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**FINANCIAL STABILITY REPORT**

**2006**



21

# **FINANCIAL STABILITY REPORT**

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## ABBREVIATIONS

CAR – capital adequacy ratio  
CIS – Commonwealth of Independent States  
CSB – Central Statistical Bureau of Latvia  
DENOS – securities settlement system of the LCD  
DVP – delivery-versus-payment  
ECB – European Central Bank  
EKS – electronic clearing system of the Bank of Latvia  
ESA 95 – European System of Accounts 1995  
EU – European Union  
EU10 – countries which joined the EU on 1 May 2004  
EU15 – EU countries before 1 May 2004  
FCMC – Financial and Capital Market Commission  
FOP – free of payment  
FRS – US Federal Reserve System  
GAP – repricing gap or difference between RSA and RSL  
GDP – gross domestic product  
HICP – Harmonised Index of Consumer Prices  
LCD – Latvian Central Depository  
LLA – Latvian Leasing Association  
MFI – monetary financial institution  
NBFI – non-bank financial institution  
NPLs – non-performing loans  
OPEC – Organisation of Petroleum Exporting Countries  
PAS – Postal Accounting System  
POS – Point of Sale  
RIGIBID – Riga Interbank Bid Rate  
RIGIBOR – Riga Interbank Offered Rate  
ROA – return on assets  
ROE – return on equity  
RSA – interest rate sensitive assets  
RSE – Riga Stock Exchange  
RSL – interest rate sensitive liabilities  
SAMS – interbank automated payment system of the Bank of Latvia  
SDR – Special Drawing Rights  
SMEs – micro-enterprises, small and medium-sized enterprises  
UK – United Kingdom  
US – United States of America  
VaR – the maximum expected losses over a certain period of time and with a given probability (Value-at-Risk)  
VNS – securities settlement system of the Bank of Latvia

*Sources: the Central Statistical Bureau of Latvia, the Financial and Capital Market Commission, the Latvian Leasing Association, LURSOFT (Database of the Republic of Latvia Register of Enterprises) and the Bank of Latvia.*

*Charts have been compiled on the basis of data provided by the relevant national central banks and the European Central Bank (Charts 1 and 2), Reuters (Chart 3), the Bank of Latvia (Charts 4, 26, 28–34, 47, 48, 52, 53, 57, 59 and 60–67), the Financial and Capital Market Commission (Charts 5–10, 13–19, 38–42 and 46), the Central Statistical Bureau of Latvia (Charts 12, 49–51, 54 and 55), Latio LTD (Chart 11) and estimates prepared by the Bank of Latvia, also based on the Financial and Capital Market Commission data (Charts 20–25, 27, 35–37 and 43–45). The table is based on the data of the Bank of Latvia.*

*Figures featured in the charts are rounded values.*

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## EXECUTIVE SUMMARY

The high profits generated during the second half of 2006 point to a sound financial position of the Latvia's banking sector. The good financial performance of the banking sector is mainly related to the ongoing rapid economic growth in Latvia, optimistic forecasts by economic agents and a continuing credit expansion. However, the vigorous growth is aggravating the macroeconomic risks more and more – the evidence is the persistently high inflation, steep rise of real estate prices, and increase of current account deficit and external debt. It was the high domestic demand that promoted the dynamic growth – especially in the sectors related to real estate development. These trends suggest an increasing vulnerability of the Latvian economy to various shocks and potentially a more pronounced slowdown of growth.

Considering the growing macroeconomic risks and the rapid expansion of lending that causes inflation hikes, the Bank of Latvia continued to pursue a tight monetary policy. In May, 2006 it resolved to expand the minimum reserve base, to include liabilities with a maturity over two years. In response to continuously low real interest rates on loans in lats and interest rate increases in the euro area, the Bank of Latvia's Council raised the refinancing rate by 0.5 percentage point on two occasions (standing at 4.0% at the beginning of 2006 and at 5.0% at the end).

The macroeconomic risks are likely to increase the vulnerability of the sector that plays an important role in national economy, i.e. banking. The access to foreign financing, growing income of population and persisting swift rise in real estate prices were the main factors underlying the credit market trends. Household loans for house purchase and lending to real estate activities accounted for most of the overall increase in the outstanding loans.

The most critical financial stability risks in the banking sector are related to a potential drastic price adjustment in the real estate market, a further interest rate hike and changes in terms and conditions of foreign financing.

The quality indicators of bank loans, especially those granted to households for house purchase and to real estate operations, remained high. However, the concentration of bank credit portfolio in segments directly or indirectly related to real estate continued to increase thus boosting banks' exposure to real estate market related risk. The mounting debt of the real estate companies also points to an aggravation of this risk. These companies are likely to be among the first to incur financial losses in the event of a drastic price adjustment in the real estate market.

Though falling unemployment and rising income continued to improve the financial position of households, the bank credit risk arising from household loans still continued to increase. The rise in interest rates in global financial markets pushed up the household debt servicing costs only marginally. The pickup of household debt obligations resulted in an increase of the debt to income ratio, thus increasing the risk that the ability of households to fulfil their debt obligations may be limited as the pace of economic growth slows down. The increase of the loan-to-value-of-collateral ratio is another factor that increases credit risk. The credit risk related to households is still limited owing to the relatively low average loan amount in the banks' loan portfolio, the comparatively small number of households who have borrowed, and the fact that, for most of the borrowers, the real estate purchased is their place of residence.

ROE, though diminishing somewhat, remained high. However, stress tests of banks in the breakdown by sector indicate a continuously augmenting banks' sensitivity to a real estate shock (affecting households).

Taken together, these trends point to further aggravating financial stability risks

in the banking sector, intensifying the need of further elaboration of risk management policies by banks.

## 1. EXTERNAL ECONOMIC ENVIRONMENT AND ECONOMIC DEVELOPMENT IN LATVIA

In the second half of 2006, the global economic development continued on a steady course. Towards the end of the period, the pace of global growth lost some momentum primarily on account of some moderation in the US GDP growth. At the same time, euro area and UK growth rates accelerated. In Japan, the GDP growth rebounded in the fourth quarter after a modest slowdown in the previous quarter.

Having reached the high in August, oil prices dropped sharply, easing inflationary pressures in developed economies. In the second half of the year, however, oil prices edged up as a result of the announcement on oil output cuts made by the OPEC ministers. Likewise, metal prices that had reached the peak in summer dropped on account of weakening demand in the EU and US in the conditions of a broad-based supply, from China in particular. Global wood prices rose in the second half of the year.

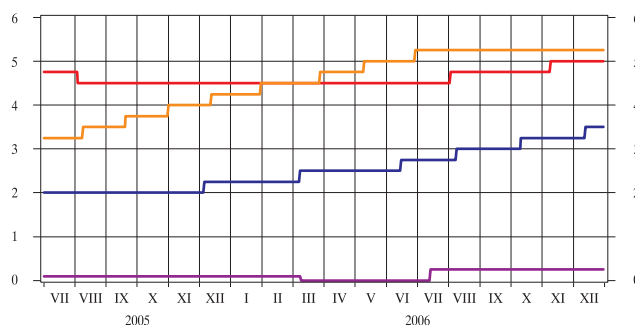
In the third quarter, the US growth continued on a downward trend, mainly due to a weaker activity in the construction sector, primarily residential building. Some acceleration in the GDP growth observed in the fourth quarter was triggered by private and government expenditure as well as net exports. Consumer price index declined in the second half of the year under the impact of energy price moderations. With oil prices on an upward trend, consumer price rises had intensified since November, yet the FRS left its base rate unchanged (see Chart 1).

Chart 1

### BASE RATES OF THE MAJOR CENTRAL BANKS<sup>1</sup>

(%)

— ECB  
— FRS  
— Bank of Japan  
— Bank of England



In the second half of the year, the economic growth in the euro area continued at a solid rate. The growth, broadly based across the sectors, was primarily underpinned by domestic demand, which, in turn, was boosted by strengthening consumer confidence, improving labour market conditions and expansion in lending. A substantial decline in inflation rate had been observed since July 2006; nevertheless, HICP inflation rebounded in November. The strong increase in money supply was driven by low interest rates and robust expansion of economic activity. In order to reduce the upward risks to medium-term price stability, in the second half of 2006 the ECB raised its base rate in several steps, from 2.5% to 3.5%.

In the EU10 countries (excluding Cyprus and Malta), a dynamic economic growth continued in the second half of the year. A particularly solid GDP growth momentum was recorded for Estonia (11.3% in the third quarter and 11.2% in the fourth quarter) and Slovakia (9.8% and 9.6% respectively). The development of

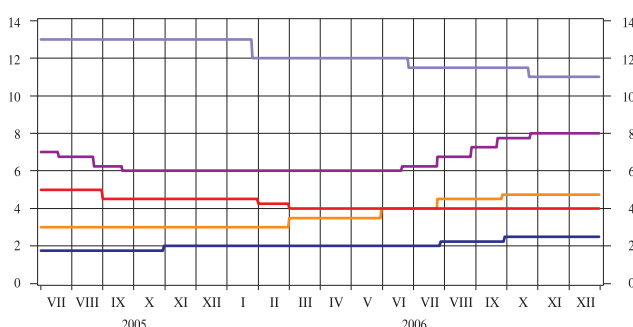
<sup>1</sup> On 9 March 2006, the Bank of Japan changed from the basic discount rate and the basic loan rate to uncollateralised overnight call rate.

the region was supported by a more dynamic economic growth in the EU15 countries, capital inflows and domestic demand. In the conditions of climbing inflation, the central banks of the Czech Republic, Slovakia and Hungary raised their base rates in several steps in the second half of the year (to 2.5%, 4.75% and 8.0% respectively; see Chart 2). As inflationary pressures remained confined in Poland, the Central Bank of Poland left its base rate unchanged in the second half of the year.

Chart 2

**CENTRAL BANK BASE RATES  
IN COUNTRIES OF CENTRAL EUROPE  
AND RUSSIAN FEDERATION  
(%)**

— Czech Republic  
— Slovakia  
— Poland  
— Hungary  
— Russia



The economies of Estonia and Lithuania developed somewhat less buoyantly in the second half of the year. In part, it was due to the narrowing of production in Estonia in the third quarter and expansion of imports in Lithuania. As in the first half of the year, domestic demand was among the main drivers of economic activity. Household consumption was boosted by improved conditions of lending and rapidly growing wages and salaries. Unemployment rate in the two countries continued on a downward trend. As to the inflation rate, the falling energy prices in the mid-second half of the year determined its decline both in Estonia and Lithuania, yet at the end of the year inflation had already returned to the level recorded at the beginning of the reporting period.

The economic growth in Russia continued on a solid upswing in the second half of the year. A notable deceleration in goods export growth was offset by strong private consumption and larger investment, particularly in the construction sector. Inflation continued to decline due to stronger state control over administered price rises and tightening competition in retail trade, with the growth in monetary aggregates losing the hold somewhat. In October, the central bank of the Russian Federation lowered the base rate by 50 basis points, to 11%.

In the second half of the year, global appreciation of the euro continued. In this period overall, the euro rose against the US dollar by almost 3 percentage points. A particularly steep appreciation of the euro recorded in October and November was attributable to the latest information regarding the US growth, which was supposed to decelerate, while that of the euro area continued to be steady. On 5 December, the euro reached a two-year high against the US dollar (1.33).

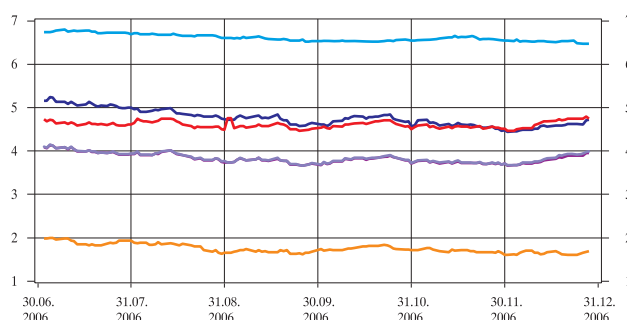
After an upswing in June, the majority of world stock markets experienced a slight drop at the beginning of the second half of the year. However, good corporate profit indicators and positive development outlooks for a number of economies supported a further increase in stock prices. Against the lowest level of the second half of the year, the European stock market index Dow Jones EURO STOXX 50 grew by 18.0%, the US stock market index S&P 500 by 14.9%, NASDAQ Composite by 19.5%, and the Japanese stock market index Nikkei 225 by 19.3% at the end of the reporting period. The Russian stock market reported the largest increase of RTS index by 32.0%.

In the developed countries, expectations of lower inflation and stronger awareness of investors that the US growth was losing momentum underpinned a drop in government bond yields in the second half of the year (to December; see Chart 3). From the beginning of July to the end of November, the US government 10-year bond yield decreased by 0.7 percentage point (to 4.47%), whereas that on the respective German and French bonds declined by 0.4 percentage point (to 3.68%). In the given period, the yields on 3-month Treasury bills and medium-term bonds increased in the euro area, while those in the US decreased. The yields on medium-term and long term Treasury bonds of the developed countries had been growing since December, as the macroeconomic indicators of the US and the euro area countries were better than expected. The yields on US government 2-year and 10-year bonds edged up by 0.2 percentage point (to 4.82% and 4.72% respectively), while those on the German bonds of the same maturity picked up 0.25 point (to 3.91% and 3.96% respectively).

Chart 3

**GOVERNMENT 10-YEAR BOND YIELDS  
IN SOME WORLD COUNTRIES  
(%)**

— US  
— Japan  
— UK  
— Germany  
— France  
— Russia



### *Latvia's economic activity*

In Latvia, macroeconomic risks continued to strengthen due to economic growth gaining stronger momentum under the impact of domestic demand that expanded more dynamically. Domestic consumption and investment were fuelled by a swift growth in employment, wages and social transfers, substantial upsurge in corporate profits, efficient use of EU structural funds, optimistic outlook for future development, and steep pickup in the pace of lending primarily financed by impressive inflows of foreign capital. With the supply side of the economy failing to adjust quickly to this upsurge in the demand, inflation rate became steadier, and strong increases in imports and the current account deficit of the balance of payments were observed.

The export growth rate likewise accelerated. Although recent hikes in prices and costs in Latvia, which translated into a higher real effective exchange rate of the lats, had been impressive, they did not seem to have seriously undermined external cost competitiveness of Latvia. Notwithstanding comparatively solid productivity improvements, in 2006 relative prices stood close to the average level of the last five-year period; moderation in export growth was primarily attributed to the developments in certain external markets of significance for Latvia and to the volume of domestically sold commodities whose growth was driven by expanding demand<sup>2</sup>.

Duly accounting for stronger macroeconomic risks and the brisk pace of lending, the drivers of high inflation rate to a large extent, the Bank of Latvia proceeded with the implementation of a restrictive monetary policy. In May 2006, the minimum reserve base for banks was expanded to include banks' liabilities with a ma-

<sup>2</sup> The significant volatility of export growth after the EU accession can be explained, in part, by methodological adjustments regarding external trade flow accounting.



turity of over two years. Given persistently low real interest rates on loans in lats and interest rate increases in the euro area, the Council of the Bank of Latvia raised refinancing rate by 0.5 percentage point on two occasions (from 4.0% at the beginning of 2006 to 5.0% at the end of the year).

In accordance with the ESA 95 methodology, the general government consolidated budget ran a slight financial surplus in 2006; nevertheless, the structural budget balance deteriorated pointing to pro-cyclical fiscal policy. It was mainly determined by the allocation of a part of additionally collected tax revenue to boost the budget expenditure in the period of economic development.

Looking ahead, aggravating macroeconomic risks increase the exposure of the Latvian economy to various shocks and, consequently, also the possibility of a more pronounced slowdown in the economic growth. However, in line with the forecasts, the Bank of Latvia is anticipating a gradual moderation of economic development, to reach a GDP growth rate maintainable in the medium term (7–8% in 2009). It would be supported by a number of factors: 1) saturation of the credit market (mortgage lending in particular), 2) government-approved anti-inflation plan with the central focus on fiscal consolidation, dampening of lending (mortgage lending in particular), addressing of labour market problems and other measures, 3) rising interest rates and debt servicing costs, 4) high employment rate and capacity utilisation in some economic sectors.

## 2. BANK CREDIT RISK

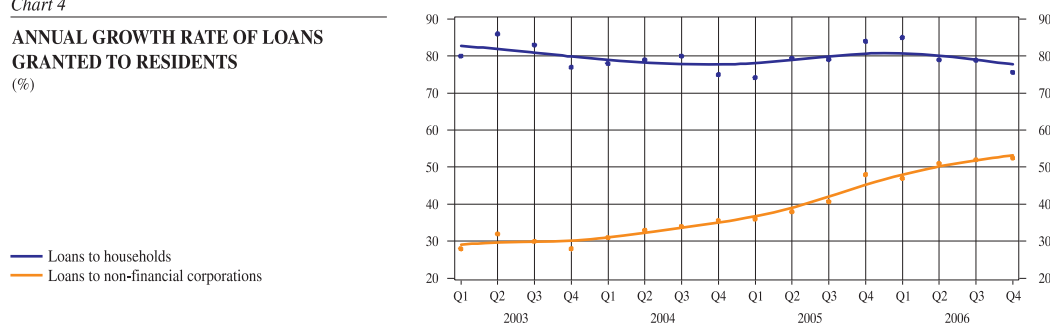
**Along with the rapid economic growth, the quality indicators of bank loans remained high. At the same time, the direct and indirect exposure of banks to the risk associated with developments in the real estate market increased.**

Access to foreign financing, the growing income of the population and still persisting swift rise in real estate prices were the main factors underlying the credit market trends. With debt obligations of the population increasing at a more rapid pace than income, the debt to income ratio is building up, at the same time limiting clients' ability to fulfil their debt obligations as economic growth slows down. With the expansion of borrowing in foreign currencies, bank credit risk increases also due to clients' exposure to the foreign exchange risk. As the number of borrowers is growing, the range of potential borrowers gradually narrows and banks extend loan maturities in order to attract new borrowers.

In the second half of 2006, the rate of lending growth remained high. At the end of December, outstanding loans to residents totalled 9 789.9 million lats or 86.9% {69.3%}<sup>3</sup> of GDP, of which 4 567.8 million lats were loans to non-financial corporations, 4 296.6 million lats – loans to households and 850.6 million lats – loans to non-bank financial institutions. The annual growth rate of lending was 57% {64%}. Even though due to the high accumulated base it partly decreased in year-on-year terms, in absolute terms the expansion of lending was particularly marked (2 182.6 million lats in the second half of the year). The annual growth rate of loans granted to non-financial corporations accelerated (52.5% {47.6%}) at the end of December; see Chart 4). Though the growth rate of loans granted to resident households moderated, it remained high. The annual growth rate of loans granted to resident financial corporations in its turn continued to decline reflecting movements in the financing structure of leasing portfolios of bank subsidiaries (leasing companies). Leasing companies primarily drew financing from abroad without the intermediation of resident banks (mainly due to the expansion of the reserve requirements base).

<sup>3</sup> {} – a year-on-year indicator.

Chart 4

**ANNUAL GROWTH RATE OF LOANS GRANTED TO RESIDENTS (%)**


Loans to households for house purchase and real estate operations accounted for the major share in the increase in the outstanding loans (see Chart 5). As the growth rate of outstanding loans in those household and non-financial corporation lending segments remained high, concentration of bank credit portfolio in segments directly or indirectly related to real estate continued to increase in the second half of the year thus boosting banks' exposure to real estate market related risk (see Chart 6).

Chart 5

**CONTRIBUTION OF MAIN LENDING SEGMENTS OF THE RESIDENT LOAN PORTFOLIO TO THE INCREASE IN LOANS AND THEIR GROWTH RATE**

(annual growth rate, %; contribution to the growth rate of loans; percentage points)

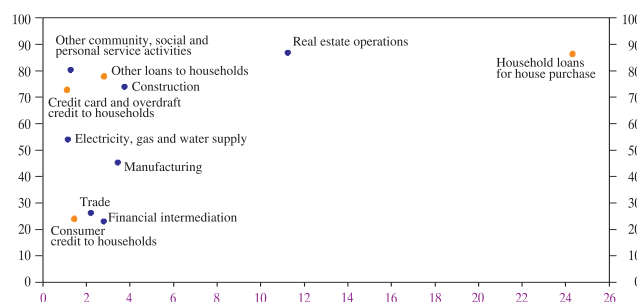
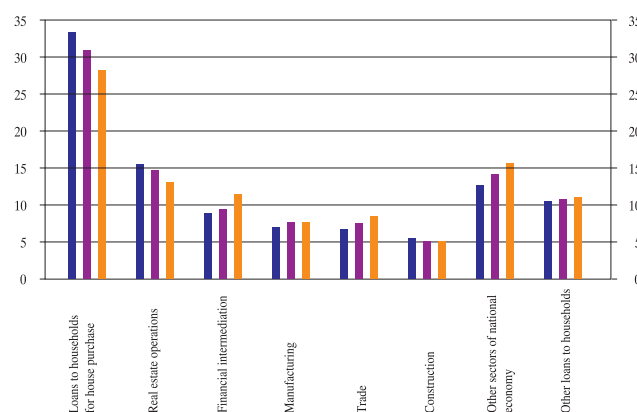


Chart 6

**BREAKDOWN OF LOANS GRANTED TO RESIDENTS BY LOAN SEGMENT (%)**

■ Share of the segment in December 2006  
 ■ Share of the segment in June 2006  
 ■ Share of the segment in December 2005



At the end of December, the level of lending for real estate operations in five Latvian banks exceeded 10% of assets, with total assets of these banks accounting for 57% of the overall Latvian banking sector assets (see Charts 7 and 8). Moreover, in two banks the level of lending for real estate operations exceeded 15% of the total assets of the banking sector.

Loans granted for real estate operations reflect only the direct exposure of banks to the real estate market developments. In the longer term, the developments in this market inevitably affect also the development of the construction sector and loans granted to households for house purchase as real estate serves as collateral for those loans. As loans to households for house purchase are usually loans with fairly long maturities and primarily with a floating interest rate, the size of monthly loan payments is sensitive to interest rate movements. The rise in interest rates

Chart 7

**BREAKDOWN OF BANKS INTO GROUPS BASED ON THE SHARE OF DOMESTIC LOANS GRANTED FOR REAL ESTATE OPERATIONS IN THE RESPECTIVE BANK'S ASSETS**

(number of banks)

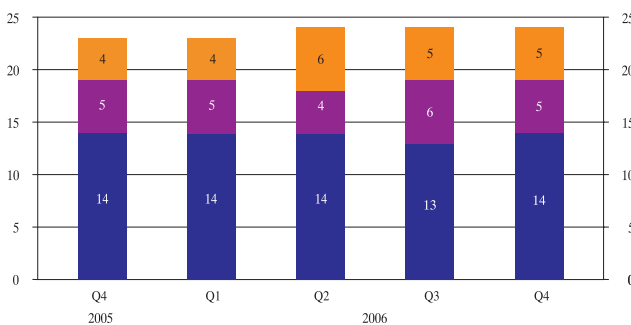
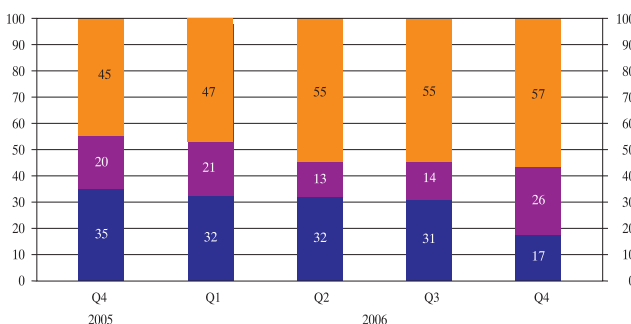


Chart 8

**BREAKDOWN OF BANKS INTO GROUPS BASED ON THE SHARE OF DOMESTIC LOANS GRANTED FOR REAL ESTATE OPERATIONS IN THE RESPECTIVE BANK'S ASSETS**

(share of bank assets in total banking sector assets; %)



in global financial markets pushes up the household debt servicing costs. According to the worst case scenario, as the quality of household loans deteriorate significantly, the underlying collateral of bad loans may be sold on the real estate market, thus increasing the supply and reducing the prices. This would worsen not only the financial and economic position of enterprises involved in real estate construction and development but also that of other related sectors (wood and metal product manufacturing, trade, etc.).

At the end of December, in six Latvian banks total outstanding loans for real estate operations, construction and household loans for house purchase exceeded 40% of the bank's assets (see Chart 9). Moreover, the assets of those six banks totalled 45% of the assets of the Latvian banking sector, presenting a significant increase compared to the end of June (36%; see Chart 10). Concentration of the real estate market-related risks in banks may enhance the interaction effects of the downturn in real estate prices, lending growth and overall economic activity.

Chart 9

**BREAKDOWN OF BANKS INTO GROUPS BASED ON THE SHARE OF DOMESTIC LOANS GRANTED FOR REAL ESTATE OPERATIONS, CONSTRUCTION AND TO HOUSEHOLDS FOR HOUSE PURCHASE IN THE RESPECTIVE BANK'S ASSETS**

(number of banks)

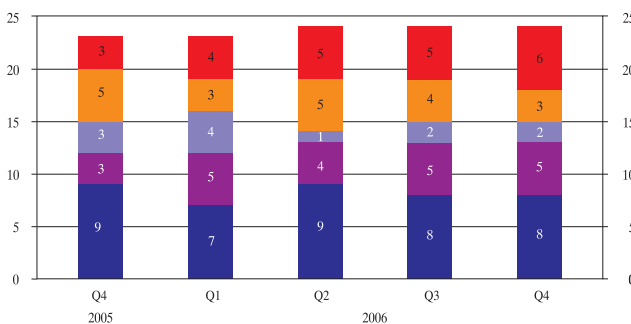
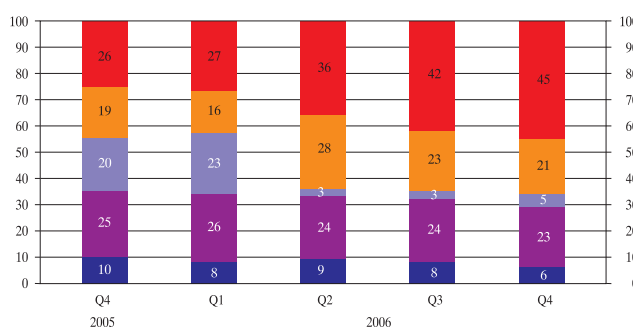


Chart 10

**BREAKDOWN OF BANKS INTO GROUPS BASED ON THE SHARE OF DOMESTIC LOANS GRANTED FOR REAL ESTATE OPERATIONS, CONSTRUCTION AND TO HOUSEHOLDS FOR HOUSE PURCHASE IN THE RESPECTIVE BANK'S ASSETS**  
(share of bank assets in total banking sector assets; %)

■ <10%  
■ 10–20%  
■ 20–30%  
■ 30–40%  
■ >40%



### Box 1. Latvia's real estate market review

Given the rapid rise in outstanding bank loans to real estate related sectors, it is important to estimate potential risks to the development of this market. In the sector of standard block house apartments, the activity continued to be brisk, and the volume of transactions was increasing in the second half of the year. The Old Town was an exception, for the number of transactions there decreased, thus indicating that prices in the most expensive segment of the market had stabilised. In 2006, the prices of standard apartments in Riga picked up about 69%, with the price per square meter over 1 500 euro<sup>4</sup>. In December 2006, the average price per square meter in a standard block house apartment on the outskirts of Riga corresponded to an average 2.6 month net wage of those employed in the capital city. Single-room apartments, in high demand nowadays, reported particularly elevated prices, with costs of one square meter exceeding those in an analogous 3-room apartment even by one third.

In 2006, the supply of apartments for sale noticeably exceeded the number of apartments offered for rent.<sup>5</sup> On the one hand, it indicated that amounts collected as rent did not cover loan payments when moving to a new dwelling; hence selling the previous apartment was financially more attractive. On the other hand, it may suggest that the owners, having lost hopes for a significant future price rise, more often opted for selling their previous apartments.

Other segments of the real estate market, e.g. land, single-family homes and new residential housing, also reported essential price rises. The market segment of new apartment construction projects remained extremely buoyant in the second half of 2006 as well. According to the estimates of real estate market companies (limited liability companies Balsts, Ober Haus Real Estate Latvia), the price of one square meter in a new apartment construction project amounted to 3 600 euro in the centre of Riga and to 2 000 euro on the outskirts of the city on average at the close of 2006 (see Chart 11). Prices of new apartments in Riga increased on average by 20%–33% (i.e. two times less than in 2005 when a 60% rise was registered). The demand for new housing moderated, selling time became longer, buyers were more fastidious, and the volume of speculative transactions shrank. Nevertheless, the demand for new housing is expected to be solid also in the future. For 2007, a more moderate price rise (10%–20%) is projected for both the standard block house apartments and new residential projects. Though 5 865 new apartments were built<sup>6</sup> in 2006 (53.9% more than in 2005), it is less than planned (see Chart 12).

<sup>4</sup> According to the data of Latio LTD.

<sup>5</sup> Except the Old Town.

<sup>6</sup> Including single-family homes; CSB data.

Chart 11

**AVERAGE STANDARD APARTMENT  
SELLING PRICE ON THE OUTSKIRTS  
OF RIGA AND ANNUAL GROWTH  
OF PRICES**

(euro/m<sup>2</sup>)

— Euro/m<sup>2</sup>  
— Annual changes (%; right-hand scale)

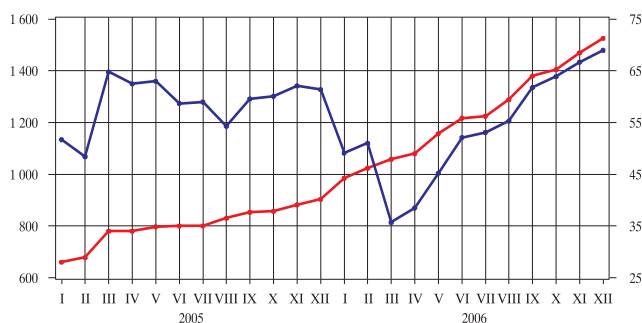
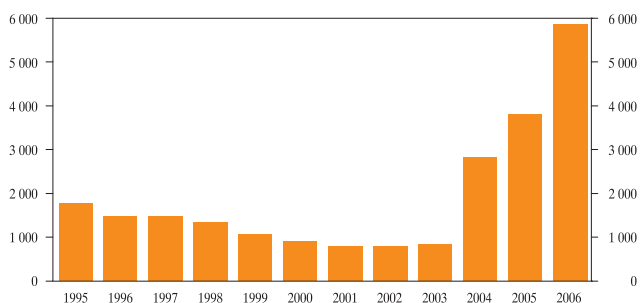


Chart 12

**NUMBER OF NEW APARTMENTS  
(INCLUDING SINGLE-FAMILY HOMES)**



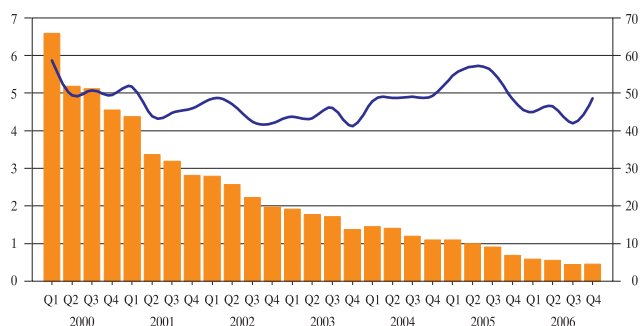
*Disparities between the actual results and projections suggest that the capacity of the construction sector was limited. Along with delayed project launching, an extremely steep rise in construction costs (26% in the fourth quarter 2006), declining profit margins and tighter competition such limited construction capacities posted increasing risks to this segment. Current hikes in real estate prices add to the concerns about overestimation of real estate prices in some market segments and eventual price adjustments in the event of an unfavourable scenario of the economic development.*

In line with the rapid economic development, the quality indicators of bank loans continued to improve. Although the volume of NPLs slightly increased in absolute terms, with the pace of bank lending remaining high, their share in total loans continued to shrink (see Chart 13) reaching 0.4% {0.7%} at the end of December. The share of loans with repayments past due including those with repayments 30 days past due at the end of December remained unchanged compared to the end of June (see Chart 14).

Chart 13

**NPLs OF LATVIAN BANKS**

— Share of NPLs in loans (%)  
— NPLs (millions of lats; right-hand scale)



The improvement of loan quality was broadly based across the banking sector. The number of banks with the ratio of NPLs to total outstanding loans not exceeding 1% continued to grow (see Chart 15). Total assets of those banks accounted for 91.6% {67.6%} of the banking sector assets. Write-offs of loans in 2006 only amounted to 8.5 million lats {14.9 million lats} or 0.7% {1.8%} of banks' capital and reserves, presenting a significant decline compared to 2005. Specific provisions for loans to non-banks covered 117% of NPLs (see Chart 16).

Chart 14

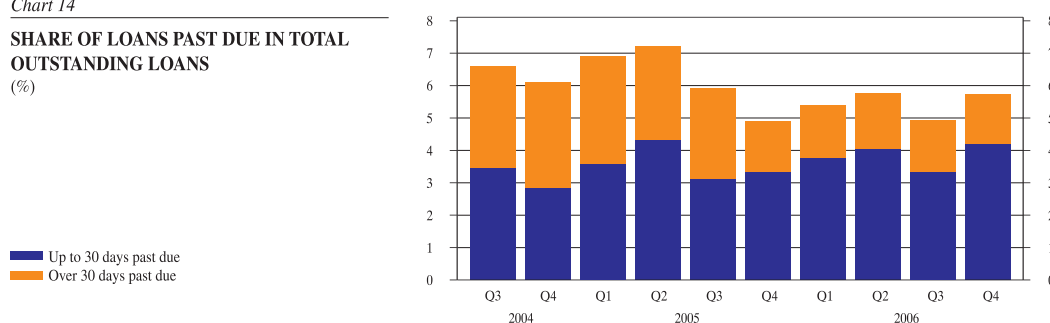
**SHARE OF LOANS PAST DUE IN TOTAL  
OUTSTANDING LOANS  
(%)**


Chart 15

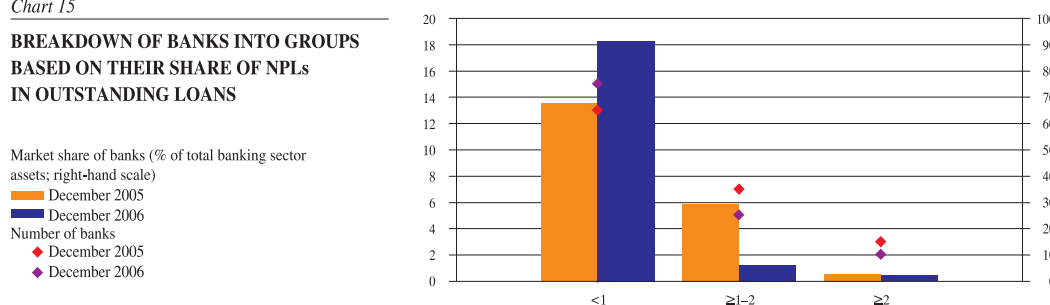
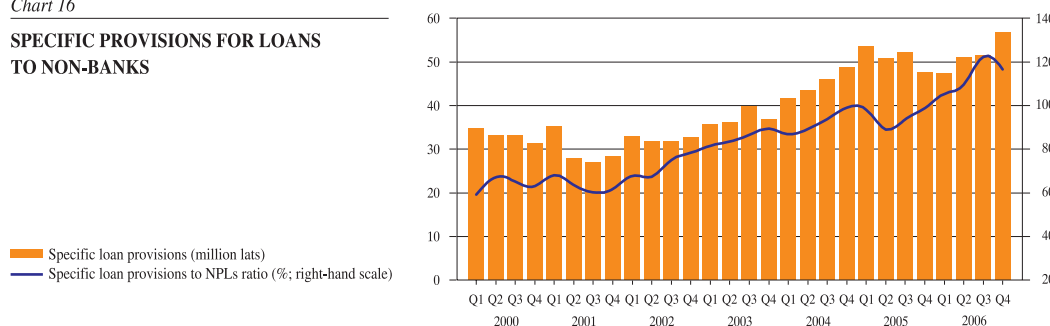
**BREAKDOWN OF BANKS INTO GROUPS  
BASED ON THEIR SHARE OF NPLs  
IN OUTSTANDING LOANS**


Chart 16

**SPECIFIC PROVISIONS FOR LOANS  
TO NON-BANKS**


The loan quality indicators in the breakdown of sectors and largest segments of household lending imply that the quality of loans granted both to households and to all major sectors of national economy (except manufacturing) has improved (see Chart 17). Moreover, the segments directly or indirectly related to the real estate area, i.e. loans granted to households for house purchase and real estate operations, as well as for construction, are characterised by the highest loan quality indicators, also reflecting more rapid growth of lending. The rising share of NPLs in the loans granted to the manufacturing sector relates to problems experienced by individual businesses in the metal and metal products manufacturing sector.

The loan to value ratio in the most rapidly growing segment of mortgage lending – loans granted to households for house purchase – overall remained broadly conservative, i.e. for more than a half of such loans this ratio did not exceed 70% (see Chart 18). During the last half-year, however, the share of loans with the loan to value ratio of 70% to 100% expanded quite notably. Nevertheless, in the event of real estate price adjustments the quality of loans with a low loan to value ratio forming the largest share of outstanding loans granted for house purchase will not deteriorate and in the event of forced sale the real estate could be sold at a price, which would not be lower than the outstanding loan.

Chart 17

**NPL DEVELOPMENTS IN MAIN LENDING SEGMENTS**

(share of NPLs in outstanding loans of the respective sector; %)

- 1 Household loans for house purchase
- 2 Real estate operations
- 3 Financial intermediation
- 4 Manufacturing
- 5 Wholesale and retail trade
- 6 Construction
- 7 Consumer credit to households
- 8 Transport, storage and communication
- 9 Agriculture, hunting and forestry
- 10 Electricity, gas and water supply
- 11 Other community, social and personal service activities
- 12 Credit card and overdraft credit to households
- 13 Hotels and restaurants
- 14 Fishing
- 15 Mining and quarrying

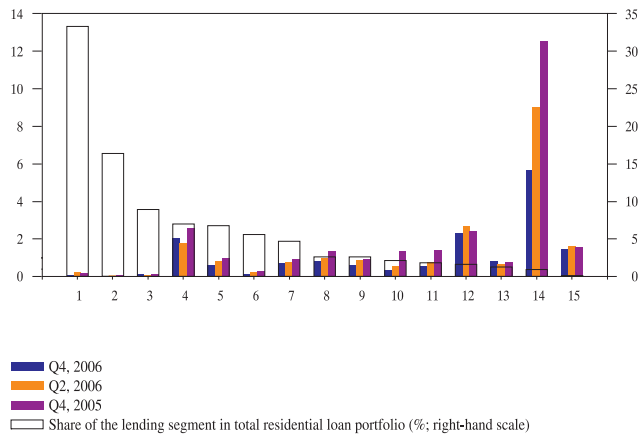
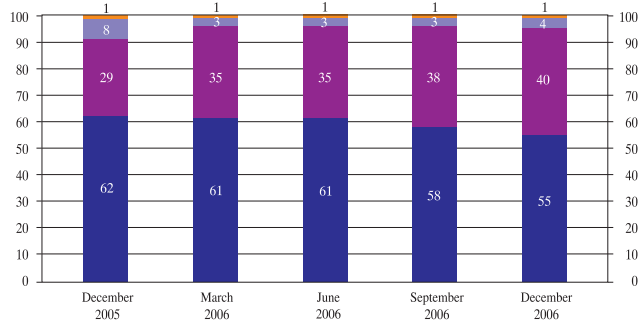


Chart 18

**BREAKDOWN OF LOANS TO RESIDENTS FOR HOUSE PURCHASE BY THEIR LOAN TO VALUE RATIO**

(%)

- Loan to value ratio <70%
- 71% < loan to value ratio <100%
- Loan to value ratio >100%
- Information not available



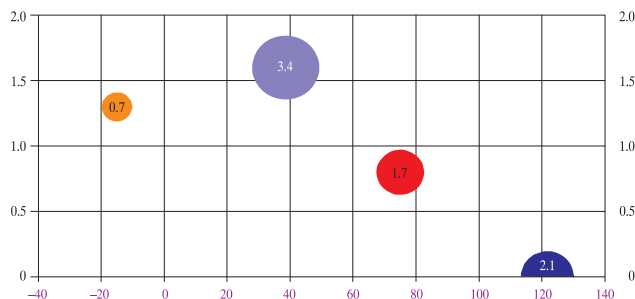
The annual growth rate of lending to non-residents was 40.6% {12.0%}, considerably lower than that of the resident loan portfolio. Thus the share of loans granted to non-residents within the total credit portfolio of the Latvian banking sector at the end of December fell to 9.9% {10.6%}. The largest share of the non-resident loan portfolio was still comprised of loans granted to residents of EU10 countries, with their share in the total bank loans amounting to 3.4% {3.9%} at the end of 2006 (see Chart 19). Loans granted to the residents of CIS and EU15 countries, however, posted the most rapid growth. Moreover, the loan portfolio quality of the loans granted to residents of CIS countries remained especially high with just an insignificant share of NPLs in those loans.

Chart 19

**SHARE OF THE MAJOR GEOGRAPHICAL SEGMENTS OF THE NON-RESIDENT LOAN PORTFOLIO IN THE TOTAL LOAN PORTFOLIO OF THE BANKING SECTOR; ANNUAL GROWTH RATE OF LOANS AND LOAN QUALITY**

(share of NPLs in outstanding loans; annual growth rate of loans; %)

- USA
- CIS
- EU10
- EU15



### Box 2. Stress tests of the banks' loan portfolios

Stress test<sup>7</sup> results indicate that, year-on-year, the capacity of banks to absorb credit risk generated shocks increased in December 2006 (if the growth in the NPL share did not exceed 6 percentage points; see Chart 20). Under more serious credit risk shock scenarios whose occurrence is less probable, the shock-absorbing ability of the Latvian banks has weakened somewhat year-on-year. At the end of 2006, Latvian banks overall could have absorbed, without any serious problems, such potential credit risk increases that would cause the NPL share in banks' credit portfolios to grow by 1 percentage point (see Chart 21); if it were the case, all banks would be able to meet the minimum capital requirement. Given a 0.4% NPL share in the total bank credit portfolio at the end of 2006, it may be assumed that all Latvian banks could have absorbed, without any serious problems, a potential credit risk increase causing a 3.5 times expansion in the NPLs.

Chart 20

#### GENERAL CREDIT RISK STRESS TEST RESULTS

(number of banks with CAR below the minimum capital requirement; increase in the NPL share in total loans; in percentage points)

Q4 2005  
Q2 2006  
Q4 2006

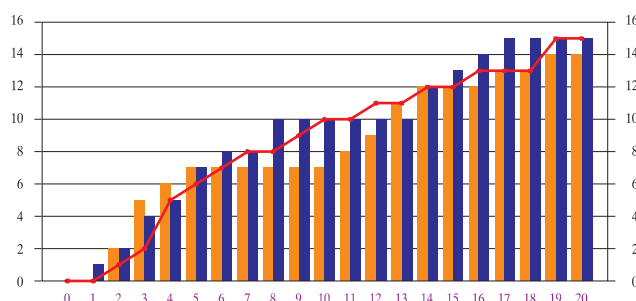
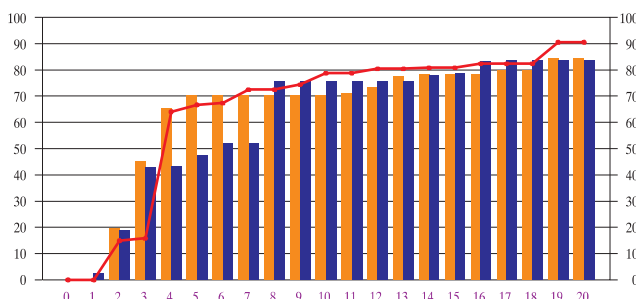


Chart 21

#### GENERAL CREDIT RISK STRESS TEST RESULTS

(asset share of banks with CAR below minimum capital requirement in total bank assets; increase of NPL share in total loans; in percentage points)

Q4 2005  
Q2 2006  
Q4 2006



At the same time, if the NPL share in banks' credit portfolios were to increase by 3 percentage points or 8.5 times in absolute terms, two banks, with their assets jointly accounting for 16% of the total bank assets, would incur problems with meeting the minimum capital requirement.

The bank stress test results in the breakdown by sector show that bank exposure to real estate market related shocks with an impact on households continued to grow (see Charts 22 and 23). Bank exposure to a potential shock affecting major domestic market oriented sectors became particularly strong in the third quarter but eased towards the end of 2006. Likewise, bank sensitivity to a potential external shock weakened, reflecting a growing concentration of banks' loan portfolios in the domestic market oriented sectors.

The proportion of losses resulting from potential sectoral credit risk shocks to banks' assets continued to grow in the second half of the year, without exceeding the 4%

<sup>7</sup> Stress test results provide an indication of the scale of losses resulting from growing credit risk that banks would be able to absorb before their CAR falls below the minimum capital requirement. Stress tests reflect bank losses as the need to make additional provisions for the NPLs whose amount and hence also the share in total loans grows as a result of increasing credit risk. The banks' capital and risk-weighted assets are reduced by the amount of additional provisions to be made. Calculations assume that the share of the three NPL categories (substandard, doubtful and lost loans) for each bank expands in proportion to the growth in NPLs simulated in the stress test.



Table 1

**SECTORAL CREDIT RISK SHOCKS USED IN STRESS TESTS AND THEIR PARAMETERS**

Types of shock	Shock parameters
Internal shock	20% <sup>1</sup> of loans to major domestic market oriented sectors (construction, trade, real estate, renting and business activities) become NPLs.
External shock	20% of loans to the major foreign market oriented sectors (manufacturing and transport, storage and communication) become NPLs.
Real estate shock	20% of loans to real estate, renting and business activity become NPLs.
Real estate shock affecting households	20% of loans to real estate, renting and business activity and loans to households for house purchase become NPLs.

<sup>1</sup> This and the other shock parameters are based on the assumption that a 20 percentage point rise in the NPL share is made up of the three NPL categories (substandard, doubtful and lost loans) in equal proportions.

Chart 22

**SECTORAL CREDIT RISK SHOCK STRESS TEST RESULTS**

(number of banks with CAR below the minimum capital requirement)

Q4 2005  
Q1 2006  
Q2 2006  
Q3 2006  
Q4 2006

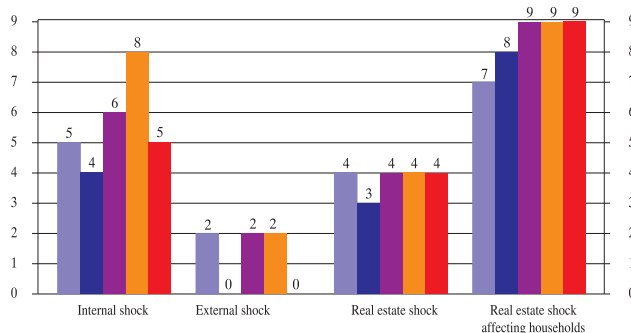
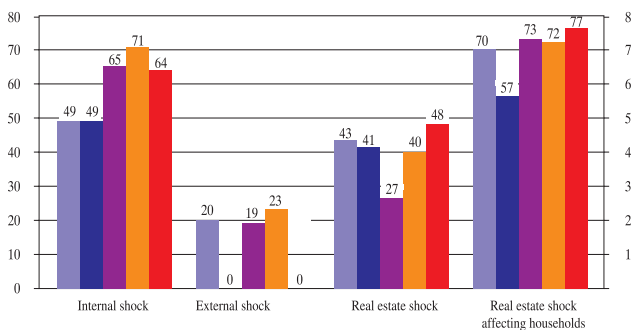


Chart 23

**SECTORAL CREDIT RISK SHOCK STRESS TEST RESULTS**

(asset share of banks with CAR below the minimum capital requirement in total bank assets; %)

Q4 2005  
Q1 2006  
Q2 2006  
Q3 2006  
Q4 2006



margin of banks' assets (see Chart 24). Only the losses resulting from an external shock do not display a tendency to grow in relation to banks' assets. Additional capital needed to meet the minimum capital requirement, likewise, increased gradually (except in the event of an external shock; see Chart 25).

Chart 24

**SECTORAL CREDIT RISK SHOCK STRESS TEST RESULTS**

(total bank losses; % of bank assets)

Q4 2005  
Q1 2006  
Q2 2006  
Q3 2006  
Q4 2006

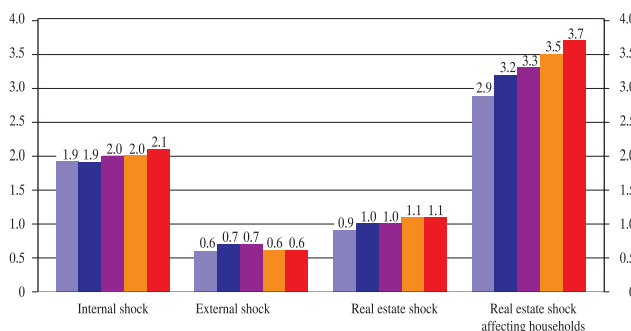
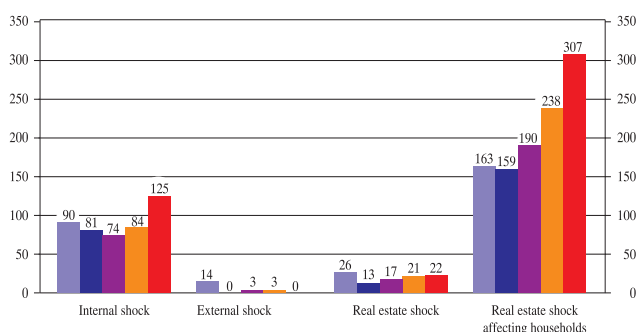


Chart 25

**SECTORAL CREDIT RISK SHOCK  
STRESS TEST RESULTS**  
(additional capital needed to meet the minimum capital requirement; in millions of lats)

■ Q4 2005  
■ Q1 2006  
■ Q2 2006  
■ Q3 2006  
■ Q4 2006



### 3. BANK PROFITABILITY<sup>8</sup>

#### Banks made record high profits in 2006.

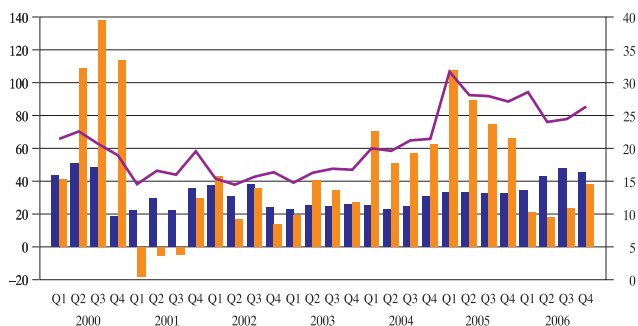
The banking sector continued to demonstrate boisterous growth in 2006, earning a profit of 265.9 million lats (a 37.7% increase over 2005). Nearly all banks made profit; yet despite overall increase, half of the banks lost somewhat in profitability year-on-year. The profit increase was less rapid because of the previous year's high base and the increasing competition, as well as because of the increase of interest rates<sup>9</sup> in the money markets and other factors, e.g., business expansion.

In 2006, ROE for the banking sector was 26.3% (a little lower than a year ago), because the bank capital growth rate (45.1%) was faster than that of profit (see Chart 26).

Chart 26

**DEVELOPMENTS OF ROE AND ITS COMPONENTS**  
(%)

■ Annual growth of capital and reserves  
■ Annual growth of accumulated profit  
— ROE (right-hand scale)



#### Box 3. What drives ROE

*A profitable banking sector has a better capacity to absorb adverse shocks, which is a prerequisite for financial stability. This is why it is crucial to measure the factors that affect the profitability in the banking sector. ROE describes changes in profit as well as in other factors (see Table 2). Consequently, an increase of ROE does not necessarily mean an increase of a bank's profit alone. To measure ROE, the so-called risk-adjusted return approach becomes handy:<sup>10</sup>*

$$\text{ROE} = \frac{\text{Pre-tax profit}}{\text{Operating income}^{11}} \times \frac{\text{Operating income}}{\text{Risk-weighted assets}} \times \frac{\text{Risk-weighted assets}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Capital and reserves}}$$

<sup>8</sup> Unaudited data.

<sup>9</sup> ECB and the Bank of Latvia refinancing rates, interest rates in interbank market.

<sup>10</sup> Risk-adjusted return approach has been employed in the Bank of England, Financial Stability Report, December 2003, and *Sveriges Riksbank*, Financial Stability Report, 2006 No. 1.

<sup>11</sup> Operating income is the aggregate of net interest income, dividend income, net commissions, financial instrument transaction and revaluation results.

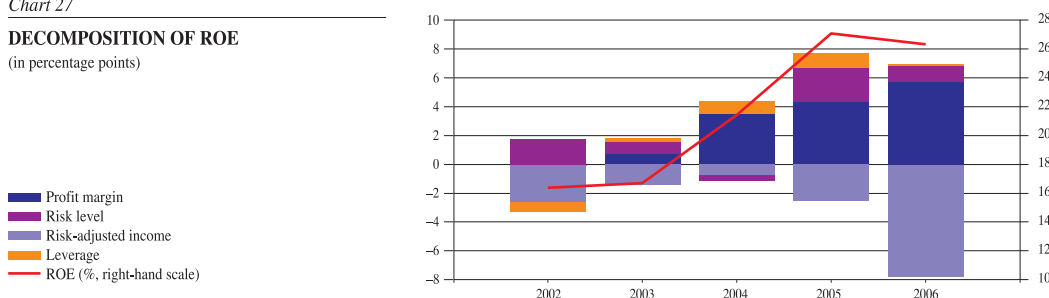
Table 2

## FACTORS AFFECTING CHANGE IN ROE

Factor	Calculation	Effect on ROE
Profit margin	Pre-tax profit	ROE increases with the factor increase
	Operating income	
Risk-adjusted income	Operating income	ROE increases with the factor increase
	Risk-weighted assets	
Risk level	Risk-weighted assets	ROE decreases with the factor increase
	Assets	
Leverage	Assets	ROE decreases with the factor increase
	Capital and reserves	

In 2006, the profit margin in the Latvian banking sector demonstrated an increase over the previous year (see Chart 27), because the pre-tax profit grew more rapidly than operating income: the steep climb in interest expense was largely responsible for slowing down the growth of the latter.

Chart 27

DECOMPOSITION OF ROE  
(in percentage points)

The risk-adjusted income shrank compared to the end-2005 figure: with the ongoing and rapid expansion of lending, risk-weighted assets increased faster than operating income. This was the main constraint on ROE.

Risk level and leverage almost did not change compared to the end of the previous year, because both risk-weighted assets and assets, together with capital and reserves, grew at very similar rates. It is loans to non-MFIs that largely build the risk-weighted assets; simultaneously, they are the major part of assets. To comply with the minimum capital requirements stipulated in the Law "On Credit Institutions", the banks were compelled to increase their capital in order to be able to keep up with the mounting risk-weighted assets.

Though the bank assets posted a faster growth (45.4%) than profits, the ROA in the banking sector did not change notably compared to the previous year (2.1%).

Of late, and in 2006 in particular, the dispersion of ROE in the banking sector expanded (see Chart 28). For most of banks, ROE diminished in comparison with that a year ago. At the end of 2006, the assets posting ROE ratio of 20% and above accounted for 74.4% of total bank assets (see Chart 29).

With the continuous rapid growth of loans granted and the increase of interest rates, the interest income from loans to non-MFIs grew by 64.2%, and at the end of the year contributed a little more than a half of total income. All interest income contributed approximately two thirds to the total income (see Chart 30). Interest expense grew even more rapidly (92.7% over 2005), mainly on account of a rise in interest expense on liabilities to MFIs. In terms of volume, interest expenditure on liabilities to MFIs exceeded expenditure on non-MFIs' deposits – mostly on account of differences in term structures. Rising market rates rather

Chart 28

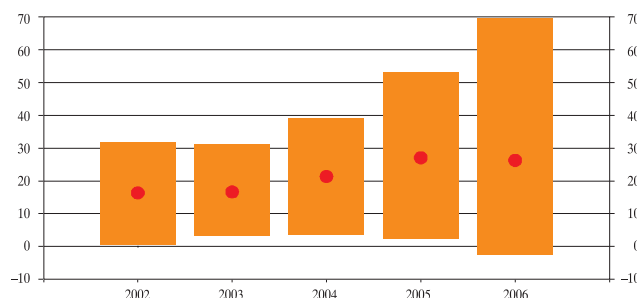
**DISPERSION OF BANKS' ROE**  
(%)

Chart 29

**BREAKDOWN OF BANKS BY ROE**

Market share of banks (% of total bank assets; right-hand scale)

Number of banks

- 2005
- 2006
- ◆ 2005
- ◆ 2006

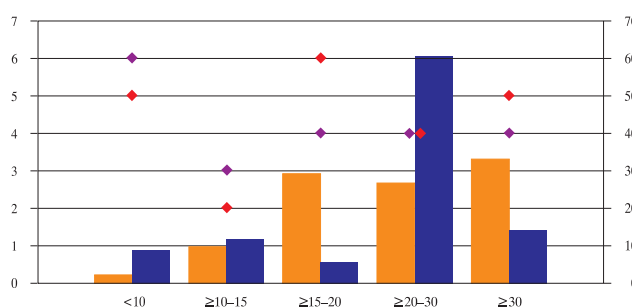
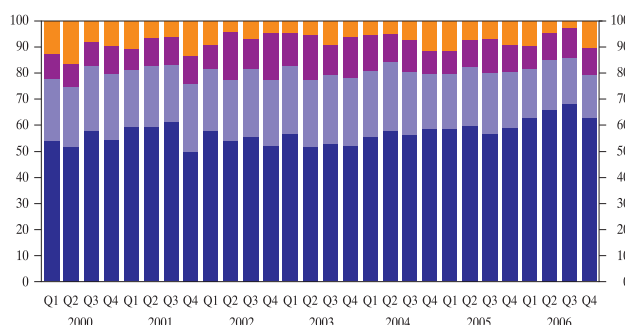


Chart 30

**INCOME PROFILE**  
(%)

- Interest income
- Commissions and fees
- Income from trading with financial instruments
- Other income

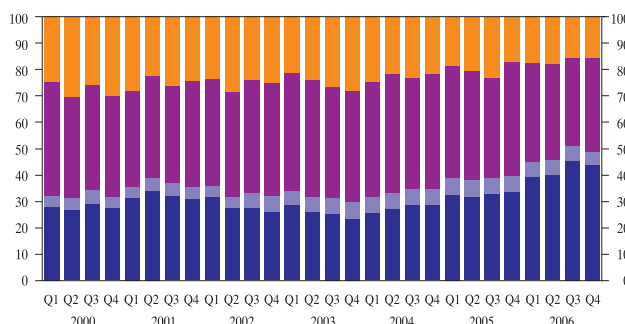


affected the interbank business rates than the interest rates on non-MFI deposits. Interest expense accounted for 42.9% (see Chart 31) of the total expenditure, thus becoming the largest expenditure item. Net interest income grew by 38.5%.

Chart 31

**COST PROFILE**  
(%)

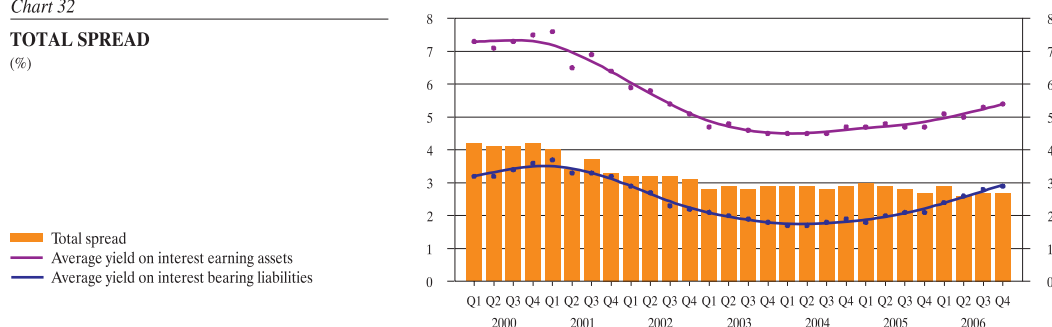
- Interest expense
- Commissions and fees
- Operating costs
- Other expenditure



In 2006, the total spread<sup>12</sup> was 2.7 percentage points in average (see Chart 32). As a result of the interest rate increase, the average interest rate on interest earning assets rose. The average interest rate on interest bearing liabilities increased as well, albeit slightly faster.

<sup>12</sup> The total spread – the difference between average interest rates of interest earning assets (claims on the Bank of Latvia – since January 2005 also demand deposits on which earlier interest was not paid –, MFIs, net loans – loans less special provisions for doubtful debts, debt securities and shares) and interest bearing liabilities (liabilities to the Bank of Latvia, MFIs, deposits, debt securities).

Chart 32

**TOTAL SPREAD**  
(%)

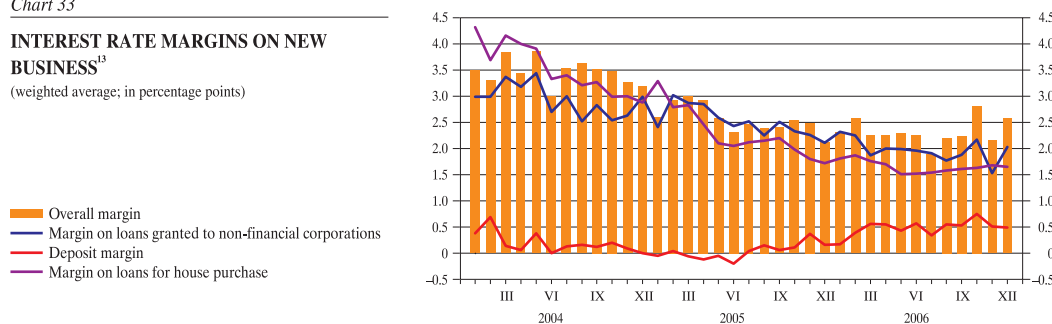
Loans accounted for 71.0% {66.7%} of interest earning assets. Consequently, the development of lending margins is the main factor behind profitability dynamics. In 2006, the ECB raised its key rate on five occasions. The Bank of Latvia followed suit and took measures to reduce the demand for loans. As a result, interest rates on the market rose and the loans became still more expensive. In the second half of 2006, the average margin (a premium over the floating rate) on new loans granted to resident non-financial corporations and households hit all-time low with 2.1 percentage points.

The bank expenses on liabilities to other credit institutions and non-MFI deposits increased. The share of liabilities to other credit institutions in total interest bearing liabilities grew to 41.8% {33.4%} at the end of 2006, whereas that of interest on deposits contracted to 54.6% {63.4%}. Since the growth of interest on deposits lagged behind that of market rates, the spread continued to widen (see Chart 33).

Chart 33

**INTEREST RATE MARGINS ON NEW BUSINESS<sup>13</sup>**

(weighted average; in percentage points)



With the shares of interest income and interest expense increasing in the total income and expenditure respectively, the percentage of income and expenses related to commissions and fees continued to decrease. Expenses related to commissions and fees continued to grow at a faster rate than relevant income. Net commissions and fees grew by 15.4% year-on-year and amounted to 13.4% of total income.

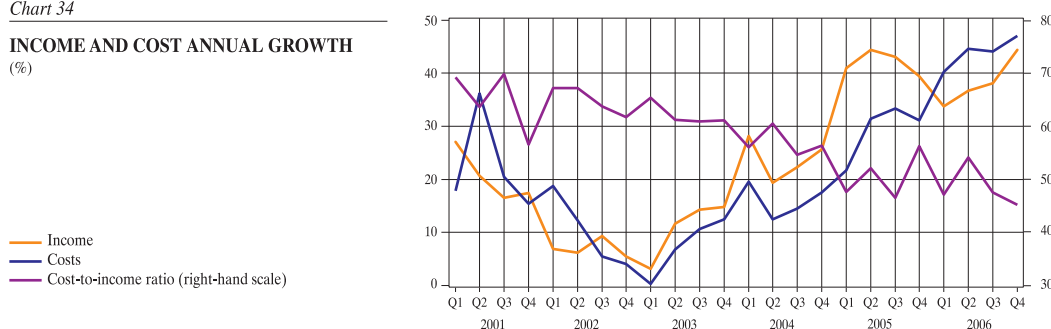
The banking sector operational costs picked up 27.0%, with their share in total expenditure shrinking from 41.8% to 36.0% (see Chart 31).

<sup>13</sup> All margins are calculated on new business. Overall margin has been calculated by subtracting the average deposit rate from the lending rate with a fixed maturity. The margin on loans has been calculated by subtracting the reference rate: the value of average 6-month money market index for the given period (RIGIBOR 6M, EURIBOR 6M or LIBOR USD 6M) from the relevant lending rate. Margin on deposit rates has been calculated by subtracting the average deposit rate from the reference rate: the value of average 6-month money market index for the given period (RIGIBID 6M, EURIBID 6M or LIBID USD 6M).

In 2006, the growth in the banking sector's expenditure slightly surpassed that of income, posting 47.4% and 44.7% respectively, mainly due to more expensive funds. Yet, the ratio describing the efficiency of banking business, namely, the cost-to-income ratio<sup>14</sup>, improved to stand at 47.6% at the end of the year (see Chart 34).

Chart 34

#### INCOME AND COST ANNUAL GROWTH (%)



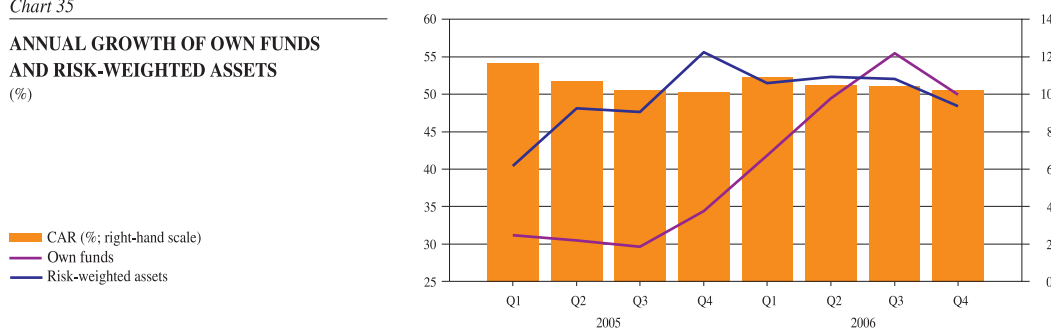
## 4. BANK CAPITAL ADEQUACY

### CAR continued to be beyond 10%.

The speedy growth of risk-weighted assets was followed by a notable increase of banks' own funds (see Chart 35); as a result, the CAR at the end of 2006 stood at 10.2% {10.1%}, whereas the lowest threshold as set by the FCMC is 8%. Tier 1 CAR remained as is (8.8%, see Chart 36).

Chart 35

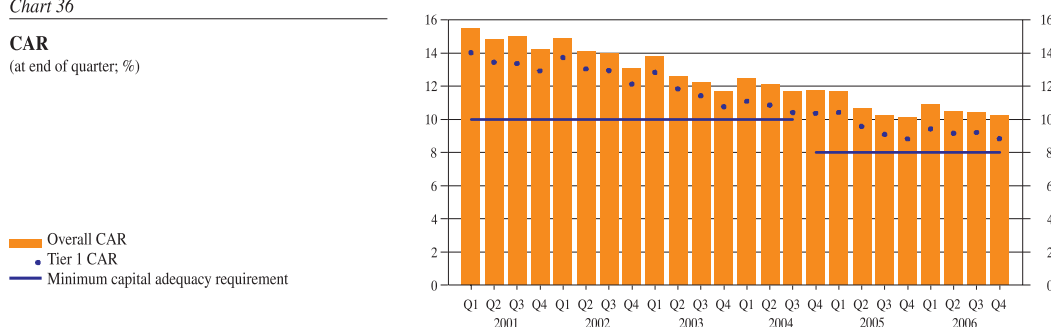
#### ANNUAL GROWTH OF OWN FUNDS AND RISK-WEIGHTED ASSETS (%)



Six banks with a 69.0% aggregate market share in total assets (see Chart 37) had their CARs in the range between 8% and 10% at the end of 2006.

Chart 36

#### CAR (at end of quarter; %)



<sup>14</sup> The cost-to-income ratio has been calculated based on the ECB methodology: (operating costs + intangible and fixed asset depreciation and disposal)/(net interest income + income from dividends + net commissions and fees + profit/loss from trades of financial instruments + financial instrument revaluation result + other ordinary income - other ordinary expenditure + adjustment for impairment of available-for-sale financial assets) x 100.

Chart 37

## BREAKDOWN OF BANKS BY CAR

Market share of banks (% of total banks' assets; right-hand scale)

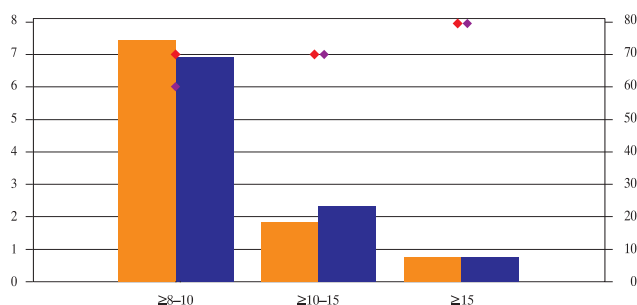
2005

2006

Number of banks

2005

2006



## 5. INTEREST RATE RISK OF BANKS

**The broadly balanced RSA and RSL structure and the low banks' sensitivity towards interest rate changes points to a relatively limited exposure of Latvia's banks to the interest rate risk.**

In the second half of 2006, Latvian banks' overall exposure to repricing risk<sup>15</sup>, the most significant source of the banks' interest rate risk, remained limited. Cumulative 1-year RSA to RSL ratio, which is the key ratio for the interest rate management purposes, dropped to 1.00 {1.03}, implying that at the end of 2006, the RSA and RSL for maturities under one year were perfectly balanced in the Latvian banking sector (see Chart 38). The balance of RSA and RSL improved also for shorter time-bands (under 3 months), the cumulative 3-months RSA to RSL ratio increasing to 0.96 {0.92}.

Chart 38

## RSA AND RSL RATIO OF LATVIAN BANKS

RSA / RSL

Q2, 2005

Q4, 2005

Q2, 2006

Q4, 2006

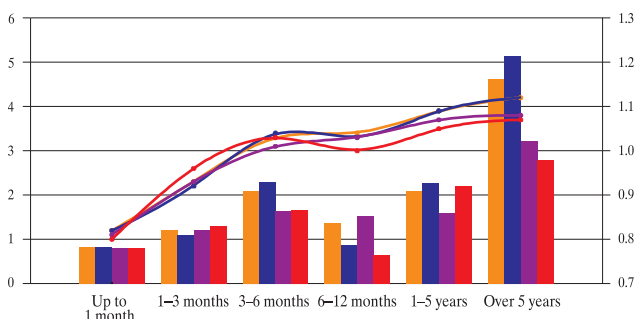
Cumulative RSA / RSL (right-hand scale)

Q2, 2005

Q4, 2005

Q2, 2006

Q4, 2006



Repricing gap (GAP)<sup>16</sup> or difference between RSA and RSL, relative to Latvian banks' assets, remained comparatively high for some time-bands. Simultaneously, cumulative 1-year RSA and RSL difference, relative to Latvian banks' assets, improved over the reporting period by shrinking from 3.2% to 0.4% (see Chart 39), thus mitigating the exposure of the banking sector to interest rate risk.

The results of sensitivity analysis show that the impact of any potential interest rate changes on net annual interest income<sup>17</sup> of Latvian banks would still be negligible (see Chart 40).<sup>18</sup>

<sup>15</sup> Repricing risk is the probability of suffering losses due to interest rate movements and mismatching residual maturities of assets and liabilities. In this case, losses are incurred when the interest expenditure growth exceeds that of the interest income or the interest income falls quicker than interest expenditure. When estimating the bank's exposure to repricing risk, only RSA and RSL are examined, and they are distributed into several time-bands depending on the time remaining to repricing, which is the residual maturity for fixed rate instruments and the time remaining to reviewing the interest rates for variable rate instruments.

<sup>16</sup> The GAP of a pre-defined time-band is the difference between the RSA and RSL value within the specific time-band. The larger a particular bank's GAP, the higher its interest rate risk exposure. In the event of a positive GAP, the bank will incur losses from an interest rate decline, as the RSA exceed the RSL, and, therefore, the banks' interest income will shrink more notably than the expenditure. In the event of a negative GAP, the bank will incur losses from a rise in interest rates, as the liabilities exceed the assets and, therefore, the banks' interest expenditure will grow more than the income.

Chart 39

### GAP'S SHARE IN TOTAL LATVIAN BANKS' ASSETS (%)

GAP  
 Q2, 2005  
 Q4, 2005  
 Q2, 2006  
 Q4, 2006  
 Cumulative GAP  
 Q2, 2005  
 Q4, 2005  
 Q2, 2006  
 Q4, 2006

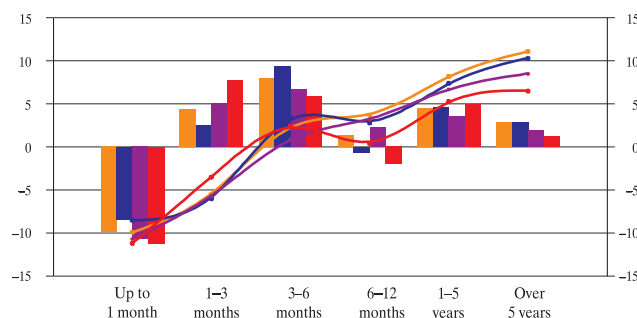
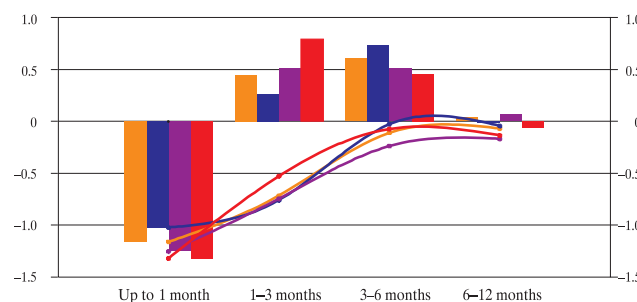


Chart 40

### SENSITIVITY ANALYSIS: IMPACT OF INTEREST RATE INCREASE BY 1 PERCENTAGE POINT ON THE ANNUAL NET INTEREST INCOME OF LATVIAN BANKS BY MATURITY (% of capital and reserves)

Impact  
 Q2, 2005  
 Q4, 2005  
 Q2, 2006  
 Q4, 2006  
 Cumulative impact  
 Q2, 2005  
 Q4, 2005  
 Q2, 2006  
 Q4, 2006



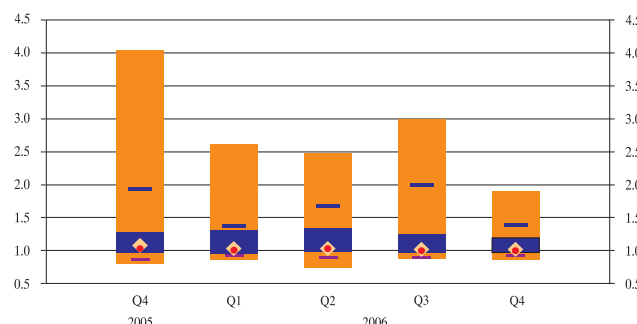
With interest rates increasing by 1 percentage point, the negative GAP in the time-band of up to one month would decrease the net interest income of Latvian banks by 1.3% of the total banks' capital and reserves. Alternatively, the positive GAP in the time-bands of 1-3 months and 3-6 months would increase the net interest income of Latvian banks by 0.8% and 0.5%, respectively, of the total banks' capital and reserves. All in all, the interest rate increase by 1 percentage point would result in a drop of banks' net interest income by 0.1% (cumulative effect) of the total banks' capital and reserves. The comparatively high positive GAPs for the time-band from 1-6 months are largely due to the variable interest rates on the bank loans. Consequently, any changes in money market interest rates are priced into interest rates on bank loans in a relatively short period of time, thus diverting the interest rate risk to the client.

The spread between the interest rate risk ratios of different banks narrowed notably in 2006 compared to the end of the previous year. At the end of December, the cumulative 1-year RSA to RSL ratio spread between the highest and the lowest value shrunk more than three times (see Chart 41). In 2006, the range between the 90th and the 10th percentile – as a rule, less sensitive to extreme values – shrunk, too.

Chart 41

### DECOMPOSITION OF THE CUMULATIVE 1-YEAR RSA/RSL RATIO OF LATVIAN BANKS

Minimum – maximum range  
 Interquartile range  
 Median  
 Weighted average for the banking sector  
 90th percentile  
 10th percentile



<sup>17</sup> The effect on annual profit within each time-band is calculated by multiplying the time-band's GAP with the interest rate change and the ratio of this time-band characterising the part of the year when the GAP of this time-band will be active. For the purposes of calculating the ratio, it is assumed that repricing will take place in the middle of the time-band. For example, 3-6 month time-band ratio is calculated as follows:  $(12 - 0.5 \times (3 + 6)) / 12 = 0.625$ . The overall impact on the profit for the year is the aggregate effect for the first four time-bands.

<sup>18</sup> As the calculations are based on the GAP method, they do not take into account the interest rate impact on the economic value of the banks and are based on the structure of the banks' aggregate balance sheet as at the end of 2006.

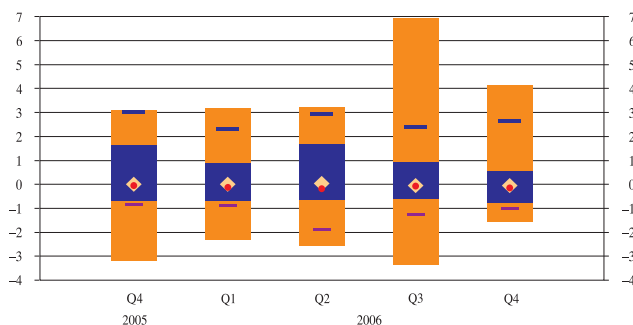


The bank sensitivity analysis results indicate that for many banks a probable interest rate increase by 1 percentage point would result in a visible growth in net interest income (up to 4.1% of total banks' capital and reserves, see Chart 42). The interquartile range demonstrates that for half of the banks the effect of interest rate increase by 1 percentage point would be in the range between -0.8% and 0.6% of total banks' capital and reserves.

Chart 42

**SENSITIVITY ANALYSIS: DECOMPOSITION OF CUMULATIVE IMPACT OF INTEREST RATE INCREASE BY 1 PERCENTAGE POINT ON THE ANNUAL NET INTEREST INCOME OF LATVIAN BANKS**  
(% of capital and reserves)

■ Minimum – maximum range  
■ Interquartile range  
◆ Median  
● Weighted average for the banking sector  
— 90th percentile  
— 10th percentile



## 6. FOREIGN EXCHANGE RISK OF BANKS

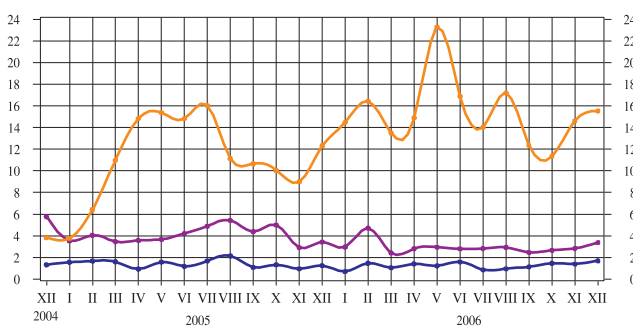
**The direct foreign exchange risk of banks continued to be low, yet, for some banks the open positions in euro remained high.**

In the second half of 2006, a further depreciation and volatility of the US dollar was observed on foreign exchange markets. The Latvian banks are well protected from the foreign exchange risk stemming from the US dollar fluctuations, as they have been maintaining low open US dollar positions already since the repegging of the lats at the beginning of 2005. Moreover, in the second half of 2006, the average volume of open US dollar positions of the banks remained the same as in the first half of the year. Open euro positions of the banks, though uneven, still dropped compared to the first half of the year (see Chart 43).

Chart 43

**WEIGHTED AVERAGE OPEN CURRENCY POSITIONS<sup>19</sup> OF THE BANKING SECTOR**  
(% of equity)

— Total  
— Euro  
— US dollar



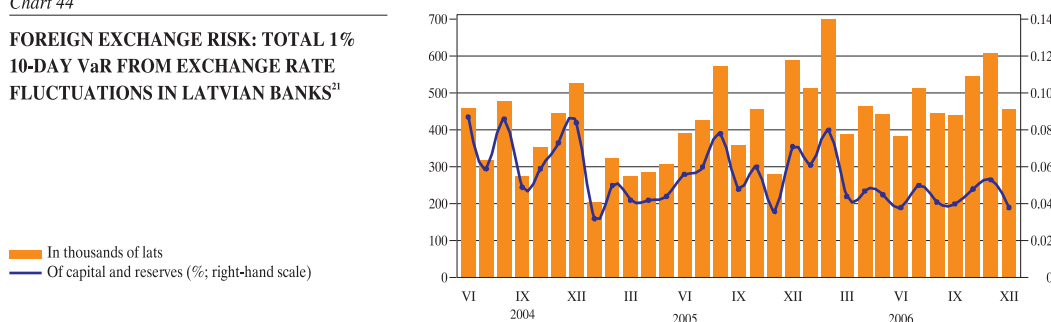
Though the average weighted volume of open euro positions is not high for the banking sector, the range of open euro position volumes is quite wide, and approximately half of the banks have their open euro positions about 10% of equity. However, some of the banks had quite sizeable open euro positions at the end of 2006.

<sup>19</sup> Calculations use the absolute values of the open currency positions. Open currency positions of individual banks are equity-weighted. Since the repegging of the lats on 1 January 2005, the open currency positions in euro are no longer included in calculating the total open currency position.

VaR<sup>20</sup> results continue to suggest that the Latvian banks' vulnerability to major adverse exchange rate developments is very low (see Chart 44). VaR did not change significantly in the second half of the year.

Chart 44

**FOREIGN EXCHANGE RISK: TOTAL 1% 10-DAY VaR FROM EXCHANGE RATE FLUCTUATIONS IN LATVIAN BANKS<sup>21</sup>**

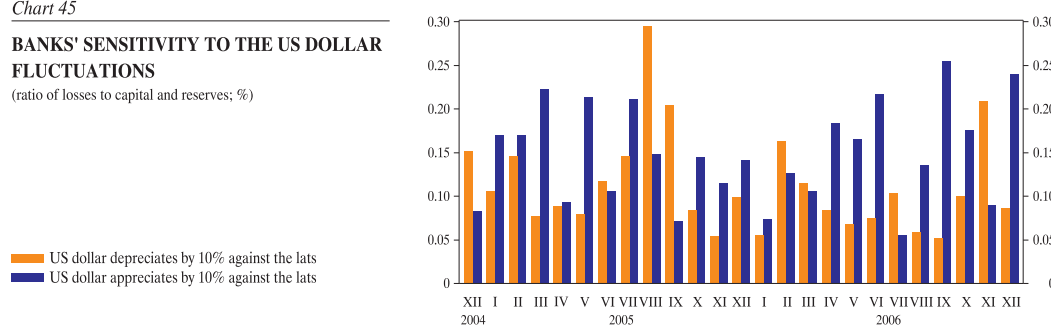


Moreover, the potential impact of the US dollar exchange rate fluctuations, the largest source of the banks' foreign exchange risk after the repegging of the lats, on the banks has remained low also in the second half of the year (see Chart 45).

Chart 45

**BANKS' SENSITIVITY TO THE US DOLLAR FLUCTUATIONS**

(ratio of losses to capital and reserves; %)



Overall, both the results of the analysis of the open currency positions and those of VaR and sensitivity suggest that the direct foreign exchange risk of the Latvian banks remains low.

## 7. BANK LIQUIDITY

### The overall liquidity ratio of banks remained unchanged (slightly beyond 50%).

The overall liquidity ratio of banks remained unwavering over the second half of the year and was 51.1% {52.3%} at the end of 2006 (the lowest threshold as set by the FCMC is 30%<sup>22</sup>). The stabilisation of overall liquidity continued together with improved liquidity in the banks<sup>23</sup> servicing residents – affected by the increase of short-term claims on the Bank of Latvia and other MFIs. The banks servicing

<sup>20</sup> VaR reflects the maximum expected losses over a certain period of time with a given probability. 1% 10 day VaR from exchange rate fluctuations means that within the next 10 days there is only a 1% probability that losses from exchange rate fluctuations will exceed the VaR. In this report, VaR was obtained based on open currency positions of individual banks at the end of each month. Calculations use the historical daily exchange rate changes within one year prior to VaR evaluation date (last day of the relevant month). Since repegging the lats to the euro, VaR calculations no longer include the euro component.

<sup>21</sup> One should keep in mind that VaR for the Latvian banking sector is the aggregate of VaRs of individual banks. The actual aggregate VaR for the banking sector is somewhat lower, because of the lack of full positive correlation between VaR of individual banks.

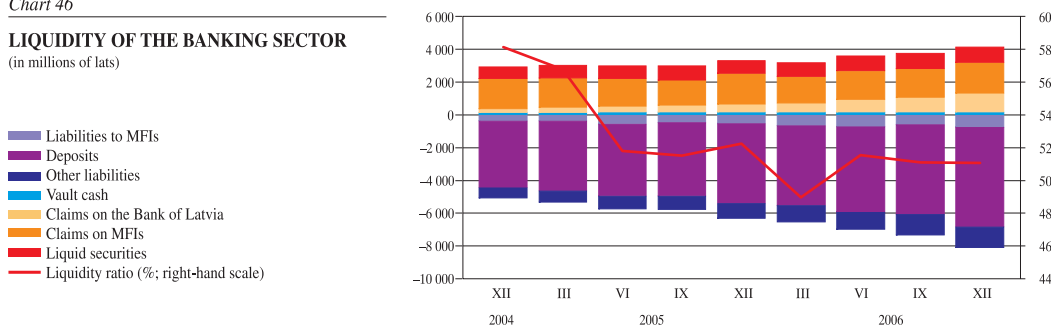
<sup>22</sup> Liquid assets (vault cash; claims on the Bank of Latvia and solvent credit institutions whose residual maturity does not exceed 30 days, and deposits with other maturity, if a withdrawal of deposits prior to the maturity has been stipulated in the agreement; investment in financial instruments, if their market is permanent, unrestricted) must not be less than 30% of banks' total current liabilities with residual maturity under 30 days.

non-residents continued to lose liquidity, suggesting their increasing involvement in lending market (see Chart 46).

Chart 46

### LIQUIDITY OF THE BANKING SECTOR

(in millions of lats)



Short-term liquidity ratio<sup>24</sup> continued to improve to stand at 65.6% {62.6%} at the end of 2006. The share of liquid assets<sup>25</sup> was shrinking slowly to reach 23.9% {26.7%} of the banking sector assets at the end of 2006.

The maturity mismatch between assets and liabilities diminished compared to the end of the first half of 2006. Demand transactions, which is the least balanced net position<sup>26</sup>, reached 3 219 million lats (28.6% of GDP; 29.9% of GDP at the end of the first half of 2006).

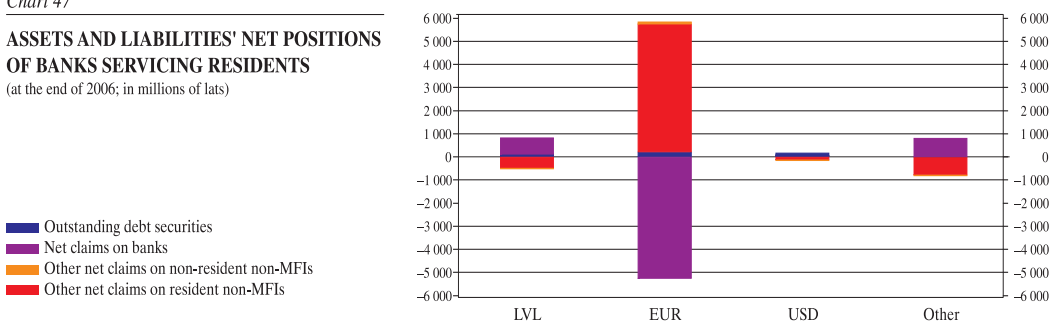
With vigorous lending continuing, the non-MFI loan-to-deposit ratio edged up further to stand at 140.1% {112.2%} at the end of the year. Banks granted an increasingly larger share of loans that are funded from borrowings from foreign banks: the share in total liabilities rose by 6.7 percentage points in 2006 and amounted to 34.2% (including 25.4% from parent banks). The share of non-MFI deposits in liabilities shrank by 7.9 percentage points and was 48.8%. This indicates a growing dependence of the Latvian banking sector on funding from foreign banks.

Analysing the situation by groups of banks, it becomes obvious that the banks servicing residents (see Chart 47) tend to draw euro liquidity from parent banks and European investment banks and, in the form of syndicated loans, also from other foreign banks. These funds are primarily used to grant euro loans to resident non-MFIs. The dependence of the banks servicing residents on the financing coming from foreign banks remained high – at the end of 2006, this type of funding amounted to 45.3% of the total liabilities.

Chart 47

### ASSETS AND LIABILITIES' NET POSITIONS OF BANKS SERVICING RESIDENTS

(at the end of 2006; in millions of lats)



<sup>23</sup> Banks are grouped by the share of non-resident deposits in the banks' assets: if it exceeds 20%, a bank is regarded as a bank servicing non-residents; if it is below 20%, a bank is regarded as a bank servicing residents.

<sup>24</sup> Short-term liquidity ratio = liquid assets/demand liabilities (to banks and non-MFIs) x 100.

<sup>25</sup> Liquid assets = vault cash + claims on MFIs + central government fixed income securities.

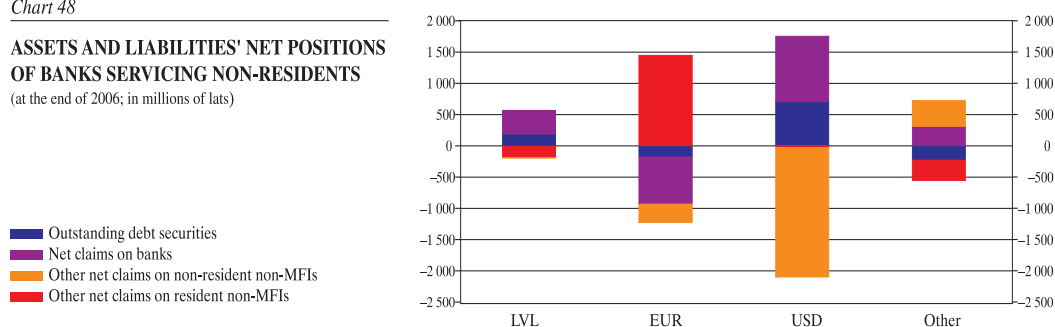
<sup>26</sup> Net position – the difference between asset position and liability position.

Banks servicing non-residents mostly attract funds from non-resident non-MFIs in US dollars, and place the majority of them in foreign liquid assets (banks or invest in securities, see Chart 48). Simultaneously, banks servicing non-residents are increasingly attracting euro funds from MFIs and using them for lending euro to residents. Nevertheless, the liquidity risk relating to non-resident deposits remained low, as the major share of those assets was placed on correspondent accounts in foreign banks and invested in securities.

Chart 48

#### ASSETS AND LIABILITIES' NET POSITIONS OF BANKS SERVICING NON-RESIDENTS

(at the end of 2006; in millions of lats)



In the second half of 2006, the deposits of non-residents with non-MFIs slightly increased (to 2 799.0 million lats), however, their share in liabilities contracted to 51.9% {59.2%}.

## 8. FINANCIAL VULNERABILITY

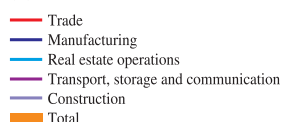
**Indebtedness level of non-financial corporations remained high, especially in real estate related sectors.**

In the first three quarters of 2006, vigorous expansion of the national economy and inflows of investment supported rapid development of the non-financial corporation sector. Endeavours to exploit profit opportunities arising from the high demand led to a buoyant rise in non-financial corporations' investment in fixed assets, mainly financed by borrowing (see Chart 49). The debt-to-equity ratio of non-financial corporations was considerably higher year-on-year, remaining broadly unchanged in the third quarter.

Chart 49

#### DEBT-TO-EQUITY RATIO OF NON-FINANCIAL CORPORATIONS FOR THE FIRST NINE MONTHS OF THE RESPECTIVE YEAR

(%)<sup>27</sup>



In the first nine months of 2006, the profit margins (return on sales) in almost all sectors were higher year-on-year. Compared to the data for the first half of the year, the limiting effect of the increase in costs was less marked, and the data for the fourth quarter also suggested that the vigorous demand continued to contribute to increasing profit margins.

<sup>27</sup> Source: CSB. Financial results of business activities.

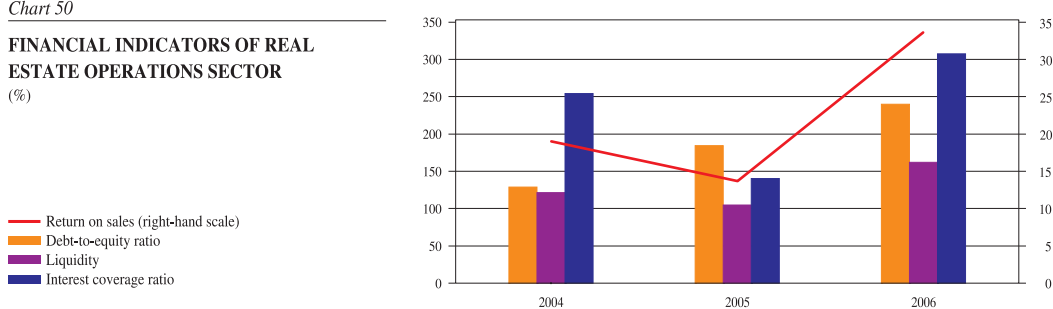
Growing profits helped to retain high interest payment coverage and even improve it in a number of sectors. Despite the fast debt growth, the volume of interest payments increased moderately, pointing to still favourable financing conditions.

Comparing fixed asset movements in various sectors of the national economy during the twelve months following the third quarter of 2005, investment in the real estate operations sector accounted for over one third of total investment. The asset structure of the national economy shifted in favour of the real estate operations, renting and other business activities (at the end of the third quarter, 12.6% of non-financial sector assets were invested in the sector, compared to 7.5% in the third quarter of 2005). The share of construction sector also increased notably, while the share of manufacturing, transport, storage and communication and energy sectors shrank.

Even though the real estate operations sector posted the highest return on sales, its return on assets was considerably below the national average. Investment in this sector did not therefore contribute to the overall income generating capacity of the non-financial sector, without attracting additional borrowed financing. The rapid growth in the real estate operations was financed by borrowing (see Chart 50) and the share of bank loans was very significant in the debt composition of the sector<sup>28</sup>. A high level of debt persisted in the sector, and interest payments kept increasing; nevertheless, with profits growing rapidly the interest payment coverage continued to improve. A deterioration of the macroeconomic environment or adverse changes in the sector asset prices affecting profitability of the non-financial corporations of the sector would add to the possibility that risks related to the high level of indebtedness might materialise.

Chart 50

#### FINANCIAL INDICATORS OF REAL ESTATE OPERATIONS SECTOR (%)



#### Box 4. Financial vulnerability of non-financial corporations in 2005

As the rapid growth of the national economy persisted and costs also increased, a vigorous expansion of the non-financial sector continued. Like in 2004, investment continued to flow into the real estate operations, renting and business activities, as well as construction, increasing the share of these sectors in the total balance of investment. The dynamic expansion was financed by borrowing which, to a lesser extent, was also characteristic of other sectors and the level of debt in the above sectors as well as in the national economy on the whole rose extremely rapidly for a second consecutive year.

Even though information for the first nine months of 2005 pointed to an ongoing increase in the profitability of the non-financial corporations it was not confirmed after collating data for the year. In the context of the previous years, however, the profitability level remained fairly high.

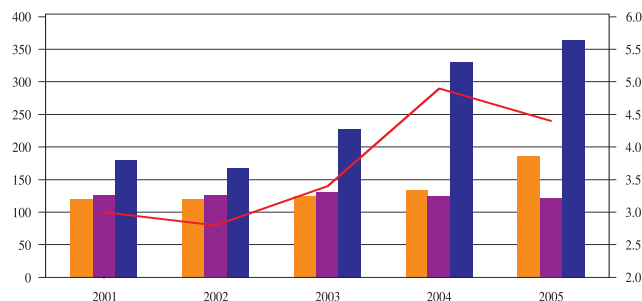
<sup>28</sup> In 2005, the share of borrowing from credit institutions in the liabilities structure of real estate operations was 47.9% while the average in the national economy was 28.9%. Source: CSB.

Although interest-bearing debt rose steeply, the volume of interest payments increased rather moderately and its coverage even improved (see Chart 51).

Chart 51

#### FINANCIAL INDICATORS OF NON-FINANCIAL CORPORATIONS (%)

— Return on sales (right-hand scale)  
— Debt-to-equity ratio  
— Liquidity  
— Interest coverage ration



#### The household debt continued to pick up at a high pace.

Although the growth rate of household deposits continued to slowly accelerate, the negative net financial position of households turned more negative and reached 14.5% of GDP at the end of 2006 (see Chart 52), implying that household liabilities to credit institutions and credit unions exceeded their deposit holdings. The increase in household debt consisting of liabilities to banks, leasing companies and credit unions showed a year-on-year increase of 76.7% reaching 40.9% {28.5%} of GDP (see Chart 53), a sustainable low vis-à-vis the euro area countries where it amounts to 60% of GDP on average.

Chart 52

#### HOUSEHOLD DEPOSITS WITH MFIs AND LIABILITIES TO MFIs AND LEASING COMPANIES

(at end of period; in millions of lats)

— Household debt (total)  
— Total deposits with credit institutions  
— Net position of households

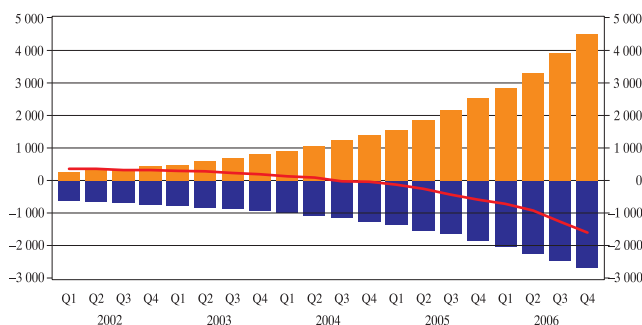
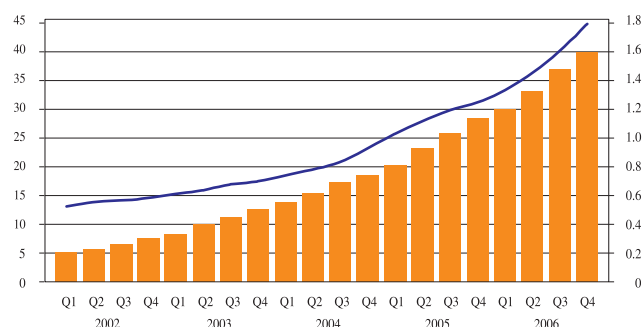


Chart 53

#### HOUSEHOLD DEBT AND INTEREST PAYMENTS

(% of GDP)

— Household debt  
— Annual interest payments of households (right-hand scale)



Bank loans granted for house purchase accounted for the largest part of the household debt. At the end of 2006, the number of such loans reached 131.6 thousands representing a year-on-year increase of 27.5%. This means that no more than 14.5% households had used bank loans for house purchase. It has to be noted, however, that one household can potentially have more than one bank loan, therefore this figure might actually be smaller. With the rise in real estate prices persisting, the average level of mortgage loans continued to increase, reaching 24.8 thousand lats at the end of 2006.

As interest rates on interbank loans were going up in the euro area and accordingly also in Latvia, the level of interest payments by households increased by 80.8% compared to 2005 and represented 1.8% {1.3%} of GDP. Household income, however, also continued to increase. This was evidenced by a rise in gross wages and salaries (by 23% during the year) and the decline in the registered unemployment rate (to 6.5%).

**Box 5. Real estate market trends in the context of household purchasing power**

*Review of the results of the household survey initiated by the Bank of Latvia<sup>29</sup> suggests that willingness to obtain bank loans primarily depends on factors that could be expected ex-ante: income and the number of square meters of living space per family member are of importance almost in every model regression specification.*

*How many new houses would have to be built to achieve price stabilisation? Increases in housing prices and housing space per capita in Latvia, Estonia and Slovenia were compared in order to assess the level of unsatisfied demand. In the second half of 2006, housing prices in central Tallinn stabilised but prices for housing in the Soviet type apartment blocks on the outskirts even declined by 10–20%. Slovenia in its turn had the highest housing space per capita among EU10 countries. In Latvia, a total of 7.8 million square meters of housing space still needs to be supplied to reach the level of Estonia and 14.3 million square meters to reach the level of Slovenia. Given the fact that construction capacities are fully utilised at the moment, Latvia might reach the level of Estonia in 8.7 years' time and that of Slovenia in 16 years' time, provided that the level of housing commissioned during 2006 is retained.*

*Based on the results of the household survey initiated by the Bank of Latvia in 2006 and using a logit model, the number of households with a sufficient purchasing power who might purchase new housing in the future at the end of 2006 was assessed to be 44 thousand. Given the present growth rate of the number of mortgage loans and price per square meter to income ratio, the resulting outlook for rising housing prices was fairly short (0.5 to 2 years).*

*The paper draws some conclusions featuring price dynamics for housing in standard apartment blocks and outlining potential problems related to forecasting price stabilisation. First, in accordance with the VaR model, bank loans have an impact on price rises in the long term. Second, prices have a high level of sustainability, i.e. price dynamics depend on their past values and their movements. Finally, forecasts suggest that despite the fact that prices are characterised by their internal dynamics, a number of significant factors are vital in their assessment which cannot be forecasted or known. The minor impact of the official salary and wage level in the model points to the existence of an extensive grey economy sector. No data are, however, available on the development of actual income of households and its breakdown. Future lending policy pursued by banks and price development expectations of the population play an important role.*

<sup>29</sup> Vitola, K., Dāvidsons, G. Analysis of market for apartments in standard blockhouses in relation to lending and household purchasing power assessment. The study is available at: <http://www.bank.lv/lat/main/all/sapinfo/eksar/nekup/pet/>.

## 9. NBFIs

Aggravating risks associated with the real estate market in Latvia, most likely, would not exert direct impact on leasing companies. The major leasing service providers, closely related with the banking sector (bank subsidiaries) have reduced the leasing financing of real estate. The outstanding amount of financial leasing granted to resident households for house purchase is limited.

The role of the NBFIs in the financial system of Latvia remained minor in the second half of 2006. The previous *Financial Stability Report* presents a detailed breakdown of the NBFi loans. The share of leasing companies' assets accounted for the majority of the overall NBFi assets.

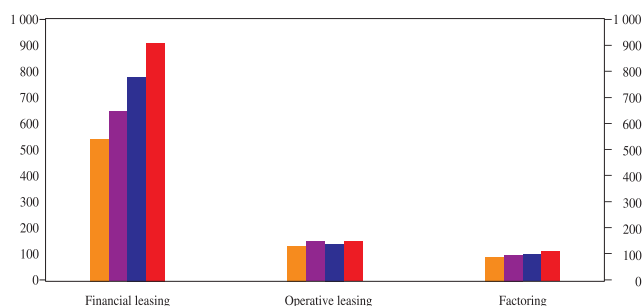
In the second half of 2006, the outstanding amount of leasing and factoring loans granted by leasing companies expanded by 274.5 million lats, reaching 1 183.3 million lats (see Chart 54).

Chart 54

### DYNAMICS OF THE LEASING MARKET SEGMENTS IN 2006

(at end of period; in millions of lats)

Q1  
Q2  
Q3  
Q4



Financial leasing posted a buoyant rise, hence the role of this type of loan in the leasing companies' portfolio continued to increase. The outstanding amount of factoring loans was minor, as the majority of these loans (80.0%) were with a maturity of up to six months, thus containing a long-term rise in the outstanding amount. In contrast to factoring loans, new financial lease agreements were mostly concluded with a maturity of two years and longer maturity.

Although the amount of financial leasing loans granted to households has recently expanded, the leasing companies' portfolio by economic sectors remained diversified at the end of 2006.

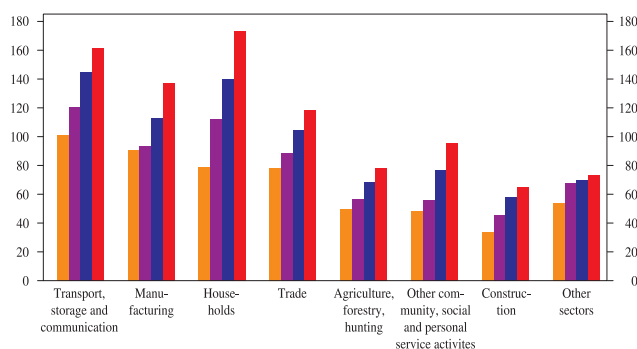
The financial leasing (the major type of loans granted by leasing companies) portfolio by economic sectors indicates that the financial leasing granted to households posted a substantial growth in 2006 (see Chart 55). At the end of the first quarter of 2006, the share of households in the outstanding amount of financial leasing was 15.0%, reaching 19.3% at the end of the year.

Chart 55

### CHANGES IN THE OUTSTANDING AMOUNT OF FINANCIAL LEASING BY ECONOMIC SECTORS IN 2006

(outstanding amount at end of period; in millions of lats)

Q1  
Q2  
Q3  
Q4





The outstanding amount of financial leasing services provided to resident non-financial businesses increased in all major lessees' sectors in the second half of 2006. However, taking into account the buoyant expansion of financial leasing in household financing, the share of major sectors: transport, storage and communication, manufacturing and trade in the total resident financial leasing portfolio moderated somewhat.

Increasing risks associated with the Latvian real estate market, most likely do not affect leasing companies directly. The major leasing service providers, closely related with the banking sector (bank subsidiaries) have reduced the leasing financing of real estate. According to the CSB data, the outstanding amount of financial leasing granted to resident households for house purchase was minor (an average 1.5 million lats or 1.3% of the outstanding amount of financial leasing granted to households in 2006). Hence in household financing, the financial leasing was mainly used for consumption and other purposes.

Loans granted in euro continued to expand in the loan portfolio of leasing companies. Although in 2006 euro interest rates continued to grow, the interest rate spread of the lats and the euro loans remained positive, hence the consumers chose financing mostly in euro rather than in lats.

## 10. SECURITIES SETTLEMENT SYSTEMS

**The Bank of Latvia performs oversight of both the DENOS and the VNS in accordance with the *Oversight Policy for the Securities Settlement Systems of Latvia* approved by the Council of the Bank of Latvia. The operation of DENOS is systemically important as it ensures settlements of financial instruments in public circulation, while the main objective of VNS is to ensure settlements of the Bank of Latvia's monetary policy operations and those of intraday credit operations.**

One of the tasks of the Bank of Latvia under the Law "On the Bank of Latvia" is to promote smooth operation of the payment systems. Since a significant part of executed payments relate to the securities settlements, problems in the securities settlement systems may cause delays in payment system operation and affect the implementation of monetary policy. Hence, in order to ensure fulfilment of this task, the Bank of Latvia performs oversight of the securities settlement systems functioning in Latvia (hereinafter, the Systems), monitoring the operation of the existing Systems, evaluating them as per the tasks set and proposing the necessary changes within the framework of oversight. The Bank of Latvia performs oversight of the Systems in Latvia in accordance with the standards of the European System of Central Banks and the Committee of European Securities Regulators, recommendations of the Committee on Payment and Settlement Systems of the Bank for International Settlements and the International Organisation of Securities Commissions as well as other regulations of the ECB and the Bank for International Settlements. The Bank of Latvia applies the same oversight core principles to both Systems. Within the oversight, an assessment of the System operation is performed in compliance with international standards and other documents, if necessary, as well as meetings with System operators on various issues related to the functioning of Systems are held, and the System operation statistics analysed.

Regarding the development of securities market at the international level, the European Code of Conduct for Clearing and Settlement (hereinafter, the Code) signed in November 2006, has to be mentioned.

The majority of participants in the EU securities market infrastructure have joined or

undertaken to implement, on the voluntary principles, the Code approved by the Federation of European Stock Exchanges, the European Association of Central Counterparties and the European Central Securities Depositories Association. The Code aims to achieve greater efficiency of securities market and integration in Europe. The Code requires signatories to meet certain standards in the areas of price transparency, access and interoperability and service unbundling and accounting separation. The LCD has also signed the Code and, complying with the requirements of transparency of the provided service fees, has published the samples of cost calculation by the securities market participants, facilitating a better understanding of the fees applied by the LCD to the securities settlement services.

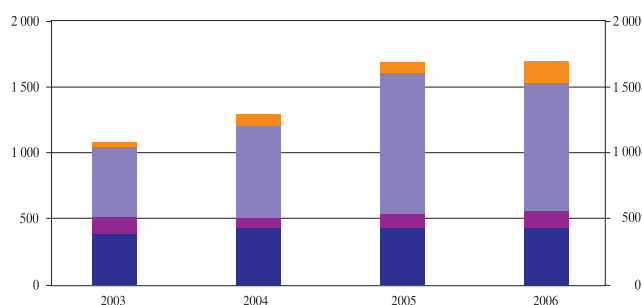
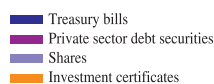
The total amount of securities registered with the LCD remained broadly unchanged in 2006, while that of securities kept in the VNS even decreased at the end of the year. Positive trends observed on the global stock markets facilitated an increase in the securities turnover in DENOS. Along with a strengthening demand for loans in the monetary operations of the Bank of Latvia, a rise in the turnover of the VNS was also observed.

All publicly traded securities issues (including the securities kept in the VNS) are registered with the LCD. At the end of 2006, the total value of the registered securities accounted for 1 700 million lats in the DENOS, with the amount of registered investment certificates expanding more notably (see Chart 56).

Chart 56

#### TOTAL VALUE OF SECURITIES REGISTERED WITH THE LCD

(at end of period; in millions of lats)

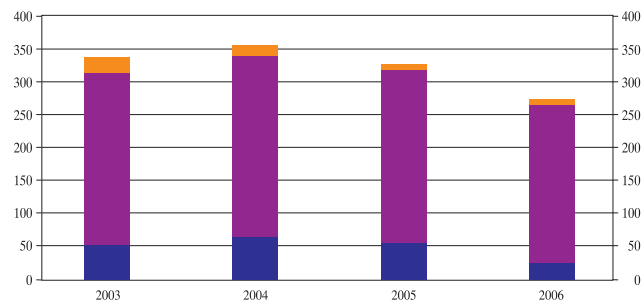
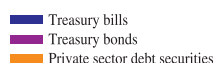


At the end of 2006, the value of securities kept in the VNS declined to 272 million lats (see Chart 57).

Chart 57

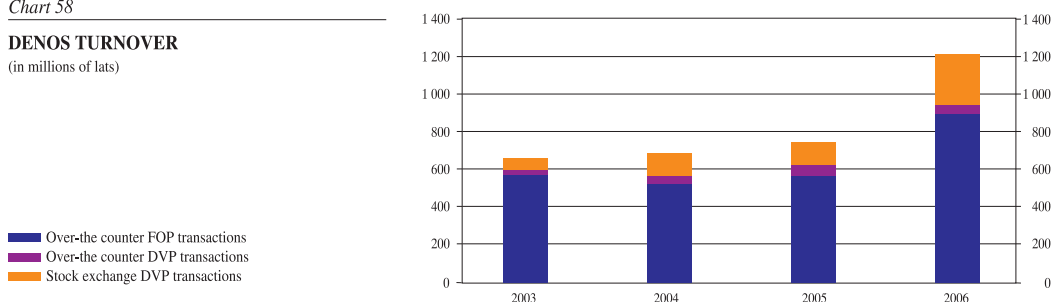
#### TOTAL VALUE OF SECURITIES KEPT IN THE VNS

(at end of period; in millions of lats)



Treasury bonds still accounted for the largest share. Strong interest in investment made in securities contributed to a significant expansion of securities turnover in DENOS (see Chart 58), with the settlement of FOP (mainly settlements of large-value transactions on the over-the-counter market) and DVP transactions increasing as a result of trading on the RSE accelerating. A rise in total turnover was also driven by cross-border trade and settlement in securities registered with the central depositories of the Baltic States.

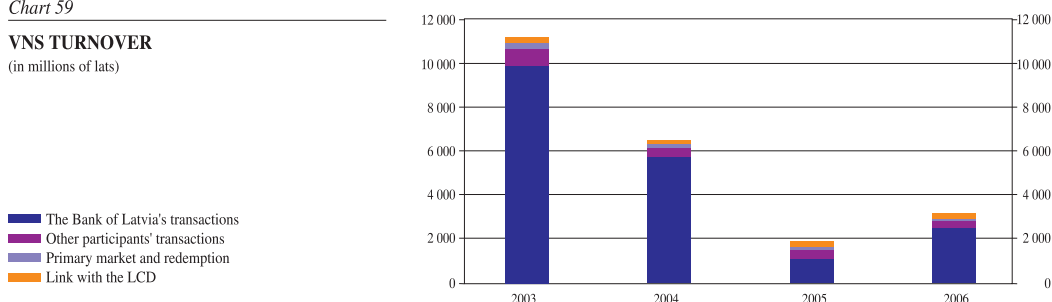
Chart 58

**DENOS TURNOVER**  
(in millions of lats)

A rise in securities transfers (FOP) points to a high mutual confidence among transaction participants, and at the same time from the viewpoint of risk analysis, results in increasing threat of systemic risk, if a market participant fails to settle the transactions made with other market participants.

The VNS that ensures the execution of securities transfer orders (with DVP transactions prevailing) related with the settlement of the Bank of Latvia's monetary policy operations remains systemically important, as confirmed by a higher turnover than that of the DENOS (see Chart 59). The substantial value of transactions requires that a particular attention be focussed on ensuring a stable operation of the VNS and measures preventing settlement-related risks implemented.

Chart 59

**VNS TURNOVER**  
(in millions of lats)

In 2006, no threat to smooth functioning of settlement systems was observed.

The risk containment measures implemented in the securities settlement systems of the LCD and the Bank of Latvia ensure smooth securities settlement. To prevent credit risk in securities settlement, market participants may choose to execute the DVP settlements.

Operational risk was mitigated as a result of the changes introduced in financial instrument transfers by the LCD at the end of 2006, stating that transfers may be executed in the DENOS only with a beneficiary's validation. The LCD does not require the beneficiary's validation, if the beneficiary and the sender of financial instruments have opened a financial instrument account with the same participant of the LCD.

## 11. PAYMENT SYSTEMS

**In the second half of 2006, the share of the SAMS and the EKS diminished in the respective payment segment both in terms of volume and value.**

The significance of the SAMS and the EKS in the overall payment infrastructure is characterised by the share of each system in the interbank and retail payments.

In the second half of 2006, indicators of the share of payment systems' turnover (see Chart 60 and Chart 61) declined year-on-year. Of interbank credit transfers in lats, the volume of interbank payments processed by the SAMS amounted to 80.7% (34.0 thousand) and their value was 74.8% (20.4 billion lats). The remaining share was executed by Latvian banks via correspondent banking arrangements. Of retail interbank credit transfers, 76.0% (14.2 million) and 69.9% (5.7 billion lats) respectively were handled in the EKS. The residual share was determined by some Latvian bank mutual gross settlements of customer credit transfers.

Chart 60

**THE SHARE OF SAMS TURNOVER IN THE INTERBANK CREDIT TRANSFERS IN LATS (%)**

■ The second half of 2005  
■ The second half of 2006

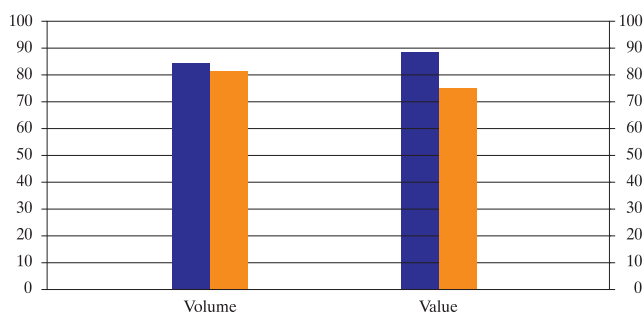
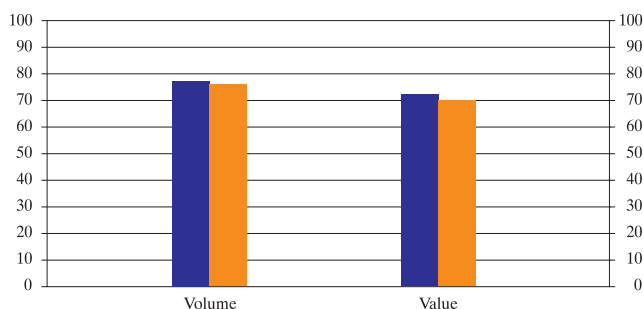


Chart 61

**THE SHARE OF EKS TURNOVER IN THE CUSTOMER INTERBANK CREDIT TRANSFERS IN LATS (%)**

■ The second half of 2005  
■ The second half of 2006



The volume and value of payments processed in both systems posted a notable increase in comparison with the second half of 2005: a pickup of 41.5% (12.4 thousand) and 76.1% (11.8 billion lats) in the SAMS and a growth of 12.6% (1.6 million) and 21.2% (998.5 million lats) in the EKS respectively. Along with the settlements in the Bank of Latvia's systems, mutual interbank settlements also expanded, resulting in a diminishing significance of both payment systems in the lats payment infrastructure.

As in the previous periods, the concentration ratios of the SAMS were higher in terms of value and those of the EKS – in terms of volume in the second half of 2006.

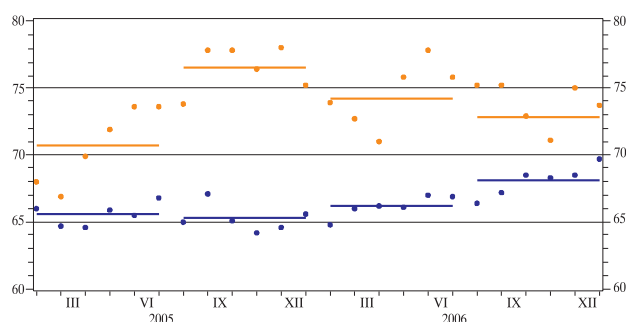
As the main domino effect indicators, the SAMS and the EKS concentration ratios (the share of the system's five largest participants) retain a similar trend on an annual basis: in accordance with the ECB guidelines, they do not exceed the stipulated limit of systemic risk – 80%.

The volume concentration ratio of the SAMS increased to 68.1% (107.6 thousand; see Chart 62) in the second half of 2006. It was mainly determined by the

Chart 62

### THE SAMS CONCENTRATION RATIOS (%)

• Volume  
 — Average volume ratio (half a year)  
 • Value  
 — Average value ratio (half a year)



rise in volume of customer payments (20.5%; 10.7 thousand) and, in particular, the activities of the five largest participants. The value concentration ratio of the SAMS declined from 76.5% (20.5 billion lats) in the second half of 2005 to 72.8% (27.5 billion lats) in the second half of 2006, as the total value of payments executed by the system's five largest participants rose by 28.2% (4.4 billion lats), while the value of payments executed by other banks expanded more buoyantly (55.8% or 2.7 billion lats). At least seven banks, including the Bank of Latvia, were equally active in facilitating the reduction of concentration in the system.

The SAMS is primarily the interbank payment system also providing an opportunity to execute urgent or customer large-value payments. In the second half of 2006, the share of the two payment types was as follows: 35.1% (34.0 thousand financial market payments) and 64.9% (63.0 thousand customer payments) in terms of volume and 80.0% (20.4 billion lats) and 20.0% (5.1 billion lats) in that of value respectively.

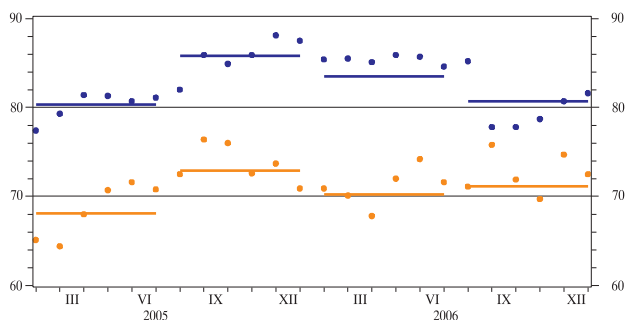
The volume and value of bank payments expanded by 36.5% (9.1 thousand) and 49.9% (6.8 billion lats) in comparison with the second half of 2005. The volume of customer payments rose by 20.5% (an increase of 10.7 thousand), while the value dropped by 5.6% (a 302.9 million lats decrease).

The SAMS is a large-value payment system, mainly characterised by value ratios. Comparing the bank payment and customer payment value concentration ratios (see Chart 63), the concentration of customer payment value was by 9.6 percentage points higher (80.7%) in the second half of 2006 and slightly exceeded the limit of systemic risk. This concentration ratio shrank, however, by 5.1 percentage points since the second half of 2005, thus pointing to a gradual lowering of the customer payment value concentration in the system.

Chart 63

### THE SAMS PAYMENT VALUE CONCENTRATION RATIOS (%)

• Customer payments  
 — Average customer payment ratio (half a year)  
 • Bank payments  
 — Average bank payment ratio (half a year)



The value concentration ratio of bank payments changed only slightly since the second half of 2005 (shrank by 1.8 percentage points), highlighting smooth distribution of system participants' payments.

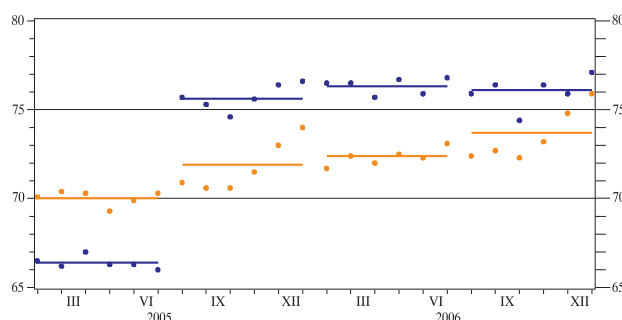
The EKS concentration ratios changed moderately since the second half of 2005. The concentration ratio of the EKS payment volume (76.1%) was almost constant, i.e. the semi-annual changes did not exceed 1% in 2006. The payment value concentration of the EKS rose to 73.7% (by 1.8% or 818.0 million lats) in the second half of 2006, as the value of payments executed by the system's five largest participants posted a more vigorous increase (24.2%) than the payments executed by other participants (13.7%; see Chart 64).

Chart 64

## THE EKS CONCENTRATION RATIOS

(%)

- Volume
- Average volume ratio (half a year)
- Value
- Average value ratio (half a year)



Settlements are executed in two clearing cycles in the EKS, i.e. twice a day. In the second half of the year, 66.5% of total daily payments and 57.7% of the daily value of payments handled in both clearing cycles were processed in the first clearing cycle of the EKS. An increase was observed in both clearing cycles in the EKS: in the first clearing cycle the total volume and value of payments rose by 9.5% and 13.1% respectively and in the second clearing cycle the turnover grew by 19.1% and 34.4% respectively.

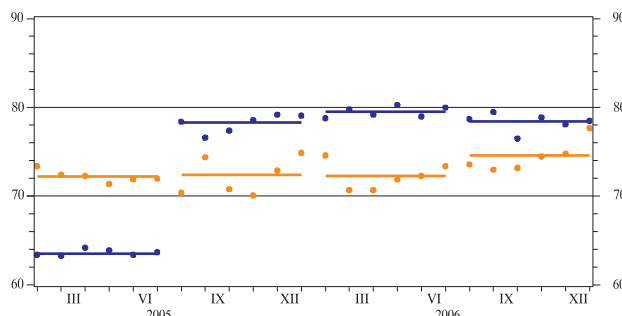
The EKS is a retail payment system processing a large volume of payments, hence it is mainly described by payment volume ratios. A comparison of the payment volume concentration ratios of both cycles (see Chart 65) showed that in the second half of 2006 the volume concentration ratio was by 3.8 percentage points higher in the first clearing cycle than in the second clearing cycle (78.4% and 74.6% respectively). Overall, the concentration ratios of both cycles tend to level out. The fact that the same five major originator's banks were covered in both concentration ratios in 2006 accounts to a great extent for it.

Chart 65

## THE EKS PAYMENT VOLUME CONCENTRATION RATIOS

(%)

- Average ratio of the first clearing cycle
- Average ratio of the first clearing cycle (half a year)
- Average ratio of the second clearing cycle
- Average ratio of the second clearing cycle (half a year)



The systemic risk was minor in both payment systems of the Bank of Latvia in the second half of 2006 as well. This risk continued to decrease in the SAMS and a balanced trend was also observed in the clearing cycles in the EKS.

The probability of a systemic risk or the so-called domino effect in addition to the concentration ratios was affected by the efficiency of using settlement funds in the systems.

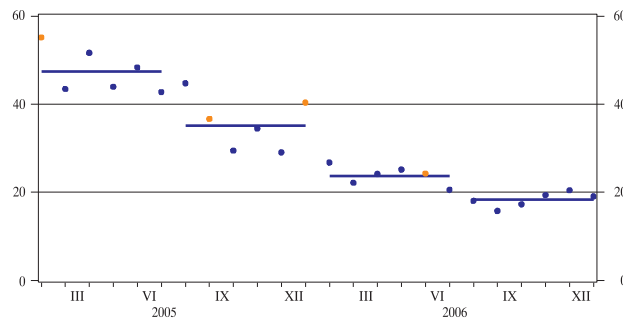
Bank settlement accounts with the Bank of Latvia are used for the financial market settlements in lats. The bank minimum reserve ratio, remaining unchanged at 8% in 2006, influenced the monthly average balance on these accounts. As of 24 May 2006, the minimum reserve base was expanded to include bank liabilities with a maturity of over two years. The value of credit institution payments in the SAMS posted a rise of 14.7% over this period, and the average balance on the accounts with the Bank of Latvia grew by 57.9%. Hence, the efficiency of using the system's settlement funds (the share of funds used for settlements in the accounts balance) declined from 23.7% in the first half of 2006 to 18.4% in the second half of 2006 (see Chart 66). As in 2005, with the system's settlement efficiency decreasing, a minimal risk that a participant might have insufficient funds for executing settlements persisted in 2006, and it is a positive feature in the context of financial stability.

Chart 66

**THE EFFICIENCY OF SETTLEMENT FUNDS IN THE SAMS**

(%)

- Monthly ratio
- Monthly ratio (increased reserve requirements)
- Half a year ratio



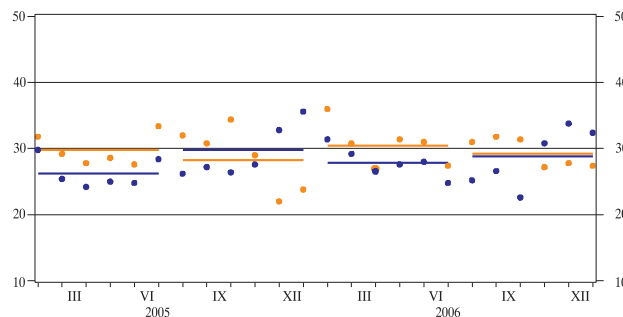
The efficiency of the settlement fund use in the EKS is described by the netting effect ratio, i.e. the system participants' net debit positions as a percentage of the system's gross transaction value. In the second half of 2006, the netting effect ratios of the first and second clearing cycle were 19.4% and 19.6% respectively (see Chart 67). This netting effect ratio is low in comparison with the ratios of other EU countries. However, as the EKS participants' net debit positions were minor in comparison with the balance on the Bank of Latvia accounts (on average 0.5%), the low netting effect created no additional liquidity risk in the system.

Chart 67

**THE EKS NETTING EFFECT RATIO**

(%)

- Average ratio of the first clearing cycle
- Average ratio of the first clearing cycle (half a year)
- Average ratio of the second clearing cycle
- Average ratio of the second clearing cycle (half a year)



In 2006, the netting effect ratios of both clearing cycles in the EKS were balanced and reflected minimum fluctuations. The netting effect ratio of the second clearing cycle continued to exceed slightly that of the first clearing cycle, posting, however, a very moderate difference indicating that both cycles were equally significant for the execution of bank customer payments and the adaptation period was, to some extent, complete.

In 2006, the payment and settlement system simulator developed by *Suomen Pankki* was used in oversight to assess the liquidity adequacy in the SAMS and set the theoretically possible critical period of time when a failure by an individual par-

ticipant in the SAMS to execute payment would cause liquidity problems to other participants in the SAMS.

Simulation of the SAMS operation was carried out from June 2006 to September 2006, and it was concluded that in terms of the received payment value the suspension of payments by the three largest participants in the SAMS (a share of 59.4% in the respective period) would only create liquidity problems to other participants after several days from the moment of suspending outgoing payments (after three days and seven hours on average). The shortest critical time period was one day and two hours, when, as a result of suspending the sending of payments by one of the largest participants, another participant would encounter the shortage of liquidity necessary for sending the respective payments via the SAMS.

For the next three largest participants (a share of 20.2% in the respective period) the critical time period was 8 days and 8 hours in terms of the received payment value. It may therefore be concluded that, with the share of value of payments received by the participant declining in the system, the time period within which a failure to send a payment by this participant would affect the liquidity adequacy of other participants is increasing.

The results of the simulation model confirmed that taking into account, first, the current turnover of the SAMS, second, high liquidity on the banks' settlement accounts, third, the functionality of the SAMS and, fourth, the system's regulations, the probability that the system participant's failure to send payments would cause liquidity problems for other participants is theoretical only. The results of simulation pointed to the high liquidity of banks.