic activities suggests increasing losses on loans to various economic activities. Moreover, the quality of loans to economic activities that depend more on the fluctuations of the economic cycle is relatively poorer. As earlier, the banks suffered comparatively largest losses on loans to the manufacturing sector. One of the reasons behind this might be the fact that loans to this economic activity are usually secured by less liquid assets, such as machinery and equipment. Also, in previous years, some large manufacturing companies that had taken loans from banks underwent bankruptcy. In 2008, gross loss of the loans to economic activities related to the real estate (construction and development of real estate projects) grew due to a complicated situation in the real estate market and decreased asset prices. Based on the results of the Bank Lending Survey, April 2009, a relatively poorer quality was also observed in loans to transport and trade activities. In terms of perspectives, banks gave the lowest assessment to economic activities of real estate, construction, transport, hotels and restaurants.

In terms of the medium-term outlook, credit risk is the biggest challenge for the banking system. In this context, an increase of bank losses absorption capacities (increase of effectiveness and growth of capital adequacy) may be treated as a risk-mitigating factor. In the environment of a prevailing economic downturn, an aggravating financial standing of private companies and individuals and increasing unemployment, some bank debtors will inevitably be confronted with financial difficulties, whereas bank loan impairment losses will grow. Empirical researches reveal that the quality of the bank loan portfolio and incurred impairment losses change pro-cyclically. Also, cases of insolvency of customers with loans issued in times of an economic upswing and whose liabilities to banks are relatively the largest are more often. In times of the economic upswing, the financial standing of borrowers is good, thus asset impairment losses in banks are low. When the economic downturn prevails, the financial position of borrowers deteriorates and impairment losses in banks increase while profitability decreases.

The Bank Lending Survey revealed that the banks were also of the opinion that the loan portfolio quality would aggravate. It is likely, that the quality of loans to households will worsen quicker. And loan impairment losses borne by banks in 2009 will be significantly higher than in 2008.

Bank loan impairment losses will also be impacted by the stagnation in the real estate market. The impact of the reduction of real estate prices is taking effect by two main channels. First, real estate is one of the princi-

pal collateral types for bank loans. Therefore, diminishing real estate prices reduce the value of loan collateral. A weakening demand for real estate narrows the potential of banks to sell pledged and taken over assets quickly and for an appropriate price. Therefore, about a half of domestic banks established or are ready to establish within the next half-year specialised companies to manage assets taken over from insolvent customers. Second, the banks directly funded the majority of real estate development projects. With falling sales in the real estate market, the financial standing of developers of real estate projects was deteriorating. Furthermore, due to lower trade volumes and disrupting settlements, the financial stance of companies in the other economic activities such as trade and others was deteriorating as well.

Bank Capital and Business Efficiency

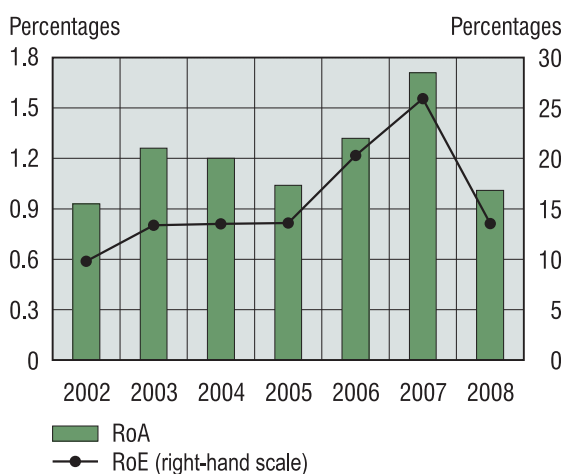
Soundness and financial stability of the banking business is usually assessed in respect of the loss-absorption capacity. In many cases the bank profit would be the first to absorb the effects of unfavourable market developments. The bank capital, in turn, is meant to cover unexpected losses in case the profit is insufficient. The bank capital adequacy ratio³⁷ is one of the most important prudential indicators set by supervisory authorities and indicates the ratio of held capital to capital requirement. Although higher profitability and capital adequacy reflect a higher degree of the soundness of the banking business, quite often these indicators move in different directions. A decreasing capital adequacy ratio is often associated with the growth of income-earning assets or their risk, that, in turn, are profit increasing factors.

Profitability and Efficiency

Notwithstanding a sufficiently high profitability of the banking system in 2008, the trend of the growth of loan impairment losses became apparent in the course of the year, while in the last quarter of 2008 and the first quarter of 2009 the banking system incurred losses. Throughout 2008, the banking system earned LTL 0.9 billion – 25% less compared to 2007. The average profitability indicators RoE³⁸ and RoA³⁹ decreased to 13.5% and 1.0% respectively. The quarterly performance analysis of the banking system reveals that the banking system quarterly profit curtailed from LTL 0.3 billion in the first and second quarters to LTL 0.2 billion in the third quarter. The banking

system performance results for the last quarter were already negative (LTL –17 million). In the first quarter of 2009, the banking system performance incurred losses, however, sufficiently insignificant so far (LTL –20 million).

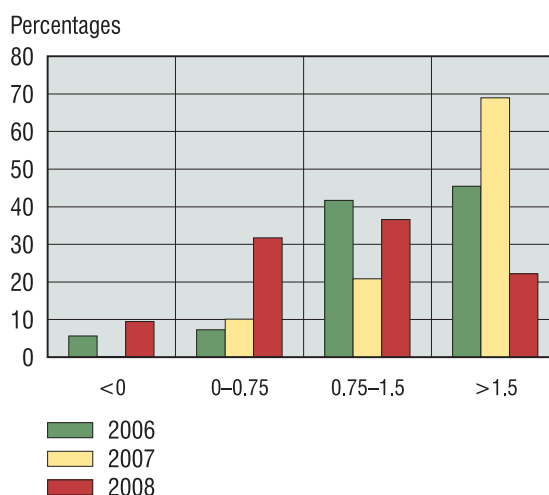
Fig. 71. Profitability of the banking system



Source: Bank of Lithuania calculations.

The majority of domestic banks ended the year 2008 with profits, except some foreign bank branches that started their operation recently and have not developed their activities yet, as well as two small commercial banks. Profitability indicators of individual banks were rather different. However, a decreasing profitability was a dominating general tendency. The highest average profitability was observed in three largest banks of Lithuania that have a relative advantage due to the economy of scale and possibility to use the parent banks' experience in such areas as business and risk management. Also, the average profitability of the second group banks was lower compared to the banks of the first group due to a larger average price of financial resources of the second group banks, lower performance effectiveness and relatively larger loan impairment losses.

Fig. 72. Distribution of the bank RoA (compared to the banking system assets)



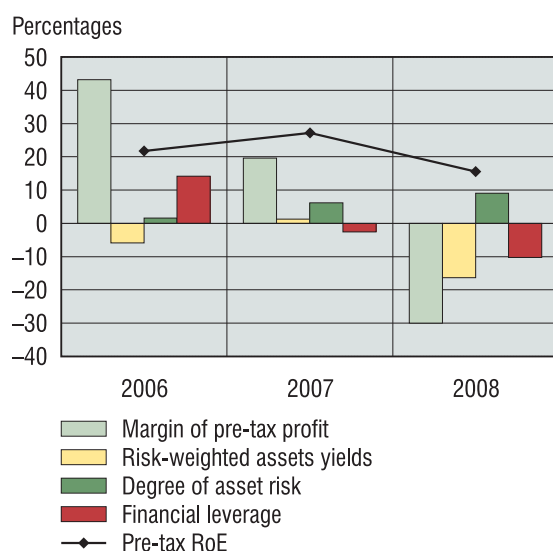
Source: Bank of Lithuania calculations.

³⁷ Capital adequacy requirement is not applied to foreign bank branches.

³⁸ The ratio of net profit (after taxes) to annual average of shareholders equity excluding the profit of the current year. Foreign bank branches are excluded.

³⁹ The ratio of net profit (after taxes) to annual average of assets.

Fig. 73. Breakdown of the pre-tax RoE



Source: Bank of Lithuania calculations.
Note: Foreign bank branches excluded.

Profit growth drivers are not always assessed as equally positive in terms of risk, e.g., an increasing asset risk pushes up the bank profitability but, on the other hand, has also an effect on the growth of risk assumed by the bank. The breakdown of pre-tax RoE of banks into components helps to reveal more in detail the reasons behind bank profitability changes⁴⁰.

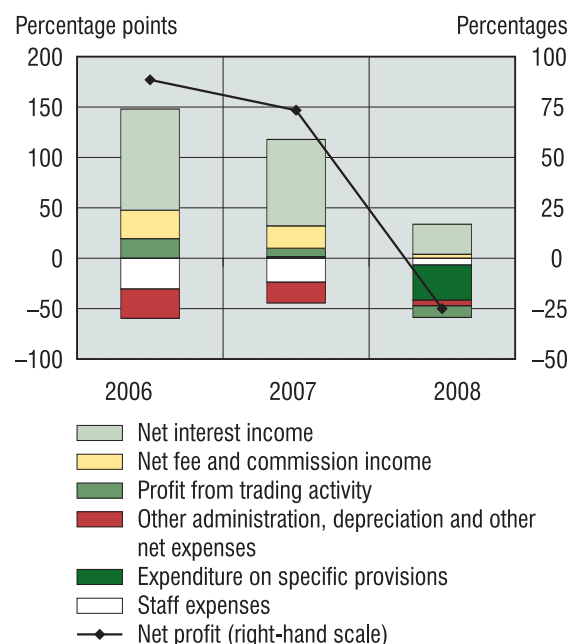
The bank profitability breakdown into components indicated that the decrease in profitability was to a great extent entailed by a reduced profit margin (business efficiency). The profitability shrinkage was slowed down somewhat by an increasing share of risk-weighted assets compared to total assets, however, income of risk-weighted assets⁴¹ dropped. Smaller income on assets as well as lower business efficiency and pre-tax profit margin reflect weaker possibilities of the accumulation of bank reserves from business activities. The financial leverage decreased and exercised a negative impact on profitability. In terms of financial stability, this shift is assessed positively due to an increase of shareholders' equity (share of non-borrowed funds) compared to the bank assets. In other words, the risk to bank creditors (depositors,

⁴⁰ According to the formula presented below, pre-tax RoE can be decomposed into the four components: margin of pre-tax profit showing what is the share of net profit in the profit from the main banking activity, risk-weighted assets income, degree of asset risk, and financial leverage that reflects total level of indebtedness.

$$\text{RoE} = \frac{\text{Pre-tax profit}}{\text{Net interest, net fee and commission and net trading activity income}} \times \frac{\text{Net interest, net fee and commission and net trading activity income}}{\text{Risk-weighted assets}} \times \frac{\text{Risk-weighted assets}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

⁴¹ Risk-weighted assets income may be treated as banks' income for the assumed credit risk.

etc.) that lent to banks arising from bank business decreased slightly.

Fig. 74. Contributions⁴² to the change of the banking system profit (annual change)

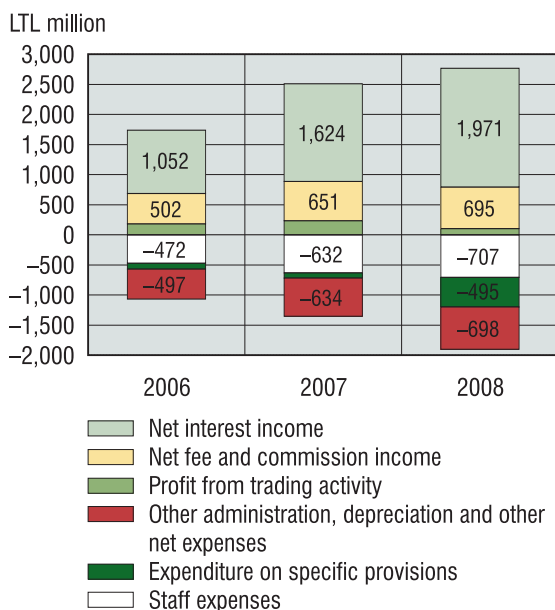
Source: Bank of Lithuania calculations.

The main reason behind the reduction of profitability was higher loan impairment losses further accounting for one of the most important factors to lower the bank profitability in 2009. In 2008, net profit of the banking system dropped for the first time in seven years. This was basically entailed by higher expenses for specific provisions because of the economy downturn, increased unemployment and deteriorating financial situation of the corporate sector. In 2008, expenses on the bank asset impairment and specific provisions were 5.6 times larger than in 2007. Their increase was particularly rapid from the third quarter of 2008. In the last quarter of 2008, expenses on the asset impairment and specific provisions were 2.7 times larger than in the first three quarters. They remained of the similar level also in the first quarter of 2009.

In 2008, bank profitability was supported by increasing net interest income, stepping up per annum by 21%. Nonetheless, net interest income grew at a substantially slower rate than in previous periods. In the context of a reduced bank crediting, the impact of the loan portfolio growth on interest income earned weakened substantially, while the growth of net interest income in 2008 was

⁴² From 2008, bank's financial reporting is prepared using the new FINREP financial reporting forms that were prepared in line with General Guidelines for Consolidated Financial Reporting approved by CEBS. Due to the changes in grouping of bank's income and costs, the data of 2007 and prior to that was regrouped to ensure historical comparability to the extent it is possible.

Fig. 75. Annual income and expenditure of the banking system
(end of period)

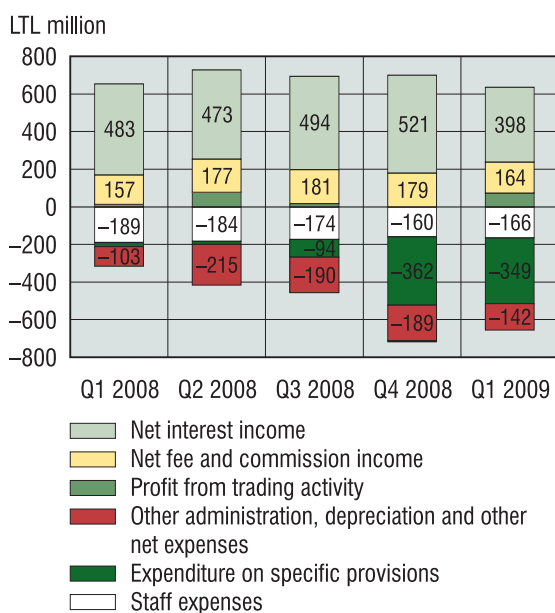


Source: Bank of Lithuania calculations.

basically sustained by EURIBOR inter-bank interest rates rising until October 2008.

Loans with variable interest rates compose the major share of bank loan portfolio; therefore, changes in the key and inter-bank interest rates are transmitted into the loan interest rates rather quickly and basically by their full scope. The effect on deposit interest rates paid by banks was somewhat more moderate. Because of these reasons, inter-bank interest rates that started to decrease in 2008 made an impact on the reduction of net interest income in the first quarter of

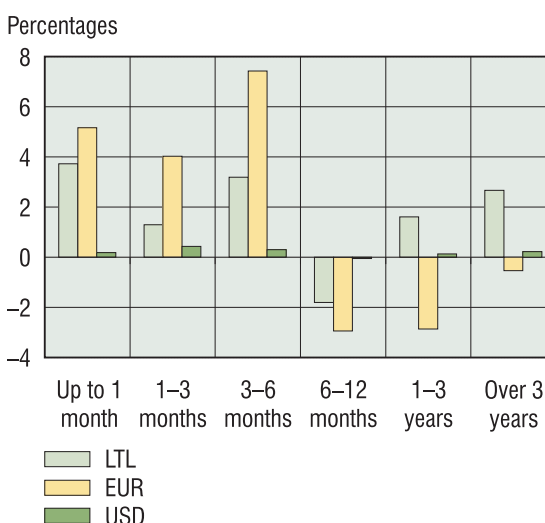
Fig. 76. Quarterly income and expenditure of the banking system
(end of period)



Source: Bank of Lithuania calculations.

2009, and this was an additional factor that entailed negative business results of the banking system.

Fig. 77. Banking system interest rate gaps⁴³ by the main currencies as at Q1 2009
(compared to assets)



Source: Bank of Lithuania calculations.

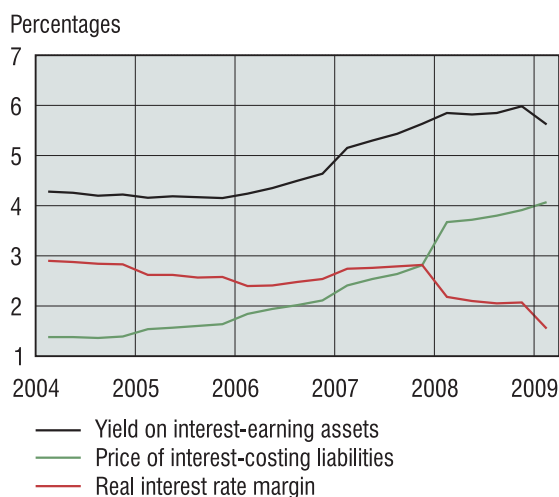
Gaps of the banking system interest rates in litas, euros and US dollars were positive for most of the periods. In other words, even if interest rates of the assets and liabilities sensitive to interest rate changes and denominated in the same currency changed in the same way, decreasing rates would exercise a negative effect on net interest income. The influence of the interest rate reduction was two-sided on the business of the banking system. Decreasing interest rates because of the dominant share of loans with variable interest rates facilitated the interest rate payment burden for the majority of customers with loans, thus mitigating credit risk. However, this situation entailed a negative impact on the bank profitability.

A buoyantly rising price of financial resources caused a decrease of the real interest rate margin⁴⁴ and in this way made a negative influence of the bank profitability. In several recent years, the yield on interest-earning assets was rising because of increasing inter-bank interest rates and also due to higher interest rate margins on new loans in the context of tighter lending conditions. Nonetheless, the price of interest costing liabilities was growing much faster, therefore, in 2008 and the beginning of 2009 the banking system average real interest rate margin shrank substantially. The rise of the financial

⁴³ Interest rate gap is calculated as the difference of sum of interest rate change sensitive assets and off-balance claims, and sum of interest rate change sensitive balance and off-balance liabilities.

⁴⁴ Net interest margin was calculated as the difference between the ratio of interest income to interest-earning assets, and the ratio of interest expenditure to interest-costing liabilities.

Fig. 78. Real interest rate margin

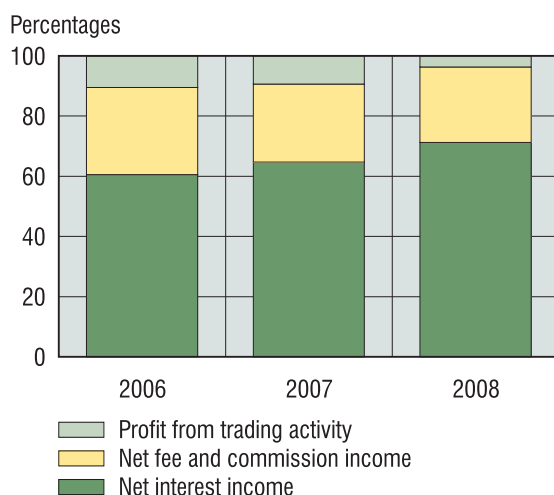


Source: Bank of Lithuania calculations.

resources price was driven by both, up to October 2008 increased ECB key interest rate and soaring risk premium in the inter-bank lending market due to the financial turmoil. The borrowing price in money and capital markets was also impacted by a lower supply of financial resources because of a deteriorating macroeconomic stance. In their attempts to broaden the share of financial resources attracted in the domestic market, banks increased deposit rates and competition for deposits strengthened. Deposits are the main source of financial resources for domestic capital banks. Therefore, these banks were forced to offer even higher deposit interest rates. For this reason the average financial resources price for the domestic capital banks was higher because interest rates paid by foreign capital banks for both, deposits and funds (in euro) from parent banks are smaller. In recent months deposit interest rates decreased a little but were still rather high.

Fig. 79. Composition of income from banking activities

(end of period)



Source: Bank of Lithuania calculations.

The composition of the bank income sources was quite concentrated in terms of net interest income. By investing mainly in the domestic market, banks were resilient to a direct impact of the global financial turmoil. The share of net interest income compared to total net income from the main banking activities stepped up to 71%. This was largely entailed by smaller income from the trading activity. Nonetheless, the Lithuanian banking system remained relatively dependent on interest income compared with banking systems of many other European Union countries⁴⁵. The bank balance sheet composition also contributed to this given the loan portfolio share in total assets made up one of the largest in the European Union.

A decelerating growth of the economic development and loan portfolio incite the banks to diversify income sources by paying more attention to increasing of fee and commission income. Fee and commission income of banks is a sufficiently stable source of bank income. In 2008, net fee and commission income rose by 7%. In the first quarter of 2009, net fee and commission income was slightly smaller than in previous quarters. However, compared to the same period a year ago, advanced a little. The result of the bank trading activity in 2008 was by near a half worse than in the previous year, and a complicated situation in the money and capital markets has an impact on a large fluctuation of such income.

After improving in several recent years, bank cost-to-income ratio⁴⁶ decreased by 3 p. p. to 49% in 2008. With a slowdown of banks' expansion, pressure on the operational expenses of banks strengthened. In their attempts to improve business results, banks started to optimize their activities. The increase of the bank efficiency in previous periods was ensured by raising the income, while the current situation necessitates the reduction of incurred costs. In addition, the accommodation of the bank business costs to the changed economic activity conditions is sufficiently sluggish. In 2008, the growth of the banking system operational expenses was almost by a half slower than in 2007, and the annual growth rate made up 17% at the end of 2008. In 2008, the staff costs of the banking system rose by 12%. However, in the first quarter of 2009, staff costs were by 12% smaller than during the corresponding period last year.

A further increase of business efficiency in banks, particularly domestic capital and

⁴⁵ The 2007 ECB consolidated banking data (CBD) that is presented in <http://www.ecb.int/stats/money/consolidated/html/index.en.html>

⁴⁶ Cost-to-income ratio is the ratio of fixed expenses (operational, depreciation and amortisation) to the profit from the main activity. Decreasing value of this indicator means higher efficiency of the activity.

smaller foreign capital banks, by enhancing management systems and procedures, optimizing the distribution of resources, introducing new technologies, searching for business niche where the experience would be used to the utmost is an important challenge in the environment of rapidly changing economic conditions of the country. When assessing changes of cost-to-income ratios of individual banks, it should be observed that the development was different. However, to summarise, the efficiency reduced somewhat in many banks. The average cost-to-income ratio of the banking system was largely influenced by a sufficiently high efficiency of three largest banks in which the considered ratio remained similar to the level reached a year ago. This suggested an operative accommodation of these banks to a changing business environment. In comparison to smaller banks, three biggest banks benefited from the centralised service provision and group-wide risk management systems that ensured the economy of scale.

Capital Adequacy

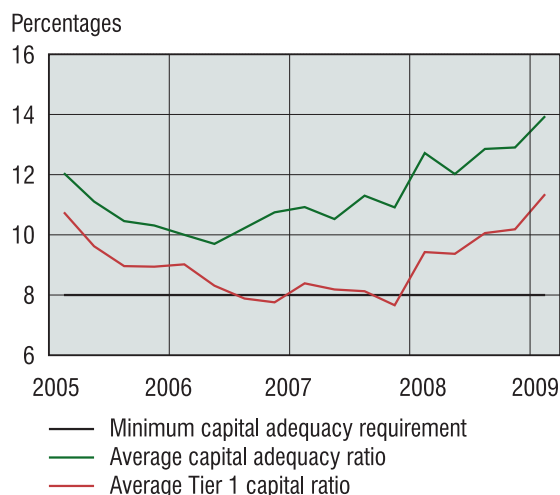
In 2008 and early 2009, the banking system capital adequacy continued to increase, implying a better coverage of bank risk by capital and bigger reserves for covering unexpected losses. The banking system capital adequacy growth has been observed from the mid-2006. In 2008, the capital adequacy ratio of the banking system stepped up by 2.0 p. p. In the first quarter of 2009, it grew by 1.0 p. p. to 13.9%. It should be noted that the increase of the capital adequacy of banks in the first quarter is usually pretty much affected by the previous year profit not yet included into capital⁴⁷.

The increase of the banking system capital adequacy is associated with the rise of the bank capital and a slower growth of the capital requirement due to an abating loan portfolio development. Over a year, the banking system capital rose by 9.6% to LTL 7.5 billion (in the first quarter of 2009)⁴⁸. The capital requirement for credit risk comprising 88% of the overall capital requirement augmented by 4.1% during the same period.

⁴⁷ The inclusion of the current year profit into banks capital has been limited from mid-2006. After the deduction of taxes and dividends to be paid, a part of retained profit of the current year may be included into Tier 2 capital if the reasonableness of the profit amount is confirmed by the independent audit company that made the audit of the bank (60% of the profit – after the complete audit of financial statements is done, and 30% may be included after the review of the financial statements).

⁴⁸ In this section, growth rates are calculated on the basis of data of banks that applied the capital adequacy requirements as at the end of the first quarter of 2009, i.e., excluding *Danske Bank A/S Lithuania branch* (former AB Sampo Bank), which changed its legal status from the joint-stock company into a foreign bank branch.

Fig. 80. Capital adequacy of the banking system



Source: Bank of Lithuania calculations.

In terms of financial stability, it is positive that the most important capital⁴⁹ growth factors were Tier 1 capital elements such as authorised capital and reserve capital as well as the share of retained profit (not envisaged to be paid in dividends) of the previous year. Capital was increased through both, external funds and bank contributions. The trend of capital increase by subordinated loans⁵⁰ observed so far, weakened in 2008 together with a slackened development of the loan portfolio. Although subordinated loans included into capital increased in some banks, this increase on the system-wide level was rather insignificant as other banks changed a part of subordinated loans into share capital or repaid them. The banking system capital also grew slightly because of the changes in the accounting policies of banks in the fourth quarter of 2008⁵¹. These changes were implemented under the European Commission Regulation of 15 October 2008, adopting changes as regards IAS 39 IAS and IFRS 7⁵².

⁴⁹ The bank capital consists of Tier 1, Tier 2 and Tier 3 capital. Tier 1 capital is the bank's core capital which includes the most reliable and stable components of the shareholders' equity such as paid authorised capital, share premium, reserve capital, retained profit of the previous year not planned to be paid as dividends, a part of audited retained profit of the current year, general reserves to cover asset losses, mandatory reserve. Tier 2 capital comprises less stable components of shareholders equity or long-term loan capital, i.e., reserves for various purposes, as well as a part of subordinated loans (issued for more than 5 years). Tier 3 capital consists of a net trading book profit and shorter-term loan capital, i.e., subordinated loans with the shortest maturity of 2 years.

⁵⁰ By their nature subordinated loans are long-term liabilities. Subordinated loans included into the bank capital must meet the following requirements: a subordinated loan must not be requested to be paid before its maturity; in case of the winding-up or bankruptcy of the loan beneficiary, the claim of the subordinated creditor must rank behind those of all unsubordinated creditors; in specified events the loan beneficiary may not pay interest on the loan, etc.

⁵¹ Approved by the Bank of Lithuania Board Resolution No. 169 of 6 November 2008.

⁵² Changes regarding the reclassification of financial assets held for trading and available-for-sale into loans and receivables or assets held-to-maturity.

The banking system was strengthened and the risk exposure was better measured by more advanced risk assessment measures. Implementing requirements of the Basel Committee on Banking Supervision (Basel II) and appropriate directives of the European Union, General Regulations for the Calculation of Capital Adequacy⁵³ were started to be applied in 2008. The new regulation ensures a more precise assessment of risks and the calculation of capital requirement needed to cover risks. When calculating capital adequacy, banks must assess credit, market and, in addition to earlier practise, operational risks. Furthermore, all banks performed Internal Capital Adequacy Assessment Process and, in addition to the evaluation of the main risks (credit, market and operational), they made the assessment of additional risks (liquidity, reputation, concentration, etc.) and formed the capital required to cover them.

Many of the banks operating in the country measure the credit risk by a Standardised Approach that is basically similar to the previous methodology. However, new General Regulations for the Calculation of Capital Adequacy define a different classification of bank assets, the application of credit risk mitigating measures as well as risk weights for

some asset classes were changed⁵⁴. As a consequence, the capital requirement for some type of assets (the value of risk-weighted assets) curtailed, while capital adequacy ratios went up. On the other hand, a negative impact on capital adequacy ratios was caused by the need to charge capital for operational risk that was started to be measured.

As from the first quarter of 2008, the largest Lithuanian bank AB SEB bankas applied the Internal Ratings Based Approach (IRB) for credit risk measurement and calculation of capital adequacy. As from the first quarter of 2009, the second biggest bank "Swedbank", AB also started to apply this approach. A more precise credit risk measurement by applying IRB, compared to the Standardised Approach, had an effect on a relative reduction of the capital requirement for credit risk. On the other hand, the capital of these banks was reduced by an amount of expected losses evaluated under the IRB. Attention should be drawn to the fact that a wider application of the IRB by banks might strengthen the pro-cyclicality of banks capital adequacy. Although capital adequacy requirements are not applied to foreign bank branches, their behaviour in the market might be cyclical due to the IRB applied by their head offices.

Box 4. Basel II Rules for Calculating Capital Adequacy and the Loan Pro-Cyclicality

Pro-cyclicality of Basel II capital adequacy requirements (Basel II) comes through three main channels:

Channel I – dependence of probability of default (PD) on the business cycle position. If the economic situation of a country aggravates, PD increases. Therefore, banks are forced to have larger capital reserves and they can lend less with the same amount of capital.

Channel II – a collateral channel, i.e., with a decrease of asset prices, the value of collateral held by banks diminishes. So, the risk of loans changes and banks need more capital.

Channel III – PD migration. In this case the PD of enterprises not yet under insolvency but possessing ratings (assigned by external credit agencies or internal ratings given by banks) increases. In other words, if the rating of an enterprise (bank debtor) worsens, PD of that enterprise increases. Hence, banks need more capital.

The main reason behind the pro-cyclicality is the PD calculation methodology, i.e., PD is calculated by assessing the current situation but not its perspective. Therefore, PD changes according to a business cycle. Although PD pro-cyclicality is an objective phenomenon, the loan flow related with it is important in economic terms. With an increase of PD, capital requirement in banks grows, loan resources become more expensive, and credit flow gets thinner. Therefore, ways are being looked for encouraging banks to raise their capital in business cycle upturns and decrease capital in their downturns. In this way, an excessive growth of the credit flow would be smoothed and at the same time increasing imbalances in the economy avoided. Presently the banks try to raise capital adequacy. However, the capital price in times of the business downturn is high therefore the reduction of the loan flow (a negative flow) is one of the cheapest ways to increase capital adequacy. At this juncture, a very simple law is in force – alternative costs of capital attraction in the market (in this case, leaving the government's help aside) are higher than non-earned profits due to non-issued loans. Moreover, both, market and supervisory institutions are keenly monitoring the dynamics of capital adequacy. Therefore, when the banks are requested to do contradictory things at a time – to raise both, capital adequacy and crediting – the existing infrastructure for the regulation of the banking activity and government interventions is ineffective.

Basel II pro-cyclicality occurs in Lithuania through all abovementioned channels. First, two largest banks in Lithuania apply Internal Ratings Based Approach for the calculation of capital adequacy, thus

⁵³ Approved by the Bank of Lithuania Board Resolution No. 138 of 9 November 2006.

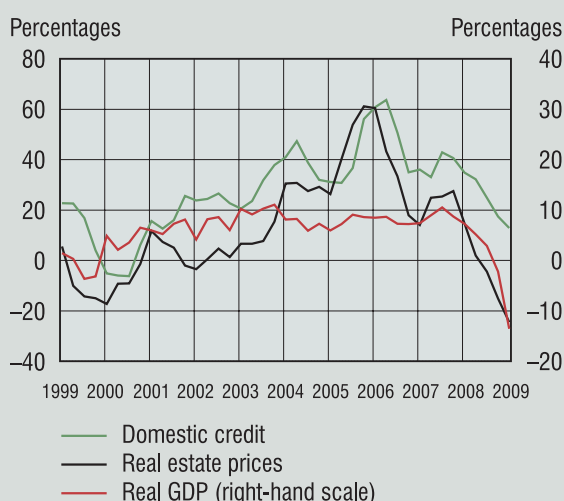
⁵⁴ For example, the risk coefficient for positions fully secured by residential real estate property shrank to 35%, and that of retail positions – to 75%.

they calculate their portfolio PD. If the economic growth is subsiding, PD increases inevitably. In the environment of dropping asset prices, the loan to collateral ratio increases, the potential loss given default (LGD) of a borrower rises. And banks require more capital. The PD migration channel occurs when banks decrease ratings of their clients. The two above-mentioned banks account for more than 51% of the total loan portfolio. In addition, pro-cyclicality occurs on an international scale as well. Parent banks of foreign banks branches operating in Lithuania also assess their risk by the Internal Ratings Based Approach. Therefore, they should recalculate PD of the Lithuanian customers as well. Moreover, it should be stressed that the lending flow to CEE countries curtailed markedly in the second half of 2008. This may be partly related to the reduction of sovereign ratings of CEE countries.

It should also be noted that data time series used to calculate PD were not long enough. Available data of some countries, including Lithuania, did not even cover the whole business cycle. Therefore, data of other countries were used. Another related simulation problem was that estimated probabilities of extreme events by applying conventional mathematical methods are not very large. That was convenient for credit institutions due to the fact that the capital adequacy ratio calculated in this way used to be higher (lower capital requirement). Currently the preference is given to methods allowing to increase the probability of extreme events. Hence, simulations become more pro-cyclical.

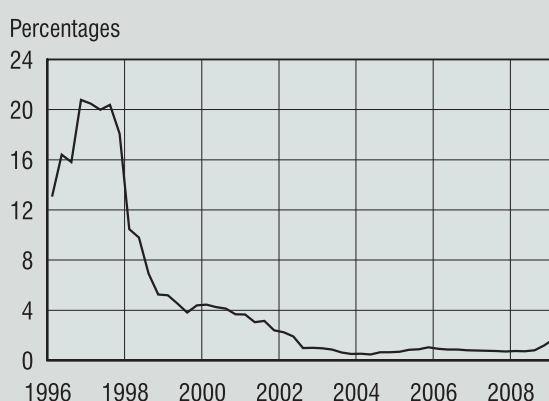
Some alternatives are suggested to soften the current situation. Dynamic provisioning is the first among them. It is a statistical provisioning method according to which provisions against loan portfolio are formed pursuant to evaluated long-term loan impairment losses. Dynamic provisioning means that during the business cycle upturn the banks are forced to form loan provisions not in line with the current state of the loan category group (occurred losses) but according to expected losses* during the entire business cycle. This method was applied in Spain, in which time series of required data were available from 1963. It would be difficult to implement this approach in Lithuania because there are no sufficient data – historically there was no whole credit cycle yet. Available data about the loan quality are not comprehensively comparable because of changes in the accounting and reporting requirements. Also, banks do not have possibilities to make such provisions because of loss event provisions defined by IFRS. That is loss events entailing a loss only in the future, not on the day of the loan valuation, cannot be regarded**. While forming anti-cyclical provisions, larger provisions should be made when the loss event is not registered but foreseen in the future. It should be observed that up to 2005 the banks formed at least 0.1% specific provisions against the total portfolio of doubtful assets i.e., assets exposed to credit risk***. Although these provisions increased financial reserves against loan impairment losses, they were not anti-cyclical and their size did not depend on the business cycle phase.

Fig. 81. Changes in credit, real estate prices and real GDP
(annual change)



Sources: Department of Statistics and Bank of Lithuania calculations.

Fig. 82. Dynamics of specific provisions



Source: Bank of Lithuania calculations.

The second alternative is related to changes of the size of Basel II capital adequacy requirement. In times of a downturn it would be possible to apply a lower capital adequacy ratio, i.e., it would fluctuate contrary to the business cycle. And vice versa – with a rapid growth of the loan portfolio, it is purposeful to raise the capital adequacy ratio. However, for the avoidance of the regulatory arbitrage, it is worthwhile to change such ratios on the European or global scale (e.g., by changing respective directives and Basel II).

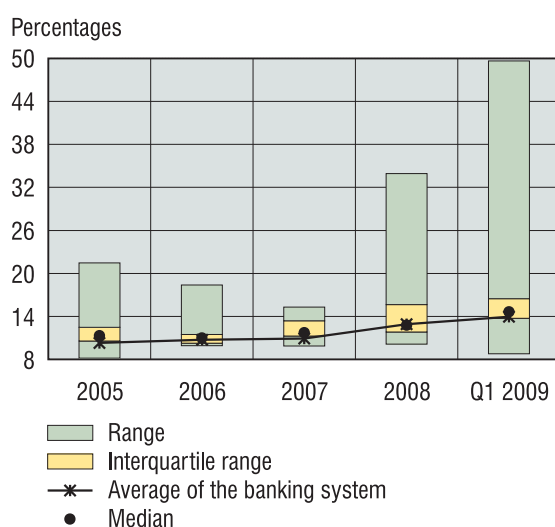
* More about in <http://www.bde.es/informes/be/docs/dt0018.pdf>

** However, there are initiatives in trying to harmonise accounting and supervision requirements in this field.

*** Excluding debt securities of the government of Lithuania and other countries with a particularly low risk, assets secured by these securities and funds as well as intra-group lending.

In terms of financial stability, an increasing capital adequacy in the majority of banks is assessed positively. Since early 2008, the median of banks' capital adequacy ratios stepped up by 2.9 p. p. to 14.6%, while the 1st (lower) quartile grew by 2.5 p. p. In other words, the capital adequacy ratio of only two banks was smaller than 13.7%. However, the capital adequacy ratio of the least capitalised bank dropped further during this period. Therefore, the capital raising issue in some banks is particularly acute.

Fig. 83. Dispersion of banks' capital adequacy ratios
(end of period)



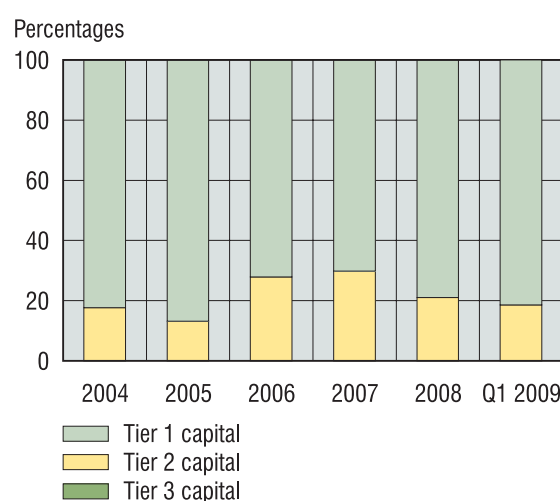
Source: Bank of Lithuania calculations.

It should be noted that in 2008 the capital adequacy dynamics in the banks of first and second groups was different. From the beginning of 2008, the average capital adequacy ratio of the first group banks grew by 3.7 p. p. to 14.2%. Within the same period, the capital adequacy ratio of the second group banks shrank slightly and made up 12.7% in the first quarter of 2009. Several reasons were behind this change. The capital of the second group banks, having no strong and capable to quickly increase share capital main investor, grew at a slower rate compared to the first group banks. In addition, the loan portfolio of the second group banks grew faster than loans of the first group banks (excluding foreign bank branches), therefore, the capital requirement of the second group banks increased relatively more. The application of new General Regulations for the Calculation of Capital Adequacy also played a role because the second group banks credited comparatively less house purchase needs of the population. Therefore, the effects of lower asset risk weights were relatively weaker. Moreover, the capital requirement for operational risk was somewhat higher in the second group banks. Furthermore, at the beginning of 2008, some banks of the second

group allocated a part of their 2007 profit for the payment of dividends. It should be noted that none of the banks paid dividends from the profit earned in 2008.

The capital structure of the banking system improved significantly. In the first quarter of 2009, Tier 1 capital made up 81% of the banking system capital, and from the start of 2008, its share broadened by 11 p. p. This was also reflected by the dynamics of Tier 1 capital ratio. In 2008, Tier 1 capital ratio grew by 2.5 p. p. Once independent auditors approved financial statements of banks and when profits earned in 2008 were included into capital, Tier 1 capital ratio of banks expanded by 1.2 p. p. to 11.3% in the first quarter of 2009.

Fig. 84. Banking system capital structure
(end of period)



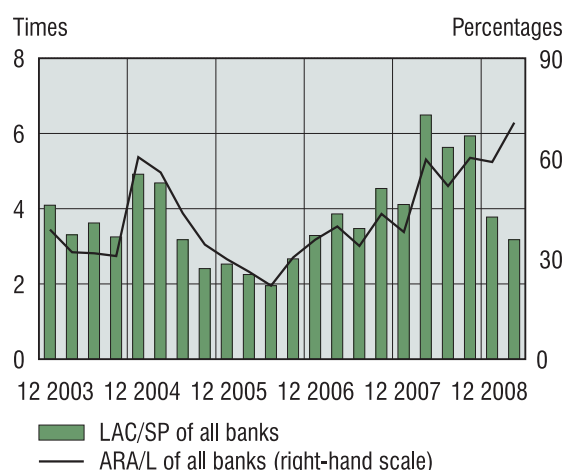
Source: Bank of Lithuania calculations.

Simulative calculations carried out by the Bank of Lithuania shows the volume of loss-absorption capacity of banks or the size of assets to be additionally assumed, with other conditions unchanged. In other words, on the basis of banks' financial stance in the first quarter of 2009, it was estimated how many losses were incurred, i.e. how many times it could increase specific provisions, or how many risk weighted assets⁵⁵ (with 100% risk-weight, e.g. loans) might the banking system assume without posing a threat to the banking activities and maintaining the capital adequacy ratio above 8% (irrespective of other prudential requirements). All comparisons are performed on the basis of actual capital adequacy ratios without regard to extra reserves, for example, retained profit of the current year not included into capital. At the end of 2008, these extra loss-absorption reserves amounted to LTL 0.5 billion or approximately 1.0% of risk-weighted assets.

⁵⁵ In these calculations, no regard is given to the actual credit risk measurement approach applied by banks, supposing that risk-weighted assets are the result of capital requirement divided by capital adequacy ratio, while a 100% credit risk weight is applied to additional assets.

An increased capital adequacy ratio of the banking system pushed up the volume of the loss-absorption capacity and additional risk weighted assets. In 2008 and the first quarter of 2009, the bank loss-absorption capacity doubled, however, specific provisions expanded even more intensively. Thus the ratio of loss-absorption capacity to the stock of specific provisions shrank from 4.1 times to 3.2 times. Moreover, macroeconomic environment risk elevated substantially.

Fig. 85. Loss absorption capacity and additional risk weighted assets of the banking system
(end of period)



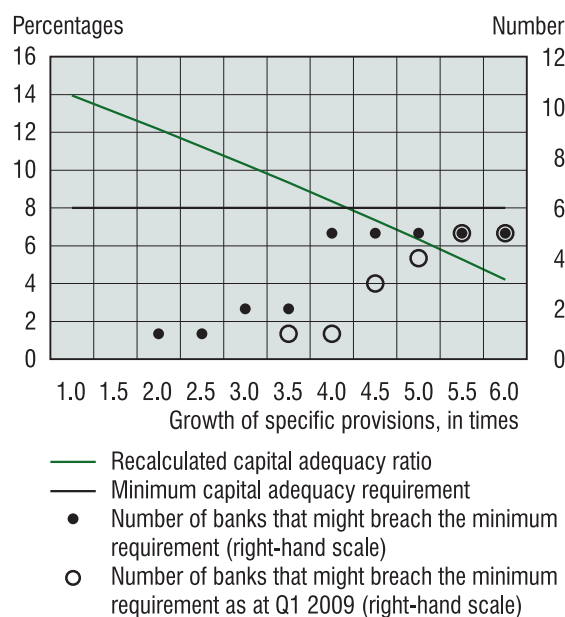
Source: Bank of Lithuania calculations.

Notes: LAC/SP – ratio of loss absorption capacity to specific provisions;
ARA/L – ratio of additional risk weighted assets to total loans (loans to credit institution excluded).

With other conditions unchanged, bank lending possibilities, with due regard to the limits of this activity in respect of the requirement to maintain at least minimum capital adequacy ratio, boosted almost twice. Simulative calculations indicate that without prejudice to the capital requirement minimum, the banking system loan portfolio might be approximately 70% larger in the first quarter of 2009. Nonetheless, presently the credit development was largely restricted by both, reduced loan demand and supply as well as the need to hold large capital reserves needed to cover unexpected losses related with a possible material worsening of loan portfolio quality.

When assessing results of simulative calculations by individual banks, banks sensitivity to credit risk losses increased in comparison to 2007. This was mostly entailed by an increase of volumes of the loan portfolio impairment at the end of 2008 and start of 2009. According to the data as of the first quarter of 2009, specific provisions should increase approximately twice so that at least one bank failed to fulfil the capital adequacy requirement. If specific provisions increased by 4.2 times (this is in line with the above mentioned ratio of loss-absorption capacity

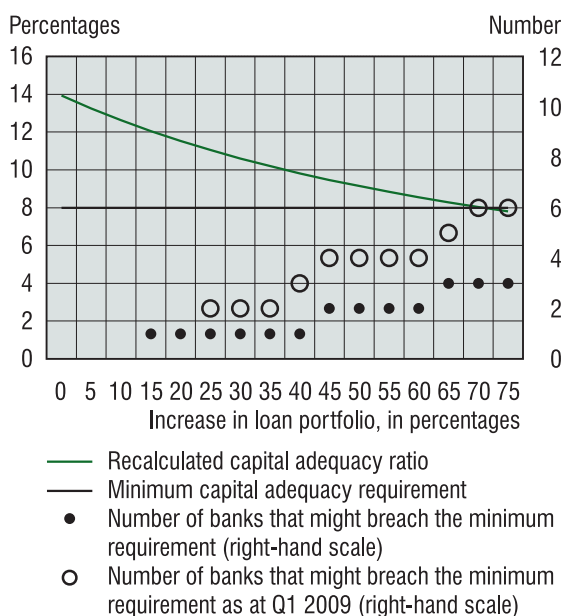
Fig. 86. Effect of the banking system's specific provisions growth on capital adequacy ratio
(with other indicators unchanged, data for Q1 2009)



Source: Bank of Lithuania calculations.

to specific provisions, which is equal to 3.2), five banks would fail to fulfil the capital adequacy requirement.

Fig. 87. Effect of the banking system's loan portfolio growth on capital adequacy ratio
(with other indicators unchanged, data for Q1 2009)



Source: Bank of Lithuania calculations.

A volume of risk weighted assets possible to assume additionally is basically dependent on the bank capital adequacy ratio. The analysis reveals that, with other conditions unchanged, the loan portfolio should increase about 15% for at least one bank to fail in meeting the capital adequacy minimum. If the loan portfolio had increased by 70%, three banks would have

failed to maintain 8% capital adequacy ratio (6 banks at the end of 2007). Therefore, in terms of capitalisation⁵⁶, the banking system capacity to increase assets, i.e., issue loans, was ample.

The comparison of average capital adequacy ratios in different European Union countries revealed that decrease trends were dominating in 2007. In 2008, when the major banks in various countries were confronted with losses incurred by the assumed risk of financial derivatives and lending for housing needs, bank capitalisation and capital raising issues became crucial. Banks in Lithuania

have individual plans to increase their capital. In addition, from the beginning of 2008 to the end of the first quarter of 2009, the average capital adequacy ratio of the Lithuanian banking system increased by 3.0 p. p. to 13.9%. This was a particularly positive phenomenon strengthening the banking system. Notwithstanding this and regarding the economic downturn in the country as well as stress testing results, a further improvement of banks management, risks management and enhancement of capital adequacy is an important aspect ensuring the financial stability of the banking system in Lithuania.

⁵⁶ That is evaluating only existing capital reserves and disregarding losses possible to be incurred as well as the current lending situation in the market.

Stress testing results should be analysed and interpreted particularly carefully with due regard to the assumptions made and technical restraints of the data and the model itself. Stress testing takes no account of potential actions of banks, supervisory or other authorities that might mitigate the effects of unfavourable events. Moreover, credit risk stress testing excluded bank reaction functions and their contributions to the banking system capital adequacy. Simulation of financial instability periods is also impeded by the fact that relationships between the main macroeconomic indicators that existed under normal conditions change considerably.

Liquidity Risk Stress Testing

Liquidity risk stress testing was performed in order to assess the resistance of banks to negative liquidity shocks, i.e., sudden and sizeable reduction of financial resources of banks. Liquidity risk stress testing covered all the operating banks, excluding one foreign bank branch that started its operation in 2008⁵⁷.

The liquidity risk stress testing methodology is based on the principles of sensitivity tests, i.e., assessment of the effects of one-off negative liquidity shocks to the liquidity position of a bank. Liquidity shocks are idiosyncratic. In terms of time, the span of the shock is set up to one month. It is very likely that over such a period of time a bank will be able to apply and get the support from the authorities to handle its liquidity problems. Based on the empirical observations, the assumption has been drawn that the foreign capital banks could mitigate liquidity shocks by borrowing additional funds from their parent banks. Moreover, it had been assumed that banks did not have any possibility of attracting other funding to offset a decrease in financial resources triggered by a liquidity shock. The deficient financial resources therefore were offset exclusively by sale of liquid assets. Some liquid assets such as the country's debt securities would be sold at a price 35% lower than the market value.

Liquidity risk stress testing was carried out on the basis of the data of the first quarter of 2009. Stress testing results were built on the recalculation of liquidity ratio, which is set for the supervisory purposes, after a shock and its comparison with the regulatory requirement (30%). In case the recalculated post-shock liquidity ratio exceeded the regulatory minimum, the conclusion was made that the banks would not face any li-

quidity problems. If the post-shock indicator dropped below the regulatory requirement, but remained above the level 10%, the conclusion was made that banks might encounter a temporary liquidity reduction, while the demand for additional financial resources and liquid assets would increase. In case the post-shock liquidity ratio decreases to the level less than 10%, the conclusion was that the bank could face an urgent demand for additional funding.

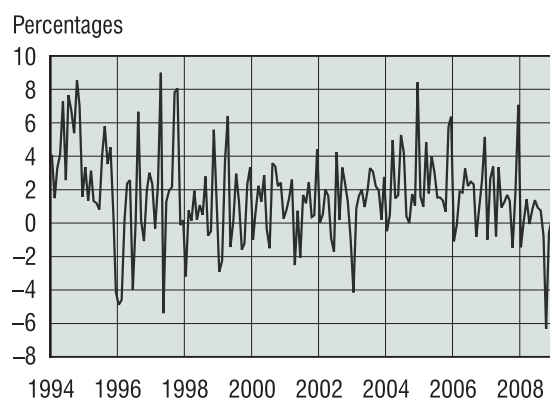
Liquidity risk stress testing was performed under 3 main scenarios that differed by the extent of the reaction of parent foreign banks. In each scenario, 3 liquidity shocks (rapid fall in deposits) were analysed: 10%, 15%, and 20%.

According to the first scenario, an assumption has been made that, in case of the shortage of liquidity, the banks have no opportunities to borrow from their parent banks or attract other funding therefore the insufficient financial resources are compensated by selling liquid assets. Some classes of liquid assets are sold at a lower than the market price.

According to the second scenario, an assumption has been made that foreign parent banks holding the banks in the country compensate 50% of the decrease in deposits with their subsidiaries and branches by providing short-term funding. The insufficient financial resources are compensated by selling liquid assets. Some classes of liquid assets are sold at a lower than the market price.

According to the third scenario, an assumption has been made that foreign parent banks holding the banks in the country compensate fully the shortage of liquidity in their subsidiaries and branches by providing short-term funding. Domestic capital banks compensate shortage of financial resources by selling their liquid assets. Some classes of liquid assets are sold at a lower than the market price.

Fig. 88. Monthly changes of deposits in Lithuanian banks



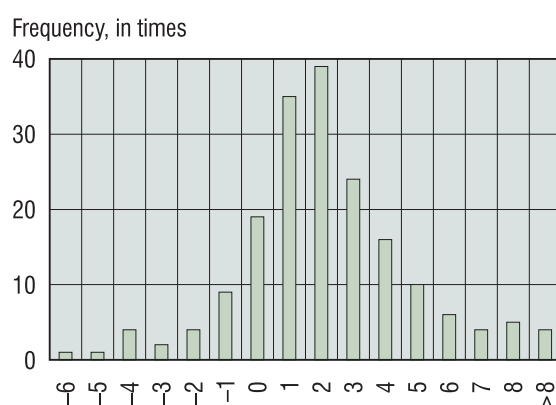
Source: Bank of Lithuania calculations.

⁵⁷ Skandinaviska Enskilda Banken AB, Vilnius Branch.

The extent of liquidity shocks is based on the observations of the factual monthly changes of deposit balances with the banks in Lithuania.

Historical data suggest, over the period from 1994 to 2008, the largest monthly decrease in the amount of deposits held in the banking system was 6.3% in October 2008. With the increasing turmoil in the global financial markets at that time and some doubts about the financial standing of some Swedish banks operating in the Baltic region, anxiety arose among the depositors of the Lithuanian banks as well. More or less sizable outflows of the deposits from the banking system were observed at the beginning of 1996 during the banking crises as well as at the beginning of 2003. In the end of 2002 and the beginning of 2003, with the false news about problems in one of the biggest banks of Lithuania, a withdrawal of deposits started while the deposits in that bank decreased by 11% in January 2003.

Fig. 89. Histogram of monthly changes of deposits in Lithuanian banks between 1994 and 2009



Source: Bank of Lithuania calculations.

Summarised analysis of the monthly changes in deposits indicates that there were only 6 months in 15 years when the deposits of the banking system decreased by more than 4%. Having in mind the above, the decrease of deposits by 10% could be considered as an event of low probability. The decrease of deposits by 20% is considered basically impossible. Decrease of deposits by 15% is an intermediate shock.

The actual practice of the Lithuanian banking system in the autumn of 2008 proved that parent foreign banks supplied additional liquidity when their subsidiaries and branches encountered decrease in deposits. In October, for instance, the increment in borrowing from the parent banks covered as much as 90% of the decrease in deposits. The maturity of the major share of the funding supplied exceeded one month, i.e. it was not included into current liabilities. Notwithstanding this, the second and the

third scenarios contain aggravating assumptions concerning partial compensation of the decrease in deposits and very short maturity of such funding, i.e. up to one month.

Table 10. Results of liquidity risk stress testing

(on the basis of Q1 2009 banks data)

	Size of the liquidity shock		
	10	15	20
Scenario 1: recalculated average post-shock liquidity ratio of the banking system	34.1	29.4	24.2
compared with the factual liquidity ratio	-8.3	-13.0	-18.2
compared with the post-shock liquidity ratio as at end-2008	3.0	2.7	2.4
compared with the post-shock liquidity ratio as at end-2007	-1.4	-1.6	-1.7
Scenario 2: recalculated average post-shock liquidity ratio of the banking system	37.1	34.3	31.4
compared with the factual liquidity ratio	-5.3	-8.1	-11.1
compared with the post-shock liquidity ratio as at end-2008	3.1	2.9	2.8
compared with the post-shock liquidity ratio as at end-2007	-1.4	-1.6	-1.7
Scenario 3: recalculated average post-shock liquidity ratio of the banking system	39.9	38.7	37.4
compared with the factual liquidity ratio	-2.5	-3.7	-5.0
compared with the post-shock liquidity ratio as at end-2008	3.2	3.1	3.0
compared with the post-shock liquidity ratio as at end-2007	-1.4	-1.5	-1.6

Liquidity risk stress testing results suggest that, in case the deposits in banks drop by 10%, the average post-shock liquidity ratio of the banking system would remain higher than regulatory requirement (30%). More sizable and particularly low probability shocks of deposits withdrawal, in case they are not covered by additional borrowing from parent banks, might result in the average post-shock liquidity ratio of the banking system lower than the requirement. Stress testing results confirmed that the lending facility provided by the parent banks ensures liquidity of the banking system and sufficient resilience to unexpected liquidity shocks. If worst-case decrease (20%) in deposits was covered by the short-term borrowing from the parent banks at least in half, the average banking system liquidity ratio would have been higher than 30%. Meanwhile, compensation of the larger portion of the decrease in deposits by way of short-term borrowing from the parent banks would ensure that the average banking system post-shock liquidity ratio would remain considerably above the regulatory requirement and the banking system would have sufficient reserves of liquid assets required for current liabilities to be discharged.

In assessment of the effects of liquidity shocks to individual banks, it should be noted that the situation in terms of liquidity risk varied. The banks of the second group were somewhat more sensitive to liquidity shocks. Moreover, those banks have no opportunity to compensate the decrease in deposits by borrowing from parent banks. On the other hand, three largest banks of the country could absorb the decrease in deposits by 10% without any additional borrowing from parent banks retaining the liquidity ratio close or above 30%. Apart from that, if the deposits decreased by 20% and that reduction was not covered by more extensive borrowing from parent banks, the liquidity standing of the three major banks of the country would still remain satisfactory considering the size of a negative liquidity shock.

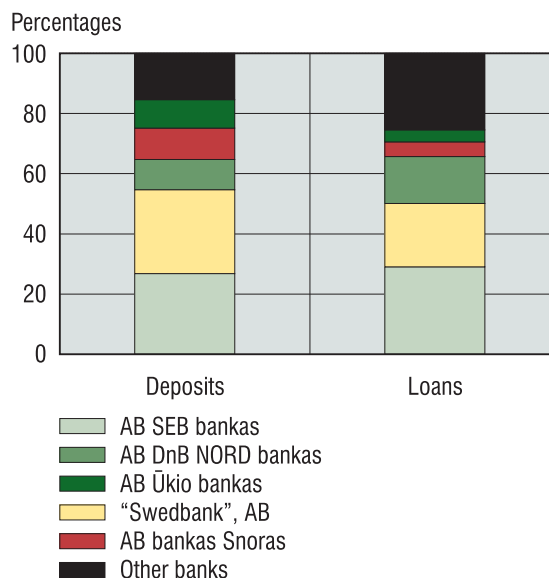
Comparative analysis of liquidity risk testing results performed under the basis of the data of different periods indicated that the standing of the banking system got better in the first quarter of 2009, however, the sensitivity increased. In comparison to the factual liquidity ratios, the decrease of the average post-shock liquidity ratio as at the first quarter of 2009 would be more pronounced than those at the end of 2007 or end of 2008. Nonetheless, the average post-shock liquidity ratio as at the first quarter of 2009 was higher than that at the end of 2008, but lower compared to the end of 2007.

Credit Risk Stress Testing

Credit risk stress testing was conducted with an aim to evaluate the scope of the potential expected and unexpected credit portfolio losses in case of adverse changes in macroeconomic environment or other extraordinary, but plausible, events and to assess whether banks have adequate capital buffers to absorb those losses. Analysis of the economic and financial system of the country indicates that the rapidly dropping real estate prices, growing unemployment level and rising interest rates are the major risks that might exert negative influence on the stability of the banking system.

The credit risk stress testing was conducted for the five largest Lithuanian banks: AB SEB bankas, Swedbank AB, AB DnB NORD bankas, AB SNORAS bankas and AB Ūkio bankas. In 2008, these banks held together 76% of the loan market as a whole and had attracted 84% of all the deposits of the banking system. Parameters needed for stress testing were compiled on the basis of individual (from the first quarter of 1999 to the end of 2008) data on loan portfolios of those banks.

Fig. 90. Loan and deposit market share of the five largest Lithuanian banks
(end of 2008)



Source: Bank of Lithuania calculations.

During the stress testing probabilities of default⁵⁸ of the loans granted to households and enterprises of some particular sectors (real estate, manufacturing, trade, construction, transport and agriculture) were estimated. The loans granted to those sectors comprise the major part of the loan portfolio of the analyzed banks. As a result, on average more than 90% of the loan portfolio to non-financial enterprises and households was tested. When assessing losses on loan portfolio, an assumption was made that the loss given default⁵⁹ parameter is 50%.

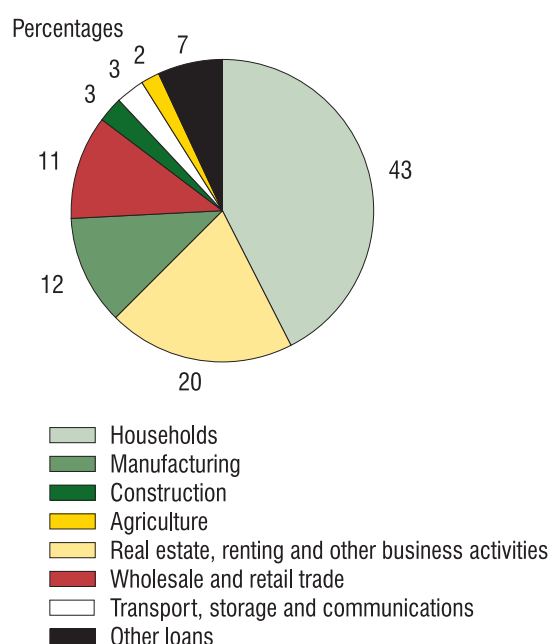
Expected and unexpected losses on bank loan portfolio were estimated using risk-based approach⁶⁰, which enables the estimation of the impact of unfavourable macroeconomic environment on the quality of bank loan portfolio under different macroeconomic scenarios. This technique allows to quantitatively assess the size of loan portfolio impairment losses over the specified period in the context of changes in various risk factors such as interest rates, unemployment level or real estate prices. The effect of adverse shocks to other macroeconomic and financial variables that explain the dynamics of the probability of default (real GDP, ratio between credit, investment, consumption, trade and GDP, short-term and long-term interest rates, housing prices, inflation, labour cost, effective exchange rate, etc.) is assessed using structural macroeconomic forecasting model. Series of probabilities of

⁵⁸ Probability that a debtor will not repay a loan and will fall into default within one year.

⁵⁹ A fraction of exposure at default that will not be recovered following default.

⁶⁰ A more detailed description of the credit risk stress testing model is provided in Financial Stability Review 2008, Annex "Implementation of the credit risk stress testing model in the Bank of Lithuania".

Fig. 91. Composition of the loan portfolio of the five largest Lithuanian banks by economic activity
(end of 2008)



Source: Bank of Lithuania calculations.

defaults by economic activities are used for calculation of the expected and unexpected losses of the banks. The ability of the banks to absorb potential losses that might materialize under highly unfavourable macroeconomic environment is assessed by comparing the estimated amount of the losses with the actual capital reserves held by the banks.

The following four scenarios were used for credit risk stress testing: fall of housing prices, increase of interest rates, growth of unemployment and the joint one – fall of housing prices and increase of interest rates. Each scenario analysed shocks of two degrees, i.e. standard and the worst-case scenario shocks.

Table 11. Credit risk stress testing scenarios

Testing scenario	Shock size
1) Fall of housing prices	30% – standard shock 40% – worst-case scenario shock
2) Increase of interest rates	3,1 p.p. – standard shock 6,1 p.p. – worst-case scenario shock
3) Growth of unemployment	3,2 p.p. – standard shock 4,8 p.p. – worst-case scenario shock
4) Combined (Fall of housing prices and increase of interest rates)	Fall of housing prices (30%) and increase of interest rates (3,1 p. p.) shocks Fall of housing prices (40%) and increase of interest rates (6,1 p. p.) shocks

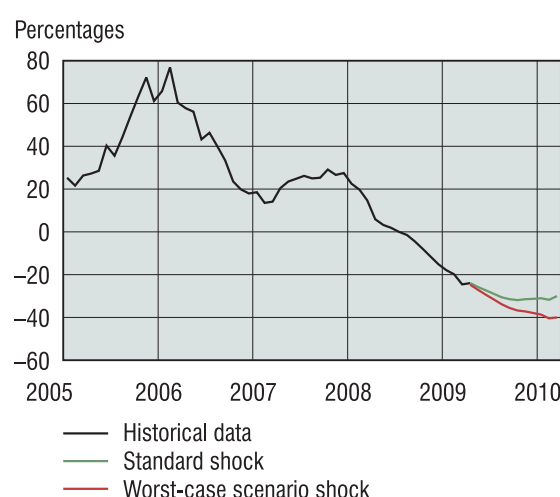
The presented stress testing scenarios are not the main scenarios of the developments of the domestic economy and banking system, on the contrary, these are extreme scenarios constructed to show the readiness of the banks to withstand consequences of un-

expected changes in case such changes take place. Probability of such shocks occurring is low, but significantly different from zero. A shock is defined as a percentage divergence from the most likely macroeconomic development scenario of the country⁶¹: its nature and size have been assessed in the context of historical data of Lithuania and other countries.

1. Housing price decrease scenario. For the credit stress testing under the housing price decrease scenario, shocks of 30% and 40% fall of the housing prices from the levels observed in the first quarter of 2009 have been chosen. Thus, under this scenario the degree of the correction of housing prices would amount to 47% and 55% respectively from the peak levels observed in the first quarter of 2008.

On the basis of the Bank Lending Survey for April 2009, representatives of the banks provide forecasts that real estate prices should decrease even further (from 20% to 30% of the present level) over the coming 12 months. Housing prices are falling in the other Baltic States too: the annual decrease in housing prices in Estonia and Latvia amounted to 34% and over 52% respectively. Analysis of other countries hit by economic crises also points that in over 60% of the cases, housing prices dropped by more than 30%. Therefore, selected shocks of further fall in housing prices of 30% and 40% for the stress testing exercise are possible scenarios, although of a low probability.

Fig. 92. Dynamics of housing prices in Lithuania and stress testing shocks
(annual change)



Sources: Real estate agencies' data used by central banks of the Baltic States and Bank of Lithuania calculations.

Falling real estate prices exert a negative influence upon the economic activity of the

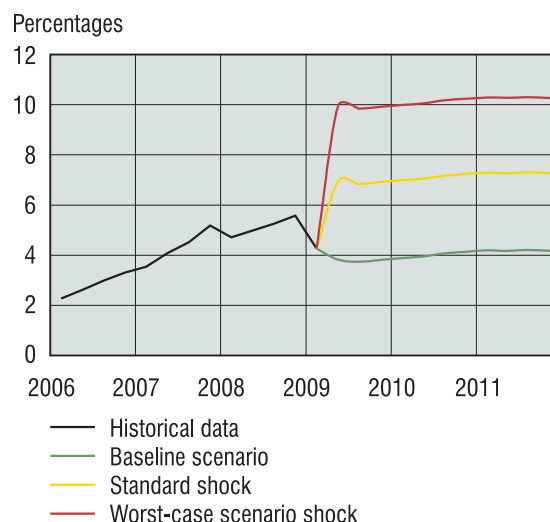
⁶¹ Medium-term macroeconomic forecasts of the Bank of Lithuania are used as the baseline scenario for future developments of Lithuanian macroeconomic environment.

country, which in turn reduce public expectations, investment flows, consumption and economic growth in the future. The slow-down in economic activity, growing unemployment, heavy loan repayment burden and the reduced value of the collateral has negative effect on the capabilities of debtors to repay the debts. The rise in the loan-to-value ratio might also directly increase credit losses on the bank loan portfolios. The rising housing prices pose the risk that the amount of a loan granted will become higher compared to the value of the collateral. This risk is especially high for the loans for house purchase granted several years ago when real estate prices were at their highest levels. Therefore, falling housing prices increase the risks of growing default probabilities and rising losses in the event of default.

2. Interest rate increase scenario. Two shocks have been chosen for the credit risk stress testing. Under the worst-case size interest rate shock, an assumption has been made that the ratio of the loans in litas to those in the euro remains the same (35% of all the loans are granted in litas while 65% are provided in other currencies). In this case, the size of the shock on weighted short-term interest rates in litas and in euro is 6,1 p. p. In the case of a standard size shock of the interest rate increase, an assumption has been made that a rapid increase in the interest rates and widening spread between interest rates in litas and euro result in a marked decrease in the flows of the loans in national currency, it also prompts the already existing customers of banks to change the currency of a loan. In this case the borrowers take loans exceptionally in foreign currencies reducing the size of the shock of short-term interest rates to 3.1 p. p. It is assumed that the full impact of interest rate shock materializes during the first testing period and lasts throughout the whole stress testing period.

The size of the interest rate shock that could materialize under potential economic downturn was assessed on the basis of the data of other European, American and Asian countries that had gone through the systemic crises⁶². The size of interest rate shock for every individual country was expressed in terms of a number of standard deviations from the historical average of interest rates. Active steps of the central banks of Europe and other countries in reducing key interest rates and stabilising global financial markets should reduce risks of the increase of interest rates in the future, however, ongoing turmoil in the global financial markets and increasing interest rate risk premiums could

Fig. 93. Dynamics of short-term interest rates and stress testing shocks



Sources: Bank of Lithuania calculations.

determine rising cost of borrowing in euro (as the risk premium to the credit institutions of the country grows) and in litas, therefore the interest rate increase scenario might materialize in case of adverse developments in the future.

Due to the higher cost of a debt, a stronger impact of the higher interest rates is reflected in the negative impact on the real investment as well as on private consumption of the households with loans for house purchase. Because of the higher interest rates, the real GDP in three years time could be considerably smaller than was expected in the main scenario. The rising cost of financial resources and growing credit risk will result in falling profitability of the banks meanwhile increasing cost of financing in the international markets might reduce credit flows from the Scandinavian parent banks to the Baltic States.

3. Unemployment growth scenario. Shocks of 3.2 and 4.8 p. p. are added to the expected level⁶³ of unemployment and in this way the overall unemployment level in the country in 2009 rise to 14.8% and 16.4% respectively.

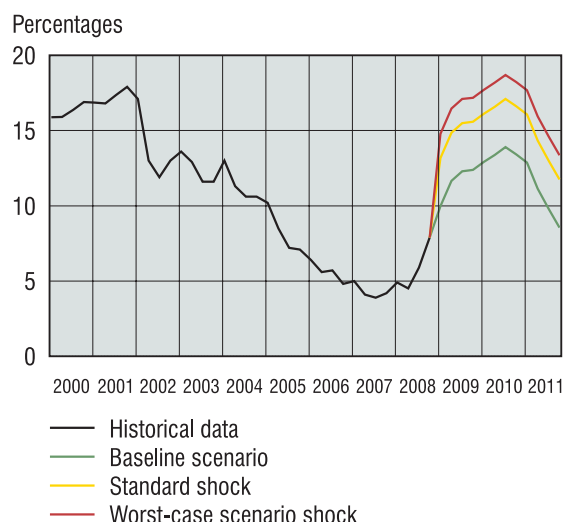
The size of unemployment level shock has been assessed on the basis of the data of other countries that had undergone systemic crises. Taking into account the quality and availability of the unemployment level data series, data of 39 countries have been analysed.

The deepening downturn in the Lithuanian economy prompts the enterprises to reduce volumes of their activities and inputs therefore they are forced to dismiss more employees. Due to rising unemployment in the country the number of the employed falls down which results in a lower value added

⁶² Systemic Banking Crises: A New Database (Laeven, 2008).

⁶³ Official macroeconomic forecasts of the Bank of Lithuania (May 2009).

Fig. 94. Dynamics of unemployment in Lithuania and stress testing shocks



Sources: Department of Statistics and Bank of Lithuania calculations.

created in the economy. This exerts a considerable impact on the consumption, demand and GDP. Reduced tax collection and growing social payments will also add to the deterioration of the financial standing of the country. Owing to great flexibility of the labour market in Lithuania and high emigration potential, the size of the unemployment shock is not expected to be higher.

4. Joint scenario of the falling housing prices and increasing interest rates. The standard size shock of housing price correction by 30% and increase of short-term interest rates by 3.1 p. p. has been chosen for stress testing. The main substantiating grounds of these shocks remain the same as described above meanwhile the effect on the economy arises not just because of the impact of each individual factor in general but because of the interaction of their effects as well.

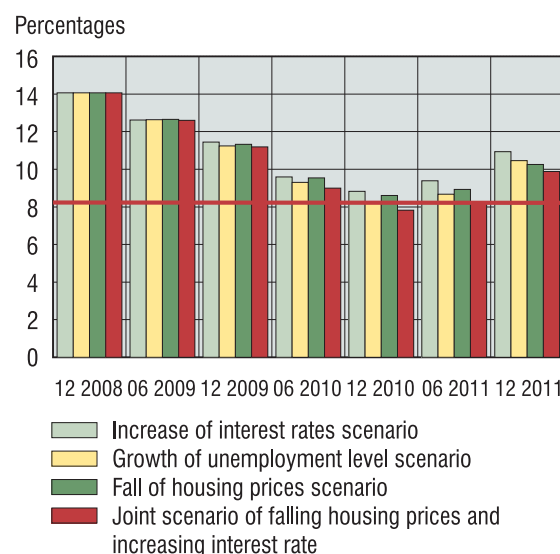
Credit risk stress testing results are analysed by comparing them with the financial stance of banks at the end of the first quarter of 2009, i.e., taking into account the actually incurred loan impairment losses, accumulated profits and the capital held with other conditions unchanged. The impact of the chosen stress testing scenarios on the capital adequacy of the banking system is assessed from the perspective of a three-year period, i.e. from the first quarter of 2009 to the end of 2011.

Irrespective of the minimum capital established by the prudential requirements, a bank should always hold sufficient capital reserves and remain solvent. On this account, the bank's economic capital – defined as a minimum capital level needed to cover losses over a certain period of time with a pre-specified probability – has been calculated. Under each testing scenario, economic capital was calculated as 99th percentile of a simulated bank portfolio loss distribution.

The banks cover the expected losses by setting the adequate interest rates after assessing the loan impairment losses. Having in mind the above, specific provisions formed by the banks and their profits were considered the sources to cover expected losses, while the capital held should cover unexpected credit risk losses. The comparison of the economic capital and the capital held by banks enables to assess the ability of banks to absorb losses incurred due to adverse changes in the macroeconomic environment.

The stress testing results show that Lithuanian banking system is adequately capitalized to cover expected loan portfolio losses. Under highly unfavourable macroeconomic environment, expected loan portfolio losses may become higher than the loss buffers to cover expected losses held by the banks thus bank capital would be used to cover those losses. This would reduce the capital buffers held by the banks, but average capital adequacy ratio of the five largest banks would still remain above the existing minimum capital level set for supervisory purposes.

Fig. 95. Average capital adequacy ratio of the five largest Lithuanian banks after absorbing expected credit losses



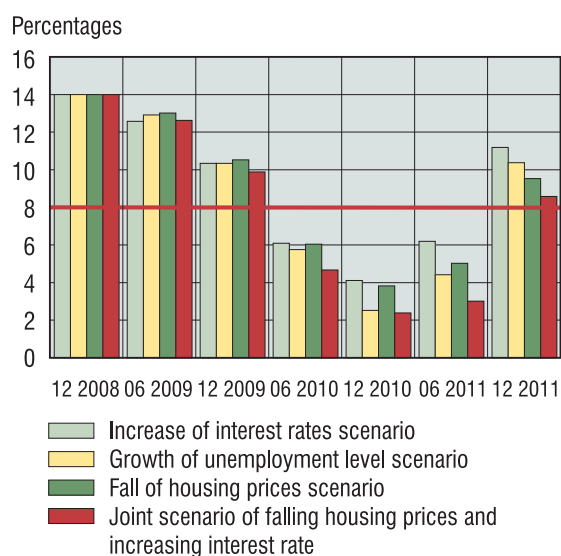
Source: Bank of Lithuania calculations.

The stress testing results indicate the need for banks to further strengthen capital base in order to be able to absorb unexpected⁶⁴, although probable, credit losses in case of adverse domestic and global macroeconomic environment. Accounting for increased unexpected losses capital adequacy ratio of individual banks would drop by 3 to 5 p. p. in 2009 assuming no actions are taken to increase capital. However, average capital adequacy ratio of the five banks would

⁶⁴ Probability that actual loan portfolio losses will be larger than estimated size of unexpected losses is less than 1 per cent.

still exceed the minimum capital level set for supervisory purposes. Stabilisation in the global financial markets and recovering domestic economy should diminish uncertainty and exert positive influence over the quality of the bank loan portfolios, which in turn would result in lower loan portfolio losses in 2011. In case of highly unfavourable macroeconomic situation, additional capital reserves may be needed to cover unexpected loan portfolio losses as a result of considerably increased credit risk in 2010.

Fig. 96. Average capital adequacy ratio of the five largest Lithuanian banks after absorbing unexpected credit losses



Source: Bank of Lithuania calculations.

Increased capital adequacy ratio of the banking system improved capacity of the banks to absorb unexpected portfolio credit risk losses but banks may need to attract additional LTL 200–250 million of capital to cover unexpected losses associated with the possibility of sizeable increase in credit risk. In case of further deterioration of domestic macroeconomic situation, the need for additional capital may increase up to LTL 1,5–2 billion in 2010 under selected stress testing scenarios. Therefore further strengthening of the bank capital and its maintenance at an appropriate level as well as development of the risk management and internal governance systems are particularly impor-

tant factors in seeking to ensure safe and stable banking business and sustainable credit growth.

On the basis of the results, the growing unemployment would have the strongest impact on the amount of the bank loan portfolio impairment losses while the effect of increasing interest rates and falling housing prices shocks would be slightly more moderate. It should be noted that the impact of the shock of the fall of housing prices on the amount of bank loan portfolio impairment losses is slower: compared to other scenarios, during the first year the impact of this shock would be relatively smaller, although during the third year it would exert the strongest negative impact on the quality of the bank loan portfolio. The joint scenario of falling housing prices and increasing interest rates would result in the highest loan portfolio losses.

This year, as compared to 2008, the results of the credit risk stress testing of Lithuanian banking system are poorer. The difference between the results might be explained by a rapid deterioration of macroeconomic environment in Lithuania and other countries that might result in higher bank loan portfolio losses.

Due to the assumptions made and technical restrictions of the approach itself, the stress testing results should be interpreted with caution. It should also be noted that, under the circumstances of a rapidly changing economic situation of the country, it is difficult to forecast precisely future macroeconomic development of the country and to assess the impact of possible macroeconomic shocks on the quality of bank loan portfolio. When assessing losses on loan portfolios, a conservative assumption was made that the loss given default in respect of all loans was 50%, although the actual indicator for some categories of loans (e.g. loans for house purchase) is lower. It should also be noted that the stress testing results describe the situation which might develop if – in case of adverse changes in the macroeconomic environment – the banks would not increase their capital or take any other actions to improve the situation over the review period.

IV. FINANCIAL SYSTEM RISK MITIGATION MEASURES

The global financial crisis directly affected most of the major economies of the world in 2008. Lithuania succeeded to avoid the direct impact of the turmoil in global financial markets due to prudential activities of commercial banks operating in the country; however, being a part of the global economy, same as many other countries of the world, faced the challenges caused by the crisis. Accordingly, reacting to the rapidly changing economic environment, the Bank of Lithuania and other institutions of the country implemented various financial system risk mitigation measures last year.

Application of bank supervisory measures. The Bank of Lithuania reduced potential liquidity and credit risk by encouraging commercial banks to maintain higher liquid asset and capital reserves than established by international standards and conduct efficient risk management. For this purpose, the Rules for Calculating Capital Adequacy were tightened. These Rules establish additional restrictions with regard to the calculation of the capital base of banks. According to these Rules, the inclusion of current year profit into the capital base was restricted and supervisory filters were legalised. The risk of property-secured loans was assessed more strictly than required by the Basle banking supervision principles. Moreover, all the commercial property-secured loans were estimated at 100% risk, a requirement which is stricter than in other European Union Member States.

After the implementation of the requirements of Directives 2006/48/EC and 2006/49/EC establishing the capital adequacy calculation requirements, the introduction of the new capital adequacy system (Basel II) and parallel capital adequacy calculation as well as the introduction of new financial reports that comply with the IFRS and enable the calculation of the fair value of assets and the application of new internal capital requirement and risk management systems in 2007, last year much attention was devoted to the internal capital adequacy assessment process in banks. For this purpose, an assessment of each bank was made and recommendations and instructions on the improvement of the risk assessment process or additional capital requirement were provided, when needed.

Taking into account the current unfavourable situation in global and domestic financial markets, special attention was paid to the collection of additional daily information on individual asset and liability items of the banks' balance sheets, its analysis and evaluation of trends.

Also, for several consecutive years banks were recommended to transfer their profit to reserves for covering operational risks and improving their capital base. Taking into account market developments and potential risks, banks also tightened lending conditions, introduced stricter evaluation of the borrower's financial situation, increased loan margins, tightened collateral requirements, raised loan to value ratio and applied other credit risk mitigation measures.

Measures for ensuring financial system liquidity. In order to increase liquidity in the domestic inter-bank market and thus reduce the pressure on the inter-bank interest rate, last year the reserve requirement ratio of commercial banks was reduced from 6% to 4%. It should be noted that the reserve requirement ratio was still higher than that of euro area commercial banks (2%).

In October last year, the Bank of Lithuania amended the procedure for granting liquidity loans to domestic commercial banks. The new procedure expanded the list of eligible collateral and included other amendments increasing effectiveness of the process of granting liquidity loans.

In order to enhance confidence of depositors in relation to domestic banks, the Seimas of the Republic of Lithuania increased the maximum deposit insurance amount from LTL 20 thousand to LTL 345 thousand since November last year. According to the new deposit insurance procedure, in the event of contingency depositors would be reimbursed 100% of their deposit – up to the amount in litas that corresponds to EUR 100 thousand. The maximum deposit insurance amount established in Lithuania is higher than in many European Union states.

Preparation for financial crisis management. In 2008, the Bank of Lithuania continued to enhance cooperation with central banks and supervisory authorities of other countries and improved internal procedures for risk assessment. Since foreign banks own a significant share in the financial system of Lithuania, international cooperation is especially important to prepare properly for the financial system crisis management. To control the situation, depending on the origin and scale of the financial system crisis, common measures and coordination of actions of several countries may be required. Crisis management on an international level has been provided for in the memoranda of understanding and individual agreements between bank supervisory authorities. On 1 June 2008, the Bank of Lithuania, together with the Ministry of Finance of

the Republic of Lithuania, the ISC and the Securities Commission signed the new Memorandum of Understanding on co-operation between the financial supervisory authorities, central banks and finance ministries of the European Union on cross-border financial stability. This Memorandum defines the principles of close cooperation and exchange of information between responsible institutions, provides for the establishment of formal cross-border stability groups and the signing of special cooperation agreements between countries, which financial systems are especially closely integrated.

Preventive efforts of the Bank of Lithuania in the field of crisis management included supervision of commercial banks operating in Lithuania, analysis of the activity of the whole banking system, establishment of a systemic model that enables the evaluation of potential external and internal shocks and their impact to individual financial institutions and the entire financial system, as well as improvement, oversight and stress testing of the payment system.

In November 2008, the Government of the Republic of Lithuania adopted the Financial

Crises Prevention and Management Plan, which defines potential procedures for financial crisis prevention and management and the procedure for the cooperation and exchange of information between responsible institutions supervising the financial system. In the beginning of this year, the Bank of Lithuania introduced regulations and started to perform the procedures of crisis prevention and management established in the said legal act.

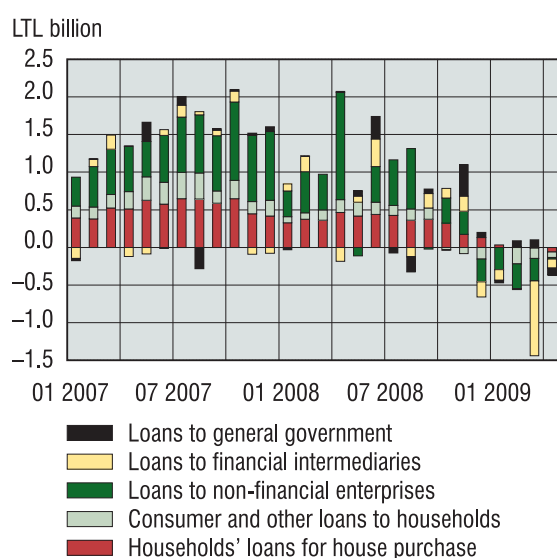
In the beginning of this year, the Government of the Republic of Lithuania approved the draft Financial Sustainability Law. The draft Law provides for short-term preventive measures that could be taken by the state to enhance financial stability and credibility of the banking system, if needed. This document provides for the possibilities to grant state guarantees, buy out bank assets and acquire a stake in banks. It also provides for the possibility of the takeover of bank shares for public needs. The state could grant state guarantees (up to LTL 3 billion) to banks, when they borrow in the market. After coordination with the ECB and the European Commission, the draft Law will be submitted to the Seimas.

V. ANNEXES

Annex 1. Sharp Slowdown of Credit Growth: Consequence of Supply and Demand

Credit crunch is an abrupt tightening of credit standards and a moderation of the possibility to receive a loan with unchanged interest rate. Credit crunch is often a consequence of long-term intensive earlier lending. The term itself is not related to qualitative assessment – whether it is good or bad. Under credit crunch, banks do not have a possibility to grant loans for new projects due to a shortage of capital and unwillingness to assume risks.

Fig. 97. Loan portfolio composition by sector (monthly change)



Source: Bank of Lithuania calculations.

Empirical changes of the balance of the bank loan portfolio show that in April 2009 the flow of loans to the private sector was negative for the fifth consecutive month. The bank loan portfolio declined by LTL 2.6 billion in total since the beginning of 2009. The largest decline was registered in loans to financial intermediaries (LTL 1.3 billion).

In Lithuania, as in some other CEE countries, the rapid credit expansion was mainly financed by the funds of parent banks. The flows of foreign bank loans for the financing of the loan portfolio expansion in CEE countries became negative already from the beginning of the third quarter of 2008. Although capital flows from parent banks grew in Lithuania, it was partly related to the large-scale withdrawal of deposits observed in autumn. The banks offset this withdrawal by lending to their subsidiary banks. On the other hand, the debt to parent banks declined by LTL 1.8 billion in the first four months of 2009. The demand for funds from parent banks declined due to the

growth of Government deposits and smaller demand for loans.

Why Did the Loan Supply Decline?

Capital adequacy, liquidity situation and available resources of banks have an influence on possibilities of banks to grant loans. Currently, we face the situation when banks may avoid crediting even high quality investment projects, in order to have more liquid funds and capital. This is primarily related to the forecasted losses of banks: if banks forecast larger losses, they will limit lending, since the funds will be necessary to cover losses. Another cause is the deterioration in collateral quality, for example, due to lower real estate prices. In such case, banks would suffer large losses due to the deterioration in the quality of real estate-related loans. Finally, it became very difficult for banks to securitize loans. Although these trends are global, they also take a toll on our banking system, since we are a part of the global financial markets.

After central banks and governments of many countries implemented economic stimulation measures, borrowing standards in international financial markets started to stabilise. Possibilities of the Lithuanian banks to attract financial resources abroad improve; however, they remain complicated due to strict assessment of risks and downgraded credit ratings in the Baltic States. Banks attempted to attract financial resources in the domestic market through intensive competition by means of high interest rates on deposits. It resulted in an elevated price of monetary resources, which was transferred on new borrowers by increasing interest rate margins on loans. Taking into account the economic recession of the country, banks also tightened credit standards. The assessment of the factors affecting the granting of loans by banks revealed that the tightening of credit standards on loans was mainly determined by the strengthening risk related to the overall economic situation and housing market prospects. Financing expenditure and balance-sheet restrictions also induced the tightening of credit standards.

These factors contributed to the decline in lending, which was especially evident in the second half of 2008, when the credit flow shrank by a half, compared to the first half of the year. The assessment of interest rates showed that the borrowing costs of the private sector were higher by 0.8 p. p. in 2008, compared to 2007.

Summarising, it could be stated that banks adjust credit standards on the basis of the overall domestic and global economic situa-

tion. During the period of economic growth, when borrowing was relatively cheap both in the domestic market and the international market, banks offered very favourable conditions to borrowers. When the economic growth slowed down, the risk of borrower insolvency rose and the borrowing costs increased, banks attempt to protect themselves from potential losses and tighten risk assessment.

What Determined the Loan Demand in the Recent Decade?

Empirical research of the loan demand⁶⁵ shows that the private sector borrowing is affected by investment expenditure and interest rates on loans.

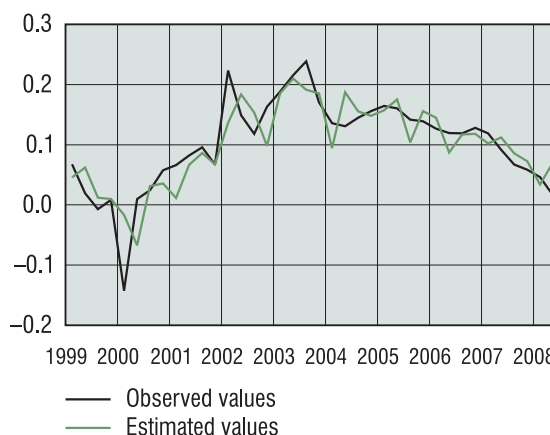
In the case of both loans to enterprises and loans to households, the influence of the earlier flow is important, i.e. the flows of loans generates another flow of loans. It is related to the fact that investment in one sector (for example, construction) stimulates the demand for loans in other sectors, for example, retail trade, transport, etc. Since a part of the flow of loans financed using foreign savings remained within the domestic economy, it also encouraged further growth of consumption expenditure. In the case of loans to households, it is evident that the demand for loans for house purchase grew with the increase in enterprise investment in residential housing while the interest rate also had a significant impact on the flow of loans. With the rise in interest rates, the flow of loans decreased significantly, compared to the level observed in previous years. In the case of loans to enterprises, the influence of interest rates on the demand for loans was significantly lower than in the case of loans to households. This may reflect high dependence of the flow of loans to enterprises on the expectations with regard to investment profitability and payback. Under the conditions of recession, these expectations have deteriorated significantly, and this does not encourage enterprise investment.

The equation of the volume of loans to households:

$$\begin{aligned} \Delta lh(t) = & 0,74 \cdot \Delta lh(t-1) + 0,61 \cdot \Delta c(t) + 0,12 \cdot \Delta invh(t-3) - \\ & (0,08) \quad (0,27) \quad (0,03) \\ & - 0,08 \cdot \Delta irlh(t-1) \cdot D(t), \\ & (0,02) \end{aligned}$$

where: Δ is the first order difference operator; standard deviations of respective coefficients are indicated in the brackets after the equation; $D(t)$ is a dummy variable associated with a more rapid credit expansion since the third quarter of 2002.

Fig. 98. Changes in the volume of loans to households and their estimated values

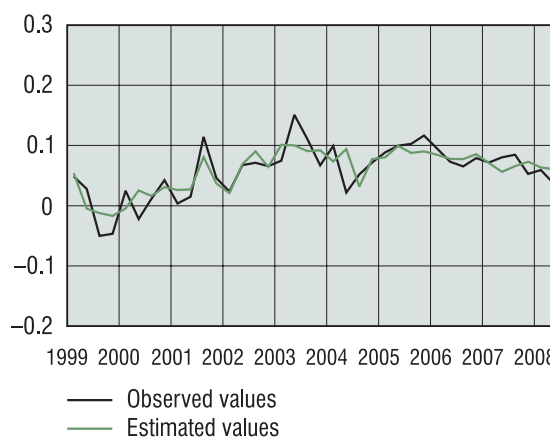


Source: Bank of Lithuania calculations.

The equation of the volume of loans to non-financial enterprises:

$$\begin{aligned} \Delta l(t) = & 0,04 \cdot D(t) + 0,37 \cdot \Delta l(t-1) + 0,16 \cdot \Delta inv(t) - \\ & (0,01) \quad (0,11) \quad (0,05) \\ & - 0,03 \cdot \Delta irl(t). \\ & (0,01) \end{aligned}$$

Fig. 99. Changes in the volume of loans to enterprises and their estimated values



Source: Bank of Lithuania calculations.

The dummy variable $D(t)$ in this equation shows the reversal in the development trend of the volume of loans since the third quarter of 2002.

⁶⁵ Quarterly data of 1999–2008 are used for the econometric research; their list is provided in Table 11. All variables used for the research are not stationary, therefore, only differential equations are evaluated using the ordinary least squares method.

Table 12. List of variables

<i>lh*</i>	The volume of loans to households, LTL million
<i>c**</i>	Private consumption expenditure, LTL million
<i>irlh</i>	Interest rate on loans to households, %
<i>invh*</i>	Investment in residential housing, LTL million
<i>l*</i>	The volume of loans to non-financial enterprises, LTL million
<i>inv**</i>	Investment in non-residential buildings, civil and engineering constructions, machinery and equipment, LTL million
<i>irl</i>	Interest rate on loans to non-financial enterprises, %
<i>D</i>	Dummy variable (since Q3 2002) equal to 1, in other periods – 0.

Sources: Department of Statistics and Bank of Lithuania calculations.

*Log-transformed.

**Seasonally adjusted and log-transformed.

It is possible to state on the basis of equation measures of goodness of fit that both equations explain the change of the volume of loans quite well.

What Do the Survey Data Show?

After the recent tightening of credit standards by most commercial banks and decline in the flow of loans, the opinion spread in the public that banks attempt to fully restrict the granting of loans and thus avoid the rising risk of customer insolvency. According to the bank lending survey, banks tightened general credit standards to enterprises and households in the recent half of the year. On the other hand, banks also stated that recently the demand for loans had shrunk significantly and its growth was not expected in the nearest future.

Household survey showed that the decline in the flow of loans was highly affected by the avoidance of the population to assume additional financial liabilities in the face of economic recession. The housing affordability index calculated by the Bank of Lithuania, which is used to assess the capability of a household to acquire medium-priced housing, shows that under current credit standards a household that earns average income meets loan conditions by more than 100%. The following conditions are presumed when calculating this indicator: housing is purchased by taking a loan from a bank for the term of 25 years and with the payment of average interest of the market, the initial payment of the owners makes up 20% of the loan amount, and no more than 40% of the household's monthly income is allocated for the payment of the loan. When analyzing the dynamics of this indicator, it is observed that in 2006–2007, when the growth rates of the flow of loans were

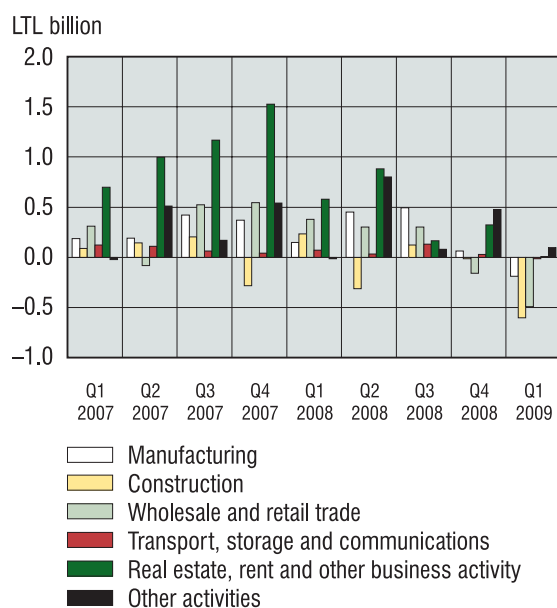
the highest, a household that earns average income satisfied loan granting conditions by 75–95%. Taking this into account, it is possible to state that recently the standards for issuing credit for house purchase are more appropriate and acceptable for efficient functioning of the market than they are excessively tight.

Credit Crunch or Return to Balanced Credit Growth?

In times of recession, the demand for loans decreases: both investment and consumption drop. The currently observed phenomenon is the shock of overall demand, which, *inter alia*, was also determined by the fall in the crediting volume. On the other hand, the decline in credit volume and the shock of overall demand encourage businesses to reorganise production and use resources more rationally. Enterprises are forced to reduce their financial leverage. Alternative costs of reorganisation are smaller during crisis. The tightening of credit standards mostly affects the enterprises that have most uncertain prospects of operation. The tightening also has an impact on those enterprises that are in better financial situation, but are incapable of overcoming information asymmetry problems, especially in the case when they belong to economic activities that are assessed as having poor prospects. Summarising, it should be noted that problems emerge when banks start to apply "one size fits all" policy. In the current market situation, some signs of such policy are observed, but it is not possible to state definitely that such practice is widely spread.

Credit demand and supply changes affect the economy by reallocating activity from those economic sectors that are most dependent on the flow of loans (real estate, construction) to those economic sectors that are less dependent. It should be evaluated as a positive impact and we will probably observe the situation when more investment is directed to economic activities that are open to foreign trade, since the probability of demand recovery is higher there. These positive changes are reflected by the latest data on bank loan flows by economic activity. It is obvious that the decline in the flow of loans to construction and trade was the largest. The flow of loans to manufacturing enterprises fell as well, although this fall is related to the overall decline in domestic and foreign demand for their production and thus to smaller demand for investment. The analysis of the quantity of loans granted also shows these trends.

Fig. 100. Loans by economic activity
(quarterly change)



Source: Bank of Lithuania calculations.

It should be noted that the banking system amplifies business cycles, i.e. both the extent of booms and the extent of recessions. In Lithuania, bank loans are not easily substituted by other forms of financing enterprise activity, therefore, enterprise defaults and trade credits increase.

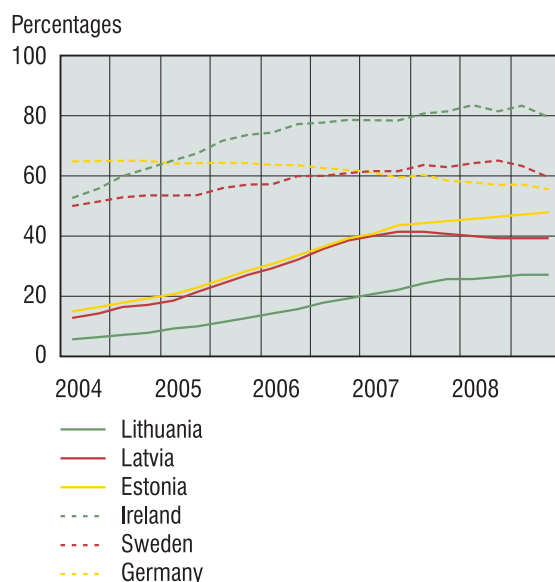
Thus, the problem of loan growth should be evaluated using integrated approach: the decline in lending reduces overall demand, worsens business prospects and increases bank losses. What level of capital flows would be acceptable? For a long time, the country experienced excessive growth of the flow of loans and deviation from the equilibrium level. The current situation should be evaluated as a return to balanced credit flow, although certain assumptions may be made that in certain cases the risk is assessed too strictly, i.e. it is overestimated. Therefore, we face excessive restrictions of loans and demands to redeem loans before their maturity on the basis of the possibilities foreseen in the agreements. However, it is unlikely that such situation will be long-term. After some time, credit expansion will return to the level of balanced growth.

Annex 2: Household Stress Testing

The adjustment that started in global financial markets in 2007 determined a rapid fall in real estate prices, a slowdown of economic growth and recession in some countries. It also had a direct impact on the financial situation of households: the threat of unemployment, decrease of income and inability to repay debts increased. The worsening financial situation of households encouraged discussions on the influence of the situation of households on the financial system and its stability. Historically, households were considered to be low credit risk source for financial institutions; however, the loan for house purchase crisis in the USA that started in 2007 showed that households may be a significant source of threat to financial stability during larger scale macroeconomic shocks.

The overall level of debt of households in Lithuania accounted for 29% of the GDP at the end of 2008. Debt indicators of our country show a relatively low level of overall debt, when compared to the debt data of other countries, though its growth was especially strong in several recent years.

Fig. 101. The ratio of the balance of loans to households to GDP in selected European Union Member States



Sources: ECB, Eurostat and Bank of Lithuania calculations.

Household research based on microdata is sufficiently new field of research, which is performed by central banks of many countries to assess credit risk. The interest in stress testing of households also increased recently. The research results in this area were published by the central banks of Sweden, Norway, Chile, etc.

The purpose of stress testing is to establish and analyse the mechanism of transmission of external shocks to households (rising interest rates, growing unemployment, falling real estate prices) on the domestic financial system and to evaluate the change of the capability of households to properly and timely comply with their financial liabilities to creditors on the basis of the newest microdata obtained by means of surveys. Based on the results of simulation calculations, the research also attempts to calculate the impact of financial vulnerability of households on the main financial market participants of Lithuania, i.e. banks, by assessing their portfolio quality and capital adequacy. Since, according to the data of the Bank of Lithuania, the population is mostly indebted to banks (loans from financial institutions comprise 77% of total liabilities of households), our research is restricted to the impact of shocks to the banking system only.

The measurement of financial stability of households is based on the model that shows income and expenses that are highly affected by macroenvironment factors. The household budget model allows performing the stress testing by including into the model low probability, but possible changes in macroenvironment factors and researching the capabilities of an individual household to properly fulfil the assumed financial liabilities.

On the order of the Bank of Lithuania, in 2007–2009 the surveys of households with loans for house purchase were conducted. During these surveys, the microdata on the financial situation of households were collected. Data representativeness ensures the application of the results obtained during surveys to the whole. Available data allow assessing the income and expenditure composition of each household surveyed and presenting the result of the difference in income and expenditure, i.e. the balance of free income (margin). The balance of free income of each household is calculated in this way:

$$M_i = DI_i - CL_i - CF_i - CI_i,$$

where: M – balance of free income (margin), DI – disposable income, CL – cost-of-living expenditure, CF – expenses on other financial liabilities, CI – interest payment for loan for house purchase.

In order to assess the liabilities assumed by insolvent households and the assets managed by them that may be used to cover losses, the following two indicators are calculated: 1) Exposure at Default (EAD). This indicator shows the share of liabilities of households with a negative margin in the total portfolio; 2) Loss Given Default (LGD).

This indicator shows the share of liabilities of households with a negative margin, which are not covered by financial or other assets, in the total portfolio (this indicator shows the share of potential losses compared to the bank's loan portfolio).

Households are tested using three types of shocks:

1. Scenario of unemployment level growth. It reduces disposable income of households and the size of a household's margin respectively. Considering an individual impact of the unemployment level on particular households, there is a problem of distribution of the effect of higher unemployment on the research sample. During this research, Monte Carlo method was applied, when the loss of employment is attributed to a specific household member by estimating 1,000 simulations, and a working member of each household faces an equal probability of job loss. After applying the Monte Carlo method, household margins are recalculated. The number of negative margins in this instance is higher due to lower income. Thus, an increase in unemployment has an impact on the increase of the losses related to the portfolio of loans to households.

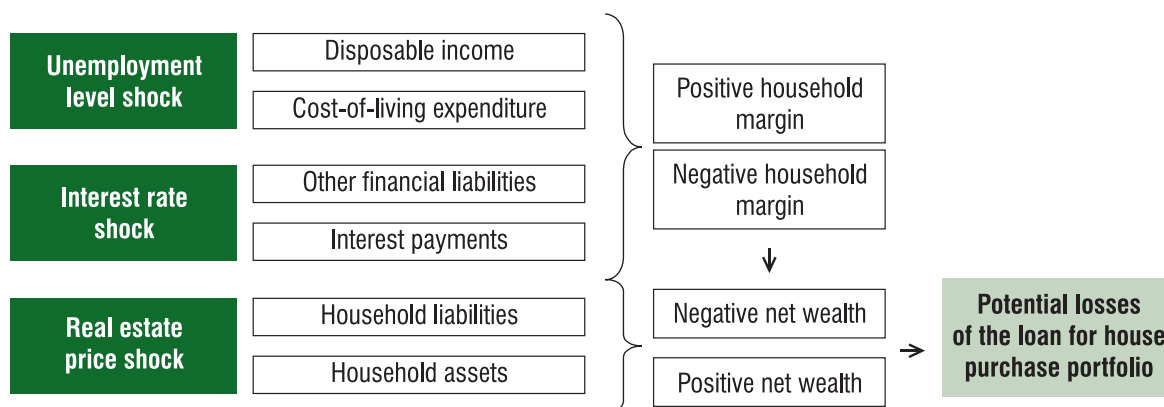
2. Scenario of an increase in the interest paid on a loan for house purchase, which will reduce the size of a household's margin. The impact of an interest rate increase on household margins depends on the interest rate fixation period. When a variable interest rate prevails, borrowers will feel the interest rate change (more or less) immediately. While testing the interest rate increase, an assumption is made that, irrespective of the interest rate fixation period, this effect will materialise immediately after the rise in interest rates. This essentially reflects a more pessimistic result than an actual result would be.

3. Scenario of a decline in the household's managed real estate price. It increases the difference between assets and liabilities of a household and thus determines higher potential losses for a creditor. When assessing the impact of the change in household asset value on the bank loan portfolio, the difference of assets and liabilities of a household (net assets) is simulated (Monte Carlo method). Owing to a shortage of the data on the assets managed by each household, an assumption is made that 10% of households have negative net assets, which make up 10% of household liabilities (these indicators are set on the basis of household stress testing research conducted by other countries). When applying the Monte Carlo method, households with a negative difference of assets and liabilities are selected randomly (the simulation is performed 1,000 times) and the size of their negative net assets is evaluated.

The size of shocks for stress testing is selected on the basis of historical data, experience of other countries and expert assessment. It should be noted that these scenarios are not the main domestic economy growth scenarios; on the contrary, they are extreme scenarios meant to show whether households are ready to withstand potential unexpected changes under unfavourable macroeconomic environment changes or other exceptional, but possible shocks. A shock is defined as a percentage change from the most probable macroeconomic development scenario of the country.

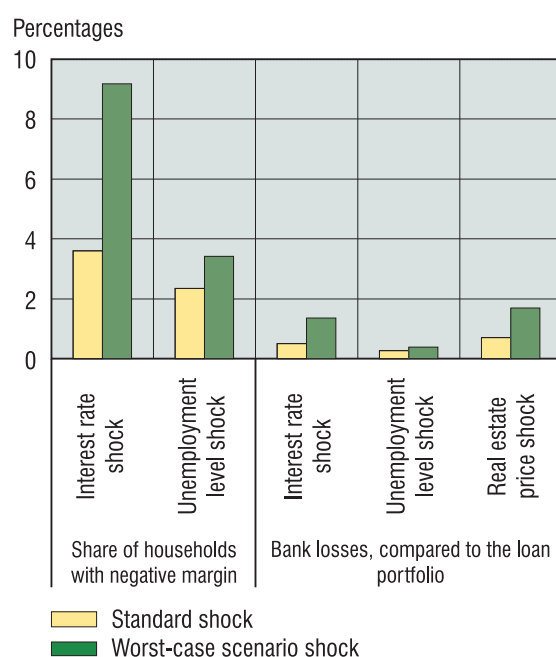
The sizes of shocks selected for stress testing are provided in Table 11, whereas household stress testing stages are provided in Figure 102.

Fig. 102. Stages of household stress testing



Finally, the losses of the loan for house purchase portfolio of the banking system are calculated. They are equal to the amount of liabilities of households with negative margin and negative difference of assets and liabilities (1,000 different values are obtained in total). Potential losses of the loan for house purchase portfolio are calculated as a median of these losses, whereas unexpected losses may be calculated from the distribution of the losses of the loan for house purchase portfolio of banks as a certain quantile.

Fig. 103. Changes of the share of households with negative margin and bank losses, compared to the loan portfolio



Source: Bank of Lithuania calculations.

Stress testing results show that the share of households with negative margin increases more rapidly due to rising interest rates than due to growing unemployment level. It is likely that such situation was determined by different principles of impact of the analysed shocks. The unemployment level affects only certain individual households by reducing the income of one working member in the household to the average amount of an unemployment insurance payment. On the other hand, the shock of rising interest rates affects all households without exceptions by increasing the interest paid on a loan for house purchase by a respective amount.

In case of a standard shock, rising interest rates would increase the share of households with negative margin by almost 3.6%, whereas the rising unemployment level would push it up by 2.4%. On the other hand, the worst case shock has a more significant impact and increases the share of

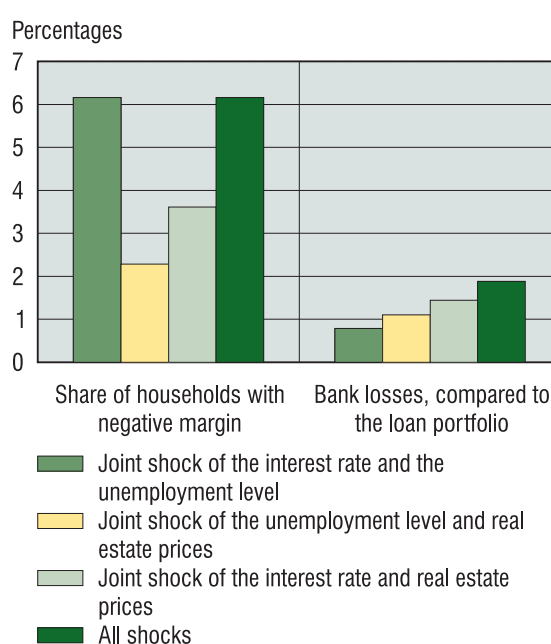
households with negative margin by 9.2% and 3.4%, respectively.

When evaluating potential bank loan portfolio losses, it can be stated that a decline in the real estate value and higher interest rates had the most significant impact. By directly affecting the value of net assets of households, the falling real estate prices mainly determine the growth of potential losses: in the worst case, the fall in real estate prices by 40% would increase losses by almost 1.7% of the portfolio value, whereas a rise in interest rates by 6.1% would increase them by 1.4%. On the other hand, the provided results should be interpreted with caution due to insufficiency of the data on the assets managed by households and the modelling assumptions made.

Depending on an individual shock, the impact on households and the financial system will be different. On the other hand, a direct evaluation of an impact of various shocks on the situation of households is not possible due to their incomparable nature (the change of one shock by a certain size is not equal to the similar change of other shock; besides, the strength of the impact on the result is not equal).

The described stress testing of households with loans for house purchase allows combining the impact of shocks, i.e. assessing the capability of households to fulfil their obligations properly and timely and the loan portfolio quality for more than one shock.

Fig. 104. Changes of the share of households with negative margin and bank losses, compared to the loan portfolio, due to the impact of joint shocks



As can be seen, the largest impact on solvency of households was exerted by the joint scenario of rising interest rates and growing

unemployment level (the joint scenario of all shocks in this case affects solvency of households to the same extent, since an assumption is made when calculating and modelling that the change in real estate prices does not affect solvency of households), which increase the share of households with negative margin by almost 6.2%. It should be noted that the impact of joint shocks is lower than individual shocks, since a part of households receive especially low income, whereas an average unemployment insurance payment is higher than the income received by them, therefore, the increase in income is sufficient for the repayment of obligations assumed.

On the other hand, the largest impacts of joint shocks on bank losses are observed during the analysis of shocks, when the real estate amortisation is taken into consideration. Such results are logical, since real estate is treated in bank balance sheets as collateral and a direct impact of a decline in its value is evidenced. It should be noted that in the case when all shocks are joined, losses suffered by banks would increase only by 1.9%. The lowest impact is exerted on bank losses by the joint shock of rising interest rates and growing unemployment level, which would increase bank losses by 0.8%. A slightly larger impact is made by the shock of growing unemployment level and falling real estate prices and the shock of rising interest rates and falling real estate prices. Their impact on bank losses is 1.1% and 1.4% respectively. It should be noted that the impact of joint shocks is lower than the sum of impacts of individual shocks, since a part of households become insolvent due to several

factors at once (for example, both due to rising interest rates and due to growing unemployment level), i.e. the impact of shocks "overlaps".

When comparing the results of the banking system credit risk stress testing and stress testing of households, we see that the shock of growing unemployment level has relatively the largest negative impact on the bank loan portfolio quality in the case of the banking system credit risk stress testing and a relatively small impact in the case of stress testing of households. This may be explained by the fact that the macroeconomic scenario analysis method is applied in the case of the banking system credit risk stress testing, i.e. the complex impact of growing unemployment level on overall activity of the domestic economy and the loan portfolio quality. A simple sensitivity test is applied during stress testing of households, i.e. only the impact of a change in one selected factor on the financial situation of households with loans for house purchase is monitored by assuming that other risk factors do not change in the period under analysis. It also should be noted that the household stress testing model analyses only the changes in the financial situation of households with loans for house purchase, therefore, this model may be treated as a supplement to the banking system credit risk stress testing model.

The impact of shocks on households is not similar in various countries. It depends on the economic structure, institutional actions, government policy or specific features of financial markets.

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