

FINANCIAL
STABILITY
REVIEW

2008

Abbreviations

CAD	current account deficit
CEE	Central and Eastern Europe
CIS	Commonwealth of Independent States
ECB	European Central Bank
ERM II	Exchange Rate Mechanism II
EU	European Union
EURIBOR	Euro Interbank Offered Rate
FDI	Foreign Direct Investment
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 institution
n. a.	not available
OECD	Organisation for Economic Cooperation and Development
OMXR	Riga Stock Exchange Index
OMXS	Stockholm Stock Exchange Index
OMXT	Tallinn Stock Exchange Index
OMXV	Vilnius Stock Exchange Index
p. p.	percentage points
RIGIBOR	Riga Interbank Offered Rate
RoA	return on assets
RoE	return on equity
SC	Securities Commission
TALIBOR	Tallinn Interbank Offered Rate
VILIBOR	Vilnius Interbank Offered Rate
VSE	Vilnius Stock Exchange
Department of Statistics	Department of Statistics to the Government of the Republic of Lithuania

Country Abbreviations

AT	Austria	IT	Italy
BE	Belgium	LT	Lithuania
BG	Bulgaria	LU	Luxembourg
CY	Cyprus	LV	Latvia
CZ	Czech Republic	MT	Malta
DE	Germany	NL	Netherlands
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

The Review was prepared by the Economics Department of the Bank of Lithuania. Mindaugas Leika is responsible for the preparation of the Review. This publication was drawn up by Rimtautas Bartkus, Žygimantas Mauricas, Milda Norkutė, Virgilijus Rutkauskas, Gediminas Šimkus, Milda Valentinitė and Ernestas Virbickas. The data and valuable remarks were provided by the Credit Institutions Supervision Department, the Market Operations Department and the Statistics Department of the Bank of Lithuania.

The Review is available in *PDF* format on the Bank of Lithuania website at www.lb.lt.

The cut-off date for the data of the Review is 1 May 2008.

CONTENTS

Introduction	4
Summary	5
I. MACROECONOMIC ENVIRONMENT	7
External Environment	7
Internal Environment	13
Internal Macroeconomic Environment	13
Household Sector	18
Non-financial Corporate Sector	23
II. DEVELOPMENTS IN THE FINANCIAL SYSTEM	29
The Financial System Structure Development	29
Development of the Banking System	33
Bank Assets and Loan Portfolio	33
Loan Portfolio Quality	38
Funding and Liquidity of Banks	41
Bank Capital and Business Efficiency	44
Risks to the Banking System	52
III. RESILIENCE OF BANKING SYSTEM TO UNFAVOURABLE DEVELOPMENTS	55
Stress Testing	55
IV. FINANCIAL SYSTEM RISK MITIGATION MEASURES	58
V. ANNEX	59
Implementation of Credit Risk Stress Testing Model in the Bank of Lithuania	59

BOXES

Box 1. Impact of the recent global financial market turmoil on the stability of the domestic financial system	8
Box 2. Real estate prices and economic growth	17
Box 3. Impact of real estate price developments on financial results of enterprises	24
Box 4. Liquidity management in the Lithuanian banking system	30

Introduction

Financial markets, and commercial banks in particular, are an important link in the Lithuanian economy, through which financial resources are reallocated in terms of time and space. The Bank of Lithuania seeks to ensure stable operation of the domestic financial institutions. This facilitates efficient reallocation of resources and contributes to long-term price stability and growth of the national economy. The Bank of Lithuania conducts an ongoing supervision of credit institutions and oversight of payment systems, and cooperates with other 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 the countries whose banks are active participants in the Lithuanian market. The purpose of such cooperation is to ensure coordination of supervisory actions and decision-making, improve risk management, exchange important information and prepare more adequately for critical situations ensuring effective coordination of actions. The Bank of Lithuania also urges domestic credit institutions to be conservative and focus their attention on systemic and macroeconomic risks.

Assessing the situation in the domestic financial market, the Bank of Lithuania aims to inform market participants about the systemic risk related to their operations. The financial stability analysis in this way differs from the ongoing supervision of credit and other financial market institutions, which is aimed at testing the operating risk of an individual institution. Thus, 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 unfavourable internal and external shocks.

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 the 2007 Review, this Review focuses more on stress testing of the domestic banking system according to two low probability scenarios: the growth of interest rates and the change in the real estate prices. For this purpose, an assessment of the quantitative effects of the main macroeconomic environment changes on the banking system is presented in the third chapter of this Review, whereas the Annex to the Review includes a more detailed presentation of the stress testing model used 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, 12 June 2008

Reinoldijus Šarkinas
Chairman of the Board of the Bank of Lithuania

Overall assessment of financial stability

The Lithuanian financial system is assessed as stable and able to withstand internal and external shocks. The situation of bank borrowers remains good: corporate profits and household income continued to increase strongly. Banks continued to earn profits and their capital base strengthened further at the beginning of the year. However, both the internal and external macroeconomic environment changed markedly and there have been increasingly more signs of weaker economic activity. This, in turn, means that risks to the banking system will increase, though moderately, in 2008. The main risks to the banking system stem from increased tensions relating to the liquidity situation in the global markets and a possible sharper deterioration in the loan portfolio quality. This would occur if a stronger-than-predicted deceleration in the growth of domestic economy would lead to the worsening of the financial standing of the corporate sector, a rise in unemployment, and a decline in household real income. The impact of increasing interest rates, which could undermine the ability of households and non-financial corporations to fulfill their obligations under loan agreements, is assessed to be limited. The results of stress testing have shown that the banking system had accumulated sufficient reserves to absorb losses and would be resilient both to significant shocks of real estate price declines or interest rate increases and liquidity shortage.

By publishing the Financial Stability Review, the Bank of Lithuania aims to review the development of Lithuania's financial system and evaluate its capacity to operate under less favourable conditions of the macroeconomic environment. To this end, the first part of the Review analyses changes in the macroeconomic (external and internal) environment. While reviewing the internal environment, the main focus is given to the financial standing of the financial system debtors – corporations and households. The second part analyses the financial system. Given that the banking system is the most important component of the financial system, this part deals with the standing of the banking system only. The third part provides an analysis of the banking system's resilience to potentially unfavourable economic developments. The Review is concluded with specifying the main risk mitigation measures applied in 2007 and early 2008. The stress-testing model used in the Bank of Lithuania is described in more detail in the Annex thereto.

Risks to the stability of financial system increased, compared to 2006 and early 2007. Despite that, the Lithuanian banking system remained stable and able to withstand significant shocks that may potentially arise both from unfavourable changes in the international environment related to risk revaluation and liquidity shortage and changes in the internal environment related to price adjustments in the real estate market, and weaker growth of the domestic economy. Although the probability of all these scenarios remains low, the main risks to the financial system stem from:

- a) higher liquidity risk with the banking system's increasing dependence on external funding sources and long-term shocks in international financial markets;
- b) interest rate increases as a result of risk revaluation;
- c) increased probability of real estate price adjustments, weaker development of the real estate sector, and spillover effects on the other sectors of economic activity.

The dependence of the banking system on unfavourable changes in the external environment has increased with increasing reliance of the banking system on external funding sources. In particular, this applies to banks with a substantial share of liabilities as financial resources attracted from abroad. On the other hand, the fact that the largest banks belong to strong foreign parent banks helps to lessen the banking system's dependence on unfavourable developments in the domestic environment.

Liquidity risk increased due to a US subprime mortgage crisis that emerged in the middle of the last year. A wide-scale risk revaluation was performed in global financial markets. It was followed by a liquidity shortage. The turmoil in global financial markets did not have any sizeable direct impact on the Lithuanian banking system. A significant portion of funds necessary to ensure bank liquidity were obtained from foreign parent banks whose financial standing remained sound and activities almost intact by the turmoil in global financial markets. Liquidity risk in the banking system as a whole was mitigated by the fact that av-

verage maturity of bank liabilities became longer. Domestic banks borrowed mainly in the internal market and held more sizeable reserves of liquid assets. Liquidity stress testing results suggested that banks would be able to withstand substantial changes in liquidity. Notwithstanding this, liquidity risk is elevated due to the persisting tensions in the international financial markets.

Key interest rate increased by the ECB in 2007 and higher risk premium, driven by the turmoil and liquidity shortage in global financial markets, entailed more expensive lending in euro and litas in the inter-bank market. In addition, interest rates in national currency rose in the country's inter-bank market because of a higher risk premium. With loans with variable interest rates prevailing in bank loan portfolios, rising inter-bank interest rates have a negative impact on the financial standing of bank debtors, corporations and households, which increases the credit risk of financial institutions.

This risk was mitigated by the continually improving financial position of households in 2007. Driven by strong economic growth and labour shortage, unemployment fell below its natural level and wages increased robustly. Notwithstanding this, higher inflation, weaker growth of the real estate market and a correction in stock markets led to a decrease in the consumer confidence indicator. Tighter lending standards and a change in the market expectations about the development of the housing market resulted in weaker growth of household borrowing in late 2007 and early 2008.

Risk to the sustainability of household debt servicing is associated with an anticipated shift of the economy to a stage of weaker growth. This may entail higher unemployment and weaker real income growth, which will be outpaced by the increase of costs of debt and loan servicing. Decelerating growth of real income or rising interest rates may be a source of strong financial pressure for some households. So far, owing to a favourable macroeconomic environment, neither interest rates nor the growth of the most indispensable consumption expenditure have had any major impact on the growth of the number of insolvent households. This, in turn, has had no significant effect on bank profitability. However, with a turn in economic cycle, the number of households facing financial difficulties will increase, which implies heavier losses to the banking system.

A trend of an increasing number of bankruptcies was observed at the beginning of 2008, partly reflecting worsening prospects

of part of corporate business. Despite record corporate profits earned in 2007, income growth is expected to moderate in the future. Furthermore, the overall performance of corporate business should be assessed with caution because of profit windfalls from financial and investment activities in the previous periods, most evident in real estate and retail trade sectors whose performance improved due to a revaluation of managed investment real estate and recording it in financial accounts.

Increased probability of real estate price adjustment raises concerns about the spillover effects of growth deceleration in the real estate sector on other economic sectors. Further tightening of credit standards may substantially worsen the financial situation of economic sectors relating with real estate. Solvency risk of corporations associated with this activity increased driven by falling real estate prices. Given that real estate corporations and construction enterprises fall among the biggest debtors of banks, the credit risk of the loans-to-corporations portfolio increased. It is to some extent mitigated by the fact that a part of corporations within this sector have possibilities to diversify their business.

The anticipated slower growth of national economy may have negative repercussions on bank profitability. Considering the slowdown in the growth of the economy, interest rate increases and a probability of real estate price adjustment, bank loan portfolio quality is likely to deteriorate: overdue loans and credit risk losses will augment. The decline in bank profitability will also be driven by the growing price of financial resources and operational costs. On the other hand, earnings from business areas that are less dependent on business cycle fluctuations may at least partially offset the reduction of pro-cyclical income growth and potential increase of losses. Additionally, risk to the banking system was mitigated by higher capital adequacy ensuring better coverage of bank risk by capital and larger reserves for the absorption of unexpected losses. Despite this, the issue of strong capital adequacy maintenance remains crucial.

Stress testing results of the banking system's credit risk revealed that major banks were resilient to large-scale unfavourable changes in the economic situation, such as real estate price declines and interest rate increases. Moreover, banks held sufficient reserves of liquid assets, ensuring both the fulfilment of their current liabilities and sufficiently high resilience to unexpected liquidity shocks.

I. MACROECONOMIC ENVIRONMENT

External Environment

Global economic development, which was affected by financial market turmoil, slowed down markedly in late 2007. With house price adjustments taking place and a decrease in consumption and investment due to tightening borrowing conditions, the moderation of the development of the US economy, which appeared in the centre of financial turmoil, was particularly strong. In the last quarter of the year, the growth of the US economy made up just 0.6%. There were increasingly more signs of weaker economic development also in the euro area. With a decline in domestic consumption, economic activity moderated both in the industrial and services sectors.

Emerging market economies maintained a strong rate of growth in 2007; at the end of the year, however, export and industrial production growth moderated in these countries as well.

The global economy expanded by 4.6% in 2007. Based on the forecasts of international organisations, global economic growth rates are expected to moderate in 2008 and 2009 (see Table 1). Industrialised countries remained the regions of highest vulnerability. The annual growth of the US economy, which is close to recession, is forecasted to be 0.9% in 2008. With the deterioration in financing and trade conditions, the euro area growth is expected to moderate as well. Weaker growth of domestic consumption in developed economies would also have an impact on the development of emerging market economies.

Table 1. Real GDP growth and inflation in selected regions of the world

(annual changes, percentages)

	2006	2007	2008*	2009*
Real GDP growth				
Globally	4.9	4.6	3.8	3.6
Euro area	2.8	2.6	1.7	1.5
US	2.9	2.2	0.9	0.7
Japan	2.4	2.0	1.2	1.1
Emerging and developing economies	7.8	7.9	6.7	6.6
Inflation (annual change in consumer price index)				
Euro area	2.2	2.1	3.2	2.2
US	3.2	2.8	3.6	1.6
Japan	0.3	0.1	0.7	0.6
Emerging and developing economies	5.4	6.4	7.4	5.7

Sources: IMF and the European Commission.

* Forecasts.

High energy, food and other basic commodity prices continue to remain the main drivers of rising global inflation. Rising inflation and at the same time increasingly obvious signs of economic slowdown in developed countries put forward a complicated balancing dilemma for the implementation of monetary policy in these countries. In the US, which has been facing higher risks to the expansion of its economy, the monetary policy was mitigated and the measures for fiscal promotion were approved. Whereas the ECB, which put more emphasis on the risk of rising inflation, the need to curb the medium- and long-term inflation expectations and the prevention of the second-round effects of energy and food price increases, did not mitigate its monetary policy. The annual rate of inflation stood at 4% in the US and at 3.6% in the euro area in March 2008. Net inflation (excluding food and energy prices) increased to 2.4% both in the US and the euro area. In emerging economies, where food and energy prices account for a relatively bigger portion of the consumer basket, inflation increased strongly as well. The rising inflation in these countries was also driven by robust domestic demand.

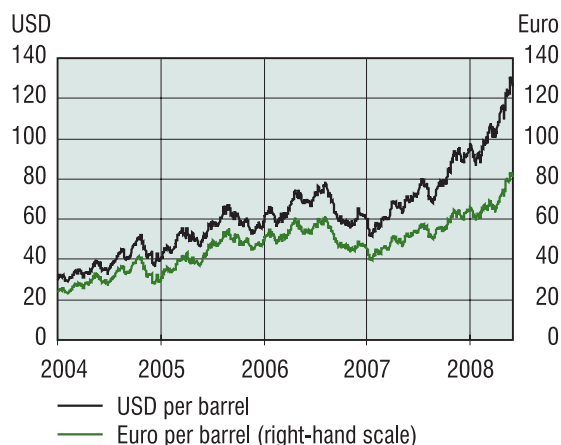
The central banks of developed countries, seeking to ease tension in financial markets, actively used various monetary policy instruments. The US Federal Reserve Bank, the ECB and other central banks provided additional liquidity through open market operations. In August 2007, the US Federal Reserve Bank cut its base interest rate by as many as 300 basis points. Interest rates were also cut by the central banks of England and Canada.

With an increase in the exports on the back of moderated domestic demand and depreciation of the US dollar against other currencies (especially the euro), the US CAD narrowed for the first time since 2001 to 5.5% in 2007. The current account surplus decreased in oil-exporting countries while in Asian countries, China in particular, it continued to increase. In 2007, the euro area current account remained nearly balanced.

In 2007 and the beginning of 2008, commodity prices were highly volatile. The price of *Brent* crude oil surged to USD 130 per barrel in May 2008. The average price of oil in USD was 63% higher than in the previous year, while the price recalculated in euro (litas) increased by 40%. In April 2008, the general level of prices of non-energy commodities in USD was 23% above its level a year ago (the prices of food commodities surged by 59%, and those of industrial raw materials by 12%). The strong growth in the price level of industrial raw materials

in early 2008 was driven by a 65% increase in the prices of ferrous metals. Food prices were most strongly affected by the growing demand, especially for meat and dairy products, in emerging market economies and by the growing demand for food commodities used for biofuel production.

Fig. 1. Global oil price



Source: Bloomberg.

Financial market tensions remained the main risk to the further expansion of the global economy. As the US housing market faced difficulties in 2007, banks, insurance companies and hedge funds incurred substantial losses. The financial institutions of the countries with the most developed financial systems – the US and Europe – suffered the heaviest losses. The uncertainty about the magnitude of losses that, in the IMF's estimation, may amount to some USD 945 billion (about USD 500 billion in the OECD's estimation) and their distribution among

the financial institutions undermined market participants' confidence and resulted in a liquidity shortage in the money market. As tensions in the US sub-prime mortgage market spread to other relatively safer financial market segments, they heightened concerns about the systemic risk to the global financial system and the real economy.

Financial market turmoil partly resulted from too strong confidence in the new risk diversification instruments, which distorted the assessment of risk embedded in various financial instruments and heightened the risk assumed by financial institutions. Market confidence is likely to be restored, once financial institutions disclose all the losses they incurred and enhance their capital base.

House price adjustments in the wider group of developed countries would also negatively affect further growth of the global economy. In the countries with developed mortgage lending systems, the relationship between the housing sector and a business cycle is stronger. The use of house as an asset pledged for financing consumer borrowing strengthens the influence of house prices on consumption. The importance of house prices for the monetary policy transmission mechanism has been increasing in developed countries. Quite a number of developed countries, such as the UK, Ireland, the Netherlands and Spain, recorded a robust growth in house prices which often exceeded the influence of the growth in fundamental factors. In some of these countries, the signs of house price adjustments strengthened markedly: house prices began to go down in the UK, Ireland and Spain.

Box 1. Impact of the recent global financial market turmoil on the stability of the domestic financial system

The emerged turmoil and liquidity shortage in the global financial markets did not have any pronounced impact on the banking system of Lithuania. Firstly, domestic banks did not hold investment in the instruments related to the US sub-prime mortgage market, therefore, didn't suffer from direct losses. Secondly, the banks didn't have any exposure to structured investment vehicles that would have required additional funding. Thirdly, resilience of the banking system of Lithuania to shocks in the financial markets rests upon the fact that the major part of liabilities was comprised of stable financial sources (deposits attracted in the domestic market and borrowing from parent banks) while banking activities were primarily orientated towards the fulfilment of the needs for domestic borrowing. Moreover, the domestic banks had sufficient reserves of liquid assets that ensure timely fulfilment of liabilities in case of liquidity shortage problems.

As regards the impact of recent turmoil in the global financial markets on the outlook for the stability of domestic financial system, it should be taken into consideration that a significant share of assets of domestic banks is financed by the funds attracted from parent banks. Overall liquidity situation in the domestic banking system depends mainly on the liquidity situation of parent banks and an actual situation of the financial markets in which they operate. On the one hand, foreign parent banks of Lithuanian banks basically did not incur any losses caused by the investments in instruments related to the US sub-prime mortgages and they had strong and stable financial situation and high profitability. On the other hand, these banks attract a substantial part of financial resources in the capital and money markets, e.g. by issuing debt securities. Lower liquidity in

financial markets and increased risk premiums resulted in higher funding costs and shorter maturity of the borrowing by these banks.

The turmoil in the global financial markets exerted only indirect impact on the banking activities in Lithuania manifesting itself in particular through increased borrowing costs and lower profitability. The banks operating in Lithuania did not incur shortage of resources although funding costs provided by the parent banks to their subsidiary (secondary) banks operating in Lithuania was growing. Firstly, owing to a pass through of the growing funding costs to interest rates on loans, this might produce a negative effect on credit demand. Secondly, average cost of financial resources attracted in the domestic market is lower than that of the borrowing from parent banks therefore competition for customer deposits is likely to increase. Thus – as far as liquidity is concerned – domestic banks will find themselves in a more complex situation since they are more dependent on the financial resources attracted in domestic markets and, seeking to remain competitive, offer higher interest rates on deposits. As a result, growing funding costs would have a negative impact on the profitability of the domestic banks.

Moreover, recent turmoil in the global financial markets has made significant impact on the prices of financial assets and demand for financial services. For instance, by the end of April 2008, the value of the OMXV index dropped by 25% from its peak that was reached at the beginning of October 2007. Fluctuation of market prices of equity, debt and other financial instruments has a direct effect on the profitability of the banks that have acquired them. Moreover, due to negative sentiments prevailing in the financial markets and reduction of the price of the financial assets, demand of non-professional market participants for financial services provided by banks might decline what in turn would make a negative impact on the profitability of the banks through lower income from services and commissions.

The impact of turmoil in global financial markets on the real side of domestic economy has mostly been indirect too: it got an expression through a reduced foreign demand caused by slower economic growth of foreign countries. Notwithstanding the deteriorated outlook for growth of many of the main Lithuania's export partners, Lithuania's export should remain resistant to these fluctuations in demand. Considerable share of Lithuania's export is made up of products the demand for which has been barely affected by a slowdown in the global economic growth (e. g. export of food products). Due to the above-mentioned characteristics of the structure of Lithuania's export, it is influenced more by the factors related to the outlook for individual sectors rather than trends in overall external demand. On the other hand, turmoil in the global financial markets exerted negative influence on expectations of economic agents of Lithuania and that might reduce demand for goods and services. In that case business outlook for a number of enterprises might deteriorate and they might face financial difficulties. Regard is to be given to the fact that both households and enterprises borrowed usually by taking loans with floating interest rates. Recently, inter-bank interest rates in the euro area rose because of lower liquidity and increased interest premiums determined by the turmoil in global financial markets. Owing to the increased demand for borrowing in litas, inter-bank market interest rates increased in Lithuania. The mentioned developments of interest rates increased servicing costs.

The Baltic States

For Lithuania's financial stability, the neighbouring Baltic States are important in that the Baltic region is often perceived as a single area and all three countries tend to follow similar path of economic development. Despite that, the processes in both the real sector (inflation, CAD) and the financial sector (loan development) imply differences between these countries.

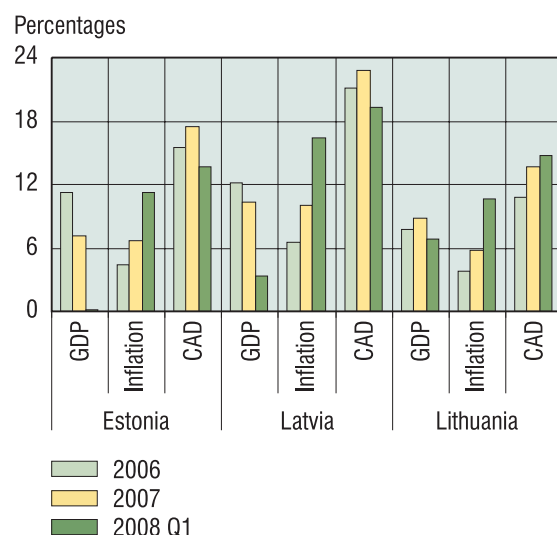
Economic growth rates in the neighbouring Baltic States decreased in the first quarter of this year. According to the preliminary estimate of the first quarter of 2008, the annual real GDP growth in Latvia decreased to 3.6%, whereas in Estonia it decreased to 0.4%. The deceleration of the economic growth was affected by a weaker growth in household consumption expenditure as well

as lower activity in the real estate, trade and transport sectors.

The growth in household loans and loans to enterprises slowed down both in Estonia and Latvia. In Latvia, the annual growth of loans for house purchase slowed down more than three times to 27% in March 2008. The annual growth of consumer loans slowed down by almost three times to 37% in March 2008. There were similar trends observed in Estonia, as loans for house purchase and consumer loans grew by around 25% and 38%, respectively, i.e. more than two times slower than a year ago.

In the beginning of 2008, inflation in Latvia and Estonia became still higher mostly on account of food and energy price increases. In Latvia, the annual inflation stood at 16.6% and in Estonia at 11.2% in March 2008.

Fig. 2. Main economic indicators of the Baltic States
(annual change)



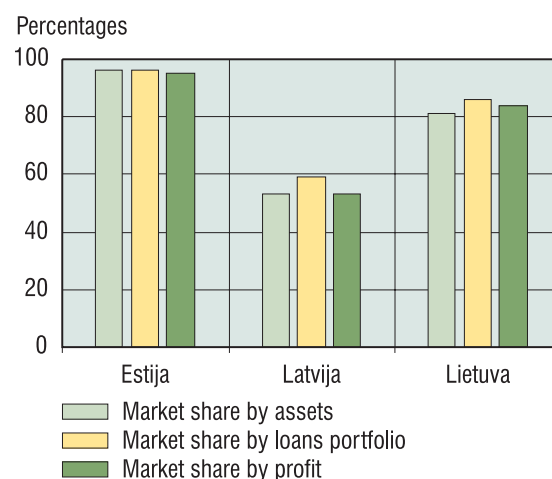
Sources: Eurostat and national central banks of the Baltic States.
Note: real GDP, consumer price index and CAD relative to GDP.

The CAD remained wide in the two Baltic States; however certain tendencies of its narrowing were recorded recently. With a decrease in the import and at the same time an increase in the export of Latvia in the last quarter of the year, the relative indicator of the CAD decreased to 17.7% of GDP. In Estonia, the positive influence of the shrinking import on the CAD was offset by a decline in export volumes, and therefore the narrowing of the CAD was not significant.

The Situation of Nordic Parent Bank Groups

The shareholder composition in the Baltic States' financial system remained broadly unchanged: five major Scandinavian investors held the largest share of the banking system capital. The banks managed by the major Scandinavian bank groups held 85% of the total loan market and earned over 80% of the profit of the entire banking system. In Estonia, the same investors practically managed the entire banking system, whereas in Latvia their share was substantially smaller on account of quite a large market share held by banks with domestic capital.

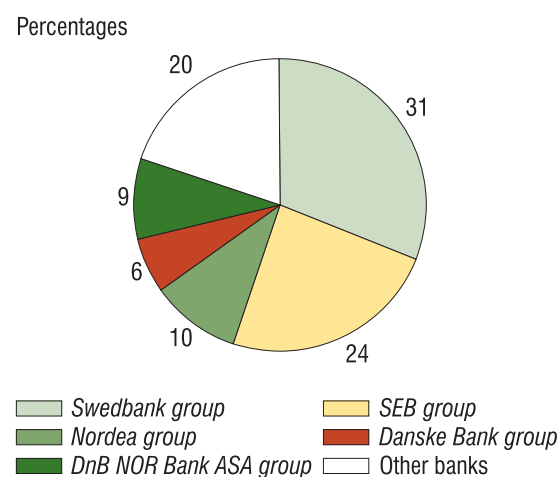
Fig. 3. Market share in the Baltic States of the five most important investors in Lithuania's banking system
(end of 2007)



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

The most important investors in the Baltic States are two Swedish groups, SEB and Swedbank, holding more than a half of the loan market in the Baltic region. In Lithuania, these two banks held 56% of the loan market and earned 70% of the profit of the entire banking system. Due to this reason, the financial situation of the main Nordic parent bank groups is important for the stability of the banking systems of Lithuania and other Baltic States.

Fig. 4. Loan market share of the five most important Nordic bank groups in the Baltic States
(end of 2007)

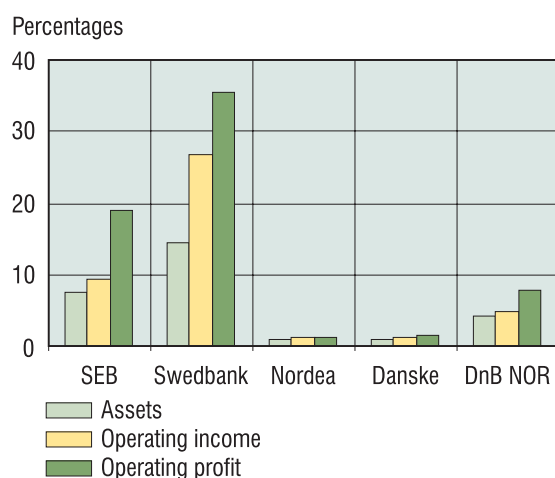


Sources: Bank of Estonia, Bank of Latvia and Bank of Lithuania calculations.

The share of the Baltic banks in relation to the Scandinavian banks in the Scandinavian bank groups was relatively small, but expanding fast. The asset share of the Baltic banks in their parent bank groups varied from 0.8% within the Nordea group to 8% within the SEB group and 15% within the Swedbank group. Due to a strong growth of the loan portfolio

of banks and their high operating profitability, the influence of the Baltic banks on the yield and profitability of their parent bank groups was higher. As much as 35% of the total operating profit of Swedbank and 19% of that of SEB were earned from operations carried out in the Baltic States¹. This increases operational and profitability dependence of the aforementioned banks on this region. As a result, potentially weaker economic growth in the Baltic region may exert negative influence on the operating performance of the Scandinavian banks.

Fig. 5. The share of the Baltic banks in their Scandinavian parent bank groups (end of 2007)



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

Note: The data for Nordea and DnB NOR include Poland.

The financial situation of individual largest investors in Lithuania's banking system remained strong in 2007. The profitability of the Swedish banking system remained high and loan losses were insignificant. However, after reaching its peak in 2006, the profitability of the Swedish banking system decreased slightly, whereas in the first quarter of 2008 a marked decline was observed. In the banking systems of other Scandinavian countries, a similar pattern could be observed, which broadly resulted from higher financing costs and a lower real interest rate margin. Despite that, net interest income continued to increase quite significantly, driven by a strong growth in the corporate and household loan portfolio. A substantial portion of income and profit was earned from foreign operations, and in late 2007 the foreign loan portfolio already made up more than a half of the entire loan portfolio of the Swedish banks. Net commission income increased gradually to about 30% of the Swedish banking system's total profit²; however, lower turnover in the stock market

and falling stock prices had a negative impact on the growth of this type of income in the second half of 2007.

The operating efficiency of the Scandinavian banking systems declined slightly. The main reason behind the deterioration of efficiency ratios was a strong growth of expenditure, which outpaced that of income. The growth of expenditure was mainly caused by the rapid increase in staff and administrative costs. Similar tendencies were also observed in the Danish and Norwegian banking systems.

The quality of the loan portfolio of the major Scandinavian parent bank groups was good, and an increase in the loan portfolio along with a decline in provisions for loan losses resulted in the improvement of the ratios reflecting the quality of loans. The proportion of impaired loans decreased further to just 0.5% of the loan portfolio of major Swedish banks. It should be noted, however, that the risk related to robust credit growth in the Baltic States, possible price correction in the commercial real estate market and a higher risk in global financial markets increased.

Capital adequacy indicators went down in all major parent Scandinavian bank groups, holding the banks of the Baltic region, but capital adequacy above the requirement ensured that the foreign bank groups under review held sufficient capital reserves against unexpected losses. The assessment of changes should take into account the fact that in early 2007 Scandinavian banks introduced new rules for the calculation of capital adequacy (Basle II), which allowed reducing risk weightings for certain groups of loans. Thus, the capital adequacy ratios would be even lower, if they were calculated according to the former rules (Basle I).

Table 2. Key financial ratios of the most important foreign investors in Lithuania's banking system

	RoE ratio			Cost-to-income ratio			Capital adequacy ratio		
	2006	2007	2008 Q1	2006	2007	2008 Q1	2006	2007	2008 Q1
SEB group	20.8	19.3	9.6	0.58	0.57	0.69	11.5	11.0	11.1
Swedbank group	19.3	18.9	16.8	0.52	0.51	0.53	9.8	9.3	9.3
DnB NOR Bank ASA group	19.5	22.0	5.7	0.50	0.51	0.74	10.0	9.6	9.4
Danske Bank group	17.5	15.1	9.8	0.53	0.56	0.62	11.4	9.3	13.6
Nordea group	21.4	19.1	15.8	0.53	0.52	0.54	9.8	9.1	9.4

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

¹ Swedbank and SEB group annual reports of 2007.

² Financial Stability Report, Sveriges Riksbank, 2007, No. 2.

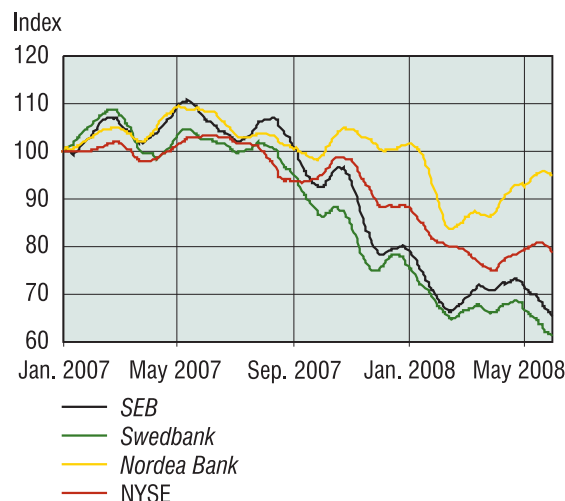
Lower liquidity and rising interest rates in the global capital and money markets resulted in higher financing costs for Scandinavian banks. Customer deposits, which are a stable and inexpensive source of financing, comprise slightly more than a half of the total financing of Scandinavian bank groups. The remaining portion of the loan portfolio is financed by capital and money market securities, however, this method of financing is more expensive and more dependant on the existing situation in the financial market. The rising costs of financing and a lower interest rate margin may have a negative impact on the profitability of banks and thus reduce the liquidity of Scandinavian parent banks and credit flows into the Baltic region.

Resilience of the Swedish banking system to internal and external shocks remained high³, however it weakened somewhat recently on account of higher credit risk, higher cost of financing and the global financial market turmoil. The results of a stress test carried out by the central bank of Sweden in 2008 suggested that major Swedish banks were adequately prepared for handling potential losses as a result of the deterioration of the loan portfolio quality in the Baltic States. However, the strong growth of the Baltic States' loan portfolio, deceleration of the economic growth rates of these countries and declining bank capital adequacy ratios heighten the risk involved in the Baltic States.

The US sub-prime mortgage crisis and the related instability in the global financial market had a limited impact on the performance of Scandinavian bank groups. Regardless of that, the equities of all major investors in the Lithuanian banking system underwent strong negative price corrections, and the rates of decline in equity prices were comparable to those of European and American banks. This falling was probably driven by the changes in the assessment of investor expectations and the risk along with fears that the financial crisis would have a long-term negative effect on bank profitability. It should also be noted that the decline in equity prices of the two largest investors in the banking system of the Baltic States was stronger than the decline in NYSE *Financial Index*.

Fig. 6. Equity price dynamics of the four largest Swedish banks

(01 01 2007 = 100)

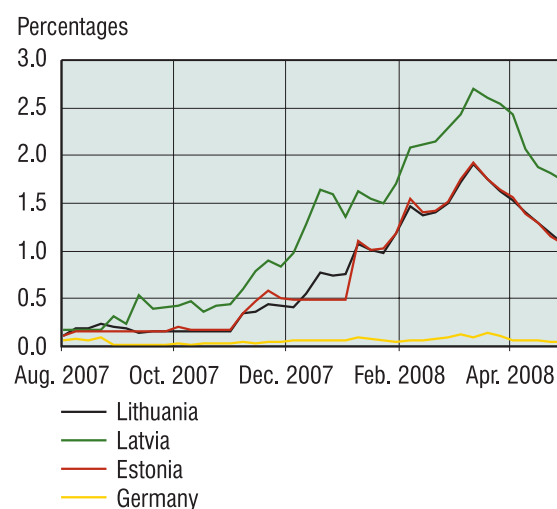


Source: Bloomberg.

Note: Four-week moving average of the index.

Increased concerns of investors about the growing risk of the Baltic region were reflected in the price dynamics of credit financial derivatives. Investors were mainly concerned about a potential deterioration in the macroeconomic situation in the Baltic region driven by a strong rise in inflation and the wide CAD. This increased the demand for credit risk insurance in the Baltic States, which resulted in sharp increases in sovereign credit default swap interest rate spreads.

Fig. 7. Baltic States' 5-year credit default swap spreads on sovereign debt



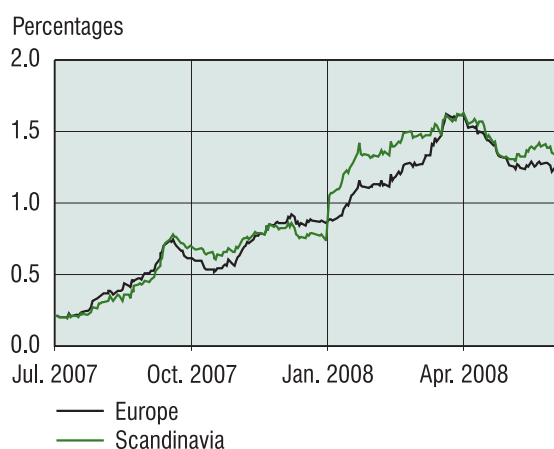
Source: Bloomberg.

However, the dynamics of these swaps also reveal increasing risk aversion by investors, i.e. portfolio shifts towards the safest securities. In addition, on account of relatively low liquidity of the government securities of the Baltic States, the number of transactions in this market is small. Therefore, the announced credit default swap spreads of-

³ Financial Stability Report, Sveriges Riksbank, 2008, No. 1.

ten tend to be higher due to liquidity risk premium, whereas the quoted spreads often do not represent actual transactions, but are calculated from available quotes.

Fig. 8. Comparison of the 10 year credit default swap Index of Scandinavian and European banks



Source: Deutsche Bank.

The above concerns of investors about the increased risk of Scandinavian banks were reflected by a rapid rise of the credit financial derivatives index, which grew stronger than the analogous index of European banks.

Internal Environment

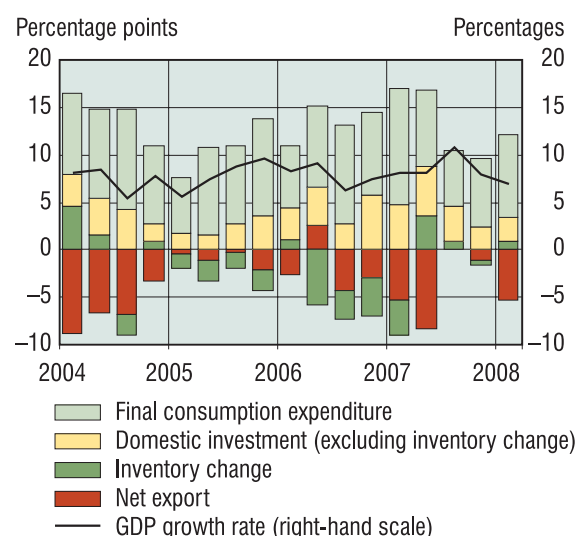
Internal Macroeconomic Environment

Robust growth of Lithuania's economy continued into 2007: according to preliminary estimates, the real GDP increased by 8.8% over the year. The increasing domestic demand, which was driven by the growth of household and corporate income, active borrowing and a better use of the EU funds, remained the main driver of economic growth. Strong economic growth further contributed to the growth of the number of employed and more active participation of the population in the labour market. In 2007, the labour force consisted of more elderly people, and more youth supplemented it than before.

Inertness of the economic activity was still observed in the first quarter of 2008, when internal demand continued to grow markedly. However, increasing evidence of the transition of the economy to a moderate growth phase was observed already in late 2007. At the end of 2007, the real estate market, which largely contributed to the recent economic upturn, exhibited the trends of stagnation: the housing price growth subsided and the number of the real estate transactions decreased. Due to increased uncertainty and

banks tightening credit standards, lending for house purchase and to the housing market-related enterprises declined significantly since the fourth quarter of 2007.

Fig. 9. Contributions to real GDP growth (by expenditure approach) (annual changes)



Sources: Department of Statistics and Bank of Lithuania calculations.

According to the assessments of the Bank of Lithuania, the economic growth should slow down slightly in 2008 and be lower than its long-term average in 2009. In 2008-2009, the investment related to the construction sector should subside, whereas the unfavourable development of this sector should have spillover effects on other domestic demand-oriented sectors. It should determine an overall slowdown of the growth of income and thus private sector investment and consumption. In tandem with the slowdown in nominal income growth, private consumption growth will additionally be dampened by higher inflation and more pessimistic expectations about future income growth.

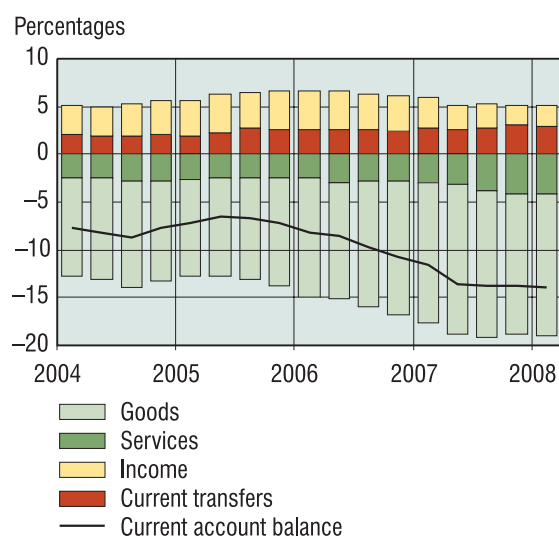
Deceleration of economic growth is likely to result in higher unemployment. For some time, a part of free labour resources should be used in other (non-construction) sectors, where labour demand still exceeds its supply. However, the rate of unemployment is expected to increase, as the demand will subside in many domestic demand-oriented sectors due to the general economic slowdown. As a matter of fact, these assessments rely on the assumption that the possibility of the decline in active population because of emigration is limited, as in many countries, which were the main hosts of the Lithuanian emigrants, the economic growth has been weakening hence the labour demand in these countries is on the downside.

CAD relative to GDP stabilised in the second half on 2007, but widened to 14.8% of GDP in the first quarter this year. In 2007, the CAD stood at 13.7% of GDP. The wid-

ening of the CAD in the beginning of the year was highly affected by the ongoing strong growth in the imports of goods and a negative investment income balance. The negative effects of the above factors were mitigated by a relatively stronger growth of the positive balances of services and labour income.

Fig. 10. Composition of the current account balance

(four-month moving average, compared to GDP, annual changes)

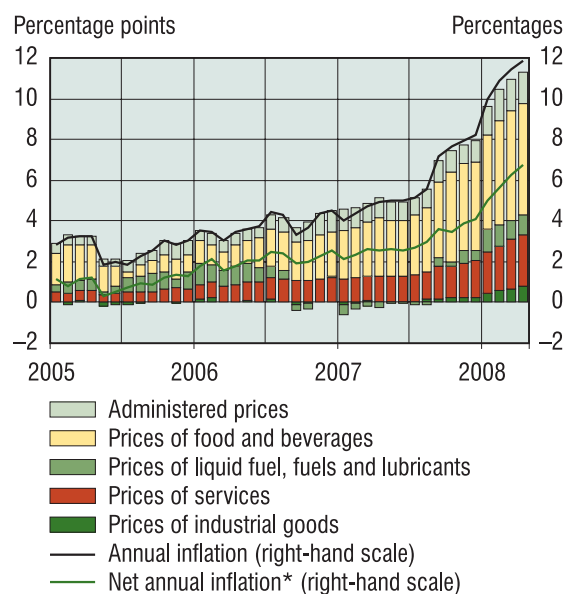


Sources: Department of Statistics and Bank of Lithuania calculations.

Decreasing economic activity should determine a more moderate CAD to GDP ratio in 2008–2009. The export of Lithuania should remain quite resistant to external demand fluctuations, since a considerable share of Lithuanian exports consists of products (e. g. agricultural and food products, fertilisers), which are less sensitive to cyclical economic fluctuations. Due to these peculiarities of the Lithuanian export structure, its development is much more significantly affected by factors related to the prospects of individual sectors than by the overall trends of external demand. In the short term, recovery of the oil-refining capacity will have a strong effect on the export volumes.

In the first months of 2007 and 2008, the overall annual inflation increased significantly. In the beginning of 2008, the average annual HICP inflation exceeded 7% (the annual average inflation was 3.8% in 2006 and 5.8% in 2007). Rising food prices made the most significant contribution to the increase in inflation. The price dynamics of these products are determined to the largest extent by the food price changes in foreign countries, which have an impact on Lithuanian export prices that are transferred to the producer prices of agricultural products and further on to the consumer prices of food products in Lithuania.

Fig. 11. Contributions to HICP
(annual changes)



Sources: Department of Statistics and Bank of Lithuania calculations.

* HICP, excluding the prices of food, fuels and lubricants and administered prices.

Net annual inflation increased noticeably during the period under review due to continued strong internal demand. Rapid rise in the prices of services made significant contribution to the increase. The growth of the prices of services was significantly affected by the wage growth at the rate higher than that of labour productivity growth. Within the group of services, the largest contribution to the annual inflation was made by the rising prices of restaurant, café and dining-room services. Their prices were pushed up not only by large demand and growing wage costs, but also by increasing food prices. The contribution of another component of the net inflation – the prices of industrial goods – on the overall inflation slightly increased, but remained low. The growth of wages and the increase in the prices of commodities continued to exert upward pressure on the producer prices of industrial goods. However, an increase in the prices of these goods for consumers was limited by a lower growth of the prices of imported goods than that of the prices of domestic goods.

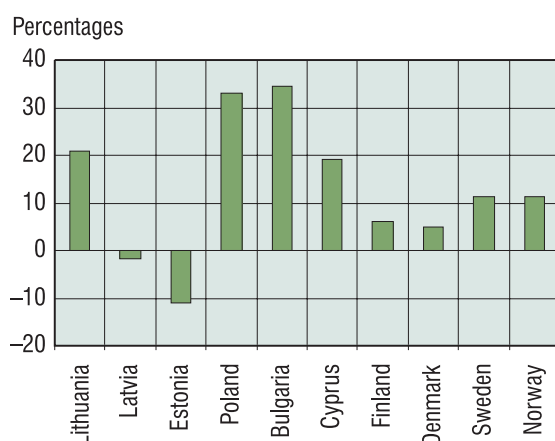
According to the assessment of the Bank of Lithuania, the overall annual inflation should reach its peak in 2008 and then decline gradually. In the nearest future, the pressure on the prices of agricultural products (and consequently on those of food products) should remain. The overall inflation will also be pushed up by increasing excise duties and energy prices. Still, with the turning of the economic cycle towards deceleration, the demand pressure on inflation should disappear. Relatively decentralised labour market and the absence of legal establishment of the private sector wage indexation ensure favourable condi-

tions for a flexible response of wage growth to the changing economic environment and thus for approaching market equilibrium and reducing price pressures. It also has to be noted that labour market flexibility is the key prerequisite that will ensure the reduction of inflation, smooth reorientation of resources towards export sectors, competitiveness of these sectors in foreign markets, and thus a sound long-term macroeconomic foundation of the Lithuania's economy.

The Signs of Housing Market Slowdown Became More Evident in 2007

The changes in expectations and borrowing conditions in the last quarter of 2007 determined the deceleration of the housing market. Although the overall annual price growth remained positive (21%), the price growth in the fourth quarter declined significantly, and the number of transactions went down by 20%, compared to the third quarter, contrary to the usually observed end-of-year seasonal rally of market activity. The number of speculative transactions, when housing is purchased for the purpose of its future sale for a higher price⁴, fell altogether with the first-time buyer demand, which shrank significantly.

Fig. 12. Nominal prices of housing in selected EU member states in 2007 (annual change)



Sources: national central banks, ECB and www.globalpropertyguide.com

Up to the end of 2007, the growth of housing prices was largely driven by the expectations of future housing appreciation, while the other house price component⁵, the return on rent, was rising less rapidly for a long time. In 2007, rental prices increased by 29%⁶.

⁴ According to the data of the public enterprise Centre of Registers, such housing makes up 9% of all housing.

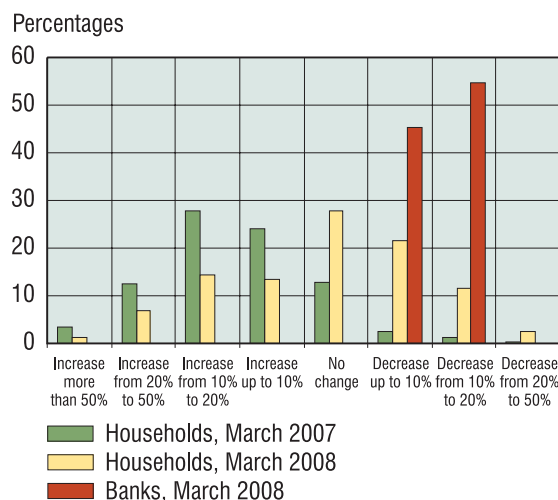
⁵ If housing is looked upon as an investment and the price and profitability assessment method, analogous to the stock valuation method, is used. The most simple method is to imagine the housing price as $P_t = E_t(P_{t+1}, D_{t+1})$, where E_t denote expectations, P_{t+1} is the future increase in housing price and D_{t+1} is the return on housing, i.e. housing rent income.

⁶ Source: Department of Statistics.

The growth of housing rent income together with the deceleration in the growth of housing prices show the ongoing correction in the real estate market and the narrowing of the gap from the fundamental price⁷.

The household survey shows that **demand for housing will remain sluggish⁸ in 2008 due to the prevailing expectations of price decline.**

Fig. 13. Expectations of housing price changes over the next 12 months



Sources: Bank lending survey, April 2008 and household surveys conducted on behalf of the Bank of Lithuania (2007 and 2008).

Banks were more conservative than households in their assessments of housing market prospects. All the banks participating in the bank lending survey expected a fall in housing prices of up to 20% in 2008⁹. This view should result in a further tightening of loan granting standards and reduction of the volumes of credit for house purchase and thus limit the housing demand through the credit channel. In addition, in the absence of the rise in housing value, speculative transactions should disappear in the market. Although housing was still relatively more profitable investment than other types of investment in Lithuania in 2007, its return decreased, whereas the example of the neighbouring countries shows that this investment may entail a loss.

⁷ Theoretically, the housing price bubble is defined as the gap between the theoretical housing price (calculated according to the formula presented in the previous footnote) and the market price. The gap may contract both due to the growth of housing rent prices and due to the fall of the market price. When the gap is narrowing, it may be stated that the housing price bubble is collapsing.

⁸ By order of the Bank of Lithuania, the survey was conducted by a joint Lithuanian-British market research and public opinion poll company Baltijos Tyrimai in March-April 2008. 463 Lithuanian households were surveyed which had taken a loan for house purchase. Detailed results of the survey are available on the website of the Bank of Lithuania (http://www.lb.lt/lt/ekonomika/fin_stabilumas/fin_paskola.htm).

⁹ Bank surveys on lending conditions are organised to obtain information about interest free loan granting standards applicable by banks, lending costs, and market expectations. The survey was conducted in April 2008; answers were received from 9 commercial banks and 2 foreign bank branches. Detailed results of the survey are available on the website of the Bank of Lithuania (http://www.lb.lt/lt/ekonomika/fin_stabilumas/fin_paskola.htm).

Table 3. Return on investment in the Baltic States

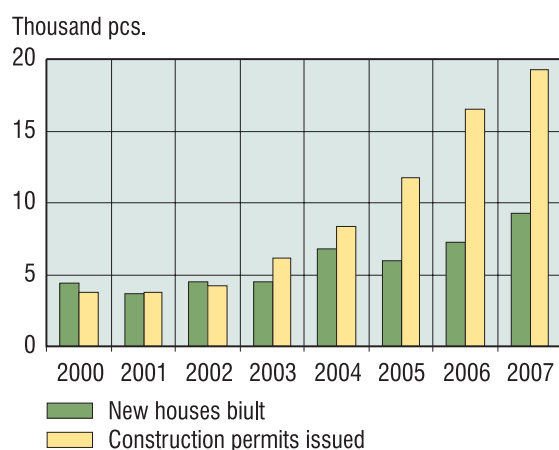
(end of period, percentages)

		2003	2004	2005	2006	2007
Lithuania	Shares	105.8	68.2	52.9	9.8	4.4
	Deposits	1.3	1.2	2.1	2.5	3.9
	Housing*	15.4	29.2	61.1	28.8	20.9
	Pillar III pension funds	n. a.	0.7	11.8	5.5	7.5
Latvia	Shares	47.2	43.5	63.5	-3.1	-9.2
	Deposits	n. a.	1.9	1.7	1.7	2.6
	Housing*	-10.4	24.3	61.5	69	-1.7
Estonia	Shares	34.4	57.1	48.0	28.9	-13.3
	Deposits	2.1	2.1	2.2	3.2	5.0
	Housing*	25.5	23.9	37.8	37.3	-5.9

* Including only the increase in housing price, without housing rent income.
Sources: national central banks, OMXV, OMXT and OMXR.

Due to declining demand and increasing supply, the housing supply started to exceed the demand at the end of 2007 and in the beginning of 2008. The decline in demand was reflected by markedly smaller numbers of loans for house purchase granted and transactions concluded. The number of transactions concluded in the fourth quarter of 2007 was lower by 17% than in the fourth quarter of 2006, whereas the number of transactions concluded in January 2008 was lower by 25% than in the same period a year ago. At the same time, due to the strong growth of prices in recent years, the investment of construction enterprises in the residential housing market grew rapidly: the construction of residential buildings grew by 27% in 2007, whereas the housing area increased by 9%. The number of construction permits issued shows that construction companies have planned quite a rapid expansion of the supply also in 2008. The data of the first quarter of 2008 confirmed it: the number of houses built was higher by 40% than in the same period of 2007.

Fig. 14. The number of new houses built and the number of construction permits issued



Source: Department of Statistics.

Probability for the housing supply to become excessive due to inertness (significant time gap between the approval of the project and its implementation) is increasing. Although the housing demand in Lithuania is expected to remain high in the long term due to the fact that the housing area per one resident is still almost twice lower than the euro area average, it is most likely that in the short term the demand will continue to decline. It would prolong the time of housing sale and force construction companies to reduce housing prices, especially if construction projects were financed using borrowed funds. Anecdotic evidence suggests that construction companies have already started reducing housing sale prices, but remained profitable. The size of profit margins in the construction and real estate sectors still was sufficiently high at the end of the year (8% and 47%¹⁰, respectively), implying that companies may absorb a relatively large decline of housing prices without suffering large losses.

Commercial real estate market. The expansion of construction of commercial buildings was quite rapid (in 2007, the area of administrative premises increased by 31%, whereas the area of industrial enterprises and warehouses grew by 44%), however, the supply, at least in some segments, was insufficient. The occupancy rate in the office segment has been close to 100% for the second consecutive year. The sale prices of offices increased by around one third due to unsaturated demand. The prices of rent of new offices have meanwhile increased by 11%¹¹. Moreover, the hefty demand for office rent allowed offloading various additional costs, such as land tax and insurance, from owners to tenants. The occupancy of manufacture and warehousing premises was close to complete, whereas their rent price increased by 10% over the year.

The expansion of commercial construction was impeded up to now by the orientation of enterprises towards meeting the demand for residential buildings, where the prices grew more rapidly and profit margins were higher. The change of market trends and the number of permits issued shows that the construction of commercial buildings will become much more active in 2008. If most of these projects are implemented, the supply in this segment, as in the housing market, may not only be satisfied, but also become excessive, especially taking into consideration the fact that the business cycle enters its downwards phase and the demand declines respectively, whereas the implementation of commercial real estate projects lasts two years. On the other hand,

¹⁰ Department of Statistics data and Bank of Lithuania calculations.

¹¹ http://www.ober-haus.com/files/baltic_report_2008_online.pdf

a more conservative banks' approach with respect to all real estate projects may slow down the construction process, if banks choose to restrict crediting for all real estate projects either due to information asymmetry, in order to reduce the concentration of loans related to the real estate or due to the declining profitability of construction companies. Bank lending survey shows that, although from October 2007 to March 2008 banks only restricted the financing of residential construction projects, half of the banks already intended to tighten financing conditions also for commercial real estate projects from April to September 2008.

The majority of commercial construction projects were targeted projects up to now, i.e. the object was built for a specific buyer

or tenant, however, the interest of investors was also observed. The sale of commercial premises to investment funds and leaseback agreements became more popular. Owing to the geographical attractiveness (especially in the warehouse market) and lower price of commercial buildings, compared to other European Union Member States, the demand of investors may increase in the medium term and be an additional incentive in this market. On the other hand, the interest of both private and institutional foreign investors may be subdued in the short term, owing to a weaker growth of the economies of Lithuania and of the other European Union Member States, worse forecasts for the real estate market prospects and the situation in global financial markets.

Box 2. Real estate prices and economic growth

Dynamics of real estate prices and GDP are closely interrelated. Consumption and investment are direct channels through which real estate market makes a direct impact on the economy. Consumption grows* if owners of housings tend to additionally pledge valuation gains, raising in that way the amount of the loan taken. The residents who have their own housing but do not pledge it, also tend to save less since the increased value of the assets – which, in case of emergency they would be able to sell – serves like a buffer causing “precautionary saving” motive to become less important.

Investments tend to increase in line with increasing commercial real estate prices since enterprises are able to borrow more because of higher value of the collateral they hold; moreover, they may often take out cheaper loans since their financial standing gets better assessment. This phenomenon is most notable in the sectors directly related to real estate operations (real estate and construction companies). Meanwhile growing household consumption makes a positive contribution to the performance of enterprises from other sectors. Owing to acceleration principle, enterprises can finance more new projects from the profits as well as obtain credit, because the financial sector tends to credit profitable enterprises. Improving performance of enterprises in turn allows them to employ more people and raise wages, increasing in that way income, assets and consumption of households. In other words – through balance sheets of households and enterprises – increasing prices of real estate serve as a trigger to favourable economic expansion spiral. By contrast, as real estate prices go down, due to reduction in the value of assets possessed by the private sector, banks limit credit and raise cost of loans, which slows economic growth.

Development of real estate prices becomes particularly important for the financial sector if participants pursued myopic policy over the period when prices were going up, i. e. in order to gain larger share of the market, the banks did not adequately assess either solvency of debtors according to regular criteria (income of households, monetary flows of enterprises, etc.) or resistance to negative developments. In theory, as the business cycle moves into a downward phase, a drop in real estate prices can drastically boost the number of non-performing loans. The banks, forced to sell real estate for the price below outstanding amount of the loan, thus may suffer losses, which impacts banks' profit and capital. In banking system, where the largest part of capital is attracted in the local markets, bank losses and fall of their share value may lead to circumstances where banks will have to restrict loan granting not just selectively but in general too**. In Lithuania's case such a situation is feasible if the banks did not have sources of additional funding in their parent banks. With the additionally attracted funds, the banks can continue to grant loans, at a slower rate, though. Therefore taking into account the above, the probability of the credit crunch scenario is still relatively low.

The effect of housing prices on consumption has been supported by empirical research***. Rising prices of housing boosted consumption in many countries of the European Union and contributed to the upturn of the business cycle. Impact of the housing prices was more pronounced in the countries with more flexible and developed housing markets, i.e. where crediting conditions (loan to value ratio, average loan maturity and refinancing fees) are easier and where these loans can be securitised. Empirical research also shows the importance of investment into residential construction to economic activity. According to econometric estimates, falling investment into residential construction signal an approaching economic downturn; one year prior to the downturn this explains around 10% of the slowdown in the GDP growth (or even 25% in case of the US)****. Although residential construction accounts for a small share of GDP (about 6.5% in the developed countries), as its amount decreases,

investment in the related sectors decreases too and unemployment in the construction, real estate and financial sectors grows, what in turn, reduces consumption.

In Lithuania, the housing market is relatively flexible however loans secured with a pledged real estate became more popular only in recent years. According to the Bank of Lithuania, the amount of such loans is not large thus impact of decreasing housing prices on consumption would be limited. On the contrary, investment channel could play an important role. First, value added created by construction and real estate sectors is rather considerable (16% and 19% of GDP in 2004 and 2007 respectively) and has been growing for the last three consecutive years. Second, employment grew in both of the two sectors (from 12% to 16% of all employees). Third, growing prices of real estate increased the value of the assets held by enterprises allowing them to borrow larger amounts for both the investment and current expenditure therefore reduction in prices would make a negative impact on the volume of investments. Fourth, stagnation in the real estate market would affect a number of other economic sectors (manufacturing of construction materials, furniture industry, retail trade, etc.), still the negative impact would be reduced by the enterprises exporting part of their production. Fifth, the growth of loan portfolio of commercial banks was mainly driven by rapidly growing housing loans as well as those granted to construction and real estate enterprises, therefore a slowdown in the housing market might lead to reduction in banks' profits. Taken together, these factors suggest that the falling housing prices could slow down significantly the economic growth of Lithuania. Analysis of data indicates that – in Lithuania's case – housing price developments signal future changes in the GDP growth one year prior to the start of these changes.

* On an assumption that the households possessing a dwelling have higher marginal propensity to consume. In case of similar propensities of the households to consume, the effect of rising housing prices on consumption may be negligible because of redistribution of the assets of households: the households possessing a dwelling may consume more and those without a dwelling but wishing to acquire it, have to cut down the consumption (IMF, Global Financial Stability report, April 2008).

** Such a case is illustrated by the Japanese real estate market crisis in the 1990's. The rise of bank losses on loans for real estate projects entailed a lowering available level of capital and a decline in bank share value. Being unable to attract sufficient external capital, banks were obliged to reduce the volumes of their loan issuance not only to the real estate but other economic sectors as well.

*** IMF, Global Financial Stability report, April 2008.

**** IMF, Global Financial Stability report, April 2008 and Leamer E. "Housing IS the business cycle", September 2007.

Household Sector

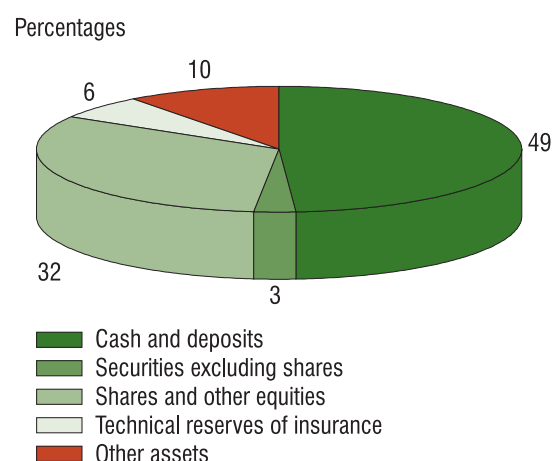
Assets, Liabilities and General Standing of Households

In 2007, the financial standing of households continued to improve. Rapid economic growth and the shortage of labour kept unemployment below its natural level (4.3%). Wage growth and income tax reduction boosted household disposable income along with their financial savings and other assets. Moreover, financial assets of households increased also due to one-off factors, such as the restitution of rouble deposits. Therefore, financial assets of households increased by one fifth in 2007. The growth of real estate market prices increased non-financial assets of households, but their liquidity decreased at the end of the year.

The bulk of financial assets were held as deposits with banks. In view of the turmoil in international financial markets in 2007, the conservative saving structure of households in Lithuania – with the preference given to financial instruments of ample liquidity and moderate return – was relatively favourable. Riskier investments (into equities or equity-linked investment funds) that have recently experienced negative returns made up a smaller share of household assets.

Compared to previous years, the growth of household deposits slowed down – the environment for saving in 2007 and the beginning of 2008 was unfavourable due to negative relative interest rates.

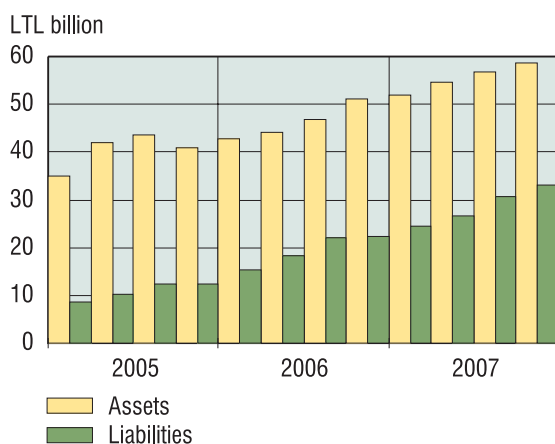
Fig. 15. Financial assets of households
(end of 2007)



Source: Bank of Lithuania calculations.

Net assets of households fell in recent years, as financial liabilities grew faster than financial assets. The ratio of financial liabilities to financial assets increased by 12% over the year. Notwithstanding this, it remained rather low (56%).

Fig. 16. Financial assets and financial liabilities of households
(end of period)



Source: Bank of Lithuania calculations.

Loans to MFIs comprised the largest share (79%) of household liabilities. The remaining share was principally made up of household debt to non-financial corporations.

The number of households that have taken large (housing) loans increased more notably. The number of households with consumer and other loans remained broadly unchanged.

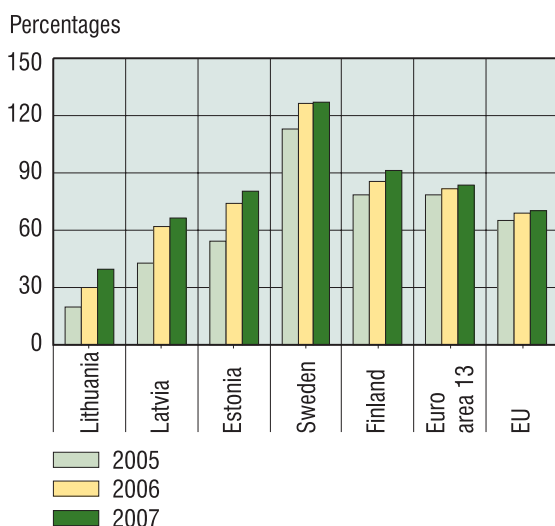
Table 4. Indebted households

	2004	2005	2006	2007
Share of households with housing loans, %	2.3	6.0	8.7	10.3
Share of households with consumer or other loans, %	20.0	18.1	22.3	21.2

Sources: Department of Statistics and Bank of Lithuania calculations.

The ratio of household loans to disposable income has been increasing noticeably in recent years. However, in comparison to other EU countries, it still remained rather low.

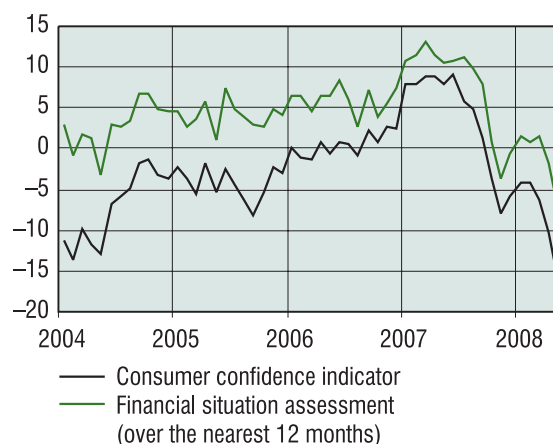
Fig. 17. The ratio of housing loans to disposable income in selected European Union countries
(end of period)



Sources: ECB, Eurostat and Bank of Lithuania calculations.

From the second half of the year, household expectations started to deteriorate. This development was mainly driven by increasing inflation as well as the slowdown in the real estate market and a fall in equity markets. In early 2008, the consumer confidence indicator dropped to record lows, while the assessment of financial situation turned negative.

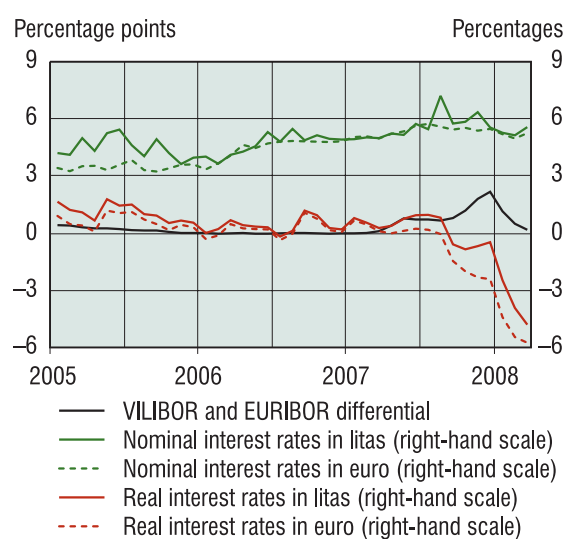
Fig. 18. Consumer confidence and financial situation assessment indicators



Source: Department of Statistics.

Loan servicing burden has risen along with an increase in interbank interest rates. The cost of borrowing in litas increased faster, compared to loans in euro. This in turn prompted the growth of debt in euro, and this trend continued, despite the narrowing interest rate spreads since the beginning of 2008.

Fig. 19. Nominal and real interest rates on new housing loans



Source: Bank of Lithuania calculations.

The banks tightened credit standards for granting housing and consumer loans. Stricter requirements were applied for borrower's income, as banks took into consideration the growing expenses of living. Other standards applied to the approval of loans remained broadly unchanged over the last year.

Table 5. Credit standards

(according to net differential between banks that tightened and eased credit standards, percentages)

	2006 04	2006 10	2007 04	2007 10	2008 04	2008 10*
Changes in standards applied for loans for house purchase	-20	-9	18	27	45	45
Determined by changes in macroeconomic environment	-30	-27	18	45	82	-
Determined by housing market prospects	-10	9	18	45	73	-
Changes in standards applied for consumer loans	-20	-36	0	36	45	27

Source: Bank leading surveys.

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

* Projected. Expectations of the surveyed Banks.

Worsening expectations and the tightening of credit standards led to a slowdown in credit growth. The increasing monthly flows of new loans to households observed in the first half of 2007 stabilised in the third quarter and started to decrease rapidly towards the end of the year and in early 2008. The comparison of EU countries suggests that slowdown in household credit growth can be attributed to the dynamics of the housing market: the countries that experienced a fall in housing prices (Spain, Ireland, Estonia and Latvia) faced vivid deceleration in the issuance of loans to households, meanwhile credit growth in other countries did not change much.

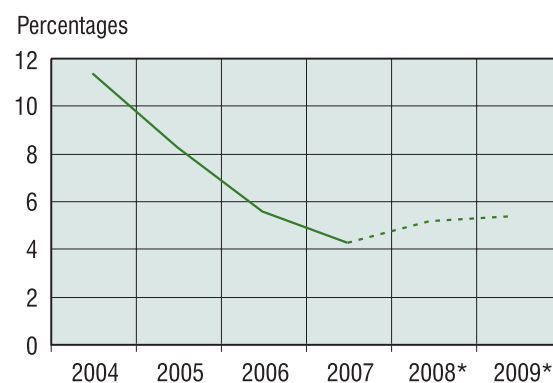
The growth in consumer and other loans (student, small business) moderated too. The flows of new loans decreased more notably at the end of 2007, while during the first quarter of 2008 the flow shrank to LTL 0.3 billion (in comparison to LTL 0.5 billion in the first quarter 2007). This might be attributed to growing household income as well as higher interest rates. Crediting through credit cards became more popular (the amount of such loans grew almost by one third over the year), although it still accounted for a meagre portion of loans.

Overall, the slowdown in the growth of household loan portfolio observed in the second half of 2007 and early 2008 can be assessed as positive. First, it relieves tension in the real estate market where banking loans play a leading role; second, it restricts the boost of domestic demand and at the same time supports the reduction of macroeconomic imbalances. Moreover, a more conservative approach of banks reduces competition over higher-risk clients, financial standing of which normally deteriorates as the business cycle moves into a downturn phase.

Risk Related to Household Debt

The risks related to household ability to repay loans usually increases with the deceleration of economic growth, as under the circumstances of robust economic growth both debtors and banks often overestimate the sustainability of wages, the value of assets and employment. Two main risk types reflect household capability to manage liabilities: the risk of real income fall resulting either from unemployment or rising inflation and the risk of interest rate increase.

The anticipated move of the economy into a phase of slower growth will increase uncertainty in the labour market. It might increase the risk of unemployment and real income growth. In 2007, the unemployment dropped to the lowest level over the last decade – 4.3%, but in some sectors (construction, trade) tensions have started to ease in the beginning of 2008. Based on the Bank of Lithuania estimates, the unemployment rate will increase in 2008, but will remain below the natural level. Labour mobility among economic sectors and international emigration could reduce the level of unemployment, but it is worth noting that economic growth in the countries that accept most of the immigrants is slowing down as well.

Fig. 20. Unemployment and its forecasts

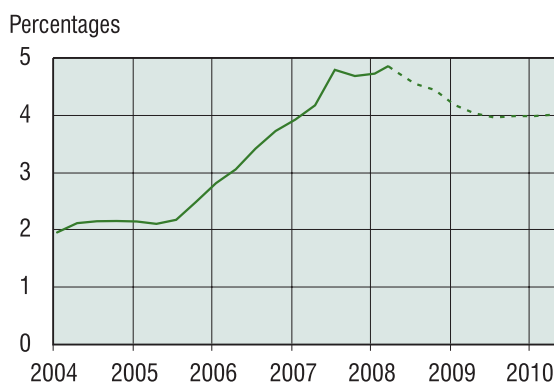
Sources: Department of Statistics and Bank of Lithuania calculations.

* Bank of Lithuania forecasts.

The further growth of real disposable income will be limited by increasing inflation, but it is likely to remain positive (although distributed unevenly across economic sectors). The growth of public sector wages and its projected increase will push up nominal disposable income. Borrowers with lower than average income will face the highest risk, as they are more sensitive to the increasing prices of the basic consumer goods and public utilities. However, based on the results of the household surveys, a larger share of clients of financial institutions fall into the average or above average income categories, which reduces the credit risk for the lenders.

The risk was growing due to an increase in interest rates in 2007, but still remained low. Owing to the structure of indebtedness of households in Lithuania, which is characterised by prevailing loans with short interest rate fixation, the fluctuations of interbank interest rates instantly affect the interest payments. In 2007, a hike in interbank interest rates – in national currency in particular – increased the loan repayment burden to households. A number of households sought to reduce growing interest payments by refinancing housing loans, i.e. by changing loan currency from litas to euro or by negotiating a lower margin applied by the bank. However, the probability of a further rise in interest rates in 2008 is low, and the expectations of market participants have been recently associated with a fall in interest rates.

Fig. 21. EURIBOR (three-month) historical and future (determined by futures on 1 May 2008) interbank interest rates



Source: Bloomberg.

Taking into account the fact that the major share of loans to households has been denominated in euro and the amount of loans in other foreign currencies remained modest, the exchange rate risk to households continued to be limited. The response of households to interest rate fluctuations in different currencies was relatively fast and sizeable. With the convergence of interest rates in litas and euro from mid-2006 to mid-2007, borrowing of households in euro decreased considerably. However, as the spread widened, borrowing in euro intensified again in mid-2007. As the interest rate spread continued to grow, the demand for new loans in litas declined altogether. Since late 2007, a number of households with loans in litas started to change loan currency from litas to euro. This trend continued in early 2008. From mid-2007, the share of loans in litas decreased by 11 p. p. to 41%. The same trends were also observed in the neighbouring countries: Latvia and Estonia. In Latvia, new loans in national currency accounted for 13% in 2007. In Estonia, the growing interest rate spread did not have any noticeable effect, since the share of new

housing loans in national currency was modest in previous periods (12%).

The increase of interest rates in litas and euro also encouraged a number of households to borrow in other foreign currencies, the interest rates of which are lower, mainly in US dollars and Swiss francs. In Lithuania, the share of loans in these currencies remained modest. In April 2008, it made up about 3% of all new housing loans granted to households.

Overall, despite the economic slowdown and growing inflation, there were no major preconditions for the financial standing and solvency of households to deteriorate.

Household Sensitivity to Unfavourable Economic Developments

Household sensitivity to negative developments of financial and macroeconomic environment increased in 2007. 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 the changes in interest rates and consumer spending. Such data also enables the assessment of the level of savings – as means of precaution against negative developments – of indebted households. As may be judged from these criteria, sensitivity of indebted households to negative shocks increased in 2007.

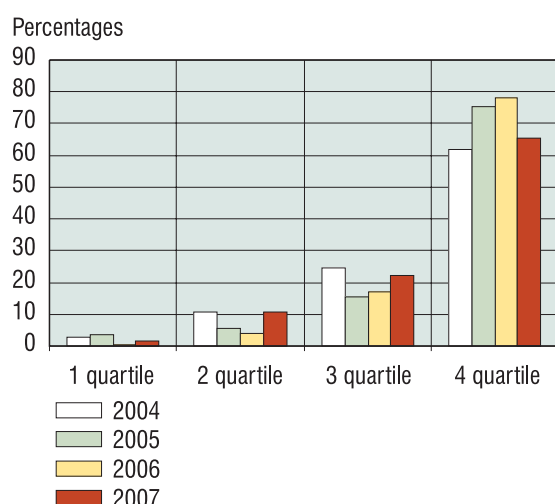
The share of lower disposable income households in the category of debtors with housing loans increased. The trend prevailing until the middle of the year – severe competition in the banking sector and easing of credit standards – determined the growth of the number of households with lower than average income that could afford to take out a housing loan¹². Over 2007, the share of such households rose from 5 to 12%. Although the average size of a housing loan taken by households with lower income is considerably smaller than the average size of a housing loan (which limits potential losses), the growing number of such debtors might increase the level of risk.

A more accurate picture of solvency and resilience of households to unfavourable income and interest rates shocks is revealed by the margins of indebted households. The margin is calculated by subtracting the servicing of a housing loan and average expenditure from disposable income of indebted households¹³. Negative margin means that,

¹² In 2007, average household income, according to the Department of Statistics, was LTL 2,096.

¹³ Average expenses are announced in statistics provided by the Department of Statistics; average expenses in 2007 were calculated based on average expenses in 2006, taking into account the inflation.

Fig. 22. Share of households with housing loans broken down by distribution of disposable income



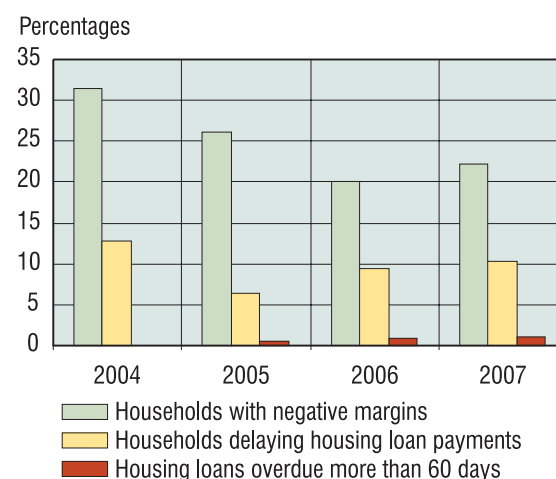
Sources: Department of Statistics and Bank of Lithuania calculations.

over one month, a household consumes less than an average household in the country.

Households with the negative margins are most sensitive to a deterioration in financial situation and environment: growing expenses bring them closer to the poverty line and might result in insolvency. On the contrary, households with positive margins are more flexible to adjust to negative shocks as their living standard is higher than average. Negative margins for the most part are common to individuals earning the lowest income: 70% of households – according to their income assigned to categories of the first and second quartiles – had negative margins in 2007.

The share of indebted households with negative margins increased. The trend of decline in the number of households with negative margins observed from 2004 to 2006 changed in 2007. This change was mostly determined by higher interest rates on housing loans. Due to poor financial standing, households with negative margins more often are incapable to carry out settlements on time with credit institutions (table 6). However, the difference from the average standard of living in most cases is low. The effective burden of payments is smaller, since households with housing loans may get back a part of paid interests making use of the tax relief. This in turn narrows the gap between household income and average expenditure.

Fig. 23. Share of households with negative margins, payment delays and overdue loans



Sources: Department of Statistics and Bank of Lithuania calculations.

The number of households delaying payments increased marginally. Compared to 2006, the number of households delaying payments rose by 1% to 10.3%. The number of households with negative margins delaying payments decreased compared to 2006, however the number of households with positive margins delaying payments increased. This was influenced by additional expenditure of these households to cover other liabilities (such as consumer loans, leasing or other loans that are not included in the calculation of the margin).

Table 6. Share of households delaying housing loan payments (percentages)

	2004	2005	2006	2007
Households with positive margins	10.1	3.7	5.0	8.9
Households with negative margins	18.8	13.8	20.0	17.2

Sources: Department of Statistics' household surveys, household surveys ordered by the Bank of Lithuania and Bank of Lithuania calculations.

The overdue time of payments on loans is usually not long: the data of the last three years suggests that only one tenth of payments is overdue more than 60 days. Although the total number of non-performing housing loans remains very small, the rising number of households with lower income and developments in margins suggest that households became more sensitive to growing interest rates and consumer spending.

The number of individuals with housing loans who save decreased marginally, although the risk was mitigated by accumulated assets. The share of households that save up nothing increased by 6% to 59% over the year. The monthly savings of households that save account on average for the costs of one-month servicing of a housing loan. It should be noted that the distribution of sav-

ings amounts is very broad: from one tenth to 1,000% of this amount. The risk of households that do not save is reduced by the fact that the majority of them have already accumulated some liquid assets (deposits, life assurance or securities). Households that do not save and do not have any accumulated assets belong to the riskiest category of indebted individuals. The said category comprised 11% of such indebted households with housing loans.

Table 7. Share of indebted households (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

Sources: Department of Statistics' household surveys, household surveys ordered by the Bank of Lithuania and Bank of Lithuania calculations.

The survey of households with a housing loan suggests that **loan servicing burden for households became easier in 2007**. Notwithstanding the fact that the share of households with very heavy loan servicing burden remained almost unchanged, the number of households to whom loan servicing does not pose any burden at all increased significantly. This was the result of reduced personal income tax and growing income last year.

Table 8. Assessment of housing loan burden (percentages)

	Very heavy burden	Moderate burden	No burden
2004	38.2	46.5	15.3
2005	34.5	48.2	17.3
2006	27.0	58.0	14.7
2007	26.1	53.3	20.6

Sources: Department of Statistics' household surveys, household surveys ordered by the Bank of Lithuania and Bank of Lithuania calculations.

International comparison suggests that Lithuanian households with housing loans are more sensitive to negative developments. According to the latest data, households with negative margins and households with no accumulated assets in Sweden accounted for 7 and 6% respectively (in Lithuania, 22 and 13% respectively). The assessment of a housing loan repayment burden in richer countries is also more favourable, e.g. housing loan servicing posed heavy burden for 26% of households in Lithuania and less than 20% in Ireland, meanwhile housing loan servicing was not perceived as a burden by only 21% of indebted individuals in Lithuania and 28% in Ireland.

To sum it up, the segmentation of sensitivity of clients with housing loans became evident in 2007. Sensitivity of a part of households with low sensitivity to negative developments declined even more, as

reflected by this segment's increased margins and savings and a more favourable assessment of burden. At the same time, the number of most sensitive households with negative margins and without protective buffers increased. This means that the

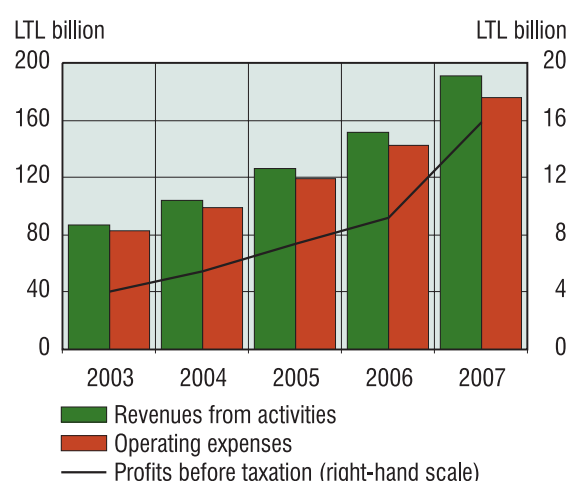
Non-financial Corporate Sector

General Standing of Enterprises

Profits of enterprises reached record highs last year, however, taking into consideration an anticipated slowdown in economic growth, enterprises are not likely to sustain such high levels of profitability in the future. Due to the favourable macroeconomic situation, growth rates of profits of non-financial enterprises exceeded economic growth of the country as in the previous periods.

In 2007, strong growth in the number of newly established enterprises and decrease in that of bankruptcies was further observed. Compared to the previous year, the number of profitable enterprises increased by 1p. p., meanwhile the share of bankrupt enterprises in relation to the total number of enterprises was one of the smallest over the entire period of observations. In 2007, the number of enterprises that went bankrupt was 20% lower compared to 2006, however, with the economy starting to slowdown this trend would change. Further support for this argument is given by an increased number of bankruptcies, which grew by 46% in the first quarter of 2008 year-on-year.

Fig. 24. Results of enterprises performance (end of period)



Sources: Department of Statistics and Bank of Lithuania calculations.

In 2007, the gap between the profit before taxation and losses over the year grew on average by 74% meanwhile profitability reached the historically highest level, i.e. nearly 9%. On the one hand, this was determined by improving results of principal activity of enterprises, supported by strong domestic demand

and rising export income. On the other hand, the total result of enterprises' performance should be evaluated with some caution due to atypically high, compared with previous periods, profits from financial and investment activities as well as its substantial contribution to the amount of profits before taxation. Excluding profits obtained from financial and

investment activities of enterprises operating in real estate and retail trade sectors, average profitability of private sector enterprises in 2007 turned out to be close to the average profitability (nearly 7%) in that way illustrating more sustainable profit growth and emphasising exceptionality of the results from financial and investment activities.

Box 3. Impact of real estate price developments on financial results of enterprises

International Accounting Standards No.16 'Property, plant and equipment' establish that, when choosing its accounting policy, an economic agent should decide which one of the two approaches of revaluation of property, plant and equipment it is going to apply. In case an economic agent chooses **cost approach**, subsequent to initial recognition as an asset, an item of property is carried at its cost less any accumulated depreciation and accumulated impairment losses. **Revaluation approach** establishes that in case the fair value of property can be reliably measured, the property should be carried at a revaluated amount, being its fair value at the date of the revaluation less subsequent accumulated depreciation and subsequent accumulated impairment losses.

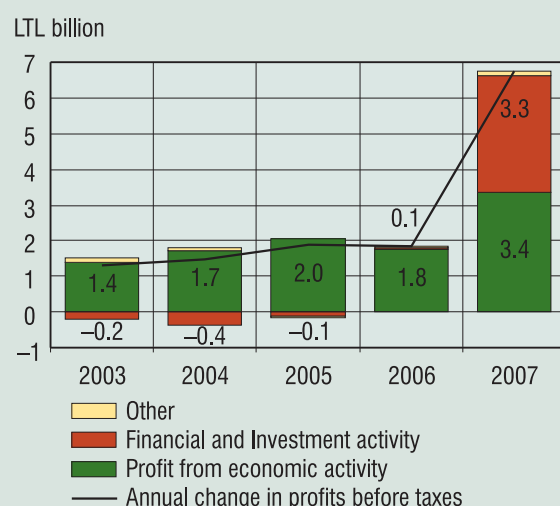
Revaluations of property should be made with sufficient regularity in order to ensure absence of any material differences between the fair value of a revaluated asset and its carrying amount. Changes in the value of assets should be reflected in equity and recognised as profits or losses. Those enterprises that – when accounting for their property – apply revaluation approach record revaluation into the balance sheet by increasing (in case the value of assets rose) or decreasing (in case the value of assets reduced) shareholders' equity. Other enterprises (e.g. real estate or trading enterprises) that account for the real estate held as investment assets reflect changes in its value by adjusting both equity and profit (loss) account. As enterprises fulfil the requirements of the International Accounting Standards, fluctuations in the value of property result in stronger volatility of revenues and pro-cyclicality. Rapid economic growth and increasing property prices raise the balance sheet value of such enterprises and allow to reflect higher level of revenue in the financial accounts. However, falling property prices determined curtailment of balance sheet of those enterprises and losses sustained in the financial and investment activities as far as this was related to the property.

In 2007, profits of enterprises reached record highs in Lithuania, the growth of which was significantly affected by revaluation of property as well as its reflection in the results of the financial and investment activity performance. This was observed most vividly in the retail and real estate sectors whose profits prompted to a large extent an improvement of the results of the financial and investment activities performance.

For the above reasons, the performance of enterprises in those two sectors largely reflected the effect of property price growth. At the same time this indicates higher risk in case of decrease in the value of real estate, since enterprises, when recording lower value of assets in their financial accounts, would sustain losses in financial and investment activities performance. Moreover, reduction in the value of property will adjust shareholders' equity the growth of which was two times stronger in the retail and real estate sectors than that of other enterprises over the year.

In 2006, similar trend was also observed in the other Baltic States, e.g. in Estonia, 70% of the profits of enterprises before taxes were received from the financial and other activities rather than the principle activity. This was also a result of the performance of real estate enterprises that make up one third of the revenue from other activities of all enterprises.

Fig. 25. Contributions to change in profits of enterprises before taxes



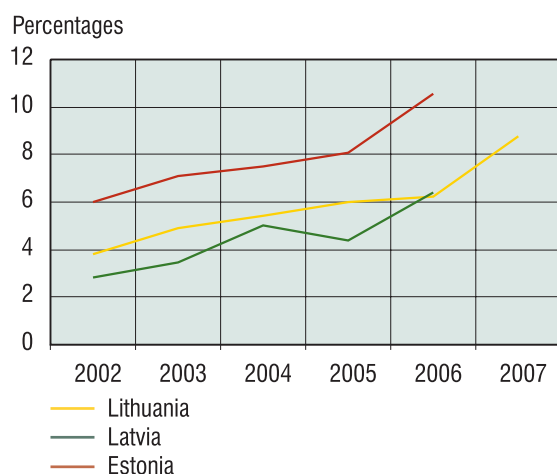
Sources: Department of Statistics and Bank of Lithuania calculations.

Evaluating profit margins and absolute size of profits in the context of business cycle – beginning with the first available data in 1998 – it is observed that average profitability of corporations in Lithuania increased from 1 to 9%.

On the one hand, profit margins are not evenly distributed: over the year, the gap between the sectors of highest (real estate) and lowest (energy) profitability increased by 11 p. p. On the other hand, decline in the profit margins resulting from restrained domestic demand could be offset by an increasing demand related to the growing economies of Russia and CIS. In this context, agricultural and food industries are in a particularly favourable position.

Fig. 26. Average profitability of enterprises in the Baltic States

(profits before taxations compared to revenues)

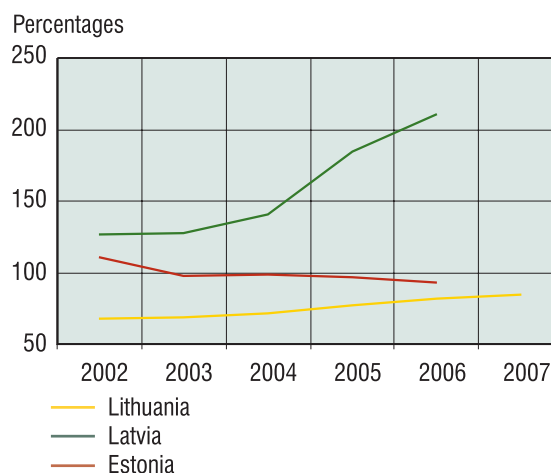


Sources: Department of Statistics, Central Bureau of Statistics of Latvia, Statistics Agency of Estonia and Bank of Lithuania calculations.

Rising profits of enterprises had a certainly favourable impact on the discharging of assumed liabilities (increase of which accounted for 34%). Financial leverage that shows the ratio of total corporate debt to equity increased further. Based on the mentioned indicator, the highest risk was incurred in the trading sector as well as in several small sectors such as fishing, hotels and restaurants. Compared to 2006, debt to equity ratio increased mostly in the sectors of hotels and restaurants, industry and health care, meanwhile, the financial leverage has decreased in real estate, fishing and trade sectors. Since the second quarter of 2006, decrease in financial leverage has been observed in real estate sector and it was apparently rapid in the fourth quarter of 2007. The reason behind it could be strong growth of own capital prompted by the reflection of increased value of real estate in both better results of financial and investment activities and the item of retained profit. A similar trend was observed in retail sector.

Among the Baltic countries, enterprises of Lithuania have been standing out for their lowest debt compared to equity for some time already. Rapid growth of financial leverage of the enterprises of Latvia could be partly related to the more intense credit expansion.

Fig. 27. Financial leverage of enterprises of the Baltic States



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

Growing average profitability and decreasing financial leverage of real estate enterprises could be explained by the results of financial and investment activities discussed above. The wider gap between profit before taxes and losses of real estate enterprises is likely to have enabled them to reduce short-term liabilities in the last quarter of the year and improve in that way standing of the financial structure.

Looking ahead, the prospects of the enterprises active in the real estate market are partly reflected by the dynamics of their equity prices. Since the beginning of the year 2007, the equity prices of major real estate and construction enterprises was dropped less than the composite OMX Baltic Benchmark index. On the one hand, that would seem to suggest that, in the long-term perspective, the investors of the Baltic countries give favourable profitability assessment of individual enterprises operating in the real estate market and do not attribute major importance for the potential threat of real estate price adjustment in respect of their activities.

On the other hand, stock exchange trades in equities of large real estate enterprises that have more possibilities to diversify income from their activities in case of recession in the housing market by giving more attention for the projects aimed at infrastructure, commercial real estate and etc. This suggests that large real estate enterprises incur lower risk compared to smaller ones founded for

Fig. 28. Equity price dynamics of real estate enterprises

(2007 01 01 = 100)

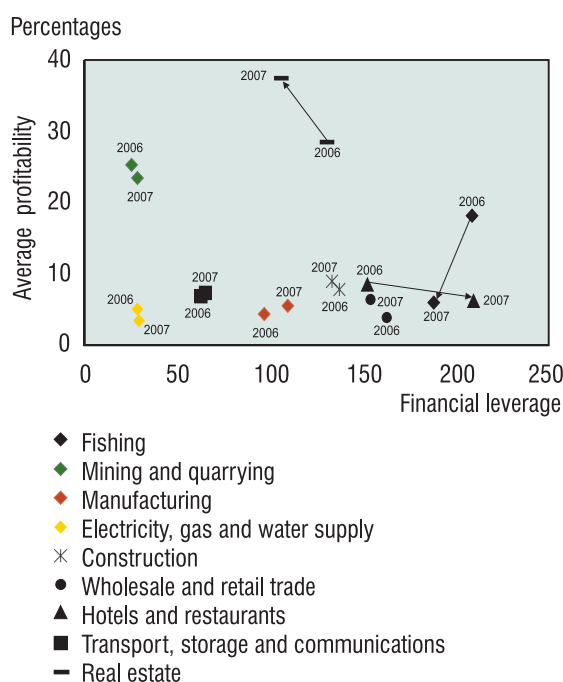


Sources: Bloomberg and Bank of Lithuania calculations.

Note: Real estate enterprise index is composed of Lithuanian (Invalda, Pramprojeckas, Panevežio statybos trestas), Latvian (Latvijas tilti, VEF) and Estonian (Acro Vara, Eesti Ehitus, Merco Ehitus, Tigrion property development) real estate companies equities prices weighted average.

the purpose to finance specific real estate projects.

Fig. 29. Change in average profitability and financial leverage of enterprises



Sources: Department of Statistics and bank of Lithuania calculations.

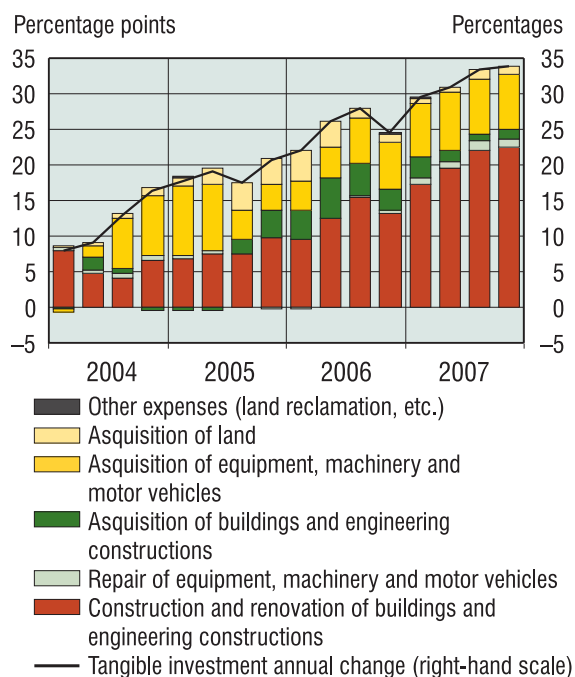
Liquidity status deteriorated slightly in many sectors towards the end of 2007. The working capital ratio, which shows the capability of enterprises to discharge their short-term liabilities, fluctuated around 1.5 and was slightly lower than a year ago. The year-on-year critical liquidity ratio, which shows the ratio of the components of the assets of highest liquidity to short-term liabilities, decreased. Along with the growing evidence of emerging problems in settlements among economic entities, reduction of this ratio points to the deterioration of solvency.

Deterioration of short-term solvency was observed in the sectors of real estate, transport, construction and trade as well in a few smaller sectors.

Financial funds of the enterprises were directed to investment, although like in the previous years, considerable share of investment was channelled to the non-tradables sectors¹⁴. The largest share of funds was allocated for the construction and renovation of buildings and engineering constructions. Accordingly, enterprises from manufacturing, wholesale, retail, real estate and renting as well as other business activity sectors were major investors. Apart from Lithuanian non-financial corporations, orientation of tangible investment towards the investment linked to real estate was also characteristic of the other Baltic countries, e.g. in Estonia, that type of investment made up over 70% of all tangible investment in 2006.

Fig. 30. Contribution to tangible investment growth

(annual change)



Sources: Department of Statistics and Bank of Lithuania calculations.

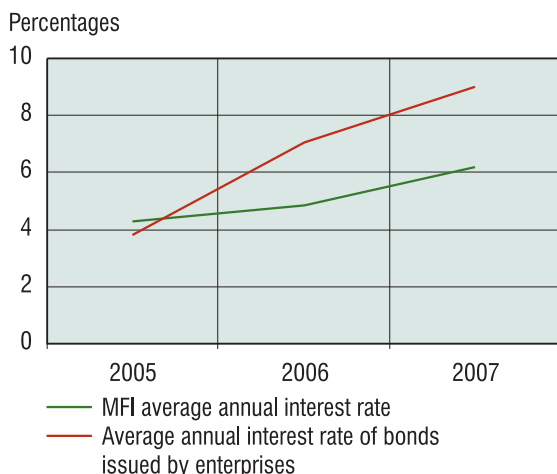
To finance their activities and investment, enterprises used both own¹⁵ and borrowed financial resources. Total financial liabilities of the business sector grew by one third over the year. As the borrowing costs increased in the domestic market, growing number of enterprises sought to attract funds from the parent companies abroad: over the year, that type of financing of tangible investment grew

¹⁴ A tradable sector comprises the agricultural, fishing, mining and quarrying, manufacturing, and transport sectors, a non-tradables sector comprises all other sectors.

¹⁵ The survey of business environment of small and medium enterprises shows, that 72% of businessman intended to use profit for business development.

most rapidly. Since loan issue conditions were getting tighter and borrowing costs were increasing, share of loans granted to non-financial enterprises by MFI to finance tangible investment decreased, however, it remained the major source of external financing used by the enterprises in Lithuania.

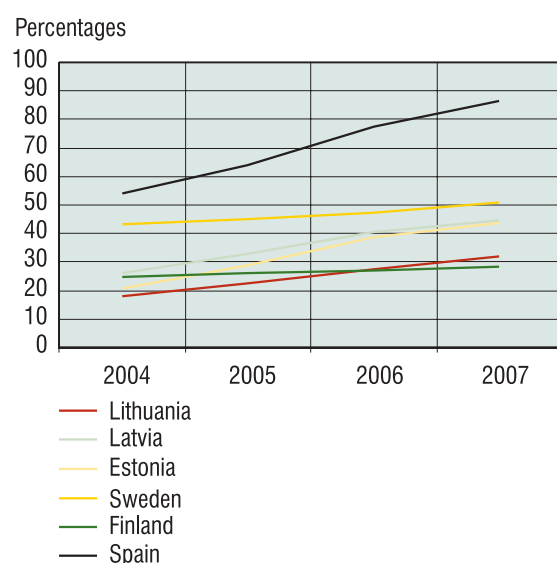
Fig. 31. Indicator of financing costs of enterprises



Source: Bank of Lithuania calculations.

Year-on-year growth of loans to non-financial corporations granted by MFI was slower in 2007. This was influenced by increasing interest rates as well as tighter lending conditions. In Lithuania, loans granted for enterprises to GDP ratio made up as little as 32% and remained one of the lowest in the EU.

Fig. 32. Loans to non-financial corporations ratio to GDP in selected EU countries (end of period)



Sources: Eurostat, ECB and Bank of Lithuania calculations.

In 2007, as in periods before, large and on average year-on-year growing share of loan portfolio to non-financial corporations consisted of long-term loans (i.e. those with a maturity of over one year). Nevertheless

shortening maturities of loan portfolio for non-financial corporations emerged at the end of the year.

In 2007, average annual interest rate on loans to non-financial corporations was 1.3 p. p. higher than one year ago. Growing cost of loans was mostly determined by global trends as the banks lending margin for non-financial corporations declined, albeit moderately, over the year. Bank lending survey of the Bank of Lithuania carried out in April 2008 on lending conditions showed that almost all banks restricted extension of loans for residential construction for real estate and construction companies. It is likely that due to banks' intentions to tighten financial conditions, borrowing funds for the projects related to commercial real estate will also become more difficult.

Although enterprises actively borrowed through VSE (nominal value of bonds issued by non-financial corporations accounted for 84 million LTL in 2007¹⁶), that debt was not as significant as loans granted by MFI in the context of the structure of their overall debt. This type of borrowing does not require securitisation therefore is more attractive.

Corporate Debt Risk Assessment

Growing financial liabilities of enterprises increase risk of debt servicing. Enterprises are likely to experience increasing difficulties when meeting their liabilities in the future caused by observed and projected slow-down of economic growth, real estate price adjustment and emerging solvency problems in different sectors of economic activity.

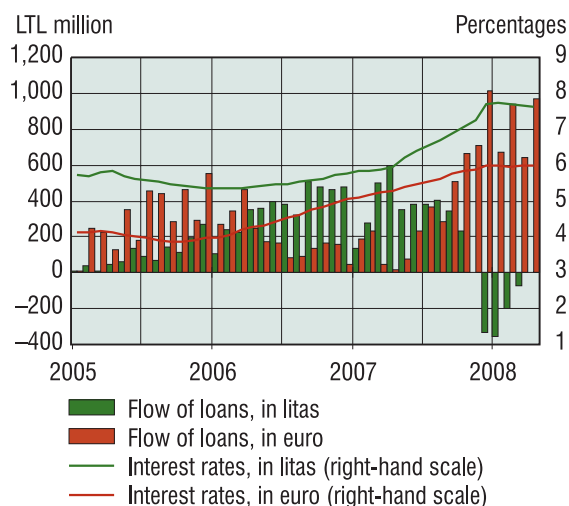
Assessing the condition of domestic enterprises at the time of publication of financial stability review in 2008, one may state that the conditions in many sectors of economic activity remain appropriate. Some concerns arise over the outlook for the real estate, construction and transport sectors. Total corporate profit grew slower than financial liabilities what might evoke settlement problems.

Corporate debt servicing costs comprise the repayment of loan value and instalments of interests. Like in previous periods, stronger effect on the growth of interest rate burden on enterprises' loans was made by increasing amounts, however, the rise in interest rates and deceleration of loan growth rates resulted in the growing impact of borrowing price. Growth of the interest rate on new loans extended to non-financial corporations has been observed since early 2006, meanwhile broadening gap between interest rates on loans in litas and those in euro modified the structure of loans grant-

¹⁶ The Securities Commission of the Republic of Lithuania.

ed to non-financial corporations. Because of higher costs for servicing debts in litas, enterprises were actively taking out loans in euro not only to finance their activities but also to repay loans previously taken in litas in order to relieve the growing burden of interests.

Fig. 33. Interest rates and monthly flows of loans to enterprises.

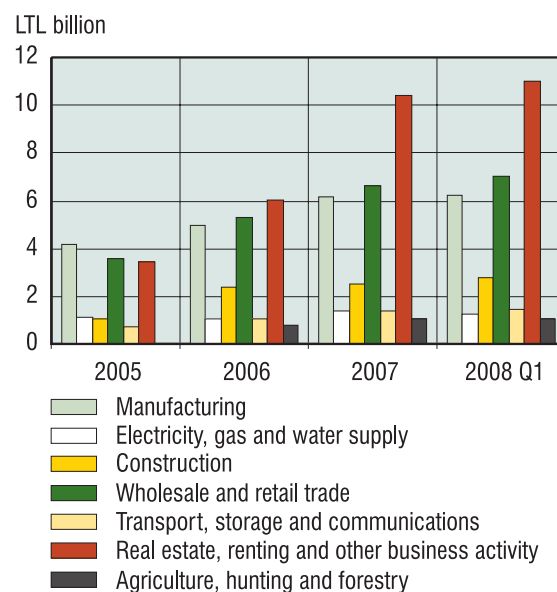


Source: Bank of Lithuania calculations.

Notwithstanding that, loans with a period of rate fixation of up to one year prevail in the flow of loans to enterprises, as the turmoil in global financial market started to evolve, enterprises, aiming to protect themselves from borrowing costs, began to fix interest rates for periods of more than one year. That tendency has been observed since mid-2007.

As in periods before, loans to real estate sector had a considerable weight in the structure of MFI loans to enterprises.

Fig. 34. Distribution of MFI loans to enterprises by economic activities



Source: Bank of Lithuania calculations.

Note: sectors with debt over LTL 1 million in the end of I quarter of 2008.

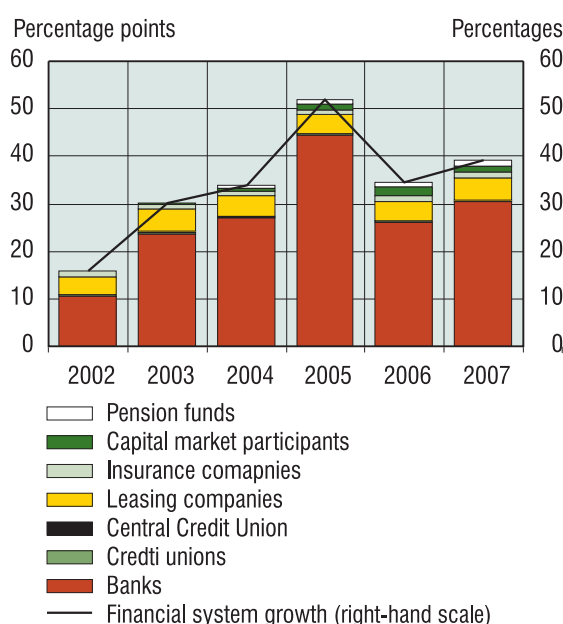
Transport sector – along with real estate and construction sectors – should be mentioned as a sector that causes concerns to the banks about its financial stance and dynamics. Although the level of debt of transport, storage and communications enterprises was lower compared to that of real estate and construction sectors, more than half of tangible investment was financed by leasing in 2007. Taking into account that majority of leasing companies active in Lithuania are subsidiaries of banks, financial condition of and dynamism in transport, storage and communications enterprises have direct influence for MFI.

The Financial System Structure Development

In 2007, as in previous years, the growth of the assets of the Lithuanian financial system¹⁷ twice outpaced that of the domestic economy. Also, this year was exceptional for the financial system because, for the first time, its assets exceeded the GDP.

The banking sector has remained the main guarantor for the financial system and its stability. The banking assets accounted for 80% of the total assets of the Lithuanian financial system, although they decreased slightly compared to 2006 (see Table 11). This was determined by fast increase of the leasing companies-held assets driven by acquisitions of motor vehicles reflecting the stimulating impact of the growth in tangible investments of the transport sector (acquisition of this asset type is usually financed through lease).

Fig. 35. Financial system development factors (annual change)



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

After a few new foreign bank branches started operating in 2007, the number¹⁸ of banks in Lithuania grew to 14. Also, there were changes in the ownership of some banks in 2007. When the Danish *Danske Bank* group acquired *Sampo Bank* from the Finnish SAMPO group, *Danske Bank* took over the control of AB SAMPO bank operating in Lithuania. At the beginning of 2007, a branch

of the Latvian AS "UniCredit Bank" opened up in Lithuania, which subsequently, in September 2007, took over the commitments of a Vilnius-based branch of *Bayerische Hypo- und Vereinsbank AG*, a member of the same bank group. In early 2007, some changes took place in the ownership of AB Bankas Snoras as a result of a few direct transactions that were carried through Vilnius Stock Exchange; two individuals now own 94% of the bank's share portfolio.

Three largest Scandinavian capital banks (AB SEB bankas, AB bankas "Hansabankas" and AB DnB NORD bankas) controlled the largest share of the Lithuanian banking system assets and also played an important role in the non-banking sector – leasing and insurances markets. Their asset holdings accounted for 84% and 35% of the total assets of the domestic leasing and insurance markets accordingly.

Three leading banks (and a significant portion of the entire Lithuanian financial system) were under control of foreign banks that have high credit ratings. This is an important factor showing the reliability of the financial system.

Table 9. Ratings of 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	positive	30.5
SEB AB (in Sweden)	A+	positive	
AB bankas "Hansabankas"	–	–	23.9
Swedbank AB (in Sweden)	A+	stable	
AB DnB NORD bankas	A	stable	13.1
DNB NOR Bank ASA (in Norway)	A+	stable	

Sources: Rating agency Fitch Ratings, web sites of commercial banks and Bank of Lithuania calculations.

* As at end-of-2007.

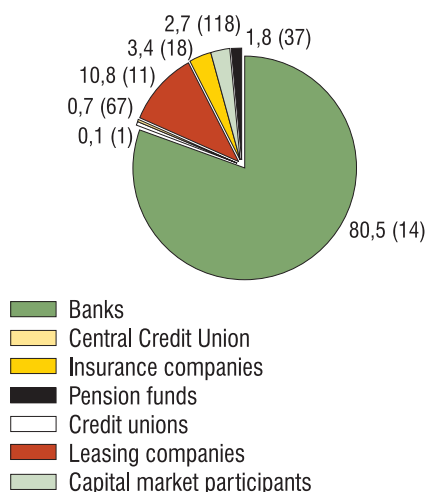
In 2007, non-bank financial institutions developed further. Their asset holdings within the Lithuanian financial system grew nearly by 1 p. p. to 20% over the year with the asset holdings of their leasing and insurance companies accounting for the biggest share (11% of the total assets of the financial system by the end of 2007). Robust activities of capital market participants and the second pillar pension funds should be emphasized since they helped to strengthen their positions in the financial system.

¹⁷ The financial system includes banks, credit unions, Central Credit Union, leasing companies that are members of the Lithuanian Leasing Association, insurance companies, capital market participants, and pension funds.

¹⁸ In 2007, 9 commercial banks and 5 foreign bank branches operated in Lithuania.

Fig. 36. Assets and participants of Lithuanian financial system in 2007

Percentages



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

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

Over the year, the market share of the capital market participants and pension funds increased by 1 p. p. The capital market participants and the second pillar pension funds shared the increase equally (the share of the third pillar pension funds remained unchanged). In contrast to the number of capital market participants, which grew by one-

fifth, the number of the second pillar pension funds went down; regardless of this, their asset holdings grew higher than the asset holdings of the capital market participants.

Although its significance was relatively small, this fast growth of asset holdings of non-bank financial system participants may indicate the willingness of residents to acquire other financial instruments as an alternative to deposits, particularly because of negative real interest rates on deposits with commercial banks.

Investor concerns over the development of the economy, increased risks in global markets, and general risk reassessment led to a decline in the national equity market. Since 2003, the capitalization of Vilnius Stock Exchange-listed shares has continued to decline, although losing its momentum (in 2007, the share market capitalization was by 11% year on year). In 2007, the growth of OMX Vilnius Index was moderate (more than twice slower compared to 2006), while during Q1 2008, the index went down by 9.2%. Negative sentiment prevailing in the global stock markets could be felt in the Baltic countries as well, while investor concerns regarding the sustainability of the economy's growth also contributed to the formation of unfavorable environment in the securities markets.

Box 4. Liquidity management in the Lithuanian banking system

Liquidity risk is one of the main financial risk types assumed by a bank. Liquidity risk may be divided into two components – financing and market risks. Financing liquidity risk emerges because of the imbalance of cash flows when solvent banks cannot fulfil their current financial liabilities in due time without sizeable costs. Market liquidity risk occurs due to decreased liquidity in financial markets, which does not allow liquidating positions held in the market in desirable time without incurring larger losses. These liquidity risk types are closely interlinked because in case of an unfavourable situation and a slash of liquid funds in the domestic banking system, banks would attempt to attract new financial resources in money and capital markets. However, being aware of increased financial liquidity risk, market participants avoid providing financing, thus reducing liquidity of money and capital markets. In its turn, reduced market liquidity pushes financial liquidity risk up, thus making a liquidity risk spiral, which had been observed in the environment of higher pressure in global financial markets.

Liquidity risk management in the Lithuanian banking system largely depends on financial resources of the domestic non-banking sector and the financial situation of parent banks, while domestic inter-bank market remains to be of an insignificant importance. The main funding sources of the Lithuanian banks were deposits of local customers and debts to groups of parent foreign banks, which amounted to 78% of total balance sheet assets of domestic banks (see Table 10). Despite negative real interest rates, the largest share of household financial assets continued to be composed of deposits accounting for about a half of the balance sheet assets of domestic banks. Meanwhile the funds attracted from parent foreign bank groups within several previous years were the key source of the annual expansion of bank assets. In order to attract more savings in the domestic market, a part of the Lithuanian banks issued bonds in addition, but due to the wide accessibility of the said financial resources, only a slight share of the total bank loan portfolio was financed by these debt securities. Because of this financing structure, liquidity management in the Lithuanian banking system is somewhat different from the liquidity management of financial institutions in countries where the market share held by foreign banks is significantly smaller.

The turmoil in global financial markets and reduced liquidity in these markets also entailed no major direct impact on the banking system of Lithuania. The amount of debt securities issued by the Lithuanian banks in foreign markets is not large and their terms of redemption have not yet matured. However, increased tension in international financial markets urged investors to assess investments in a more

conservative way and heightened their concerns about an imbalanced development of the Baltic States economies. This had a certain negative effect on the assessment of the financial standing of the Baltic States parent banks, and in individual cases made them tighten the policy of lending to subsidiaries.

According to the liquidity risk management in Lithuania it is possible to distinguish two main bank groups. Subsidiaries of parent foreign bank groups and branches having a relatively easily accessible funding source from other parent foreign bank groups are attributed to the first group composing the largest share of the banking system. The liquidity situation of banks within this group mainly depends on the liquidity stance of their parent banks. Domestic capital banks, which do not have an easily accessible external funding source and, therefore, are much more dependent on the domestic financial market, are attributed to the second group. Banks within this group offer higher interest rates on deposits in order to attract more funds from the non-banking sector and borrow in the inter-bank market more intensively, although their possibilities for borrowing in this market are restricted by limits set by lending banks on uncollateralized loans. Some banks within this group also borrowed from domestic and foreign markets for the issue of debt securities. Therefore, the liquidity position of these banks is more subject to developments in the domestic market and liquidity situation in the domestic securities and inter-bank markets. Banks within this group hold more liquid funds, such as debt securities of the Lithuanian Government, and their liquidity indicators are usually better compared to the banks within the first group.

Table 10. Funding sources composition of assets of the Lithuanian banking system
(share of balance sheet assets of domestic banks, percentages)

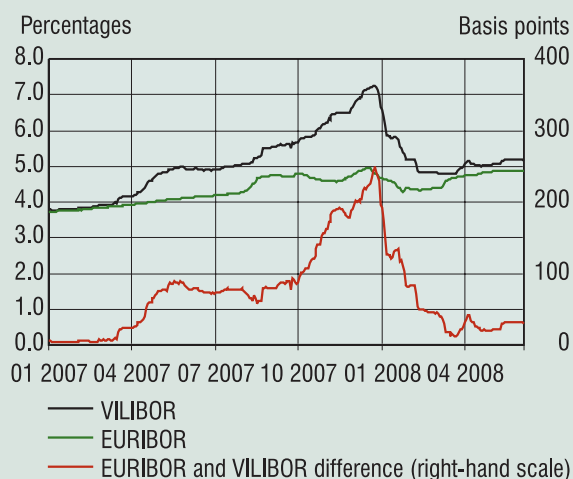
	2003	2004	2005	2006	2007
Deposits from non-financial customers	61.6	61.3	56.0	51.4	45.9
Debt to parent* banks	14.0	13.9	22.4	26.7	32.3
Debt securities issued (residents)	0.1	1.1	1.8	2.4	2.6
Debt securities issued (non-residents)	0.8	1.2	0.8	0.4	0.9

Source: Bank of Lithuania calculations.

* Debt to parent banks comprises all bank debts to banks within the foreign bank group to which it belongs.

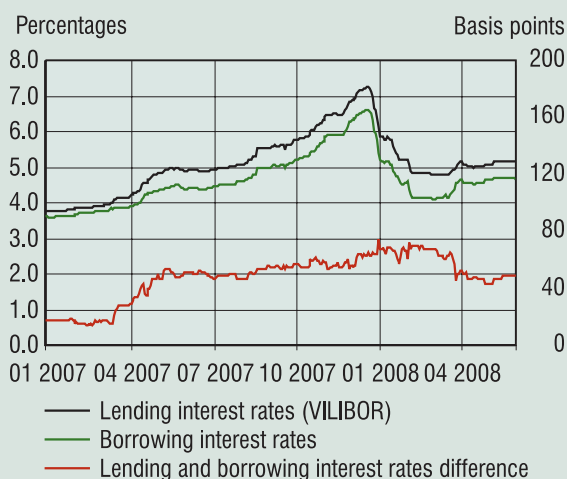
In the context of stronger concerns of foreign investors and apprehensions of rating agencies in spring 2008 over imbalanced economic development and rising inflation in the Baltic States, inter-bank interest rates increased due to a more conservative assessment of credit and exchange rate risks. Supply and demand factors of liquid funds in national currency also affected the dynamics of the inter-bank interest rates. Turmoil in global financial markets encouraged a part of investors to insure their long positions in litas and attracted the attention of some currency speculators. All these factors influenced increasing demand for borrowing in litas in the money market. The rise in demand resulted in lower liquidity of the inter-bank market because banks within the first group and their parent banks avoided shortening their positions in euro thus limiting litas supply in this market. Therefore, at the end of 2007, average 3 months Vilnius inter-bank interest rates rose to 7.26% and were 250 basis points above the euro inter-bank interest rates of the same maturity.

Fig. 37. Dynamics of average 3 months litas and euro interest rates and of their spread



Sources: ECB and Bank of Lithuania calculations.

Fig. 38. Dynamics of average 3 months Vilnius inter-bank lending and borrowing interest rates



Source: Bank of Lithuania calculations.

Table 11. Financial system of Lithuania

	2003				2004				2005				2006				2007			
	Number	LTL million	%	as % of GDP	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	13	22,031	83.4	38.8	12	29,151	82.4	46.7	12	44,849	83.4	63.2	11	58,914	81.4	72.2	14	88,990	80.5	83.8
Banks, excluding foreign bank branches	10	20,116	76.1	35.4	10	26,302	74.3	42.1	10	40,661	75.7	57.3	9	54,655	75.5	67.0	9	74,334	73.9	76.9
Foreign bank branches	3	1 915	7.2	3.4	2	2,849	8.0	4.6	2	4,188	7.8	5.9	2	4,258	5.9	5.2	5	6 656	6.6	6.9
Credit unions	57	123	0.5	0.2	61	185	0.5	0.3	64	301	0.6	0.4	66	462	0.6	0.6	67	655	0.7	0.7
Central Credit Union	1	32	0.1	0.1	1	45	0.1	0.1	1	79	0.1	0.1	1	110	0.2	0.1	1	142	0.1	0.1
Leasing companies	12	2,697	10.2	4.7	11	3,887	11.0	6.2	12	5,320	9.9	7.5	12	7,481	10.3	9.2	11	10,857	10.8	11.2
Insurance market	28	1,410	5.3	2.5	28	1,685	4.8	2.7	24	2,047	3.8	2.9	23	2,746	3.8	3.4	18	3,497	3.5	3.6
Life insurance companies	9	400	1.5	0.7	9	595	1.7	1.0	8	814	1.5	1.1	8	1,241	1.7	1.5	6	1,716	1.7	1.8
Non-life insurance companies	19	1,010	3.8	1.8	19	1,090	3.1	1.7	16	1,233	2.3	1.7	15	1,506	2.1	1.8	12	1,781	1.8	1.8
Capital market participants	31	136	0.5	0.2	41	305	0.9	0.5	70	710	1.3	1.0	98	1,656	2.3	2.0	118	2,696	2.7	2.8
Financial brokerage firms	18	69	0.3	0.1	16	78	0.2	0.1	13	109	0.2	0.2	12	156	0.2	0.2	13	141	0.1	0.1
Management companies	5	21	0.1	0.0	9	25	0.1	0.0	9	29	0.1	0.0	12	54	0.1	0.1	13	83	0.1	0.1
Open-ended investment companies	1	12	0.0	0.0	1	38	0.1	0.1	1	56	0.1	0.1	1	35	0.0	0.0	1	21	0.0	0.0
Investment funds	0	0	–	–	9	122	0.3	0.2	18	342	0.6	0.5	27	797	1.1	1.0	33	1,241	1.2	1.3
Foreign collective investment undertakings	4	34	0.1	0.1	6	42	0.1	0.1	29	174	0.3	0.2	46	614	0.8	0.8	58	1,211	1.2	1.3
Holding investment companies	3	n. a.	–	–	0	0	–	–	0	–	–	–	–	–	–	–	–	–	–	–
Pension funds	26	0	0.0	0.0	36	138	0.4	0.2	36	443	0.8	0.6	36	979	1.4	1.2	37	1,791	1.8	1.9
Pillar II pension funds	26	0	0.0	0.0	30	127	0.4	0.2	30	406	0.8	0.6	30	905	1.3	1.1	28	1,687	1.7	1.7
Pillar III pension funds	–	–	–	–	6	11	0.0	0.0	6	36	0.1	0.1	6	74	0.1	0.1	9	104	0.1	0.1
Financial system	168	26,429	100.0	46.6	190	35 396	100.0	56.7	219	53,747	100.0	75.7	246	72,348	100.0	88.7	266	100,629	100.0	104.1
Stock exchange capitalisation	–	12 917	–	22.8	–	19 634	–	31.4	–	28,207	–	39.7	–	30,004	–	36.8	–	26,950	–	27.9
Listed equities	–	9 607	–	16.9	–	16 417	–	26.3	–	23,953	–	33.7	–	26,684	–	32.7	–	23,796	–	24.6
Listed debt securities	–	3 310	–	5.8	–	3 216	–	5.2	–	4,254	–	6.0	–	3,320	–	4.1	–	3,154	–	3.3

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

Litas inter-bank interest rates and their premia to euro interest rates decreased and became stable in January–March 2008. However, the gap between longer term litas interest rates and short term rates continued to be substantially larger than before tension heightened in the financial markets of the Baltic States, reflecting still limited liquidity in the longer-term transactions market. The said curtailment in litas interest rates was driven by a combination of several factors: autonomous factors¹⁹ that pushed up temporarily the short-term liquidity of the banking system, as well as currently becoming stable assessments of short-term perspectives of the Lithuanian economy and, respectively, litas demand in the money market.

Increased uncertainty and soaring turnover in the inter-bank market also entailed higher interest rates driven by a larger spread between lending and borrowing interest rates which reached the level of 60 basis points at the end of 2007. This spread may also be treated as a market liquidity premium indicator as, in part, it reflects the market resilience to turnover developments. Also, persisting uncertainty in global financial markets pushed up interest rates on issued debt securities because market participants demanded a larger risk premium. As a result, the price of financial resources was growing buoyantly in the market and capital markets, which may worsen the stance of the liquidity situation of banks, which are over-dependent on financing sources in these markets.

¹⁹ Autonomous factors of the banking system reserves in litas are the Bank of Lithuania operations that have an impact on the amount of reserves of the banking system in litas, but are not performed due to the needs of the bank liquidity management. The main autonomous factors are the amount of currency in circulation and the transfer of the general government funds from the banking system to the Bank of Lithuania or from the Bank of Lithuania to the banking system.

Development of the Banking System²⁰

Bank Assets and Loan Portfolio

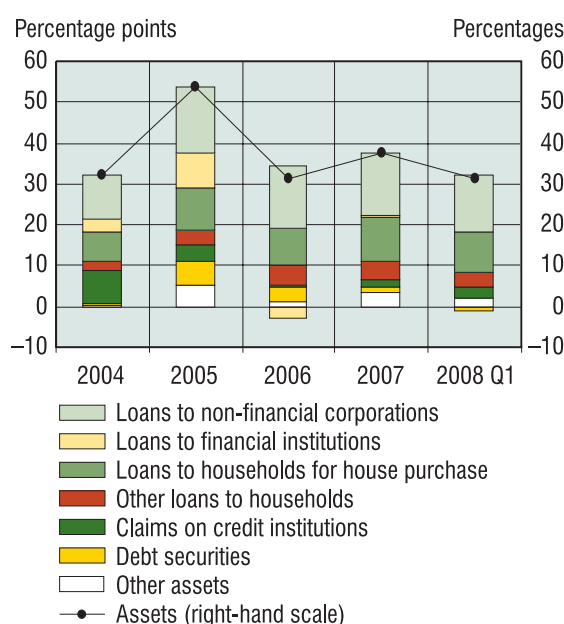
Growth of the Banking System

Alongside a rapid growth of the economy, the development of the Lithuanian banking system, which was orientated to the domestic market and fulfilment of its financial needs, was also buoyant. At the end of the first quarter of 2008, the annual growth rate of the bank assets made up 31%. An intensive crediting of the private sector was the main reason behind this growth.

Although the major share of the bank assets and activities remained concentrated in several systemically important banks, concentration decreased. Stronger concerns regarding the economic growth prospects made the largest domestic banks – key creditors of the economy – to slow down their expansion. For this reason, the banking system concentration abated in 2007 and the beginning of 2008. Within this period, the market share of three largest banks in terms of their assets shrank by

1.7 p. p. to 67%. *Herfindahl-Hirschman index*²¹ diminished by 136 points to 1 814.

Fig. 39. Contributions to the growth of the banking system assets (annual change)



Source: Bank of Lithuania calculations.

²⁰ In this chapter, the development of the banking system is analysed on the basis of bank financial statements and of those for supervisory purposes. In order to reflect the development of the Lithuanian banking system in a better way, the banking system is divided into foreign capital banks and domestic banks. This dissection is based on the bank ownership structure as at the end of 2007. Foreign capital banks are banks with the major share of equity capital owned by other foreign banks as well as foreign bank branches. In some cases, three largest banks may be singled out: AB SEB bankas, AB bankas "Hansabankas" and AB DNB Nord bankas. Three largest banks are foreign capital banks. Domestic banks are banks with the major share of equity capital owned by Lithuanian residents, as well banks that do not belong to any other foreign bank groups. Domestic banks are AB bankas „Snoras“, AB Ūkio bankas, AB Šiaulių bankas ir UAB Medicinos bankas.

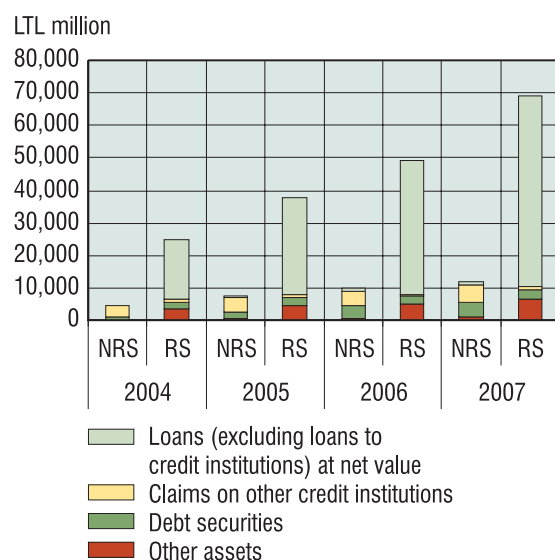
²¹ *Herfindahl-Hirschman index* is one of the most frequently applied concentration indices. The index is calculated as follows:

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

where: x_b – the bank b market share by assets, n – number of banks. Values of the *Herfindahl-Hirschman index* are varying in the interval $(1/n) \leq HHI \leq 1$. The index value would be the smallest if all components of the structure were equal, i.e., every bank would occupy the same-sized market share. The index value would be the highest when one component accounted for 100% of the entire structure, i.e., one bank would operate in the market. In practice, the value of the *Herfindahl-Hirschman index* above 1 800 usually means a large concentration.

Bank investments that were basically orientated to the issue of loans, and an increasing loans to assets ratio reflected the banks pursuit to increase interest income by assuming larger credit risk at the same time. In 2007, the loan portfolio contribution to the annual increment of assets was particularly high and made up 83%. 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 2008, the share of the banking system loan portfolio accounted for 76% of assets. Compared to the other EU countries, the share of the Lithuanian banking system loan portfolio against assets was one of the largest. On average, loans to customers made up about 50% of the bank assets in the old EU member states, while in the new EU states, this indicator accounted for 60%²².

Fig. 40. Structure of the banking system assets
(end of period)



Source: Bank of Lithuania calculations.
Note: RS – residents, NRS – non-residents.

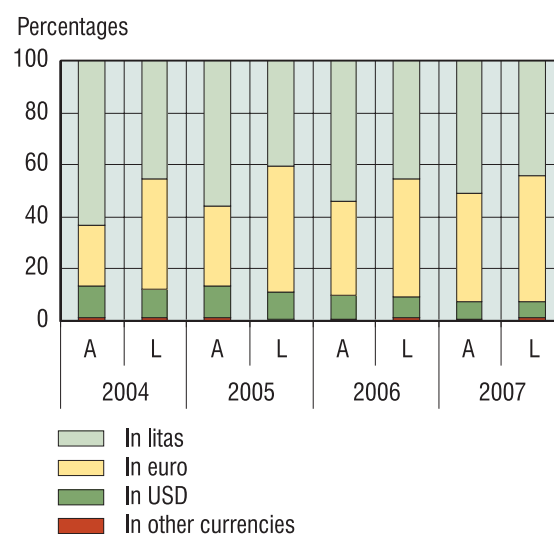
Credit risk of the banking system is concentrated inside the country. Activity of the Lithuanian economy and its development are the key factors influencing the banking system. The share of foreign assets in total assets of the banking system was relatively small. Furthermore, Lithuanian banks were not exposed to the US sub-prime mortgage market related financial instruments. Therefore, the impact of the US sub-prime mortgage crisis on the business of banks in Lithuania was solely indirect and of a limited scope (more in detail see Box 1).

The composition of the banking system assets in Lithuania and abroad was different. The loan portfolio comprised the largest share of assets held in Lithuania. Bank assets

abroad were mainly investments into debt securities issued by foreign governments and banks and short-term funds in other banks.

The major share of bank investments into securities was characterised as having low risk. First, banks invested mostly into debt securities. Being sufficiently stable for several years, the share of debt securities in the assets of the banking system made up 8% at the end of the first quarter of 2008 and was less by 3 p. p. compared to the start of 2007. Moreover, it can be observed that in 2007 banks limited their investments into debt securities, while at the beginning of 2008 the debt securities portfolio shrank in general. Second, sovereign bonds (mainly issued by governments of Lithuania, other EU countries or countries of a higher rating²³) made up around 40% of the total debt securities portfolio. Third, with the emergence of the turmoil in global financial markets, investors were seeking to reduce the assumed risk. Therefore, the demand for sovereign bonds rose, while the yield on them dropped. This fact notwithstanding, contradicting trends were observed in the development of Lithuanian banks investments into debts securities – the share of sovereign bonds curtailed, while debt securities of various private companies, mainly other banks, increased respectively. Risk of such investments is assessed as low due to a good financial standing of issuers of securities. Fourth, a limited impact of equity price risk was entailed by a relatively small portfolio of such investments (0.6% of assets) with the major share of it composed by equities of banks' subsidiary companies.

Fig. 41. Structure of the banking system²⁴ assets and liabilities by currencies
(end of period)



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

²³ Countries of a higher rating are those that have been assigned by international rating agencies the following long-term credit rating, inclusively: *Moody's Investors Service* – not lower than A3 or *Standard & Poor's, Fitch Ratings* – not lower than A–.
²⁴ Foreign bank branches are excluded.

²² *EU Banking Sector Stability*, ECB, November 2007.

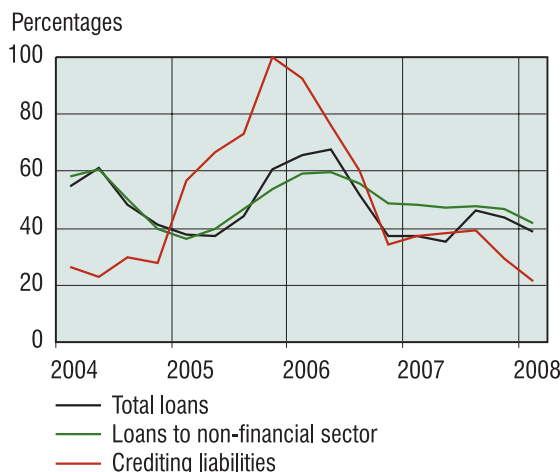
Foreign exchange rate risk in the banking system basically remained unchanged and was low. As in previous years, the banking system assets and liabilities were mainly denominated in three currencies – litas, euro and US dollar. Around 90% of the system assets and liabilities were in litas and euro. The rise of interest rates of loans in litas in 2007 entailed an increase of the euro denominated lending, and some borrowers exchanged the currency of taken loans into euros. Moreover, with a decrease of the US dollar exchange rate, the value of both, assets and liabilities denominated in this currency dropped. In 2007, these reasons were behind an observed growth of the share of euro assets and, respectively, a curtailment of the asset share in litas and US dollar. At the same time, the share of euro liabilities expanded considerably due to the euro denominated parent banks²⁵ funding by which nearly a half of loans granted in 2007 was financed. Due to this, a structural gap between the balance sheet assets and liabilities denominated in euro reduced to 0.2% of assets. Given Lithuania's aim to join the euro area²⁶ by maintaining the fixed litas exchange rate against the euro, euro positions of the banking system should be basically treated as denominated in the future national currency²⁷. The bank system assets and liabilities denominated in US dollar comprised about 7% of the system assets and liabilities; the open position was long and small and accounted for 0.3% of the capital. Open positions in other foreign currencies were immaterial. At the end of the first quarter of 2008, the overall open position in foreign currencies was short and made up 0.3% of the banking system capital.

Bank Loan Portfolio

Although the annual rate of bank loan portfolio growth remained to be robust, signals of slackening became evident. Last year, the impact of loan demand was also accompanied by a stronger influence of loan supply factors on further dynamics of the loan portfolio growth.

Notwithstanding still high loan demand in 2007, it started to diminish in the second half of the year. Over the year, the bank loan portfolio soared by 44%. A robust growth of loans was driven by both, high economic activity and partly by earlier concluded agreements according to which loans were grant-

Fig. 42. Growth of the banking system loans and crediting liabilities (annual change)



Source: Bank of Lithuania calculations.

ed in 2007 (in the housing loans segment in particular, because the period between the signing of a new housing loan agreement and granting of a housing loan may last from several months to one or even several years). However, increased interest rates and stronger expectations of the downturn in the real estate market entailed a reduction of the borrowing demand.

In 2007, the rate of the bank portfolio growth varied. Having slackened in the first half of the year, lending rates jumped in the third quarter, but later turned down again. An increase of the annual growth rate in the third quarter was basically driven by a changed financing of one of the largest banks to its subsidiaries²⁸.

Developments of the loan supply were largely driven by the change of a domestic and international environment entailing risk revaluation. With increasing investors concerns related to a macroeconomic situation in the Baltic States, incentives of foreign parent banks to further finance the economy diminished. The recent turmoil in the global financial markets added to this as well. So, Lithuanian banks whose significant proportion of assets was financed by parent banks, tightened credit standards and borrowers' risk assessment.

Banks' off-balance crediting liabilities²⁹ also signalled an awaiting decrease of lend-

²⁵ Here and elsewhere in the text the term "parent banks" comprises all banks of a foreign bank group to which a subsidiary bank in Lithuania belongs.

²⁶ Lithuania participates in ERM II from 28 June 2004 by maintaining a fixed litas exchange rate against the euro.

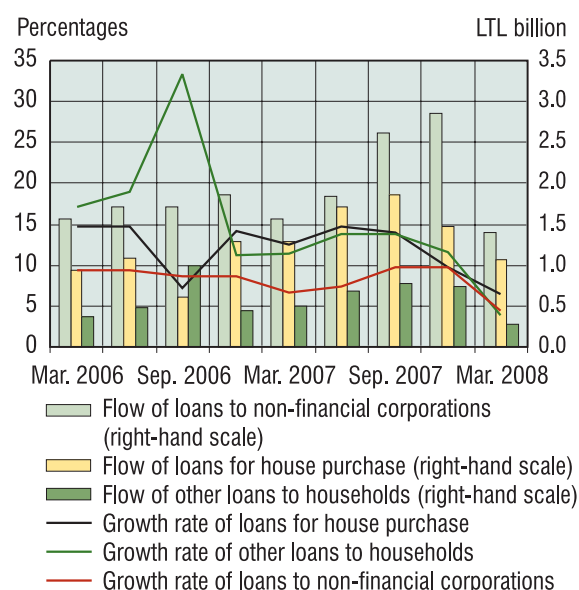
²⁷ Pursuant to the decision of the Board of the Bank of Lithuania, the open position in euro has not been limited as from December 2004.

²⁸ Up to the third quarter of 2005, subsidiaries of one of the largest banks were directly credited through other banks of the banking group. In the fourth quarter of 2005, the subsidiaries of this bank were started to be directly credited through the bank in Lithuania that controlled them, after it correspondingly increased debts to other banks of the group. In the third quarter of 2006, this subsidiary financing model was refused. The described financing changes entailed respective one-off assets and loan portfolio fluctuations amounting to about LTL 2 billion.

²⁹ The major share of crediting liabilities are composed of bank liabilities to issue loans, therefore, they may be considered as a preliminary indicator showing future changes of the loan portfolio.

ing. The average rate of crediting liabilities growth halved in 2007, compared to 2006, and dropped sharply in the beginning of 2008.

Fig. 43. Growth of the banking system loans (quarterly change)

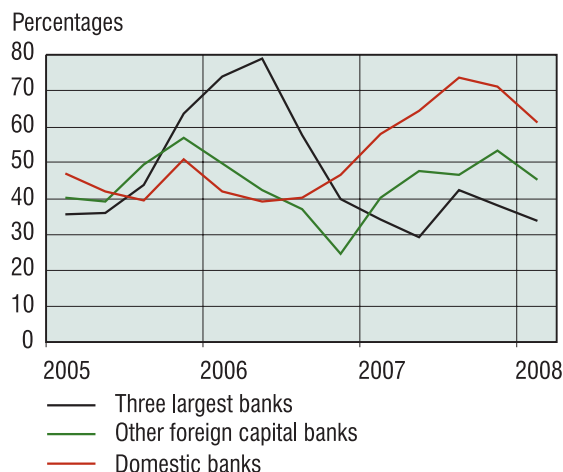


Source: Bank of Lithuania calculations.

The data as of the beginning of 2008 have already suggested a significant slackening of the bank loan growth. It was evident not only in the drop of relative growth indicators but also in a decrease of lending flow. Lending to households shrank in particular. During the first quarter of 2008, the amount of granted loans for house purchase was by 18% less, compared to the same period a year ago. A consumer and other loans to households quarterly flow slashed by 45%. Moreover, within the first three months of 2008, the increase of corporate loans issued by banks was the smallest in the course of previous two years.

In terms of the loan portfolio growth by individual banks, domestic banks and some smaller foreign capital banks³⁰ expanded their loan portfolios in 2007 substantially. In terms of absolute volumes, three largest banks lent to the economy most of all. In 2004-2006, the share of these three banks in the annual flow of loans of the banking system averaged 73%. However, in 2007, this share curtailed to 62% most likely because of the tightening of lending conditions by these banks. Such a situation might have been used by some smaller market participants whose lending interest rates were, usually, higher, as well as the assumed risk. Additionally, the expansion of the customer

Fig. 44. Growth of the foreign capital bank and domestic bank loans (annual change)

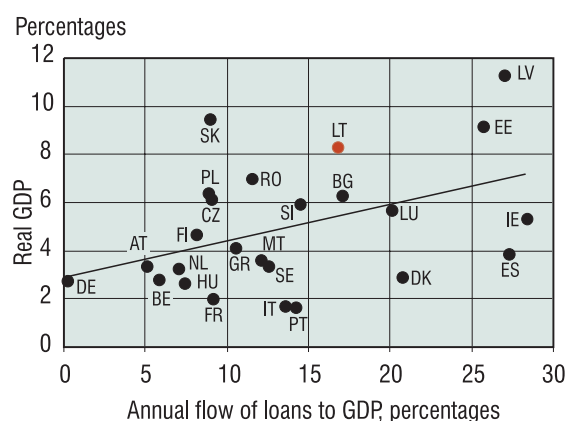


Source: Bank of Lithuania calculations.

servicing network of some smaller banks, allowing an increase of customers, was observed during recent years.

The flow of credit into the economy of Lithuania remained large. In 2007, the flow of loans granted to the non-financial sector amounted to 19% of the GDP³¹ (in 2006 – 15%), while outstanding loans increased to 59% of GDP. The comparison of the loan flow to GDP suggests that lending was an important driver of the economic growth in the Baltic States. In other words, a buoyant economic growth entailed more benign credit standards due to a better financial stance of borrowers, while the growth of loans further pushed the economic development up.

Fig. 45. Average real GDP and average flow of MFIs loans to the non-financial sector in 2006-2007



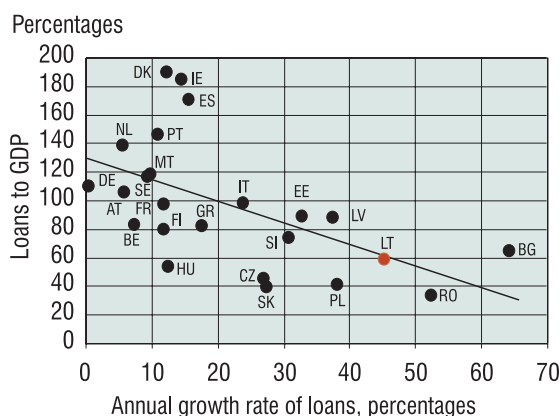
Sources: Eurostat, ECB and Bank of Lithuania calculations.

³⁰ The expansion of some foreign bank branches was particularly rapid. It may be observed that prudential requirements related with bank capital are not applied to foreign bank branches; therefore, in this respect, foreign bank branches may enjoy some competitive advantage against other banks.

³¹ It is appropriate to assess the annual growth of the loan portfolio not only in terms of the loan growth rates but also in terms of a ratio of the loan flow to GDP. In this way, a problem of an increasing comparative base is avoided, i.e., a comparative base increases together with the loan portfolio, and therefore, the rate of the loan growth may be decreasing, although the flow itself is growing.

Notwithstanding an observed buoyant growth, the Lithuanian banking system loan portfolio weighted by the size of the economy remained to be one of the smallest at the EU level. At the end of 2007, a respective average ratio of the EU loans to the non-financial sector³² to GDP made up about 110%. Compared to other EU states, the loan portfolio of the Lithuanian banks was relatively larger as that of some Central and Eastern European countries (Romania, Slovakia, Poland, Czech Republic and Hungary) but was smaller than that of Estonia and Latvia or Sweden and Denmark, which made major investments into the banking system of Lithuania. It may be observed that the rates of the loan portfolio growth are usually higher in the countries with a more intensive economic development and lower initial indebtedness level.

Fig. 46. MFIs loans to the non-financial sector in 2007

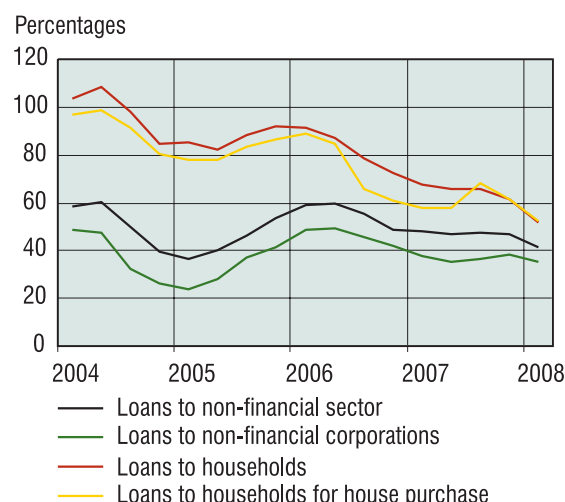


Sources: Eurostat, ECB and Bank of Lithuania calculations.

Lending to the non-financial sector remained to be the key driver of the growth of the bank loan portfolio. In terms of absolute volumes, loans to households and loans to non-financial corporations grew by a roughly similar amount. However, due to its smaller share in the loan portfolio, the annual growth rate of loans to households was higher and accounted for 52% at the end of the first quarter of 2008. The growth rate of loans to non-financial corporations was slackening as well, however, in a more moderate way, and totalled to 35% at the end of the first quarter of 2008.

With robustly soaring lending to households, the distribution of bank loan portfolio by institutional sectors turned to be more balanced and credit risk was diversified better. In 2007, the share of loans to households expanded by 4 p. p. and reached 39%, however, remained smaller if compared to the EU average. On average, at the EU level, loans to households comprised about 50% of the

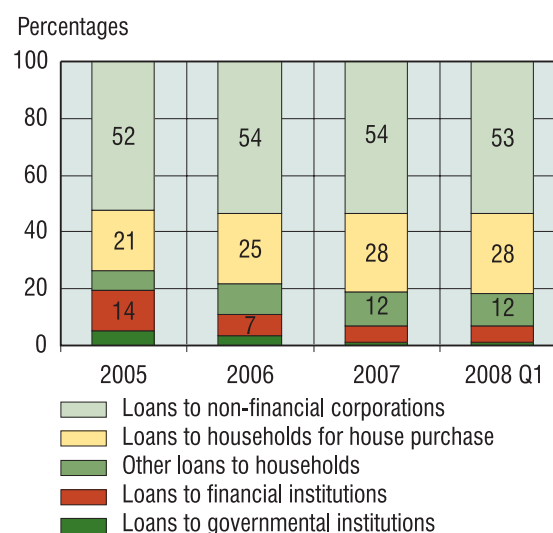
Fig. 47. Growth of the banking system loan portfolio by borrowers (annual change)



Source: Bank of Lithuania calculations.

loan portfolio of credit institutions³³, while the ratio accounted for 40% in the new EU member states. Loans for house purchase accounted for 28% in the Lithuanian banks, whereas it made up 35%, on average, in the EU and 20% in the new EU member states. The share of loans to non-financial corporations accounted for slightly more than a half of the portfolio of the Lithuanian banks and was considerably larger than the EU average (about 30%).

Fig. 48. Structure of the banking system loan portfolio (end of period)



Source: Bank of Lithuania calculations.

Sensitivity of the banking system to negative developments in the real estate market became higher. In 2007, the main directions of the bank lending by economic activities remained almost unchanged. The largest flow of loans was channelled to the

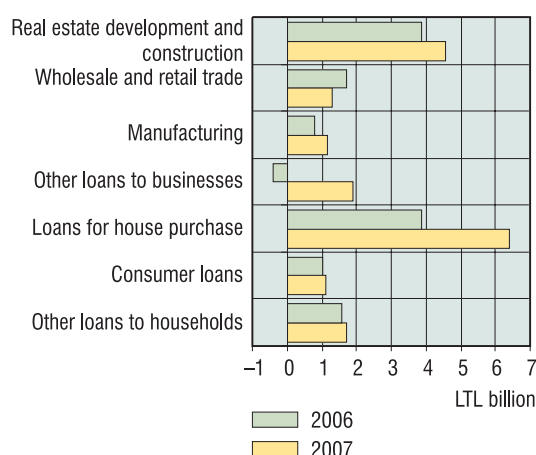
³² MFI statistics.

³³ EU Banking Structures, ECB, October 2007.

sectors closed to foreign trade, i.e., real estate development and loans to households. Nonetheless, the overall level of sensitivity was lowered by the fact that loans for house purchase, which were pledged by residential real estate, made up the major share of bank loans to households. For this reason, it was a sufficiently safe segment of bank assets.

Over recent years, banks also lent a lot to businesses associated with the real estate market³⁴. In 2007, the flow of loans to the real estate development and construction was somewhat higher than to all other economic activities taken together. Whereas the share of bank loans to businesses associated with real estate expanded to 21% (48% if loans for house purchase included). Although the overall flow of loans diminished at the beginning of 2008, loans to real estate and construction still made up about a half of the flow of loans to businesses.

Fig. 49. Changes in the banking system loan portfolio by economic activities
(annual change)



Source: Bank of Lithuania calculations.

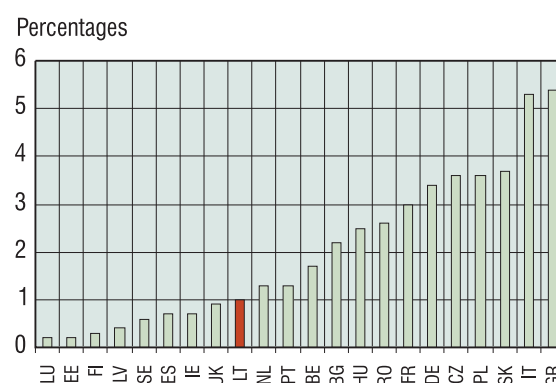
In terms of individual borrowers, portfolios of banks were well diversified. At the end of the first quarter of 2008, the average large exposure ratio³⁵ indicating credit risk concentration due to connected lending to individual borrowers amounted to 112% of the capital and over the year dropped by 63 p. p.

Loan Portfolio Quality

Given that loans comprise the major share of bank assets, credit risk is the main source of risk. The national economy development and, consequently, the financial standing of borrowers are crucial to the bank loan portfolio quality and credit risk losses. The principles for the assessment of bank loans and impairment losses (specific provisions) are based on

current financial standing of the borrowers and their capability to repay the debt. Specific provisions therefore show current credit risk assumed by banks. As a result, such indicators as a ratio of non-performing loans³⁶ to total loans or a ratio of impairment losses to total loans that are used to define the loan portfolio quality show current loan portfolio quality. This part of the Review presents analysis of the banking loan portfolio quality indicators based on our empiric observation. Potential losses in case of unfavourable and sudden events in future, such as a material change in interest rates or a marked slowdown of the economic growth, may be estimated best by stress testing. The stress testing results are provided in Chapter III.

Fig. 50. Non-performing loans in 2006
(compared to total loan portfolio)



Sources: IMF, Global Financial Stability Report, April 2008.

Note: due to differences in national accounting, taxation, and supervisory regimes, data is not strictly comparable across countries. More detailed notes are provided in the data source.

The loan portfolio quality of the Lithuanian banking system has remained high. International comparison of the banking loan portfolio quality is difficult due to differences in supervision and accounting requirements. However, we may observe that the overdue loans accounted for a relatively small share of the Lithuanian banking system loan portfolio. This could possibly happen due to gradual easing of credit requirements observed until 2007. For a long time bank credits therefore were accessible only to borrowers with higher income. A rapid growth of the country's economy until recently has also contributed to the income growth and financial standing improvement of domestic economic entities. In addition, the growth of a non-performing loan ratio was limited by especially robust development of the loan portfolio.

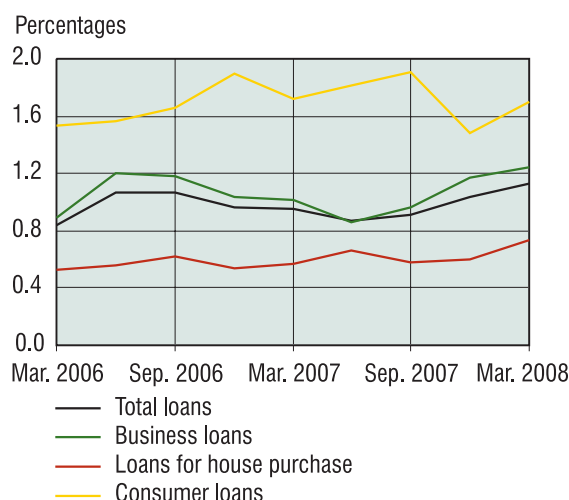
³⁴ Loans to corporations in construction and real estate, rent and other businesses.

³⁵ Ratio of bank loans, issued as connected lending and exceeding 10% of the capital, to the capital.

³⁶ In Lithuania, non-performing loans are defined as loans with regular payments overdue more than 60 days. In the text below "non-performing loans" and "loans with regular payments overdue more than 60 days" are used as synonyms.

Fig. 51. Non-performing loans of the banking system

(compared to a respective portfolio)



Source: Bank of Lithuania calculations.

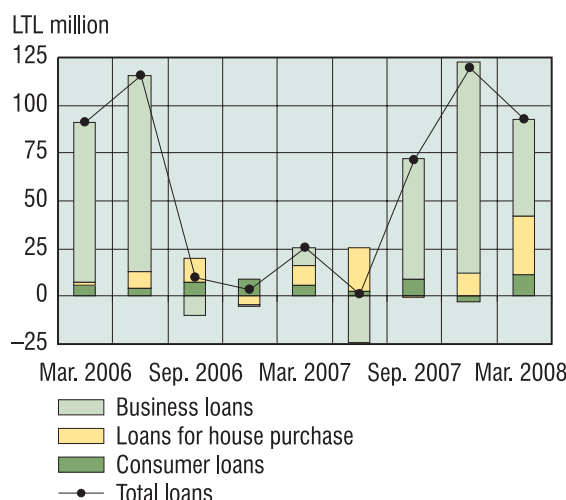
Low ratio of non-performing loans to total loans of the banking system reflected good current capabilities of bank customers to fulfil their financial obligations³⁷. Normally, banks make lending decisions based on capability of borrowers to earn a sufficient amount of income to be used for the repayment of the principal and interests on it. Bank loan portfolios therefore are, to a greater extent, composed of loans for higher solvency debtors. In 2007, the share of loans with regular payments overdue more than 60 days in total loans did not practically change making up 1.0%. However, the indicator dynamics suggests that the banking loan portfolio quality was fluctuating that year. The trend of the loan portfolio quality improvement that was observed since mid-2006 turned around in the first half of 2007. In other words, the growth rate of overdue loans was similar to and in the second half of the year even higher than the growth rate of total loan portfolio, which is considered as especially strong. In early 2008, bank loan portfolio deteriorated further.

Changes in the loan portfolio quality of the banking system were largely driven by business loans. At the end of 2007, non-performing business loans accounted for three quarters of total non-performing loans. In 2007, the share of loans to businesses with regular payments overdue more than 60 days augmented by 0.1 p. p. to 1.2% of the respective loan portfolio exceeding the average for the total loan portfolio. Non-performing business loans grew mainly in the second half

³⁷ As from October 2005, assessment of loans granted by Lithuanian banks has been performed according to IFRS; bank loans and other credit risk-related assets are recorded at their depreciated cost (after assessment of the loan value impairment). These modifications resulted in material changes of some indicators; therefore, the dynamics of bank loan quality indicators is presented and analysed from 2006. Earlier data and analysis are given in the Financial Stability Review 2005.

Fig. 52. Contributions to changes in non-performing loans of the banking system

(quarterly change)



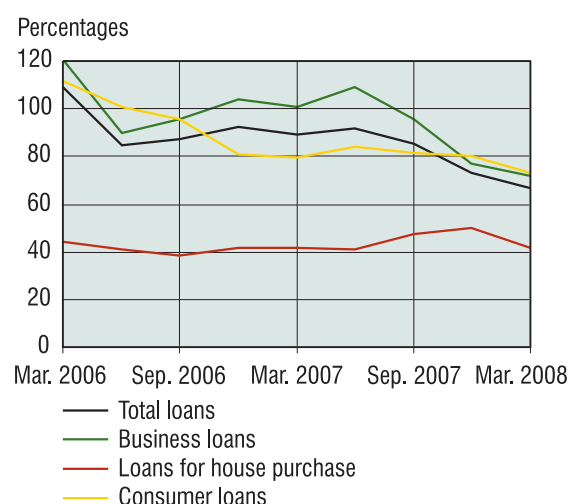
Source: Bank of Lithuania calculations.

of the year. However, business loans are usually larger than housing or consumer loans. Therefore, the influence of an individual borrower on the overall portfolio quality therefore is more pronounced. On the other hand, most acute problems recently, such as severe competition and low interest rates led to substantial easing of bank lending standards making credit accessible for a much wider group of borrowers. In favourable macroeconomic environment such borrowers are capable to ensure timely fulfilment of their liabilities to banks. However, the sensitivity of the bank loan portfolio quality for changes in the economic development has on average increased. As the national economy is entering a deceleration phase, this may contribute to the growth of banks credit risk and future increase in loan losses.

The quality of loans to households was slightly better than the average quality for total loans. This was largely due to high and rather stable quality of loans to households for house purchase. In 2006-2007, the share of loans for house purchase with regular payments overdue more than 60 days was more or less stable (fluctuated around 0.6%). However, in early 2008, the quality of loans for house purchase started to deteriorate. 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, as well as responsibility of such borrowers supported by a possibility to lose housing in case of a failure to fulfil their obligations. Also, good results of loan portfolio for house purchase were supported by a fast growth of housing prices as the borrowers that encountered financial problems could sell the property themselves and repay the loan rather than wait for bank to take over their housing.

The quality of consumer loans was somewhat lower as compared to other loans. In 2007, the share of consumer loans with regular payments overdue more than 60 days fluctuated between 1.5 and 1.9%. At the end of first quarter of 2008, it made up 1.7%. Consumer loan risk is generally viewed as higher because of the absence of collateral and the income of a borrower being the only source for the loan repayment. Higher interest rates therefore are used to compensate for a consumer loan risk. Banks pointed³⁸ that average tolerable (that does not cause concern about loan portfolio quality, assumed risk and profitability of bank products) ratio of overdue consumer loans to the total consumer loans might be 2.3% (the median of the responses was 2%). So, the quality of the consumer loans is also considered fairly good.

Fig. 53. Specific provisions to non-performing loans
(end of period)



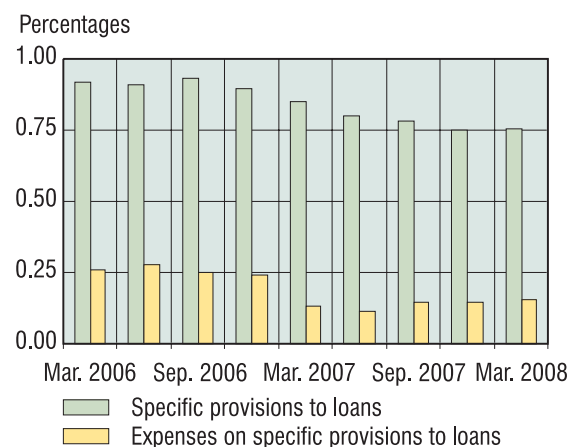
Source: Bank of Lithuania calculations.

The major share of the non-performing loans is covered by specific provisions. The largest share of potentially non-repayable loans therefore has already been written-off and would not have any effect on banks' profitability in future. In the first half of 2007, a ratio of specific provisions to non-performing loans fluctuated around 90%. However, the indicator dropped to 73% in the second half of the year. It should be noted that the amount of specific provisions used as coverage against potentially bad loans was in line with the quality of a particular loan portfolio segment, i.e., the higher the quality of the loan portfolio segment the less loan impairment losses. Thus, the ratio of specific provisions to non-performing loans for house purchase is noticeably smaller than that of other loan portfolio segments.

International comparison suggests that the coverage of potentially bad loans by spe-

cific provisions in the Lithuanian banks has remained rather high. In other EU countries, a respective indicator fluctuated approximately 60–80%³⁹. The growth deceleration trends in the Lithuanian economy make it particularly important for banks to further increase capital reserves to cover loan losses.

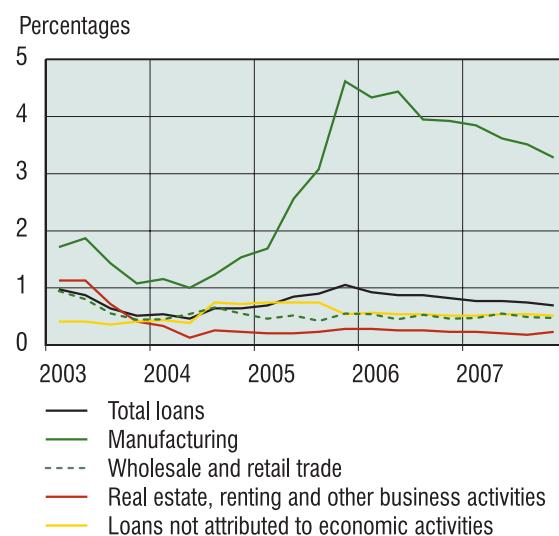
Fig. 54. Impairment loss on loan portfolio of the banking system
(end of period)



Source: Bank of Lithuania calculations.

Loan impairment losses were low in 2007. Gross loss on loans to non-financial sector, measured as a ratio of specific provisions to loans, kept decreasing in 2007 to reach 0.8% at the end of the year. Moreover, loan value impairment losses suffered during the year, if weighted against the loan portfolio, declined further. Expenses on specific provisions⁴⁰ to loans ratio that indicates the extent of losses incurred during the year due to credit risk diminished to 0.2% at the end of 2007.

Fig. 55. Specific provisions to loans of five largest banks by key economic sectors



Source: Bank of Lithuania calculations.

³⁸ Bank lending survey, April 2007.

³⁹ Global Financial Stability Report, IMF, April 2008.

⁴⁰ Excluding the adjustment for repaid written-off loans.

Gross loss on loans by economic activities suggests that the relatively largest amount of losses was incurred by banks due to loans to manufacturing sector. Firstly, this might be explained by the fact that loans to manufacturing are usually secured by less liquid assets such as machinery and equipment. Secondly, in recent years several large manufacturing corporations that had taken loans from banks went bankrupt, and this was also reflected in the banks' operational results. The April 2008 bank lending survey indicated that loans granted to food (meat), wood, electronics and textile industries were of relatively lower quality. In addition, according to the reporting banks, the prospects of property, construction and transport sectors are poor. Nonetheless, the loss on loans to these sectors remained below the total portfolio's average.

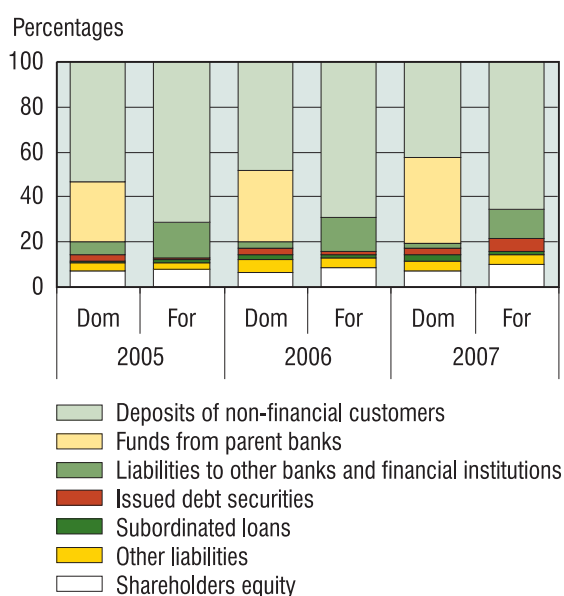
Looking further ahead, non-performing loans and loan losses are likely to rise. The bank lending survey revealed that banks themselves do not expect a significant deterioration of the loan portfolio quality or an increase of the insolvent clients in the nearest future. However, the financial standing of bank borrowers (and, in general, of all economic entities) depends basically on the economic development. The bank loan portfolio quality and loan impairment losses develop in a pro-cyclical way. In the environment of an economic upturn, financial standing of the borrowers is good, thus impairment losses on bank assets are low. Against the background of economic downturn, the profitability of banks goes down. It decreases further due to higher losses incurred because of higher credit risk associated with the deteriorating financial standing of borrowers.

The easing of bank credit standards gradually continued until 2007 with banks competing for new customers in order to increase their market share. Consequently, more individuals with lower income and of higher risk group got access to bank loans. Empirical research proves that clients who borrowed during the peak of economic upturn are more likely to default. Given the most likely scenario of a gradual deceleration of the economy, one may conclude that corporations and households will adapt to new conditions for their activities. However, the recent turmoil in global financial markets, its impact on prices for raw materials and the main export markets (EU and Russia) of corporations has caused uncertainty. In future, this may trigger financial difficulties for some bank borrowers, as well as an increase in loan impairment losses.

Funding and Liquidity of Banks

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 share of which is composed of the loan portfolio, tend to have longer maturity than 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, government debt securities are realised quite easily. And on the contrary, a part of attracted short-term liabilities is used for investments into long-term assets. In addition, some short-term liabilities such as retail customers' deposits are rather steady by aggregate amount and are considered as a stable funding source.

Fig. 56. Structure of the banking system liabilities (end of period)



Source: Bank of Lithuania calculations.

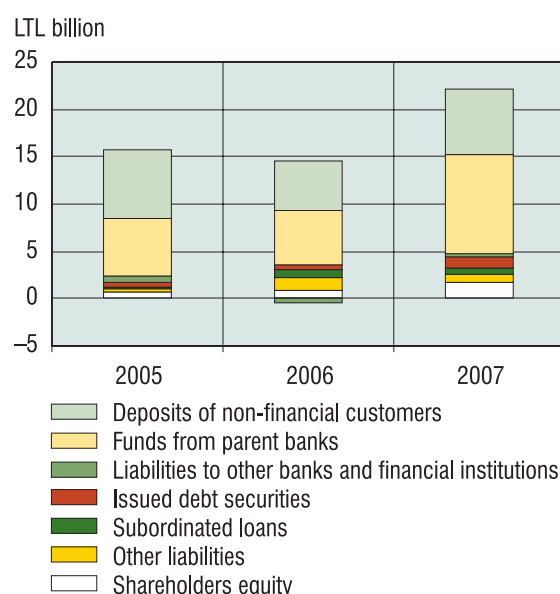
Note: Dom – domestic banks, For – foreign banks.

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 government) are a stable and low volatile source of bank financial resources. In the environment of prevailing high credit demand and relatively lower savings entailed by large consumption, the volume of resources attracted in the domestic market was insufficient to fund the bank development. Therefore, foreign capi-

tal banks increased borrowing from their parent banks. In recent years, the share of resources attracted in the domestic market was gradually decreasing as a proportion of the balance sheet liabilities⁴¹, and at the end of the year made up more than a half (55%) of liabilities.

It is worthwhile noticing, that the composition of liabilities of domestic and foreign capital banks was different. Domestic banks funded their activities largely by non-financial sector deposits covering about ¾ of balance sheet liabilities. While the composition of foreign capital bank liabilities suggests that non-financial sector deposits and funds attracted from parent banks covering 45% and 41% respectively of balance sheet liabilities, were more or less equally important sources of financial resources.

Fig. 57. Funding sources of the annual increment of the banking system assets (annual change)



Source: Bank of Lithuania calculations.

In 2007, the role of parent banks in funding the expansion of the bank loan portfolio and ensuring the bank system liquidity increased. The growth rate of foreign liabilities of the banking system was more than twice higher compared to domestic liabilities and expanded by LTL 12 billion per annum. About 90% of the increase of foreign liabilities came from parent banks. In 2007, the banking system debt to parent banks soared by 66% – to 35% of total balance sheet liabilities. The funds provided by parent banks were used to finance almost a half of the annual increase in the banking system assets.

In the context of close links between parent banks and their subsidiaries (joint venture) and increasing maturity of the funds

attracted from parent banks, these funds are treated as a stable funding source of the banking system. Usually, liquidity of foreign capital banks operating in Lithuania is managed at the whole bank group level. According to the results of the April 2008 bank lending survey borrowing from parent banks would also be the main source for the coverage of liquidity shortage. High parent banks' credit ratings and a large expertise in performance and risk management reduce the likelihood that Lithuania's banking system would face funding problems. At the end of 2007, slightly more than a half of liabilities to parent banks were longer than 1 year, while the average maturity until the fulfilment of liabilities grew from 2 to 3 years approximately.

Rising liabilities to parent banks increased the dependence of banks in Lithuania on activities of particular foreign banks. Thus, the overall liquidity stance in the banking system was largely dependent on the situation in financial markets in which parent banks operate. In the context of the turmoil in global financial markets that emerged in the second half of 2007, borrowing price in money and capital markets have increased. Given higher borrowing rates of parent banks, the price of funds provided by these banks to their subsidiaries rose as well. Considering that the average price of financial resources attracted in domestic market is smaller than that of borrowing from parent banks (more in detail see the section on profitability), competition for deposits attracted in the domestic market have a tendency to intensify further.

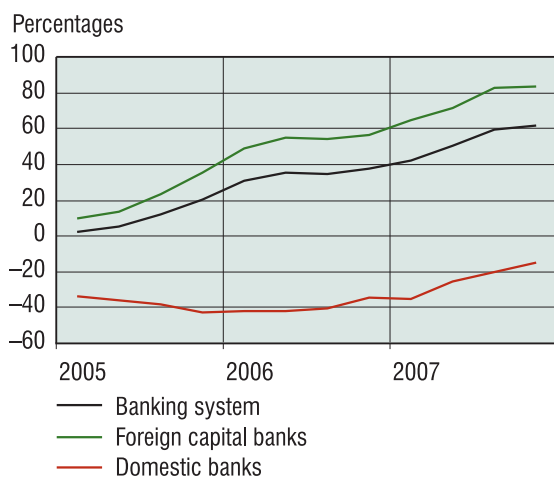
In 2007 the funding gap⁴² of domestic banks remained negative but exhibited a rising trend. In other words, deposits are still covering the portfolio of issued loans. However, the demand for alternative funding sources is increasing. The domestic banks generally offered higher than average deposit interest rates. So, in case the competition for funds in the domestic market increased sufficiently, the standing of domestic banks might become much more difficult. This might be entailed by both, substantially increased borrowing costs followed by a decreased profitability and rather limited possibilities to borrow in money and capital markets for these banks.

The banking system liabilities to other (not parent) banks and financial institutions were insignificant and basically aimed to balance liquidity fluctuations. A slightly larger share of such liabilities was observed in domestic banks. However, this situation was also affected by the fact that some of these banks

⁴¹ Balance-sheet liabilities are the difference of banking assets and shareholders equity.

⁴² The funding gap is calculated as the ratio of difference of loans and deposits to deposits and shows a share of loans not covered by deposits and the need for further lending in money and capital markets.

Fig. 58. Funding gap of banks



Source: Bank of Lithuania calculations.

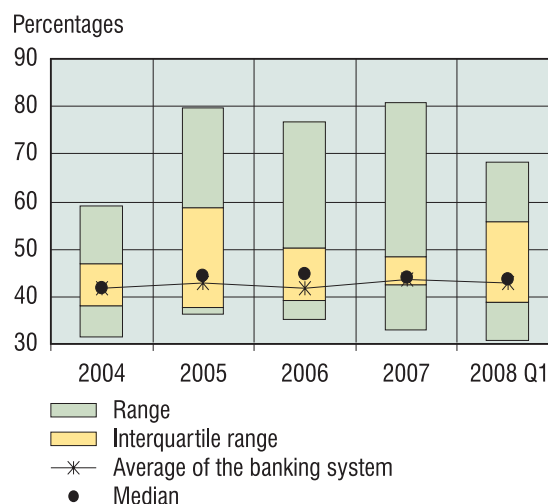
had attracted longer-term loans from other foreign banks.

Banks attracted a portion of needed funds in the capital market to finance the growth of the loan portfolio. The volume of funds attracted by issuing debt securities increased over the year by 73%. In addition to this, the amount of recourses attracted in the capital market was the largest through the entire history of the banking business. The observed growth of borrowing in the capital market in terms of financial stability is assessed as a funding structure development positively influencing the banking system liquidity situation due to a longer maturity of such liabilities and frequently fixed price. However, such liabilities accounted for a small share (4%) of total banking system debts.

Low volatile and substantially higher than the requirement (30%) the banking system liquidity ratio suggests that the banking system had a sufficient amount of liquid asset reserves and a good financial stability stance in terms of liquidity risk. The average liquidity ratio⁴³ of the banking system has been fluctuating since 2002 at around 43%. At the end of the first quarter of 2008, the liquidity ratio of the banking system stood at 42.8%, i.e. by almost 13 p. p. above the liquidity requirement (30%) established by the Board of the Bank of Lithuania.

Liquidity ratios of individual banks were rather different. It is possible to single out a majority of domestic banks, the liquid asset reserves of which, compared to current liabilities, were larger than the average in the system. Considering the recent changes in the environment, causing a possible increase of the domestic bank liquidity risk, a relatively larger share of liquid assets could be considered as a risk-mitigating factor.

⁴³ The liquidity ratio requirement, composition of liquid assets and current liabilities are defined in Liquidity Requirement Calculation Rules approved by the 29 January 2004 Resolution No. 1 of the Board of the Bank of Lithuania.

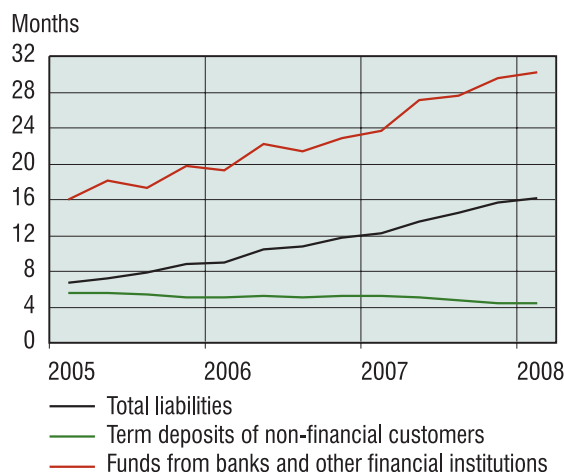
Fig. 59. Dispersion⁴⁴ of bank liquidity ratios (end of period)

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 ratios of banks managed by foreign banks were normally slightly lower than the average ratio of the system. Comparably smaller reserves of liquid assets of these banks were offset by the fact that in case of a critical situation they might expect liquidity assistance from parent banks.

Fig. 60. Average maturity of the banking system liabilities



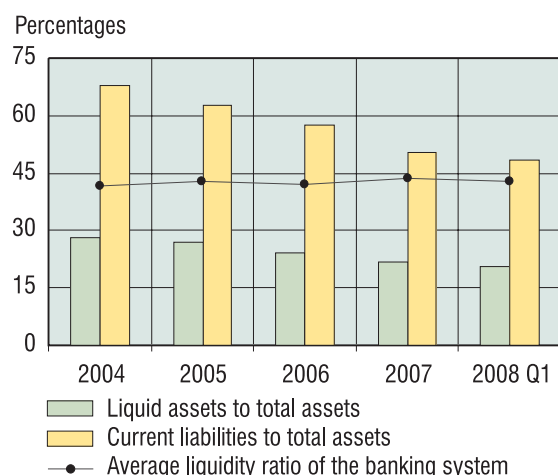
Source: Bank of Lithuania calculations.

With an increase of the average maturity of the balance sheet liabilities, sensitivity to liquidity shocks subsided. The analysis of the banking system liquidity position with respect to liabilities showed a continued

⁴⁴ 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.

positive trend of the medium-term liabilities maturity becoming longer. Throughout 2007 the average maturity of the liabilities increased by 4 months to 16 months. It was mainly influenced by a growing volume of long-term borrowing from the banks (mostly parent banks) and financial institutions. Over recent years, the average maturity of time deposits of non-financial customers has been rather stable, but started to decrease from the second half of 2007 and reached 4.4 months in the first quarter of 2008.

Fig. 61. Liquidity of the banking system (end of period)



Source: Bank of Lithuania calculations.

In the context of an increasing average maturity, the share of current liabilities compared to assets shrank. The share of liquid assets also curtailed respectively. The largest share of the banking system liquid assets was composed of government debt securities issued by Lithuania, EU member states and countries of higher credit ratings and funds of the maturity of up to 1 month held in the banks and other financial institutions of the Republic of Lithuania, EU member states and countries of higher credit ratings.

Bank Capital and Business Efficiency

Banks' Loss-absorption Capacity

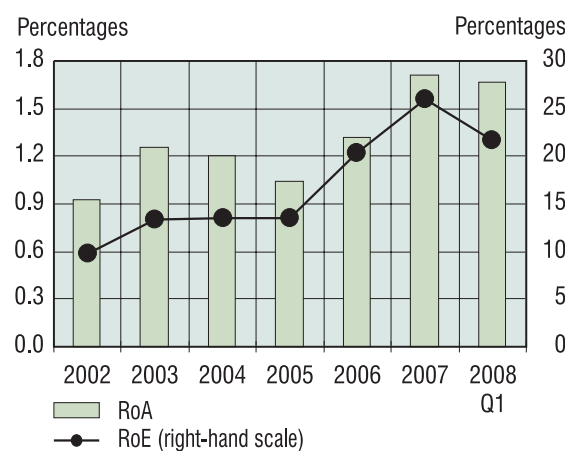
Soundness and financial stability of the banking business is usually assessed in respect of the loss-absorption capacity. In many cases the bank profit would be the first to absorb the effects of unfavourable market developments. The bank capital, in turn, is meant to cover unexpected losses in case the profit is insufficient. The bank capital adequacy ratio⁴⁵ is one of the most important prudential indicators set by supervisory authorities and indicates the ratio of capital to risk-weighted as-

sets and off-balance sheet items. Although a somewhat higher profitability and capital adequacy reflects a higher degree of the banking business soundness, 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

The year 2007 was the most successful year for the banking system in terms of profitability. Over the year, banks earned LTL 1.2 billion, and the average profitability indicators RoE⁴⁶ and RoA⁴⁷ increased respectively to 26% and 1.7%. The main reason behind this increase was a continued growth of loan portfolio, further development of financial services, as well as increased interest rates. By investing mainly in the domestic market, banks were resilient to the effect of the global financial turmoil. Loan impairment losses were also low owing to a good financial standing of borrowers. Profitability of the banks was also influenced by one-off factors in individual banks, e.g., profit from the sale of real estate or of subsidiaries.

Fig. 62. Profitability of the banking system



Source: Bank of Lithuania calculations.

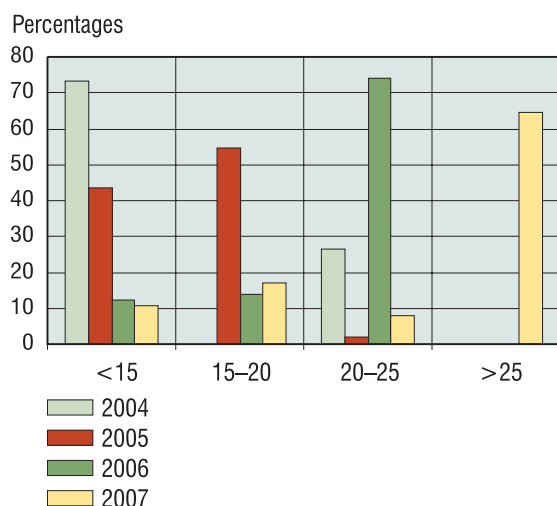
However, data of the first quarter of 2008 indicate that the average profitability of the banking system has already experienced a slight reduction. The drop in profitability was mainly caused by rising funding costs that, in turn, increased interest expenditure and slowed profit growth. It was also supported by a considerably increased shareholder equity that is used for RoE calculation, after undistributed profits earned in 2007 were included into the denominator of the ratio.

⁴⁶ The ratio of net profit (after taxes) to annual average of shareholders equity not including the profit of the current year. Foreign bank branches are excluded.

⁴⁷ The ratio of net profit (after taxes) to annual average of assets.

All banks ended the year 2007 with profit, excluding two newly operating foreign bank branches that were yet short in time to develop their activities. Although profitability indicators of individual banks were different, it can be observed that over the year profitability of the majority of banks increased. The most intensive profitability growth was observed in three largest banks, having a relative advantage against other banks due to the economy of scale and possibilities to use the parent banks experience in such areas as business and risk management. Although the average profitability growth of domestic banks was relatively more moderate, their average RoE accounted for 22%. This suggested that domestic banks had found their niche among the largest banks and that possibilities of generating profit ensuring financial stability were fairly good.

Fig. 63. Distribution of bank RoE (compared to the banking system assets)



Source: Bank of Lithuania calculations.

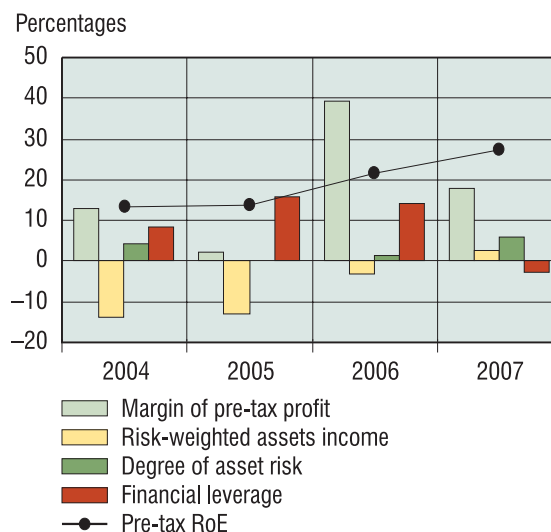
Profit growth drivers should not be always evaluated equally positive in terms of risk, e.g., increased risk of assets improves the bank profitability but, on the other hand, has also an effect on the growth of the bank risk. The breakdown of pre-tax RoE of banks into constituent components helps to identify more in detail the reasons behind bank profitability changes⁴⁸.

As in the previous periods, the growth of the banking system profitability was affected most of all by an increase of the

⁴⁸ According to the formula presented below, pre-tax RoE can be broken down into four components: pre-tax profit margin showing what is the proportion of net profit in the profit from the main banking activity; risk-weighted assets income, asset risk scope and financial leverage, showing the overall level of debts.

$$\text{RoE} = \frac{\text{Ikimokestinis pelnas}}{\text{Pagrindinės veiklos pelnas}} \times \frac{\text{Pagrindinės veiklos pelnas}}{\text{Įvertintas pagal riziką turtas}} \times \frac{\text{Įvertintas pagal riziką turtas}}{\text{Turtas}} \times \frac{\text{Turtas}}{\text{Akcininkų nuosavybė}}$$

Fig. 64. Drivers of the pre-tax RoE



Source: Bank of Lithuania calculations.

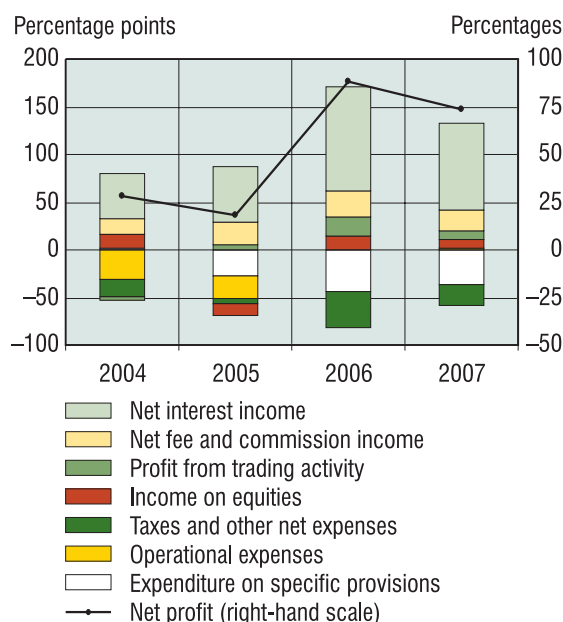
Note: foreign bank branches are excluded.

profit margin (business efficiency). From the financial stability perspective, the improvement of both, profitability and business efficiency should be positively evaluated. Moreover, the profit expansion was supported by a larger share of riskier assets in total assets of banks. Although income generated by such assets is usually higher than those earned by less risky asset categories, in financial terms this is assessed two-sidedly because the range of risk assumed by banks was increasing as well. Contrary to previous periods, risk-weighted assets income rose⁴⁹, thus softening the potential effect of the increase of the risk degree on the banking system financial stability in the future due to the possibility to accumulate larger loss-absorption reserves. In 2007, the effect of the change of the financial leverage on profitability was already insignificant and negative. In other words, the share of shareholders property in the bank assets stepped up somewhat. Therefore, profitability indicators decreased slightly, however, the risk to the individuals who lent to banks (depositors, loan issuers, etc) arising from the bank business decreased to some extent as well⁵⁰.

⁴⁹ Risk-weighted assets income may be treated as banks' income for the assumed credit risk.

⁵⁰ Subordinated loans are not included into shareholders equity; therefore, they entail the growth of the financial leverage. Given the fact that a part of subordinated loans is treated as loan capital, the real financial leverage growth would be smaller.

Fig. 65. Contributions to the growth of the banking system profit⁵¹
(annual change)

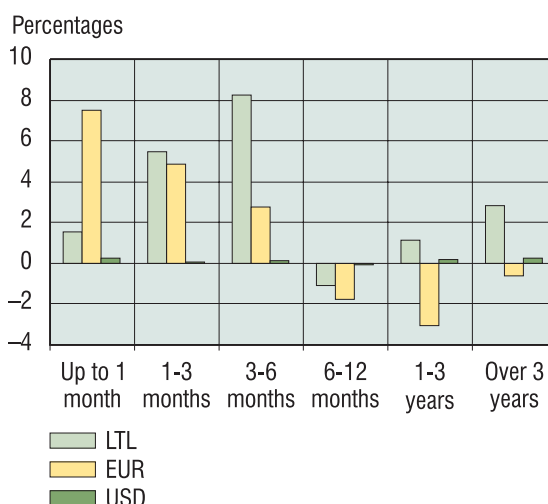


Source: Bank of Lithuania calculations.

In 2007 the growth of net profit of banks was to some extent slower compared to the previous year, however, it remained robust. As in the previous periods, the main reason behind the profit growth was a buoyant growth of net interest income, soaring by 52% per annum. In the context of gradually subsiding trends of robust crediting, further increasing volumes of the loan portfolios automatically pushed earned net interest income up. Furthermore, given the largest share of loans with variable interest rates, developments of key and inter-bank interest rates are transmitted into the loan interest rates rather quickly and basically by their full scope. Meanwhile, the effect on deposit interest rates paid by banks was more moderate.

Gaps of 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, the increase of interest rates entails a positive effect on net interest income.

Fig. 66. Banking system interest rate gaps by the main currencies⁵² in 2007
(compared to assets)



Source: Bank of Lithuania calculations.

The interest rate growth exercised a two-sided effect on the performance of the banking system. Increased interest rates advanced the rates paid not only by new but also by the majority of existing customers that had taken loans, due to the dominant share of loans with variable interest rates. Therefore, the risk that the borrowers' ability to fulfil liabilities to banks may worsen, increased. However, this was also pushing the bank profit up and simultaneously the reserves to cover potential credit risk losses.

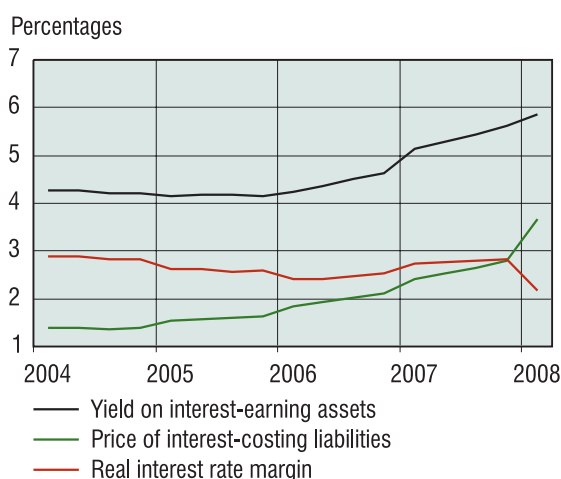
A rapidly increasing price of financial resources limited the growth of real interest rate margin. Recently, the yield on interest-earning assets was rising in a rather gradual manner because of increasing interest rates and also due to higher new loans interest rates margin of a bank, the augmentation of which was entailed by tighter lending standards. Beginning to increase in 2006, the real interest rate margin⁵³ stepped up in 2007 as well. However, a more intensive rise of this indicator was observed only in the first quarter of the year 2007. Meanwhile, a marked contraction of the real interest margin entailed by the growth of the price of financial resources has already been observed in the beginning of 2008. Regarding the fact that net interest income is the main income source of banks, it will have a negative effect on the bank profitability.

⁵¹ With the change of IFRS as from 1 January 2005, bank accounting in Lithuania changed as well. This had an impact on both, the result of the bank performance and various related indicators. Therefore, it is necessary to regard these accounting changes when comparing the 2005-2006 results with those of previous periods.

⁵² An interest rate gap is calculated as the difference between the sum of the balance sheet assets and off-balance sheet claims sensitive to interest rate changes and the sum balance sheet and off-balance sheet liabilities sensitive to interest rate changes.

⁵³ 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.

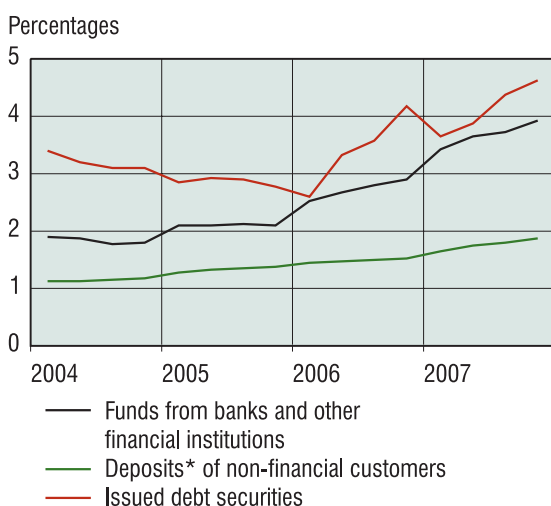
Fig. 67. Real interest rate margin



Source: Bank of Lithuania calculations.

The price of financial resources of banks started to grow at the end of 2005. In terms of the price dynamics of various financial resources, the rise of prices of funds from banks (mainly parent banks) and financial institutions was particularly apparent. This phenomenon was effected most of all by an increasing ECB base interest rate and the growth of risk premiums entailed by the recent financial turmoil in the inter-bank lending market. Meanwhile, customer deposits (including both, deposits with agreed maturity and demand deposits) average price which was generally smaller than that of funds attracted from banks and financial institutions, expanded at a much more moderate rate. This was a strong incentive for banks to pay more attention to borrowing in the domestic market (by attracting deposits). This kind of borrowing had an impact on both, increase of competition and, respectively, growth of interest rates charged on deposits.

Fig. 68. Average price of banks financial resources

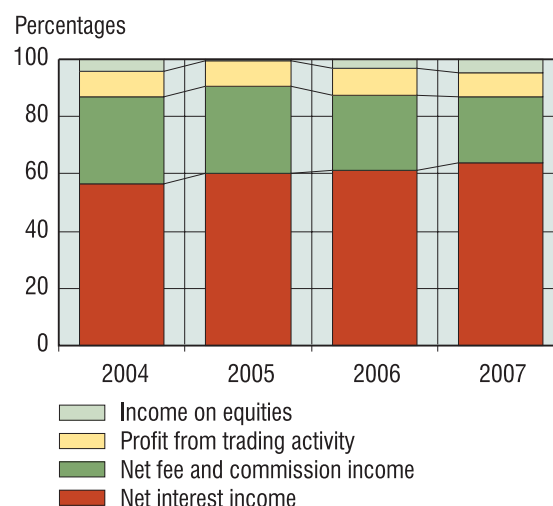


Source: Bank of Lithuania calculations.

* Demand deposits and term deposits.

The composition of the banking system income resources was rather concentrated in terms of net interest income. Therefore, income dependence on the business cycle developments was rather strong. The composition of the banking system profit from the main business was quite stable, i.e., income earned from various sources was rising. However, the share of net interest income in the composition of the main banking business income has increased somewhat recently. The growth rate of non-interest income was also robust. Compared with many other banking systems of the EU countries⁵⁴, the Lithuanian banking system remained relatively more dependent on interest income. The bank balance sheet composition, wherein the share of the loan portfolio is one of the largest in the EU, also contributed to this.

Fig. 69. Composition of the banking system income (end of period)



Source: Bank of Lithuania calculations.

A decelerating economic development and the growth of loan portfolio encourage the banks to diversify income sources by paying more attention to the increase of fees and commission income. Fees and commission income of banks is a sufficiently stable source of the bank income. From the perspective of bank possibilities to raise fees and commissions, it is evident that the main competition among banks so far was for loan interest margins, while the competition for the fees and commissions remained low⁵⁵. Moreover, at the beginning of 2008,

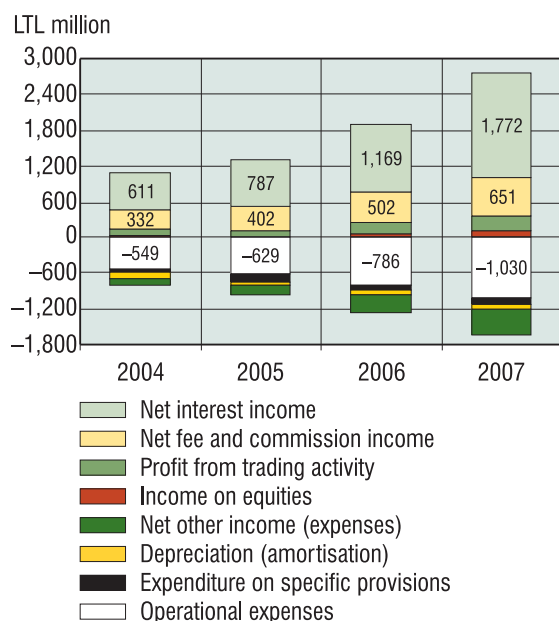
⁵⁴ EU Banking Sector Stability, ECB, November 2007.

⁵⁵ In theoretical terms such a situation emerges in the market when the transfer costs from one bank to another are higher than the marginal increase of fees and commissions. In such a case an increase of fees and commissions in one bank results subsequently to the same action in other banks. Thus, the price that might occur in a monopolistic market with one participating bank may appear in the market having many participants.

some banks have already declared about their plans to raise commission fees.

Fig. 70. Banking system income and expenditure

(end of period)



Source: Bank of Lithuania calculations.

The effect of a buoyant growth of the loan portfolio (entailed by favourable bank lending standards) and recent rise of interest rates to the bank profitability in terms of incurred asset impairment losses will be seen after some time. The asset (loan) impairment losses incurred by the banking system in 2007 were low. Such a situation was caused by a generally good financial standing of borrowers and high quality of the bank loan portfolio, as well as by the fact that larger loan impairment losses are incurred only after some time when the business cycle changes. Notwithstanding this, already in the second half of 2007 the banking system expenditure on specific provisions, though rather immaterial, was twice as at the start of the year. They sustained a similar level at the beginning of 2008 too.

A further growth of the banking business efficiency was observed in 2007, however, a bit slower than earlier. After several years of a robust development, improvement of management and relative contraction of costs, the banking system business became sufficiently more effective. If the efficiency of the Lithuanian banking business was lower than in many other EU countries in 2004, in 2006 it exceeded the efficiency level attained by many EU states⁵⁶, however, still remaining lower than in the neighbouring Baltic States. In terms of financial stability, an improvement of the business efficiency has strengthened the banking system. This

allowed banks to reduce administrative costs, develop business, and provide better services to customers as well as improve the quality of services.

Throughout 2007 the banking system cost-to-income ratio⁵⁷ improved by 5 p. p. (compared to 9 p.p. in 2006) up to 40%. An increasing efficiency is associated most of all with a better usage of available resources due to a more rapid growth of assets and income. However, the pressure on operational costs of banks, entailed by the growth of wages and inflation, is higher, and this will negatively affect business effectiveness in the future. This aspect is also seen from somewhat worse results of the banking business effectiveness already at the beginning of 2008.

In terms of the development of cost-to-income ratio in individual banks, it may be noted that positive trends were dominating in most of them. However, the average cost-to-income ratio of the system was largely determined by the efficiency in the three largest banks. Business efficiency results of other smaller foreign capital banks and many domestic banks were poorer to some extent. Therefore, a further increase of business efficiency of banks, in particular domestic and smaller foreign capital banks, by enhancing management systems and procedures of banks, optimizing the distribution of resources, introducing new technologies, searching for a niche of the pursued business where accumulated experience would be used to the utmost, and similar aspects is an important challenge for banks the implementation of which is aggravated by a severe competition.

Capital Adequacy

In 2007 and early 2008, capital adequacy of the banking system slightly strengthened indicating better coverage of bank risk by capital and larger reserves for covering unexpected losses. Capital adequacy ratio of the banking system continued to improve since mid-2006. Throughout 2007, the capital adequacy ratio of the banking system was 10.9%, up 0.2 p. p. However, during the year, the bank capital adequacy ratio fluctuated because of the rapid growth of loan portfolio and subsequent capital increases.

In the first quarter of 2008, the capital adequacy ratio of the banking system climbed by 1.8 p. p. to 12.7%. In response to a fast growth of the loan portfolio and with the aim to strengthen the banking system, the Board of the Bank of Lithuania approved

⁵⁶ EU Banking Sector Stability, ECB, November 2007.

⁵⁷ Cost-to-income ratio is the ratio of fixed expenses (operational, depreciation and amortisation) to the profit from the main activity. Decreasing values of this indicator mean higher efficiency of the activity.

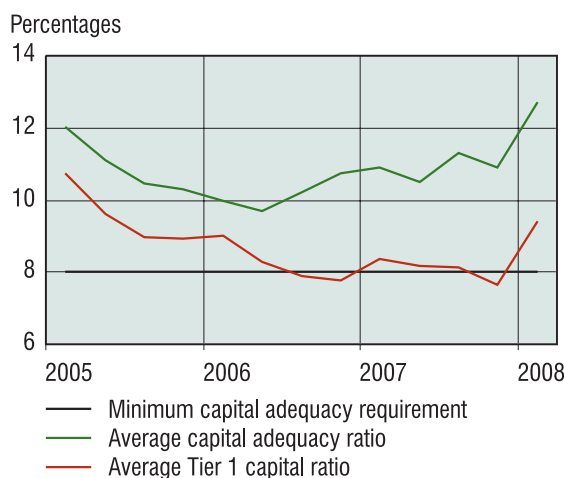
regulations that imposed restrictions on inclusion of banks' current year profit into capital⁵⁸ since mid-2006. As a result, in the first quarter of each year, banks' capital used to increase significantly by a share of previous year profit that had not been included into the capital till then. For example, at the end of 2007, the profit for that year of the banking system accounted for 1.7% of the risk-weighted assets.

Tax environment has encouraged strengthening of capital from the profits. Parent Swedish banks have their own approved dividend policy and do their best to pay out regular dividends to their stockholders. Their dividend pay out ratio is usually somewhere about 40%, although it may change depending on the bank's current year profit and cash holdings. In Lithuania, however the biggest share of current year profit remains in the form of the shareholders equity, reserve capital, reserves and retained profit. Thus, the profit is used to strengthen capital, since the fast growing loan portfolio requires more capital to maintain required level of capital adequacy. A favourable tax environment is another reason behind the dividend policy pursued by the parent Swedish owners. In Lithuania, dividends and other income from distributed profit are subject to 15% tax, while in Sweden dividends are taxed at a tax rate of 28%. Therefore, profit reinvestment in Lithuania helps reducing effective tax rate.

The new General Regulations for the Calculation of Capital Adequacy⁵⁹ were introduced in 2008. Given lower credit risk coefficients for some types of assets in the new regulation, capital adequacy ratio increased even more in the first quarter of 2008. In other words, the risk-weighted value of such assets went down, consequently the capital adequacy ratios, owing to technical reasons, went up. On the other hand, the introduction of calculation of capital need to cover

operational risk had a negative effect on the capital adequacy ratios.

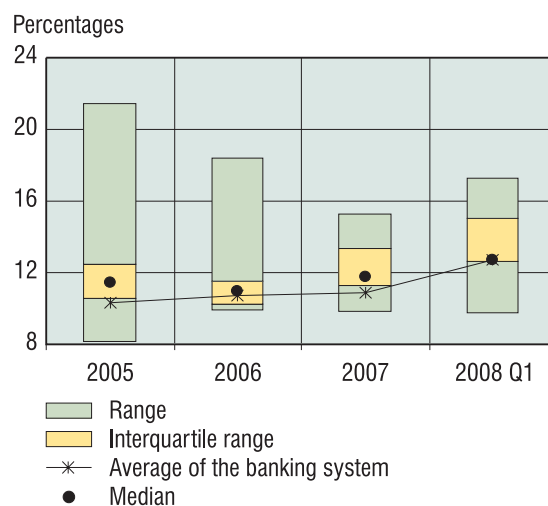
Fig. 71. Capital adequacy ratio of the banking system



Source: Bank of Lithuania calculations.

In terms of financial stability, the growth of capital adequacy in individual banks is seen as positive development. Since early 2007, the median of banks' capital adequacy ratios hiked to 12.8%, up 1.8 p. p., while the 1st (lower) quartile grew by 2.4 p. p. Namely only three banks had their capital adequacy ratios below 12.7%.

Fig. 72. Dispersion of banks' capital adequacy ratios (end of period)



Source: Bank of Lithuania calculations.

When speaking about capital adequacy management, two bank groups can be distinguished. Capital adequacy ratio was usually higher in domestic banks that had no major investor to increase subsidiaries' equity capital in a comparatively short period of time. Over the year, the average capital adequacy ratio of domestic banks climbed by 1.4 p. p. to 13%. Meanwhile, capital adequacy ratio was slightly lower in foreign

⁵⁸ After deduction of taxes and dividends to be paid, a part of retained profit for the current year may be included into Tier 2 capital if the reasonableness of the profit amount is confirmed by external auditors (60% of profits if the audit of bank financial statements is complete, and 30% of profits after review of financial statements).

⁵⁹ The General Regulations for the Calculation of Capital Adequacy adopted to conform to the requirements of the Basle Committee on Banking Supervision, known as Basel II, as well as appropriate EU directives, were approved by the Bank of Lithuania Board Resolution No. 138 of 9 November 2006. Banks operating in Lithuania shifted to the provisions of the abovementioned regulation on 1 January 2008. To calculate their capital requirement, banks have to assess credit and market risks, and, unlike in the past, to assess operational risk. Many of the banks have chosen Standardised Approach for credit risk assessment, which is by its nature similar to the previous practice. However, the new General Regulations for the Calculation of Capital Adequacy establishes different classification of banking assets, application of collateral for mitigating credit risks; also, risks coefficients for some classes of assets were modified (e.g., the risk coefficient for positions entirely secured by residential property went down to 35%, while risk coefficient for retail positions was reduced to 75%). Moreover, to assess credit risk and calculate the capital requirement, banks also may use Internal Ratings-Based Approach (AB SEB is the only one to be using this method by now).

capital banks with capital management at the entire banking group level. At the end of 2007, the average capital adequacy ratio of foreign capital banks stood at 10.5%.

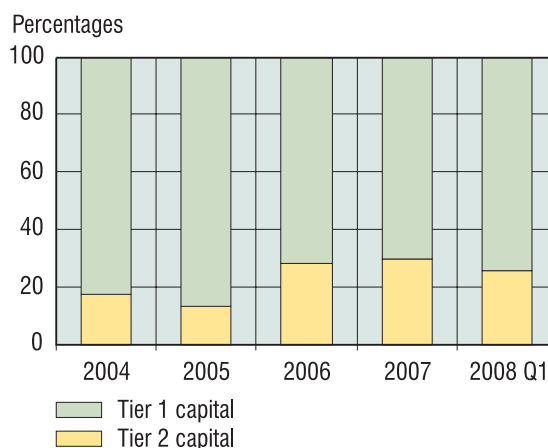
The trend observed for quite a long time changed in early-2008, when the average capital adequacy ratio for domestic banks decreased to 12.5%, whereas that for foreign capital banks went up to 12.8%. This happened largely due to the introduction of the new capital adequacy regulations. A share of loans for house purchase was comparatively smaller in the portfolios of domestic banks; therefore the impact of more liberal asset risk coefficients was relatively lower too. Moreover, capital needs for covering operational risks was relatively higher in domestic banks. In addition, some domestic banks allocated part of their 2007 profit to dividends.

The strengthening of the banks' capital adequacy could be associated with the fast capital growth. Not to impede business development and crediting, and, apparently, because of the consideration of growth of risks, banks used external sources to boost their capital⁶⁰. The following Tier 1 components were most significant as external sources for the capital growth: equity capital and reserve capital, as well as share premium. Banks' capital also grew because of subordinated loans⁶¹, mainly from parent banks. The trend for capital increase at the expense of subordinated loans has been observed for a few recent years. Apparently, the trend was fuelled by the fact that capital increase could be done easier and faster with the help of subordinated loans. Besides, banks have insufficiently made use of such possibilities of capital increase earlier.

The share of loan-capital in total capital continued to grow due to capital increase through subordinated loans. At the end of 2007, Tier 1 capital accounted for 70% of the banking system capital with its share having decreased by 2 p. p. over the year. This is also reflected in the dynamics of Tier I capital ratio. The Tier 1 capital ratio, which hiked in the first quarter of 2007 due to inclusion of the

previous year profit, later decreased gradually to reach 7.7% at the end of the year. After external auditors approved banks' financial statements and profit for 2007 was included into the banks' capital, the Tier 1 capital ratio of the banking system grew to 9.4% at the end of the first quarter of 2008.

Fig. 73. Banking system capital structure (end of period)



Source: Bank of Lithuania calculations.

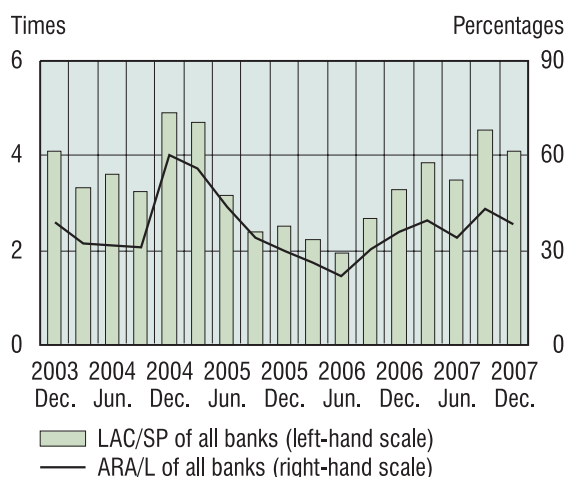
The growth rate of risk-weighted assets and off-balance items was somewhat slower than that of capital. It should be noted that the increase of risk-weighted assets, as in 2006, was driven both by bank expansion (growth of loans) and increase in assumed risk. Over the year, the average credit risk, measured as a ratio of risk-weighted assets to total assets, went up by 4 p. p. to 71%. At the end of 2007, credit risk reached as high as 97.5% of the capital requirement of the banking system.

Simulations carried out by the Bank of Lithuania help to evaluate the loss-absorption capacity of banks and the size of assets to be additionally assumed. In other words, the simulation was made on the grounds of banks' financial standing at the end of 2007 and its purpose was to find out the amount of losses (i.e. how many times specific provisions could increase) or additional assets (weighted at 100% risk, e.g. loans) that would not pose threat to banks activity and the capital adequacy ratio which should stay above 8% (irrespective of other prudential requirements). Additional reserves of retained profits for the current year, which have not been included in capital, were not taken into account during these simulations. According to the end-2007 data, such extra loss-absorption reserves made up LTL 1.0 billion accounting for 1.7% of risk-weighted assets.

⁶⁰ Bank's 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 registered equity capital, share premium, reserve capital, and retained profit (loss) for the previous year. Tier 2 capital comprises less stable components of shareholders equity or long-term loan capital, i.e., reserves for various purposes, profit for the current year, which may change in the course of the year depending on the bank activities, as well as subordinated loans (over 5 years). Tier 3 capital consists of a short-term loan capital, i.e., subordinated loans with shortest maturity of 2 years.

⁶¹ 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.

Fig. 74. Loss absorption capacity and additional risky assets of the banking system (end of period)

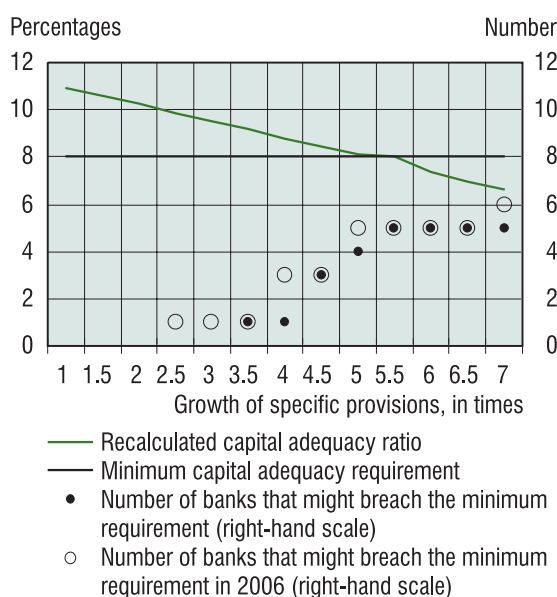


Source: Bank of Lithuania calculations

Notes: LAC/SP – ratio of loss absorption capacity to specific provisions;
 ARA/L – ratio of additional risky assets to total loans (excluding loans to credit institutions).

The calculations of the Bank of Lithuania revealed that loss-absorption capacity of banks was higher at the end of 2007 compared to 2006. However, when comparing the above results, one should take into account an increase in risks associated with general macroeconomic environment. Without breaching the minimum capital adequacy requirement, at the end of 2007 the banking system would have been able to absorb 4.1 times more specific provisions than had actually been formed or the loan portfolio could have been more sizeable by about 38%.

Fig. 75. Effect of the banking system's specific provisions growth on capital adequacy ratio (with other indicators unchanged, data for 2007)

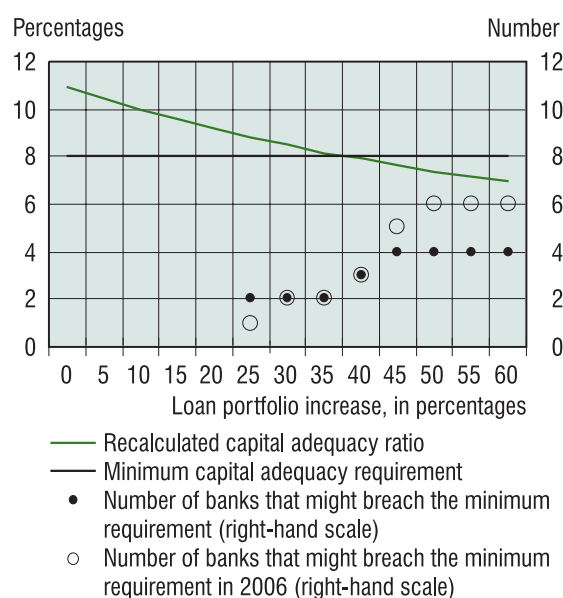


Source: Bank of Lithuania calculations.

In 2007, the loss-absorption capacity of individual banks strengthened as well. On

the basis of the end-2007 data, specific provisions should increase at least by 3.5 times for at least one bank to fail the minimum capital adequacy requirement. Should specific provisions increased by 5.1 times (this is in line with the above mentioned ratio of loss-absorption capacity to specific provisions, which is equal to 4.1), four banks would fail the capital adequacy requirement. As from 2003, a ratio of specific provisions to loan portfolio has never climbed higher than 1.1% standing at 0.8% at the end of 2007. Given the sufficiently stable ratio of specific provisions to loan portfolio, such a material deterioration of the loan portfolio quality could be seen as an event of a very low probability.

Fig. 76. Effect of the banking system's loan portfolio growth on capital adequacy ratio (with other indicators unchanged, data for 2007)



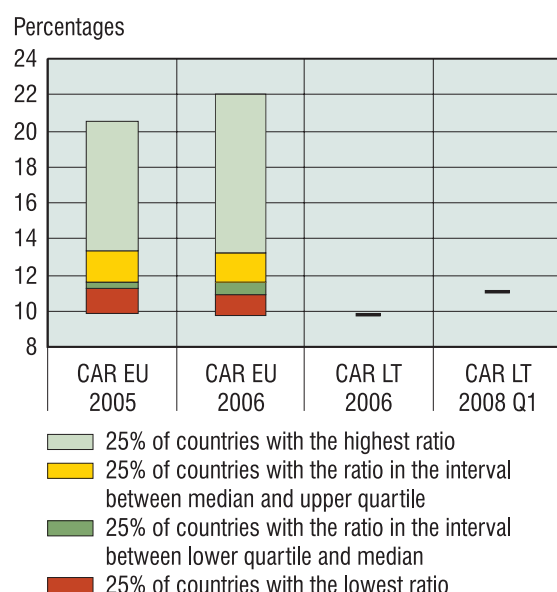
Source: Bank of Lithuania calculations.

Considering the additional risk-weighted assets that can be assumed, the loan portfolio should increase by at least 25% for at least one bank fail to meet the capital adequacy requirement. Had the loan portfolio increased by 38%, two banks would have failed to maintain the capital adequacy requirement. Since the annual growth rate of bank loan portfolio under review was 42%, the capabilities of banks to assume additional assets, i.e., to grant new loans, remained ample.

Capital adequacy of the Lithuanian banking system increased considerably in 2008, since it was among the lowest in the EU at the end of 2006. One of the reasons behind this was the difference in the regulations for capital adequacy calculation in various EU countries. If a country applies stricter provisions for capital adequacy calculation, capital adequacy ratios of banks in that country may be lower in comparison to banks in other countries. For instance, there were stricter requirements for the inclusion of current year

Fig. 77. Capital adequacy ratios in EU and Lithuania

(end of period)



Sources: EU Banking Sector Stability, ECB, November 2007; EU Banking Sector Stability, ECB, November 2006.

Notes: consolidated financial statement data, CAR – capital adequacy ratio, EU – European Union, LT – Lithuania.

profit and mixed capital instruments into banks capital in Lithuania. Consequently, despite of the somewhat lower capital adequacy ratios, the financial standing of the Lithuanian banks was solid owing to additional large loss-absorption capacity and other reserves that were not included into the capital. On the other hand, foreign capital banks dominate in the country's banking system and the capital management of these banks is done at the level of the entire banking group. This eventually has reduced incentives for excess capital maintenance. Notwithstanding the above said and in view of deceleration of the economic growth, changes in the real estate market and its possible negative impact on the country's economy, further improvements in banks management and bank risk management, and strengthening of the capital adequacy of the banking system are important directions for ensuring the financial stability of the banking system in Lithuania.

Risks to the Banking System

Risks to the banking system risk have increased compared to the end of 2006, however, remained at a relatively low level. A slowdown in the growth of national economy and higher inflation (which may lead to the worsening of financial standing of borrowers, both corporations and households), as well as unfavourable developments in the real estate market (which may significantly impair the situation of some real estate companies) are considered the major sources of

the macroeconomic risk. Due to the recent global financial turmoil, liquidity risk is seen as the major risk that the financial markets have faced.

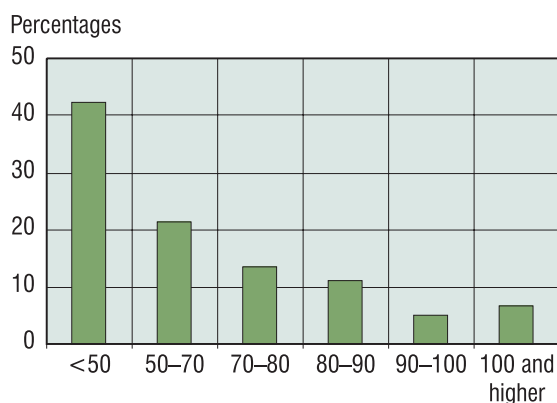
Owing to the economic slowdown and worsening situation in the real estate sector, the number of insolvent clients may go up. The April 2008 bank lending survey revealed that banks anticipate the highest losses to be incurred in transport and real estate sectors. In view of rather high concentration of bank loan portfolio the real estate, renting and other business activities, the loan impairment losses seems likely to grow in future. This may reinforce a downward pressure on banks' profitability, because the increase in net interest income, given the deceleration of bank loan portfolio growth, may be insufficient to offset these losses.

Risks associated with the correction of prices in real estate market. The risk associated with a drop of housing prices may affect financial system in several ways. First, direct risk associated with loans for house purchase would increase if a fall in housing prices coincided in time with negative developments in the macroeconomic conditions, which may stem from the decelerating economic growth and decreasing bank lending amid lingering liquidity tensions in financial markets. Worsening macroeconomic conditions (increase in unemployment, income depreciation) may lead to the deterioration of the financial stance of households, and eventually to an increase in non-performing loans for house purchase. A substantial fall of housing prices, in turn, would lead to a decline in collateral value for some loans for house purchase below an outstanding amount of the loan. In this instance, if households were unable to make loan payments, banks would incur losses when trying to sell the collateral. The loans for house purchase that were granted recently are exposed to the highest collateral-related risk. In a stagnating or falling real estate market, the collateral value of the recently granted loans either remains unchanged or goes down, whereas the repaid portion of these loans is still very small. Since banks became cautious about the real estate market outlook and more conservative in the evaluation of the expected results for real estate development and construction companies, they started limiting the lending to these sectors in the second quarter of 2007. However, the concentration of loans related with real estate market was high at the end of the year due to the brisk crediting in previous periods. For instance, in the second quarter of 2007⁶², an increase in MFI loans for house purchase accounted for 18% of total loan portfolio in

⁶² July 2007–January 2008.

Lithuania, while housing prices climbed less than 5% over the same period. Considering the ratio of a loan for house purchase to a value of a house, one can compile that, if housing prices dropped by 20% within a short period, loan-to-value ratio would exceed the figure of one for one fifth of the loans for house purchase. In case banks were to sell a number of homes at one time, the possibilities of doing this would be impeded, while housing prices would fall further.

Fig. 78. Breakdown of loans for house purchase by loan-to-value ratio



Source: Bank of Lithuania calculations.

Yet, the probability of such scenario is very low due to some legal aspects – there is no bankruptcy of natural persons in Lithuania, which would allow borrowers to default on his liabilities to a bank. Consequently even upon the sale of his home by the bank at a price lower than the loan amount, the borrower must repay the sum that was not covered by the sale price. **To summarise, in comparison to 2006, credit risk of loans for house purchase picked up as a result of a probable price correction in the real estate market, however, it has remained rather low over the medium term.**

The second channel for housing market dynamics to have an effect on the quality of bank loan portfolio is the solvency of the enterprises that are related to this market. In a stagnating or falling real estate market, the results of real estate and construction companies would deteriorate, as these companies would have to sell their output at a lower price or even with a loss. The number of housing transactions, which fell in the fourth quarter, signals that the problem may emerge. The extent to which a slowdown in the real estate market may influence the profitability of property and construction enterprises will depend on the flexibility and ability of these enterprises to move their operations to commercial property market, and their capability to shift to renovation of tenement houses as well as infrastructure development. It may be noted that recently there has not been material

demand-supply imbalances in the Lithuanian commercial property market. Therefore, the profit margins in it are significantly lower than those in the residential property construction market. It suggests a decrease in profitability of real estate development and construction enterprises, even if they successfully shift the focus on other types of activities. **Thus, there was an increase in credit risk associated with potential worsening of the results of real estate development and construction companies.**

A moderate decrease of credit growth rate and tightening of lending standards will have a positive effect on reduction in risk of the banking system as subsidising competition for higher-risk customers will lead to smaller potential losses in future. However, pressure on bank profitability is also rising due to recently increased competition for the existing clientele (in particular, competition for loan interest rates). Regardless of its unquestionably positive effect on the domestic economy (as it leads to lower borrowing costs), this will have a negative effect on the profitability growth within the banking system.

Notwithstanding the recent signs of the increased insolvency of households, the banking system risk that stems from the financial standing of households remains limited. Given the domination of loans with variable interest rates, banks managed to transfer the growing costs of loan financing to loan takers. However, the growing loan-servicing expenses along with a pick-up in inflation and anticipation of a slowdown in income growth has a negative impact on the ability of households to fulfil their financial obligations. Despite of this, the loan-to-value ratio of loans for house purchase remained quite conservative, thus bank losses that may arise due to compulsory sale of pledged houses are expected to be small. Moreover, the absence of bankruptcy of natural persons makes the amount of potential losses even smaller even in case of a significant drop in housing prices.

The turmoil in the global financial markets in August 2007 highlighted the importance of the liquidity risk management both at the entire banking system and individual bank level. Although the global turmoil had only an indirect impact on the country's banking system (via a pick-up in the financing costs), uncertainty has remained. An increased tension in the financial markets was reflected by an increase in both domestic and external financing costs. Moreover, higher uncertainty may also sharply increase the banks' aversion to lending in the interbank market. All of the said would contribute to the increase in interbank interest rates and a decrease in the number of transactions.

In view of the risk premium increase, the possibilities of banks to raise additional funds in the capital market through issuance of debt securities may be limited by both investors' aversion to risk and potential increase in a price of debt securities issuance. In case such debt securities were issued, it is questionable whether banks succeeded

in transferring the higher costs of funding to their customers due to the competition within the banking system and unequal access to various sources of funding. All this may have a negative effect on profitability of some banks as well as capital adequacy in long-term perspective.

III. RESILIENCE OF BANKING SYSTEM TO UNFAVOURABLE DEVELOPMENTS

Stress Testing

It is particularly important when analysing stress testing results that the assumptions made, as well as technical restraints by the data and model itself are taken into account. Stress testing takes no count of potential actions of banks or supervisory authorities that might mitigate the effects of unfavourable events. Also, the stress testing exercise excluded the banks' reaction functions as well as the impact of their factors on the capital adequacy of the banking system. Simulation of financial instability periods is also restricted by the fact that relationships between the main macroeconomic indicators observed under normal conditions change substantially. Stress testing results therefore should be interpreted with caution with the above-mentioned drawbacks of the analysis taken into account.

Liquidity Risk Stress Testing

A liquidity risk stress test was performed in order to assess the resilience of banks to negative liquidity shocks, i.e., a sudden and sizeable reduction of financial resources of banks. Liquidity risk stress testing was carried out for all the operating banks, excluding those that started their operations in 2007⁶³.

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. 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 shrinkage of financial resources therefore was offset exclusively by sale of liquid assets. A portion of liquid assets such as the country's debt securities would be sold at a price 35% lower than the market value.

The liquidity risk stress test was carried out on the basis of end 2007 data. Stress testing results were based on the liquidity ratio set for supervisory purposes, recalculated after a shock, and its comparison with the regulatory requirement (30%). In case the recalculated post-shock liquidity ratio exceeded the liquidity ratio requirement, the bank would hardly face any big liquidity problems. If

the post-shock indicator dropped below the regulatory requirement, but remained above the level of 10%, the conclusion was made that the bank might encounter temporary liquidity shortage, and the demand for additional financial resources and liquid assets might increase. In case the recalculated post-shock liquidity ratio decreased to the level less than 10%, the conclusion was that the bank could face an urgent demand for additional funding.

The following scenarios were used for the liquidity risk stress testing exercise.

Scenario 1. Turmoil in the global financial markets continues to persist. An increase in uncertainty entails drying up of liquidity in the money markets and growing risk premiums that make borrowing more expensive. Investors make attempts to mitigate the assumed credit risk avoiding investments into corporate debt securities. The interest rates of corporate debt securities increase markedly. These reasons lead to financial problems for foreign parent banks, which temporary do not renew 50% of financing with the duration of up to 1 month to their subsidiaries in Lithuania.

Scenario 2. Due to a sizeable deceleration of the national economy growth, persistent turmoil in global financial markets, and the fall of the price of financial assets and real estate, as well as expectations of national economic entities regarding their economic prospects obviously deteriorate. Resident economic entities start withdrawing their deposits, consequently, the deposits in banks decrease by 10%. As a reaction to this, funds of other foreign banks (excluding parent banks) and financial institutions held with banks shrink by 50%. Banks in Lithuania entirely discontinue inter-bank lending.

Scenario 3. Assumptions for Scenario 1 and Scenario 2 are combined together.

Table 12. Results of liquidity risk stress testing

(on the basis of end 2007 banks data)

	Scenario		
	1	2	3
Number of banks that might encounter a temporary liquidity shortage	1	5	5
Number of banks that might need an urgent funding	0	0	1
Recalculated post-shock liquidity ratio of the banking system, %	42	31	30

Source: Bank of Lithuania calculations.

⁶³ MP Investment Bank – Baltic Branch, Balti Investeeringute Grupi Pank AS branch and Allied Irish Banks, p.l.c. Lithuanian branch.

Results of liquidity risk stress testing suggest that banks at the country level have sufficient reserves of liquid asset that might ensure both the fulfilment of current liabilities and rather strong resilience to abrupt liquidity shocks. The bank liquidity exposure is particularly sensitive to the situation that might be triggered by a run on banks. However, even in the worst-case scenario, Scenario 3, the average post-shock liquidity indicator of the banking system should not fall below 30%.

It should be noted that liquidity situation of individual banks was firm enough to withstand the effects of liquidity shocks. It is only in the event of the worst-case scenario that the liquidity ratio of one bank could drop below the 10% level, i.e., the bank might encounter serious liquidity problems. Nevertheless, the results of stress testing proved that three systemically most important banks would remain liquid even in the worst-case scenario (their liquidity ratio would be above or close to 30%). Majority of the banks were resilient to a temporary reduction in short-term funding from parent banks owing to a rather long maturity of funding through their parent banks. However, due to a material share of deposits in the structure of banks' liabilities, an abrupt withdrawal of such funds may entail a temporarily increase in demand for additional financial resources. Apart from that, the banks might be forced to increase their reserves of liquid assets. It should be noted that under such scenario, profitability of banks may drop substantially due to forced sales of assets, increased demand for liquid assets with lower yield, as well as a higher price for newly attracted financial resources.

Credit Risk Stress Testing

The financial system and national economy analysis revealed that rising interest rates and falling real estate prices are presently the main risk factors that might have a negative effect on the stability of the financial sector. Credit risk stress testing of the banking system was performed to assess credit risk, capital adequacy and the resilience of the banks in case the potential risks will have materialized.

A credit risk stress test⁶⁴ was performed for three largest Lithuanian banks – AB SEB bankas, AB bankas Hansabankas and AB DnB NORD bankas. At the end of 2007, the assets of these banks made up 68% of banking system assets. Parameters needed for stress testing were compiled on the basis of individual quarterly (from the first quarter

of 1999 to the end of 2007) data of those three banks. Probabilities of default⁶⁵ for their loan portfolios were assessed by economic sectors. Expected and unexpected losses were assessed by analysing the economic sectors that are related to the real estate market or accounted for more than 5% of the bank loan portfolio at the end of 2007. Thus, on the average, around 90% of the loan portfolio of every bank underwent stress testing. An average probability of default of the three banks amounted to 0.8% at the end of 2007. Loss given default⁶⁶ was assumed to be equal to 50%.

Table 13. Average expected and unexpected losses and reserves⁶⁷ to risk-weighted assets of the three banks (end of 2007)

	Percentage
Expected losses	0.4
Specific provisions	0.7
Pre-tax profit*	2.6
Unexpected losses	9.7
Capital**	10.3
Capital**, Q1 2008	12.8

Source: Bank of Lithuania calculations.

* Share of profit not included into the capital.

** Capital adequacy ratio.

The stress testing results indicate a rather conservative approach of banks towards the bank loan impairment losses. On the basis of end 2007 data, first of all, average expected and unexpected year-end losses of the three largest banks were assessed. The calculations performed suggested that average expected loan losses of the three banks were almost twice smaller than their loan portfolio impairment losses (specific provisions). In other words, the results demonstrate a relatively conservative approach of banks to the assumed credit risk and that specific provisions formed exceeded average plausible losses on the loan portfolio. Also, large profit reserves at year-end should be noted. They would be the first to absorb credit risk losses. Moreover, the major share of this profit was included into the bank capital in the first quarter of 2008, and was perhaps the most important reason behind the increase of a capital adequacy ratio.

The calculations revealed that although unexpected losses of banks were smaller than capital adequacy set for supervisory

⁶⁴ A more detailed description of the credit risk stress testing in Lithuania methodology is given in Annex "Implementation of credit risk stress testing model in the Bank of Lithuania".

⁶⁵ Probability that a debtor will not repay a loan or will fall into default within one year.

⁶⁶ A fraction of exposure at default that will not be recovered following default.

⁶⁷ Pre-tax profit and specific provisions are treated as reserves for expected loss. The bank capital (capital adequacy) indicates reserves for unexpected loss of banks because credit risk losses incurred in unfavourable economic environment may substantially exceed expected losses. The sum of expected and unexpected loss reserves makes up total reserves of the bank to cover losses.

purposes, the difference was insignificant – of 0.6 p. p. only at the end of 2007. This difference, would increase up to 3.1 p. p. compared to the capital adequacy ratio at the first quarter of 2008. However, in terms of the size of capital reserves, the changing macroeconomic environment should be taken into account, as well as falling economic activity and their impact on the Lithuanian banking system. Additional capital reserves might be needed in case credit, market or operational risks materialised all at a time. To ensure sound banking operations it is therefore of crucial importance to maintain the bank capital adequacy at an appropriate level and strengthen their internal governance and risk management.

The stress test of credit risk of the three largest banks was performed with the aim to estimate the bank losses and solvency in case banks would absorb the effects of the identified macroeconomic shocks. The negative impact on the results of banks was assessed in a three-year perspective, i.e., up to the end of 2010. The following scenarios were used for credit risk stress testing.

Scenario 1. Turmoil in the global financial markets continues to persist. An increase in uncertainty entails a particular shrinkage of the money market liquidity, and rising risk premiums make borrowing more expensive. Interest rates in euro rise by 8 p. p., and interest rates in litas go up by 7 p. p. An interest rate shock has continued for three years. Increased debt servicing costs have a particularly negative effect on real investment (compared to the main scenario, in three years this indicator would decrease about 22%), and a milder effect on real private consumption (decreases about 2%). Due to higher interest rates, in three years real GDP would decline by 3% compared to the main scenario.

Scenario 2. Due to deteriorated expectations and an increase in borrowing prices, a sharp correction occurs in the real estate market – real estate prices go down by 30%. The drop in real estate prices entails a sizeable negative effect on credit flows – compared to the main forecast, in three years credit flows contract by about 60%. Real economy is affected by such a situation through private consumption, which shrinks by 12 % in three years, compared to the main scenario, and through investment flows (they decrease about 6 %). In three years, compared to the main scenario, real GDP decreases by about 5%.

The credit risk stress testing results have been analysed by comparing them with the financial standing of banks at the end of the first quarter of 2008, i.e., taking into account the actually incurred loan impairment losses, profit and capital adequacy with other conditions unchanged. It should be noted that

stress testing results must be looked upon with caution due to the assumptions made, as well as the technical restraints due to the data analysed and the model itself (for more details see Annex on “Implementation of the credit risk stress testing model in the Bank of Lithuania”).

Table 14. Results of credit risk stress testing (end of period)

Scenario 1. Interest rate increase	2008	2009	2010
Capital adequacy ratio, change by p. p.	-1.0	-1.8	-3.9
Recalculated post-shock capital adequacy ratio, %	12.7	11.9	9.8
Number of banks whose recalculated post-shock capital adequacy ratio would be less than 8%	0	0	1
Scenario 1. Real estate price fall	2008	2009	2010
Capital adequacy ratio, change in p. p.	-1.3	-3.6	-4.0
Recalculated post-shock capital adequacy ratio, %	12.4	10.1	9.7
Number of banks whose recalculated post-shock capital adequacy ratio would be less than 8%	0	1	1

Source: Bank of Lithuania calculations.

The credit risk stress test suggests the resilience of banks to sizeable negative changes in the economic activity. The results showed that decreasing real estate prices would entail a higher impact on credit risk losses of banks than increasing interest rates. Moreover, it should be noted that the transmission of the impact of falling real estate prices on operational results of banks has become faster – the largest share of losses would be already incurred in the second year. The bank losses however, due to sizeable interest rate change would grow in a more exponential with the biggest share of losses to be incurred in the last (third) period. Stress testing results also suggest that the analysed economic shocks might send the bank capital adequacy ratio down about 4 p. p. in three years (in case of each scenario). The average capital adequacy ratio of the three banks would further be above 8%, and would drop below this level in one of the banks. It should be noted that various economic activity changes are closely interlinked; for example, rising interest rates leads to the decrease in the demand for real estate and can have effect on real estate prices. So, provided that the rise of interest rates was followed by a drop in real estate prices (although it would be less than in this testing), both factors would have negative impact on the banks' capital. As the simulation and interpretation of the impact of these two factors is very complicated, they have not been discussed in this Review.

IV. FINANCIAL SYSTEM RISK MITIGATION MEASURES

The following supervisory measures have been applied: to control the credit demand and supply, as well as to avoid creating competitive advantages for foreign bank branches (subject to partial supervision) and encourage further economic development and absorption of EU funds, the Bank of Lithuania after measuring the loan portfolio base, which is relatively low compared with the country's GDP, was of the opinion that potential risk associated with credit growth would be offset best by a strong capital base and effective risk management. Eventually, tightening of the Rules for Calculating Capital Adequacy was done. The following restrictions on capital base calculation were put in place, i.e. limiting the inclusion of current year profit into the capital base and by legalizing prudential filters for regulatory capital. Also, assessment of risk to property-secured loans became more stringent (risk coefficient was raised from 50% to 100% for separate loan groups). Moreover, all the commercial property-secured loans were assigned 100% risk coefficient, a requirement which is stricter than in other EU Member States.

The most significant and cost consuming measures that the Bank of Lithuania applied last year included implementation of the New Basel Capital Accord System (Basel II); simultaneously done capital adequacy calculation; introduction of new financial statements that are in line with the IFAS and allow for measuring of real asset value; implementation of internal capital needs and risk management systems in banks; and start of supervisory inspections and evaluation process. The implementation of Basel II and related actions should be looked upon as a significant measure for ensuring financial stability.

Required reserves of commercial banks remained subject to 6% ratio which is higher than the ratio applied to required reserves of commercial banks in euro zone.

Also, for several consecutive years banks were recommended to transfer their earnings into reserves for covering operational risks and at the same time to improve their capital base. Taking into account market developments and potential risks banks tightened lending terms and conditions, introduced stricter requirements for borrower creditability, increased lending margins, started applying stricter requirements for collateral, increased loan to collateral ratio, and used other credit risk mitigation measures.

This year, major focus is to be given to banks' internal capital adequacy assessment process which is to begin after the New Capital Adequacy Requirements come into effect. To that end each bank will have to go

through a supervisory inspection, and extra capital need is to be established, if necessary.

Preparation for crisis management. In 2007, the Bank of Lithuania continued cooperation with central banks and supervisory authorities of other countries, as well as upgrading internal procedures for risk assessment. Since foreign banks own substantial share of the Lithuanian financial system capital, international cooperation plays a very important role in financial sector crisis management preparation. To control the situation, depending on the origin and scale of the financial system crisis, common measures and coordination of actions of a few countries may be required. Crisis management on an international level has been provided for in mutual understanding memoranda and individual agreements between bank supervisory institutions. In April 2008, The Bank of Lithuania joined the new Memorandum of Understanding on Financial Stability. The latter provides for formal creation of international stability groups.

Preventive efforts of the Bank of Lithuania in the field of crisis management included supervision of commercial banks operating in Lithuania, analysis of the entire banking system operations, establishing potential external and internal shocks for financial system, evaluation of their impact to individual financial institutions and the entire financial system, as well as improvement of payment system, supervision and testing in extreme conditions.

Practical preparation for crisis management has been continuously tested and improved during domestic and international financial crisis management exercises. From 20 to 24 September 2007, international simulation exercise for financial crisis management in Nordic countries was organised. It was attended by representatives of central banks, financial supervision authorities and finance ministries of Denmark, Estonia, Island, Latvia, Lithuania, Norway, Finland and Sweden (Baltic countries were represented by national central banks). All countries were represented by high-ranking officials who would be in charge of decision making during a real crisis. The exercise was organised to test ability of their participants to look at the situation systematically, share information, coordinate actions, take decisions in short time based on partial information only and under external pressure, to check existing agreements with national and foreign institutions and their effectiveness, to highlight existing procedural, legal, informational and other shortcomings.

Implementation of Credit Risk Stress Testing Model in the Bank of Lithuania

Stress Testing Principles

Stress testing is a risk management tool used to assess sensitivity of financial instruments portfolio to various types of credit, market, liquidity and operational risks in case of adverse changes in the macroeconomic environment or other extraordinary, but plausible, events. The major objective of stress testing is to estimate the potential losses and to assess whether capital held by the banks is sufficiently high to cover those losses.

Stress testing may be done both at an individual bank or entire financial system level. Commercial banks usually perform stress testing on a regular basis to determine the adequacy of available capital. Moreover, such testing is widely used by central banks and supervisory authorities seeking to identify potential vulnerabilities to the entire banking system and obtain quantitative evaluation of their potential effects. Stress testing used to be considered as a supplement to traditional risk management models such as *Value at Risk* and *Expected Shortfall*, but presently stress testing is an indispensable part of an effective risk management system and is regularly used to evaluate the effects of potential financial system shocks to the banking system.

The possibility to choose individual testing scenarios and individual assumptions based on the potential threats and major types of risks relevant to a particular bank or banking system is one of the major advantages of stress testing. A simple sensitivity test or a macroeconomic scenario analysis method may be chosen depending on the purpose of the test. Sensitivity tests may be especially useful to determine major sources of risk, however changes of just one selected factor are observed, while all the other risk factors remain unchanged throughout the testing period. As a result, sensitivity tests are suitable only to evaluate short-term effects because correlation structure among the risk factors and potential changes in the behaviour of banks are not considered. Macroeconomic scenario analysis method allows evaluating simultaneous changes of several risk factors and their interdependencies and is more suitable to test longer-term effects. Application of this method is particularly useful in determining vulnerability of financial instrument portfolio under unstable or critical situations in domestic fi-

nancial system because the parameters and correlation coefficients that are set under normal market conditions tend to change and under these circumstances the usage of traditional statistical and econometrical risk management models becomes less efficient. Nonetheless, this kind of testing model should not be applied as a direct substitute for traditional risk management models, because its results do not show the likelihood of individual testing scenarios and often cannot be directly comparable as they depend too much on the assumptions made.

Stress Testing in Lithuania

In Lithuania, stress testing is performed at two levels. The first one deals with stress testing of individual commercial banks and their groups, and the second one – with the stress testing of entire domestic banking system. For five years domestic banks have performed stress testing on their own. It is designed to assess whether a bank or a bank group has sufficient capital to cover unexpected losses that may be incurred should the assumptions in various stress testing scenarios prove correct. Since 1 December 2007, this kind of test is a component of Internal Capital Adequacy Assessment Process (ICAAP) and is a risk management diagnostic instrument that allows understanding and measuring risks associated with bank operations and ensuring their proper management. Taking into account the testing results, a bank has to prepare its business continuity plan to specify measures to be taken if a situation from the scenario occurs. Banks submit testing results to the Bank of Lithuania. General testing of a bank at least must cover credit, market, liquidity and operational risks however banks may themselves model specific scenarios and make assumptions regarding significant risk factors. The testing offers better understanding of potential threats for an individual bank and key risk factors associated with differences in asset and liabilities structure.

The Bank of Lithuania performs stress testing to evaluate the country's financial stability. The main objective is to identify potential vulnerabilities and assess resilience of the banking system to various kinds of risks. Stress testing on liquidity and credit risks was conducted. Credit risk was perceived to be the major source of risk to the stability of the Lithuanian banking system; therefore this kind of risk was given particular attention during stress testing.

In Lithuania, the credit risk stress testing of the banking system using a risk-based approach was conducted for the first time in 2007 as part of the Financial Sector Assessment Program in cooperation with the World Bank and IMF. Testing was performed based on the technique suggested by Miguel A. Segoviano Basurto⁶⁸. This technique is based on the Conditional Probability of Default (CoPoDe) and Consistent Information Multivariate Density Optimizing methodology (CIMDO), which, in comparison to other statistical and econometrical methods, allow for more effective assessment of the impact of potential macroeconomic shocks on portfolio credit risk under various macroeconomic scenarios⁶⁹.

Table 15. The structure of the credit risk stress testing exercise carried out for the Lithuanian banking system

1. Identification of major risk factors
a) Selection of individual macroeconomic test scenarios
2. Estimation of probability of default of loans grouped by economic sectors
a) Estimated as the ratio of stock of specific provisions to total loans
3. Reconstruction of economic cycle data
a) Data analysis of other countries that experienced financial crises
4. Estimating the dynamics of conditional probabilities of loan defaults
a) Ordinary Least Squares (OLS) method
b) Conditional Probability of Default (CoPoD) method
c) Structural Macroeconomic Forecasting Model roekonominio prognozavimo modelio taikymas
5. Modelling of the portfolio multivariate density
a) Consistent Information Multivariate Density Optimizing (CIMDO) methodology
6. Calculation of portfolio loss distribution and economic capital
a) Estimation of portfolio loss distribution
b) Estimation of economic capital

Source: Bank of Lithuania.

The implementation of these methodologies is particularly effective in data-restricted environments, as they provide more reliable parameter estimates of macroeconomic and financial variables, which are later used to forecast default probabilities grouped by economic sector. Thus, accumulated effects of macroeconomic shocks defined by the chosen scenarios are incorporated into the increased probabilities of default that, in turn, lead to increased expected and unexpected

portfolio losses. The technique allows estimating the effect of changes in various risk factors such as interest rates, currency rate or property prices on the level of bank capital over the analyzed period. It helps to decide whether bank's capital is sufficient to withstand potential macroeconomic shocks and absorb potential losses. Also, this method helps to project the dynamics of various risk factors and estimate future capital needs for the banks. Table 15 presents the structure of the credit risk stress testing exercise carried out for the Lithuanian banking system.

Identification of Major Risk Factors

The first step of stress testing exercise is to identify the key risk factors for the banking system and to model individual macroeconomic test scenarios. Given the current macroeconomic situation and taking into consideration the expert judgement, plausible changes in interest rates and rapid fall in real estate prices were identified as the main sources of risks. Identification of major threats to financial stability is followed by the selection of individual macroeconomic test scenarios. Defining a specific scenario is a subjective attempt, but a very important stage of credit risk stress testing process since the chosen scenario must be both probable and significant enough to have tangible effect to the country's banking system. Historical experience of other countries that have undergone financial crisis of similar nature and expert judgement are taken into account during selection of individual macroeconomic test scenarios.

Estimation of Probability of Default of Loans Grouped by Economic Sectors

Data series of probability of default by economic sectors covering at least one full economic cycle is in principle the only historical data needed to perform credit risk stress testing. However, the available statistics about bank loan portfolios was insufficient for probabilities of default to be expressed in terms of non-performing loans, flow of provisions or default frequencies. The main reasons are a very fast development of the banking system in recent years, improvements in bank supervision requirements, changes in accounting standards and changes in reporting standards to the Bank of Lithuania. Given the data available for the period under review, the probabilities of loan defaults grouped by economic sectors were expressed as the ratio of stock of specific provisions to total loans.

⁶⁸ Segoviano Basurto, M. A., Padilla, P. „Portfolio Credit Risk and Macroeconomic Shocks: Applications to Stress Testing Under Data-Restricted Environments” (January 2007). CID Working paper, No. 06/283.

⁶⁹ The method chosen is based on the cross-entropy approach, and the estimates received are more reliable than those received by using ordinary least square (OLS) method.

Reconstruction of Economic Cycle Data

In the early 1990s, Lithuania went through significant structural economic change, thus the collection of detailed and reliable macroeconomic and financial data started only in the late 1990s. Nonetheless, this period is too short to properly evaluate the dynamics of major macroeconomic and financial variables. Moreover, available data principally covers only the upturn rather than the entire economic cycle of the economic system. To properly evaluate the dynamics of various risk factors, reconstruction of the entire Lithuanian economic cycle was done, which allowed determining the value of macroeconomic variables under conditions of likely economic recession. Based on the data analysis of the Central and Eastern European countries that experienced crisis and economic downturns in the period of 1994–2006, the lowest point of the economic cycle of Lithuania for each macroeconomic variable in 2010 was estimated as follows.

$$\text{Min}_{LT}(\text{Max}_{LT}) = \text{Mean}_{LT} + \frac{\text{Min}_{VRE}(\text{Max}_{VRE}) - \text{Mean}_{VRE}}{\text{STD}_{VRE}} \times \text{STD}_{LT}$$

where: *Min (Max)* is a minimum or maximum value of macroeconomic variable at the lowest point of the business cycle of economy, *Mean* is an average value of macroeconomic variable, *STD* is a standard deviation of macroeconomic variable, *LT* stands for the Lithuanian data, *VRE* – for data of the Central and Eastern European countries.

Intermediate data were estimated by extrapolating the series assuming a constant decrease (increase) from the latest observed values and up to 2010. The Hodrick-Prescott⁷⁰ filter technique was applied to eliminate seasonal and short-term effects.

Estimating the Dynamics of Conditional Probabilities of Loan Defaults

Ordinary Least Squares (OLS) linear regression equations were used to identify significant explanatory macroeconomic and financial variables that explain the dynamics of default rates of loans grouped by economic sectors. A logit function is used to estimate default probability dynamics by economic sectors:

$$\text{Log}\left(\frac{1-\text{NT}}{\text{NT}}\right) = \beta \cdot x_t$$

⁷⁰ Hodrick-Prescott filter is used to optimize time series data by reducing its sensitivity to short-term and seasonal fluctuations. Optimized time series is obtained by minimizing the following equation:

$$\min \left[\sum_{t=2}^T (y_t - \tau_t)^2 + \lambda \sum_{t=2}^T [(y_{t+1} - y_t) - (y_t - y_{t-1})]^2 \right]$$

where: y_t – original time series variables, τ – optimized time series variables, λ – multiplier.

where: PoD – probabilities of loan defaults grouped by economic sector, X_t – the vector of explanatory variables, and β – the vector of parameters.

The vector of explanatory macroeconomic and financial variables is determined for each economic sector using OLS regression equations. However, this method is not very suitable to estimate the vector of parameters having short time series data, because the parameters calculated by using this method may often have large variance and be very sensitive to various data changes. Consequently, the parameters of the significant explanatory variables identified by OLS method are recovered using CoPoD method which provides robust estimates in data-restricted environment compared to other statistical and econometric models and helps to reduce significantly sensitivity and dispersion of parameter estimates. After identifying significant explanatory variables and their parameters, equations for the dynamics of probabilities of loan defaults grouped by economic sectors are obtained. The estimated equations are then used to forecast probabilities of loan defaults grouped by economic sectors under various macroeconomic testing scenarios. Structural macroeconomic forecasting model that is built, maintained and updated by the Bank of Lithuania is employed to forecast national key macroeconomic and financial indicators. The model provides quantitative evaluation of changes of key macroeconomic variables and their correlations based on available information and expert judgement. It also allows estimating the changes of the country's key macroeconomic and financial indicators under selected macroeconomic testing scenarios. Forecast of macroeconomic and financial explanatory variables along with the vectors of parameters evaluated by the CoPoD method are then used to estimate the dynamics of probabilities of loan defaults grouped by economic sectors under each selected macroeconomic scenario. The process of estimating the dynamics of conditional probabilities of loan defaults is presented in Table 16.

Table 16. The process of estimating the dynamics of conditional probabilities of loan defaults

1. Identification of key macroeconomic and financial explanatory variables Ordinary Least Square (OLS) method
2. Estimation of parameters of identified key macroeconomic and financial explanatory variables Conditional Probability of Default (CoPoD) method
3. Forecasting of country's key macroeconomic and financial indicators under various macroeconomic testing scenarios Structural Macroeconomic Forecasting Model

Sources: IMF and Bank of Lithuania.

Modelling of the Portfolio Multivariate Density

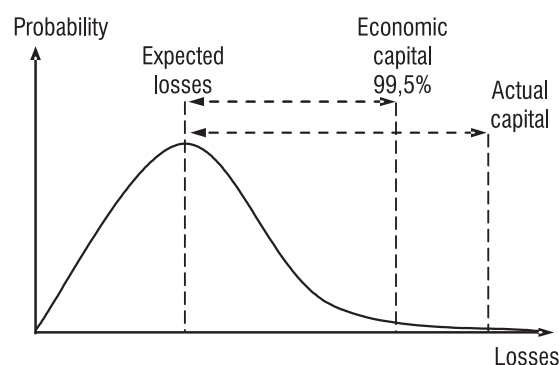
Consistent Information Multivariate Density Optimising (CIMDO) method based on the cross-entropy approach was applied to model the multivariate density of bank loan portfolio. This method allows for effective estimation of the portfolio multivariate density from the dynamics of conditional probabilities of individual loan defaults grouped by economic sectors. The absence of parametric assumptions about the distribution of the bank loan portfolio losses and default correlation structure is the main advantage of this method. Moreover, it offers a more effective evaluation of the impact of macroeconomic scenarios on the dynamics of the credit risk associated with banking loan portfolio.

Estimation of Portfolio Loss Distribution and Economic Capital

Regardless of the existing minimum regulatory capital requirements banks should always hold sufficient capital reserves and remain solvent, even if potential losses exceed the minimum capital level set by the prudential requirements. On this account, the bank's economic capital is estimated, which is determined as a minimal capital level needed to cover losses over a certain

period of time with a pre-specified probability. Economic capital is recovered from the estimated portfolio loss distribution that was simulated from the portfolio multivariate density of the bank. The portfolio loss distribution shows the size of losses that a loan portfolio of the bank can experience under certain probability.

Fig. 79. Portfolio loss distribution



Expected losses of the loan portfolio are equal to the sum of expected losses of the individual loans that make up that portfolio and are calculated as

$$EL = \sum_{n=1}^N [PoD_n \times EX_n \times LGD_n],$$

where EL – expected losses of a loan portfolio, N – number of loans in the portfolio, PoD – probability of loan default, EX – exposure at default, LGD – loss given default.

Bank should be able to cover expected losses through adequate pricing and provisioning. Bank-formed specific provisions and profit were considered as the loss buffers to cover expected losses. However, the actual loss incurred by banks at any period of time may be higher than expected loss. Estimated economic capital should serve as a loss buffer to cover unexpected losses. The comparison of estimated economic capital and available bank capital allows determining the ability of banks to absorb losses incurred due to adverse changes in the macroeconomic environment.

Financial stability review / 2008

8 printer's sheets. 200 copies. Order No. 6 981

Published by Bank of Lithuania, Gedimino pr. 6, LT-01103 Vilnius

Printed by UAB „Baltijos kopija“, Kareivių g. 13B, LT-09109 Vilnius