



NÁRODNÁ BANKA SLOVENSKA



Financial Stability Report

2006



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2006

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A Executive Summary: Financial Stability in 2006 and Risks for the Near Future

Overall, the conditions for financial stability in the Slovak financial sector were favourable in 2006. Neither impulses from the external environment nor developments inside the sector brought about substantial risks

The external conditions for financial stability in Slovakia – economic development in the key regions, such as the United States, the European Union and the Visegrad countries (“V4 countries”), the stability of financial markets, commodity markets and of the euro area financial sector were in general positive. In terms of their impacts on the Slovak economy and financial sector, increased capital movements responding to international interest rate changes in the first half of the year, exchange rate volatility in the V4 countries, and price volatility on global commodity markets (the oil market in particular) presented more significant sources of instability.

The domestic macro-economic conditions – economic growth based primarily on improvements in potential and the confirmed commitment to join the euro area – had prevalingly stabilising effects. However, a rise in inflation resulting from changes in regulated prices, movements in interest rates, temporary market uncertainty regarding the future path of economic policy of the new government, and the pass-through of impulses from global financial and commodity markets and the regional foreign exchange market to domestic markets worked in the opposite direction.

The non-financial corporations and household sectors influenced the financial sector mostly in a positive way in 2006. Economic sentiment followed a favourable trend. Rapid growth of the non-financial corporations provided further room for expansion in the financial sector, and its efficiency and stability indicators improved. Consumer confi-

dence improved, as well as the actual conditions (employment and income) for growth in household consumption, even at the cost of increased indebtedness. Uncertainty for the financial corporations was represented by impulses from the external environment, primarily the exchange rate volatility, movements in commodity prices and changes in interest rates. The increase in interest rates caused only a relative deceleration in household indebtedness.

In 2006, financial sector stability was determined primarily by the stability of the banking sector, which still covers over 80% of the financial sector’s total assets. Due to the favourable economic situation, the conditions for financial stability improved. They were influenced by rapid growth in assets and also by the sector’s enhanced efficiency.

Growth in the banking sector and its improved efficiency enabled to maintain a high level of risk coverage by high quality own capital

The growth in the banking sector’s assets was related to economic growth. The importance of loans increased in the asset structure. The banks have sufficient domestic resources, primarily deposits, to facilitate their growth, and the loan-to-deposit ratio decreased in most of the banks during the year. This development was based on the favourable trends in household incomes, sales and profits of companies, and on an increase in interest rates.

Loans to non-financial corporations increased by as much as 20%. According to information provided by banks, loans were growing mainly in the segment of small and medium-sized enterprises, which was influenced by a loosening of credit conditions. Commercial real estate loans recorded a rapid growth. Loans to households increased by 32%. Mortgage



loans dominated in the structure of loans (65% as the end of the year), but the share of consumer loans was also significant (13%). Expected growth in real estate prices and increased competition among banks contributed to a loosening of credit standards on loans for house purchases. In the banking sector, lending to non-financial corporations and households continued to be concentrated within the three largest banks.

Operations between commercial banks and the central bank dominated the interbank market. The volume of these operations related to the sterilisation of excess liquidity declined by approximately SKK 100 billion in the second half of 2006. This was related to the outflow of funds of foreign banks from the domestic financial market. This outflow reflected movements in the global financial market and uncertainty among foreign investors regarding the future direction of the new government's economic policy. The NBS responded to these developments by interventions in the foreign exchange market. The resulting balance of foreign exchange operations amounted to EUR 2.59 billion, sold from the NBS's foreign exchange reserves.

The sector's profitability, measured by ROE, increased from 17.7% in 2005 to 18.8%, and after tax profit increased by 14%. It should be stressed that the growth in income from banking operations (net interest and non-interest incomes) was much faster than the growth in operating costs in 2006, despite the larger scope and a higher quality of services. Thus, operating efficiency was improving. Profit generation, like lending activity, was concentrated in the three largest banks.

The growth in net interest income was based not only on the increased volume of loans provided, but also on the higher interest margins. Their growth was related to the increased share of loans to households, where the margins are higher than in the case of loans to non-financial corporations. In consequence of increased lending to small and medium-sized enterprises, interest margins on loans to the corporate sector also increased. Non-interest income was also growing. For the banking sector as a whole, fees and income from trading

were declining (the increased income from foreign exchange and derivative operations was not sufficient to offset the fall in income from securities operations). The creation of provisions as well as net income from the creation of provisions were declining.

Due to a rapid growth of risk-weighted assets (primarily loans) and a less rapid growth of capital, the adequacy of capital continued to decline to 13% by the end of 2006. The banks managing more than half of the banking sector's assets reported an adequacy ratio lower than 12%. However, none of the banks fell below the 8% limit during the year. The capital of the sector is of high quality – most of it is made up of equity capital or profits, and as much as 97% of its total volume falls under the Tier I category.

Risks in the banking sector were low in 2006, and were comfortably covered by banks' capital

Despite the volatility in exchange rates, the foreign exchange risk of the banking sector was limited. Although banks had open and short balance-sheet positions, they used to close them with the help of derivative operations, and thus the banking sector's overall foreign exchange position was closed. Hence, the value at risk did not exceed the level of 2% of banks' capital.¹ The indirect foreign exchange risk resulting from an increase in foreign currency loans to non-financial and financial corporations is not monitored sufficiently well.

In 2006, the interest rate risk was concentrated in the banking book. It had no influence on the capital adequacy, but it did affect the net economic worth. Should an interest rate increase occur, this worth will decline, since long-term assets exceed long-term liabilities. Interest rate positions in the trading book were virtually closed. Even the interest rate risk assessment based on stress tests does not suggest that the interest rate risk may have an important impact on the net economic worth.

Banking sector liquidity fluctuated due to changes in the volume of deposits and loans. This position was prevalently open. Nevertheless, the rising

¹ Provided the international foreign exchange market is highly liquid.

liquidity cushion consisting primarily of securities and sterilized liquidity represents a stabilising factor. However, the liquidity stabilisation capacities of this cushion in individual banks differ. Due to the rapid credit growth, the quick liquidity indicator followed a declining trend. From the point of view of the liquidity risk, however, the rebound in time deposits provides for a stabilisation. Measures of bank liquidity of up to 7 days and up to 3 months suggest that the banking sector would be able to cover 90% and 80%, respectively, of the deposits by liquid assets and assets with a corresponding maturity.

Banking sector ability to face risks and to stabilize the situation in the event of shocks continues to be high. This is confirmed by the results of stress tests at the level of individual banks, as well as the results of macro-level stress tests

Stress testing scenarios for bank credit risks revealed no significant risk of default. From the point of view of its coverage by respective banks, a major risk would only be imposed if the banks responded to an increase in the rate of default with credit freeze provisions. Less important are the risks related to lending growth accompanied by easing of credit conditions. Even a dramatic fall in real estate prices (to half) combined with an increase in the unemployment rate would not have a more profound impact on the adequacy of banks' capital (with the exception of building societies).

The equity risk and the direct foreign exchange risk of the banking sector are low. This is related to the low proportion of shares held by banks and the appropriate hedging of their foreign exchange positions. The impact of revaluation of balance sheet and off-balance sheet items would also be dampened by the structure and mutual correlation between currencies in foreign exchange portfolios. The essence of credit risk in the banking sector consists in a decline of the net economic worth in the event of an unexpected increase in interest rates. From the point of view of liquidity risk, a run on bank deposits seems to be the most risky case. With regard to deposits at non-resident banks, the sensitivity to a bank run decreased during 2006. But the liquidity risk is well covered by the liquidity cushion. In 2006, the systemic risk in the banking

sector consisting of a failure by one or two banks to repay liabilities to other banks was relatively low. The risk of a so-called "domino effect" was also low as a result of relatively weak commercial ties on the interbank market.

Stress testing at a macro level indicated that even a sharp deceleration in the growth of the Slovak economy would not pose a serious threat to the Slovak banking sector, provided such deceleration is accompanied by appropriate monetary policy actions. In the light of these results, a risk related to Slovakia's expected membership of the euro area emerges. The common monetary policy of the ECB may not be able to provide for a necessary compensation for the impacts of a possible negative asymmetric shock on the Slovak financial sector. The assessment of interest rate and foreign exchange risk exposures of the Slovak banking sector also revealed the importance of indirect impacts of a possible deterioration in the financial situation of debtors.

The results of individual insurance sector segments developed in opposed directions. The sector recorded low profitability and as many as 14 insurance companies recorded a loss on their technical accounts

Insurance technical reserves recorded a sluggish growth, despite their strong growth in the life insurance segment (15.6%). Following a period of stagnancy lasting for several years, the share of life insurance began to increase again. Growth was primarily recorded in the area of unit-linked insurance, which shifts market risks to policyholders. A decline in indemnity costs also contributed to the favourable developments in the life insurance segment. On the contrary, a decline in compulsory third-party liability insurance for motor vehicles as a consequence of intense competition in 2005, and also increased indemnity costs resulting from a higher loss ratio, were the main contributors to the negative developments within the non-life insurance segment. The volume of technical reserves ceded to reinsurers also declined. The growing volume of insurance technical reserves was invested conservatively. Due to high indemnity costs and lower incomes resulting from price competition in the segment of non-life insurance,



profits in this segment declined. The loss in the life-insurance technical account diminished. Income from financial operations declined. Overall, the sector recorded a profit of SKK 3.5 billion in 2006. The sector's interest rate risk exposure is insignificant.

Collective investment recorded high profitability and large differences in market risks among the individual funds. Risk investment limits were not used in full in pension saving

Concerning securities dealers, the adequacy of their own funds significantly exceeded the limit set by law in 2006. The collective investment sector achieved high profitability, while its net asset value stagnated. From among identified risks in mutual funds, the foreign exchange risk seemed to be the most important. However, market risks in individual funds did not differ markedly.

In pension saving, the volumes of funds were rapidly growing. Nevertheless, the structure of the sector remained unchanged. Funds were invested conservatively and the pension saving companies were not fully using the risk investment limits. From among market risks in pension funds, the most important was the equity risk.

The payment system expanded in terms of both the number and volume of transactions. It functioned smoothly, also on account of the use of intraday credit

From the viewpoint of participants, the credit risk of the system is low. However, system reliability becomes more critical in light of the growing volume of priority payments.

Short- and Medium-Term Risks to Financial Stability in Slovakia

Developments in 2006 suggest that the direction of capital flows and the foreign exchange market volatility in the V4 region and in Slovakia may be significantly influenced by abrupt changes in investors' mood. This, together with abrupt (and sharp) changes in the commodity market conditions, represents the most important short-term risk posed by the external environment to financial

stability in Slovakia in consequence of secondary impacts on price stability and the stability of local financial markets. In the short term, doubts about the planned entry into the euro area on 1 January 2009 may constitute a destabilising element, primarily due to a threat to the existing positions of financial investors. In the financial sector, short-term risks related primarily to a possible instability in the business conditions in certain segments of the financial market. Local risks to financial stability in the short term can be assessed as relatively low. The materialisation of external risks in the near future cannot be excluded. However, it should be noted that the financial sector has sufficient resources, and is able to sufficiently counteract possible external shocks.

From medium-term perspective, more pronounced external risks to financial stability should be taken into account, with regard to the number and size of shocks. In the medium-term horizon, risks related to accumulated global imbalances, an upturn in global liquidity and turbulences resulting from an improper assessment of risks related to innovative financial instruments are higher. Following Slovakia's entry into the euro area, certain risks arising from financial market instability are likely to be reduced. Price shocks coming from commodity markets and the common monetary policy may influence our economy also asymmetrically. Therefore it is essential to continue in public finance consolidation and retain or improve the current level of labour market flexibility. These policies together with the present economic upswing and the accumulated reserves in the corporate sector should be sufficient to maintain financial stability in non-financial corporations and households, and, especially, in the financial sector. It is also important to correctly assess corporate investments and risks related to household lending, which, in a period of economic boom, may be under pressure of overoptimistic expectations. There is a potential risk of price bubbles emerging on asset markets, e.g. on the real estate market. Nevertheless, it should be noted that our information sources do not provide any evidence that this risk may present a significant threat to financial sector stability in the years to come, primarily to the stability of banks. Due to its rapid growth in recent years, the Slovak economy came close to certain limits, for



instance in the labour market. In specific areas, risks emerge from the concentration of economic activities in one branch (automotive industry), from the focus of financing (commercial real estate loans) or from focusing on the provision of riskier loans (the easing of credit standards, provision of loans to small and medium-sized enterprises and low-income households). Despite the fact that risks

to economic and financial stability resulting from the above facts are low at present, their effects on financial stability may increase in the medium-term horizon. However, the existing risks are to a large extent alleviated by the expected continuation of the economic expansion and by the financial sector's advanced capability to mitigate the impacts of shocks.

B Financial Stability Report

1 External conditions for financial stability

The international interdependence of economies continues to increase. At the global level, business and financial relations between individual market entities are intensifying. That is why an evaluation of the circumstances of (in)stability in national financial systems is based on an evaluation of the economic conditions for global financial stability and the risks to it.

1.1 Economic developments in the international environment

1.1.1 The world economy

Short-term risks to the stability of the global financial system continued to be low because of strong growth in the world economy and trade

The global economy grew in 2006 at a slightly faster pace than in 2005. Most regions of the

world reported stronger than expected growth. Emerging economies in Asia were again the motor of growth, although Latin America also put in a strong performance. Recovery in the euro area came as a positive surprise. Towards the end of 2006, however, growth in the US slowed down to below its potential, largely because of the weakening real estate market. As a consequence, the global economy faced an increased risk of slowdown in 2007.

Firms and banks took advantage of the favourable economic and financial conditions to further increase their profitability, and in many cases to record figures.² This allowed economic entities to create considerable financial reserves as a cushion against risks. Short-term risks to the stability of the global financial system are therefore low, despite the anticipated slowdown, albeit probably slight, in the performance of the global economy in 2007.

Table 1 World output and world trade volume (year-on-year growth in %)

	2005	2006	2007 ¹⁾	2008 ¹⁾
World output	4.9	5.4	4.9	4.9
Developed economies	2.5	3.1	2.5	2.7
United States	3.2	3.3	2.2	2.8
Japan	1.9	2.2	2.3	1.9
Euro area	1.4	2.7	2.3	2.3
Emerging economies	7.5	7.9	7.5	7.1
Central and eastern Europe	5.5	6.0	5.5	5.3
Russia	6.4	6.7	6.4	5.9
Asia	9.2	9.4	8.8	8.4
China	10.4	10.7	10.0	9.5
World trade volume	7.4	9.2	7.0	7.4

Source: IMF: World Economic Outlook, April 2006.

1) Actual forecast.

² The combined profits of the five largest financial firms on Wall Street rose by 33% in 2006, to an all-time high of USD 132.5 billion.

Table 2 **Real GDP growth and the annual rate of HICP inflation (year-on-year change in %)**

	GDP growth						Inflation (HICP)					
	2005	2006	2007	2008	2007	2008	2005	2006	2007	2008	2007	2008
	Spring forecast of May 2006				Change from the autumn forecast of November 2006		Spring forecast of May 2006				Change from the autumn forecast of November 2006	
Euro area	1.4	2.7	2.6	2.5	0.5 p.p.	0.3 p.p.	2.2	2.2	1.9	1.9	-0.2 p.p.	0.0 p.p.
EU-25	1.7	3.0	2.9	2.7	0.5 p.p.	0.3 p.p.	2.3	2.3	2.2	2.1	-0.1 p.p.	0.1 p.p.

Source: European Commission Spring Economic Forecast, May 2007.

1.1.2 The EU and euro area

Above-potential growth driven mainly by domestic demand; the outlook is favourable

The EU economy grew by 3% in 2006 and the euro area economy by 2.7%. That represented a sharp rise in the growth of European economies in comparison with 2005, and it was achieved despite high oil prices, appreciation of the euro and a tightening of monetary policy by the ECB and a number of other European central banks. Although the pace of growth dipped slightly in the second half of the year, it remained well above its potential. The main driver of growth in the euro area was domestic demand. The revival of domestic demand (excluding inventories) was primarily led by investments and, with the situation in the labour market improving, was subsequently supported by private consumption. Although the contribution of net exports to real GDP growth improved on the figure for 2005, it was limited by imports increasing more quickly than exports. Based on the growth structure, the outlooks for European economies to grow above potential in 2007 are favourable.

Inflation under control with a upside risks – in the medium-term horizon

Consumer prices as measured by the HICP increased in 2006 by 2.2% in the EU and 2.3% in the euro area, as they did in 2005. This development was largely determined by energy and oil prices, which after rising in the first half of the year, began to fall steeply at the end of summer. For the medium-term horizon, the record high increase in the monetary aggregate M3 (a year-on-year rise of

9.7% in December 2006) and the marked rise in lending to the private sector indicate a greater risk to price stability in the euro area. As far as the real economy is concerned, the risk lies in potentially higher than expected growth in wage costs amid strong economic growth in the euro area.

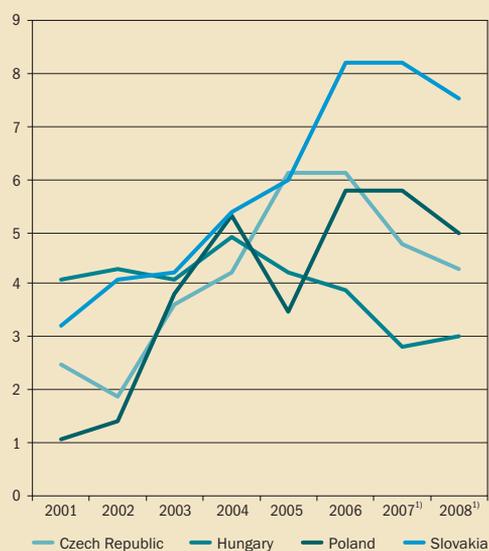
1.1.3 Countries of the V4 region³

Strong growth in the V4 region (except Hungary) was mainly attributable to investment and private consumption

The relatively strong growth of the V4 region continued also in 2006. The Czech Republic reported growth of 6% for 2006, maintaining the high level achieved in the previous year. The Czech economy's rapid growth was driven mainly by domestic demand, particularly gross capital formation. This was supported by the large inflow of foreign direct investment and the inflow of EU funds designated for infrastructure development. The share of net exports in total growth was substantially smaller than in 2005. The Polish economy recovered from a slowdown in 2005 to report better than expected growth of 5.8% for 2006. The Polish economy was boosted by domestic demand, especially in the form of investment (gross fixed capital formation recorded an increase of 16.5%). Although exports rose almost twice as quickly as in 2005, the contribution of net exports to GDP growth was negative because of the sharp increase in investment imports and consumption imports. Hungary's economy saw a further decline in growth, down to 3.9% for 2006 from 4.2% for 2005. The main cause of the slowdown in Hungary was the significant fall in domestic investment and government consump-

³ Since developments in Slovakia are analysed in detail in Chapter 2, this part focuses on the other V4 countries: the Czech Republic, Hungary and Poland. For the sake of comparison, the charts and tables also include data for Slovakia.

**Chart 1 Year-on-year growth in GDP
(in %, constant prices)**



Source: IMF.

1) Forecast.

tion. Following the approval of a package of fiscal consolidation measures, the economic sentiment indicators declined and private consumption contracted. Net exports were the main component of growth, with the sharp rise in exports (as much as 18%) supported mainly by the favourable development of the German economy. The region's growth is expected to be more moderate, but still robust, over the next two years. Inflation in Poland and the Czech Republic was very low, but is expected to rise gradually. In Hungary, prices went up substantially, largely as a result of administrative measures.

The outlook for the region's external imbalance is an improvement in every country except Poland

The external imbalance in Hungary (measured as the ratio of the current account balance to GDP),

which in 2004 had been a relatively high -8.4% of GDP, continued to decline in 2006 and is expected to maintain this trend in the next period, too. Hungary's trade balance for 2006 was only slightly in deficit (-0.5% of GDP) and could report a surplus next year. In Poland, by contrast, the current account is in exactly the opposite situation largely because of a rising trade deficit. In the Czech Republic, the external imbalance in 2006 temporarily widened to -4.1% of GDP, while the trade balance remains in surplus and is expected to grow further. Reinvested earnings are the largest component of the Czech current account deficit, but because they appear on the balance of payments financial account as a positive contribution to the inflow of foreign direct investment, they are not putting pressure on the exchange rate.

1.2 International financial markets

1.2.1 Stock markets

Stock markets continued to rise in 2006 despite tightening monetary conditions and a bear market during May and June; their volatility could rise in the next period

Overall in 2006, stock markets performed favourably despite a bear market during May and June. That correction affected a majority of the world's stock and commodity markets and its adverse effects were also seen in the prices of assets and currencies of emerging countries. At the same time, the liquid government bond markets of the G7 countries recorded a strong inflow of funds, with investors treating them as a safe haven. The sudden change in the mood of investors was initiated by fears regarding the future performance

Table 3 Current account deficits of V4 countries (in percentage of GDP)

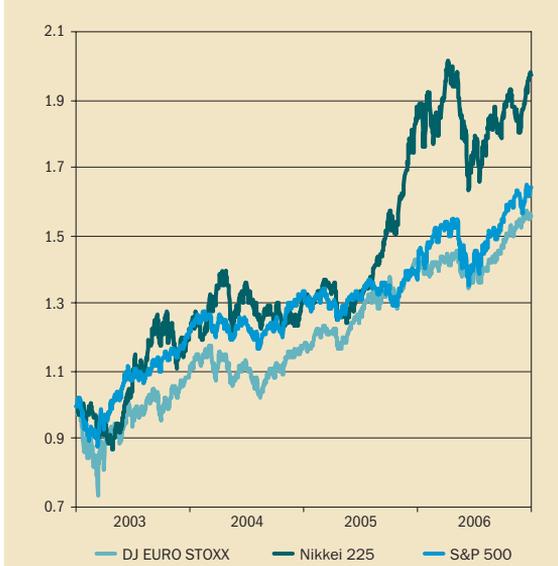
	2003	2004	2005	2006	2007 ¹⁾	2008 ¹⁾
Czech Republic	6.5	6.3	2.7	4.1	3.0	2.7
Hungary	7.9	8.4	6.8	5.9	3.5	2.2
Poland	2.1	4.4	1.7	2.3	3.1	4.3
Slovakia	6.0	7.8	8.7	5.8	4.2	3.7

Source: European Commission. Historical data for Slovakia are calculated using data from the NBS and the Statistical Office of the Slovak Republic.

1) European Commission Spring Economic Forecast, May 2007.



Chart 2 Stock market performances
(index, January 2003 = 1)



Source: <http://finance.yahoo.com>.

Chart 3 Yields on 10-year government bonds
(monthly average in %)



Source: International Financial Statistics, IMF.

of the US economy, when, on 10 May, the FOMC⁴ decided to increase the federal funds rate by 25 basis points to 5%, and signalled future monetary tightening. A factor behind this correction was probably the preceding sharp rise in stock and commodity indexes. Most stock markets did, however, re-establish their rising trend from mid-June in response to some favourable signals (notably, strong corporate income, falling oil prices and a benign outlook for the euro area). The Dow Jones Euro STOXX index rose by 15% in 2006 (compared with 21% in the previous year), the Nikkei 225 by 7% (40%) and the S&P 500 by 13.6% (3%). In the end, therefore, the correction had a limited effect on share prices in 2006. Investor interest in commodities and assets in emerging countries was also quickly restored, and the volatility of these markets returned from being high to relatively low. What these events demonstrated, however, was the risk that world stock markets would become more volatile in the next period. The risk appetite of investors may rapidly diminish if financing costs rise amid an uncertain outlook for economic growth and lower than expected corporate yields. Given the increasing correlation between different asset classes, it is highly likely that any rise in volatility

will be manifested in several markets simultaneously, while its adverse effects will be felt mainly by emerging countries (in their exchange rates and credit spreads).

1.2.2 Bond markets

Markets in government debt reflected the favourable macroeconomic development

In general, yields on government debt rose during the first half of the year and fell in the second half. Developments in the euro area reflected those in the US, albeit to a lesser extent. The decline in long-term yields in the second half of the year was mainly related to investors' expectations for a future decline in short-term rates in the US. The rising short-term interest rates therefore caused substantial flattening of yield curves, and even an inversion of the yield curve in the US.

Yields on US 10-year bonds continued to undershoot the consensus expectations of economists in regard to the future growth of the US economy. Yields were kept down by a combination of strong demand from institutional investors for longer

⁴ The Federal Open Markets Committee is the body of the Federal Reserve System that sets key monetary policy rates in the United States.

maturities and a shortfall in the supply of these issues.⁵

Overall, the volatility in bond markets (both government and corporate) over the course of the year was low. Although the correction of several markets in riskier securities in May and June did bring about a flight to safety among investors (reflected in declining yields on government bonds during this period), its effect was weak. Even the widening of corporate bond spreads was only slight. The spreads of non-investment grade bonds fell over the year, while corporate indebtedness increased. This was also evidence of the persisting search for yield.

1.2.3 Foreign exchange markets

In markets for major currencies, expected interest rates were the main determinant of developments

The euro gained 11% against the US dollar in 2006, supported by the end of rising rates in the US and, conversely, the outlook for a further rates increase in the euro area. The appreciation of the euro against the dollar and yen (by 12%) was also

based on positive outlooks for euro area economic activity that contrasted with deteriorating outlooks for the US and Japan in the second half of the year. Asian countries continued their gradual diversification of foreign reserves away from the dollar, without exchange rates being significantly affected.

Currencies of the V4 countries reported volatile and differing exchange rate developments

Exchange rates in the region showed considerable volatility in 2006. Their trend development against the euro differed: whereas the Polish zloty and Hungarian forint hardly moved against the euro, the Czech koruna and Slovak koruna appreciated by around 5% and 9%, respectively. The exchange rates reflected to a certain extent differences in the economic, financial and political developments between each country of the region in 2006, which also determined the risk assessment of investments in the individual currencies (differences in credit ratings). Also in 2006, the region's currencies were exposed to common shocks arising from foreign investor sentiment: speculative buying and corrections in global financial markets during May and June.

Chart 4 Nominal exchange rates of the Japanese and US currencies against the euro (daily data, 2 January 2006 = 1)



Source: ECB.

Chart 5 Nominal exchange rates of V4 countries' currencies against the euro (daily data, index, 1 January 2002 = 1)



Source: Eurostat.

⁵ Other structural factors may also have been in operation (See NBS: Financial Stability Report 2005, p.14).

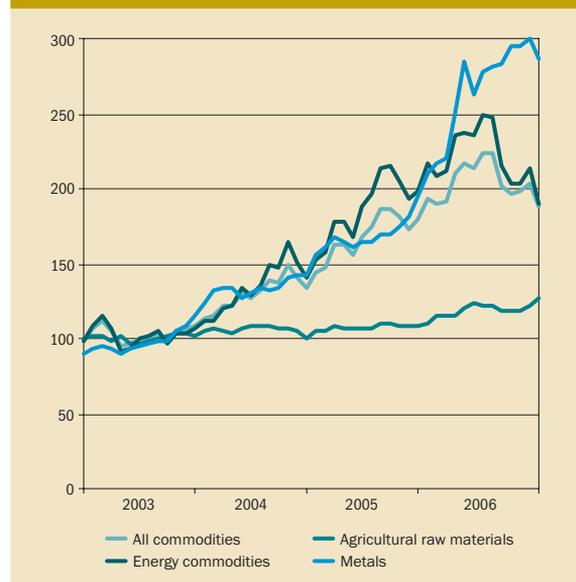


Chart 6 Exchange rates of V4 countries' currencies against the euro – 30-day historical volatility in 2006 (daily data, %)



Source: Bloomberg.

Chart 7 Commodity market performances (index, 2000 = 100)



Source: International Financial Statistics, IMF.

1.2.4 Commodity markets

Commodity market developments in 2006 were mixed

Prices of non-energy commodities continued to rise sharply in 2006, and those of industrial metals reached record levels. By contrast, the index of energy commodities recorded an overall weaker performance. Oil prices rose during the first half of the year, but then declined from August until the year-end. The fall in oil prices was a consequence of receding concerns about the geopolitical risks in key oil-producing countries, larger oil inventories, and OPEC's decision not to proceed with restrictions on extraction. Although the volatility of commodity indexes increased in May and June (in reaction to turbulence in financial markets), it was already diminishing in August.

Both the dynamics and volatility of commodity prices were affected by financial speculation

It is not just the strong raw-material demand from China and India that has affected the dynamics of commodity prices over the past four years. The rising demand for commodities and their positive price development has led to the creation of new and complex investment products based on commodities. Demand for these instruments from institutional investors (including hedge funds to an increasing extent) has also been supported by the typically low correlation between prices of commodities and traditional assets. That said, the herd behaviour of investors can lead to a strong correlation with other investment instruments, proof of which was provided by the above-mentioned correction. Speculation has therefore not only affected commodity prices but also posed risks to commodity markets and investors (causing higher volatility in commodity markets). This is illustrated by the case of Amaranth Advisors, which collapsed in September 2006 after losing USD 6 billion on an unexpected turnaround in the natural gas market.⁶

⁶ This relatively large collapse did not result in contagion (the losses were borne solely by the direct investors in the fund) owing to the fund's moderate financial leverage.

1.3 The euro area financial sector⁷ – developments and risks

1.3.1 Euro area banking sector

The financial health of the euro area banking sector was further strengthened in 2006

The euro area banking sector took advantage of the favourable economic conditions in 2006 to further improve its profitability. Despite declining interest margins,⁸ net interest income rose as large banking groups expanded into new markets (especially in south-east Europe) characterized by a strong potential for rapid lending growth and by higher margins. The sound profitability was supported by high non-interest income and a generally favourable cost ratio. The creation of provisions rose moderately from historically low levels. The resulting internal capital formation helped banks to maintain a sound solvency position, despite faster growth in risk-weighted assets. With strong solvency and progress in risk management, the euro area banking system further improved its resilience to unforeseen adverse developments, and this fact was also manifested in market indicators: the index of bank shares outperformed the general market index, the distance-to-default ratio also rose, and the credit ratings of euro area banks stabilized at relatively high levels.

The balance-sheet vulnerability of banks continued to increase in countries where household indebtedness was high above the euro area average and where this debt was financed through variable interest rates

Large banking groups became increasingly exposed to household credit risk in 2006, owing to the continuing strong growth in loans to households, declining provisions, and signs that credit stand-

ards for new loans were being relaxed in response to competition. The size of the credit risk exposure is to a certain extent mitigated by the fact that the vast majority of loans extended to households are secured by their property. At the same time, the loan-to-value ratio for outstanding mortgage loans is conservative. In addition, the rise in real estate prices reported by a majority of euro area countries in the recent period has increased the value of collateral. Households in the euro area appeared to be invulnerable to a rise in interest rates – the ratios of debt to assets and debt to income were moderate when compared internationally. However, the aggregated figures for the euro area mask the fact that household credit risk is unevenly distributed across countries and household income categories. From the view of household credit risk, the favourable outlook for the euro area economy, and therefore for employment and household income, is a positive factor.

Banks' exposure to credit risk of non-financial corporations increased

The situation in corporate balance sheets offered no strong grounds for concern about the riskiness of corporate loans. An exception are speculative-grade firms, among which the default rate began to rise in the second half of 2006, for the first time since 2003, albeit from a very low level. The rising indebtedness of enterprises (which in the last quarter of 2006 reached its highest level since 1999) and growth in interest rates could, however, result in non-financial enterprises being more vulnerable to unexpected shocks. There are concerns that credit standards have been relaxed for loans to certain fast-growing segments, such as hedge funds and private equity funds.⁹ Large banking groups may, however, be protected to a certain degree from the consequences of unexpected events (lower than expected economic growth, a rise in oil

⁷ According to analyses by the ECB and the Committee of European Insurance and Occupational Pensions Supervisors.

⁸ Declining interest margins result from the flattening of the euro area yield curve and the sharp rise in lending. As a consequence of the credit boom and slow inflow of primary deposits, the loan-to-deposit ratio is increasing. Banks are therefore having to obtain finance through the issuance of bonds or sale of loans, sources of funds that are typically more expensive than primary deposits. Furthermore, strong competition and a saturated market are putting banks under pressure to keep lending rates down.

⁹ That loans with shorter maturities rose sharply in 2006 was related to the increase in mergers and acquisitions (M&As). According to Dealogic, the value of M&A transactions worldwide in 2006 came to a record USD 3.8 trillion (an increase of 37.9% on 2005). Previously such transactions tended to be financed with the issuance of high-yielding debt. What is also notable in comparison with the past is that private equity funds have substantially increased their participation in these transactions through leverage buyout. These activities significantly boosted stock markets.



prices) by virtue of their increasing involvement in credit risk transfer (CRT) markets.¹⁰

Market risks continue to be concentrated in yield curve developments and banks' exposures to unregulated financial institutions

A flat yield curve accentuated the problem of generating interest income in an environment of low interest margins. Should this situation persist over the longer term, it could prompt banks into making riskier investments and relaxing credit standards. By contrast, even a sharp rise in long-term rates could impair the value of banks' trading portfolios. According to the results of ECB stress testing, the direct market risks arising from movements in interest rates and exchange rates are manageable. Banks must also, however, face other risks of a market character, e.g. counterparty risk. The quality of risk management in unregulated financial institutions with large financial leverage (hedge funds, private equity funds) is not necessarily sufficient. The euro area banking sector is exposed to further risks related to global development trends.¹¹

1.3.2 Euro area insurance sector

The profitability of the euro area insurance sector increased in 2006, and the outlook is also favourable. There are persisting risks, however, especially long-term ones

The solid profitability of non-life insurance companies was based on good results in premiums written and on high investment income supported by rising stock markets. The greatest risk to financial stability is the strong price competition in the sector, which is being further intensified by the gradual harmonization of regulatory legislation.¹²

This will likely place further pressure on income from premiums written and make insurance companies more willing to take on higher risk. The solvency of non-life insurance companies is also at risk from claims inflation (resulting from, for example, natural disasters) amid strong competition in insurance prices. Another risk is the capacity limit of reinsurance companies, which is leading to a rise in reinsurance prices. But since insurance companies face strong price competition, they are finding it difficult to pass on the higher reinsurance price to customers.

As for life insurance companies, 2006 was a good year despite the low long-term interest rates. They were boosted by strong results in premiums written, based largely on increasing sales of unit-linked products. The life insurance sector also faces challenges in the longer-term horizon arising from stronger competition and from regulatory and demographic changes. The effect of these factors will be to the advantage of large, financially strong insurance companies with developed systems of risk selection and management. The low, and even falling, long-term interest rates continue to pose the greatest risk to the solvency of life insurance companies.¹³ As a consequence, insurers are seeking to restrict the range of products that carry a guaranteed rate of return (capital life insurance)¹⁴ and are passing on market risks to their customers through the sale of unit-linked insurance products (investment life insurance). They are likewise seeking to mitigate market risks in their liabilities (these arise from the need to finance annuities contracted at interest rates that are higher than present rates) by investing in higher-yielding corporate debt and credit derivatives. This is happening, however, at the price of rising credit risks in their balance sheets.¹⁵ Because of the shortage of long-term debt

¹⁰ Banks may use credit risk transfer markets to buy themselves protection against losses on non-performing loans. The stronger the perception of general credit risk in the market, the higher the price of this protection. The most usual sellers of credit protection (recipients of bank credit risks) are insurance companies and pension funds. The most widely used instrument in this market is the credit default swap (CDS). Recent years have seen a sharp rise in the amount of transactions in this instrument. According to data from the International Swaps and Derivatives Association (ISDA), the value of outstanding CDSs in G10 countries rose from around USD 1 trillion in 2001 to USD 34.4 trillion in 2006.

¹¹ These risks are analysed in more detail in Part 1.4.

¹² The draft Solvency II Directive for insurance companies is expected in July 2007 and it will be implemented by 2010.

¹³ The low long-term interest rates have structural causes which could persist for a longer time.

¹⁴ When regulators further reduced the maximum guaranteed interest rate, it was of limited benefit to the profitability of life insurance companies, since this relates only to new contracts and not those previously concluded.

¹⁵ The implementation of Solvency II will change the current situation in which insurance companies are not subject to capital limits vis-à-vis credit risk. The purpose of this new regulatory directive is to ensure that the capital requirements (solvency) of insurance companies are better harmonized with the risks they undertake. On the one hand, therefore, it will make insurance companies

in the market and the transition to market valuation of technical provisions, the duration gap of the liabilities and assets of life insurance companies is continuing to widen. Life insurance companies still face a significant risk in the higher than expected longevity risk, which could result in a substantial rise in their liabilities.

The reinsurance sector recovered from heavy losses in 2005 (related to extensive natural disasters) to report a financially stable year in 2006 (when the number and extent of natural disasters was relatively small). The improvement in the sector's financial position was supported not only by higher reinsurance premiums written, but also by the increased prices of reinsurance (resulting from capacity limits) and by more effective risk management, with risks transferred to capital markets through hybrid securitization instruments. The reinsurance sector will also be affected by the implementation of Solvency II. The financial position of these companies will improve in the medium-term horizon as a result of the anticipated greater interest in reinsurance.

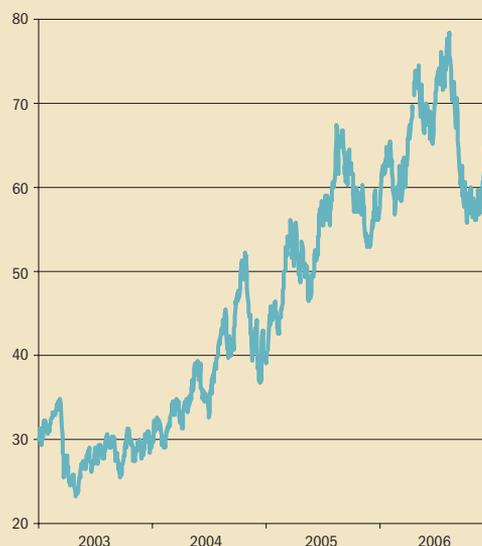
1.4 Medium-term risks from external conditions

- A slowdown in global growth in the medium-term horizon.
- A return to rising oil prices.
- A sudden change in the still favourable conditions of liquidity on financial markets.
- Uncertainty over the effect that more demanding economic and financial conditions will have on the performance of innovative financial instruments and unregulated financial institutions, which have contributed to the growth of financial leverage in the system.
- The risk of regional contagion and the risk of contagion caused by a sudden rise in risk aversion that changes global investor sentiment towards emerging countries.

Although the risk of a sharp slowdown in the global economy diminished toward the end of 2006, it remains present to a certain extent in the medium-to-long term horizon

more resistant to shocks, but, on the other hand, it will bring about a change in insurance products and investment strategies (including the use of the said structured instruments) which will also be reflected in other financial market segments.

**Chart 8 Oil prices
(Brent, daily data USD/barrel)**



Source: Reuters.

Any sharp deterioration in economic performance is unfavourable to financial stability. In mid-2006, the outlooks for global economy were still unclear and the main risks of a substantial setback to the global recovery lay in high oil prices and a hard landing for the US economy. In the second half of the year, financial markets benefited from the end of rising interest rates in the US and the decline in commodity prices, including oil. By the end of 2006, the US appeared unlikely to enter recession in the next period. In the medium-to-long term, the most significant risks to global economic growth pose a resurgence of oil prices and a possibility of a sudden and unstructured response to global imbalances. Other risks include the increasingly protectionist mood in some parts of the world.

Addressing global imbalances in a sustainable way is a long-term process

It is now largely accepted that global imbalances are directly caused by a savings glut in countries with current account surpluses, including Japan, China, several smaller Asian countries and oil-producing countries. The causes of the savings glut are particular to these countries and relate to

the development (specific shocks) and structure of their economies. Because of these surpluses, countries with an external imbalance (especially the United States) are experiencing low interest rates and high asset prices.¹⁶ Therefore, the current global imbalances are basically a secondary product of the fact that heterogeneous economies are focused on economic growth in conditions of strengthening globalization. Addressing global imbalances in a sustainable way cannot be done without structural changes in economies with surplus savings, especially China. This will be a long-term and gradual process.

The risk of a sudden correction in global imbalances declined slightly during 2006, but it remains present in the medium-term horizon

The flow of capital from reserves accumulated in countries with surpluses is helping to finance the increasing indebtedness of the United States.¹⁷ In 2006, financial markets perceived the risk of a sudden correction, including sharp changes in exchange rates, interest rates and asset prices, to be weaker, owing to favourable effects of global factors.¹⁸ Global financial stability faces the medium-term risk of a sudden correction of imbalances, where investors concerned for their returns eschew further funding of the rising trade and budget deficits of the US. That risk appears at present to be low, given the favourable characteristics of US financial markets, particularly their high liquidity. Since the US trade deficit is financed to a large extent by oil-exporting countries and China, this financing is also exposed to geopolitical risks and the risk of financial stability in China.¹⁹ Nor can it be ruled out that other markets will become increasingly attractive to investors if their struc-

**Chart 9 J P Morgan EMBI Global Spread
(daily data, basis points)**



Source: Bloomberg.

Note: J P Morgan EMBI Global Composite Spread – the difference between yields on US dollar-denominated government bonds of emerging countries and yields on comparable US government bonds.

tural characteristics improve vis-à-vis US markets. Moreover, if the financing countries opt for a rapid diversification of their foreign reserves away from the US dollar, financial markets could be hit. The pace of this process since 2000 has not, however, posed a significant shock on exchange rates.

The persisting search for yield could lead investors to underestimate risks

The search for yield (risk) has continued, stimulated by both low risk-free yields and strong competition. Prices of shares, commodities and real estate have risen, risk premiums on the yields of riskier bonds

¹⁶ Low interest rates and the rising value of assets supported indebtedness and strong consumption growth in the United States, as well as in certain other countries (e.g. the United Kingdom, Spain and Australia) and subsequently led to current account deficits in these countries.

¹⁷ From the view of economic theory, it is paradoxical that the net capital flow from emerging economies (China and the rest of emerging Asia) to developed countries (the US) is higher than vice versa. Since capital is scarce in emerging economies and its rate of return is therefore higher there, the net flow of capital should in normal circumstances be the other way around. But given the huge US trade deficit (around USD 900 billion in 2006), US debt is rising more slowly than it might otherwise do. The reason for this is that US investments abroad are higher-yielding than investments of foreign entities made in the US.

¹⁸ These factors, which in 2006 at least helped the slight slowdown in the growth of global imbalances, included mainly the following: the weakened US dollar, the decline in the US interest rate differential vis-à-vis other economies, the narrowing of the US fiscal deficit, the revival of domestic demand in the euro area, and the appreciation of the Chinese yuan against the US dollar.

¹⁹ According to Reuters, the decline in oil prices at the end of 2006 led some oil-producing countries to sell US government bonds worth USD 10 billion. China faces a strong challenge to its financial stability from an overheating economy and the expansion of a banking sector that is non-standard in institutional terms.

have been low in historical terms, and financial leverage in the system has been increasing. Financial markets continued to have ample liquidity in 2006, and their actual and expected volatility remained at historically low levels. It may be that investor expectations are too optimistic and that risks are underestimated.

Low risk aversion among investors could increase the vulnerability of the global financial system

The low risk aversion of investors is evident from the strong flow of funds into alternative/innovative investment instruments. The inflow of investment into hedge funds and private equity funds rose sharply in 2006. These institutions are characterized by the low transparency of their transactions, as well as by their utilization of large financial leverage. Embedded leverage is also typical for credit default swaps and collateralized debt obligations. These instruments enable trading in credit risk, and thereby offer banks access to additional liquidity. They also help banks to better manage credit risk. Institutions (especially pension funds, hedge funds and insurance companies) buy these instruments for their higher yields while at the same time they take on credit risks from banks.²⁰ Recently, demand for these instruments was very strong, meaning that financial institutions have become increasingly more exposed to credit and market risks.²¹ A key factor is also the ability of investors to comprehend the risks which they undertake when investing in complex and innovative financial instruments. The global financial system could therefore become more vulnerable to change in the economic/credit cycle.

Increase in systemic risk

Systemic risk has also risen, as banks have increased their credit exposure to the unregulated institutions mentioned above whose transactions appear risky.²² The interconnection between financial institutions has also been strengthened by more intensive trading on credit risk transfer markets. Certain institutions, above all hedge funds, have been increasingly involved in crowded trades and positions in largely illiquid assets. Any triggering event (e.g. losses on CRT markets or large-scale termination of carry trades²³) could result in the rapid drying up of liquidity in the markets and subsequently in significant losses, which could in turn, through the mutual financial relations, be passed on to the whole system. The stability of the global financial system could come under further threat from the simultaneous effect of other shocks, which would bring about a sudden change in how risks are perceived by investors.

Although the stability of the euro area financial system faced increased risks, its vulnerability has been limited by the sound financial position of institutions

In 2006, the euro area's banking and insurance sector continued to improve their financial condition. Profitability ratios increased and further progress was made in the quality of risk management, all of which enabled financial institutions to raise their risk exposures. Given the favourable economic outlook, the short-term horizon could see a decline in the intensity of risks arising from high household and corporate debt, overheated prop-

²⁰ The valuation of complex structured credit instruments is also problematic given that the data series are insufficiently long; it is based on models whose working assumptions are not directly observable in markets. A change in the economy that is not correctly captured in the valuation model could lead to losses on investments in these instruments.

²¹ Credit risk is less concentrated in banks' balance sheets and is spread across the financial system. Therefore individual banks could become more stable while the stability of the system as a whole could decline.

²² It is difficult to gain a more accurate picture of the size of the risk in the system, given the low transparency of transactions made by unregulated institutions. Meanwhile, the balance sheets of regulated financial institutions are providing ever less information on the risk in the whole system.

²³ Carry trades are transactions aimed at making a profit on yield differences between two different instruments. The recent period has seen considerable media attention paid to carry trades in the foreign exchange market. The investor borrows funds in a low interest rate currency and invests the proceeds in a high interest rate currency. The profit on these transactions is determined by the interest rate spread and the movement in the exchange rates of the currencies concerned. The risk lies in the volatility of these exchange rates. Carry trades in Japanese yen are particularly popular at present, owing to their risk-yield characteristics. Although their value cannot be stated precisely, JP Morgan puts it at USD 600 billion. In the recent period, these transactions have been contributing substantially to depreciation of the yen against the US dollar and euro. A sharp correction in these transactions triggered, for example, by expectations for strengthening of the yen (supported by a further decline in the performance of the US economy) could cause losses to some investors and result in corrections in other markets.



erty markets in some member countries, low long-term interest rates and from strong competition in the sectors. However, the greater vulnerability of the global financial system towards a rise in risk aversion requires that more attention be paid to the development of risks in the euro area financial system. The euro area's financial sector will also face a challenge related to the implementation of the new regulatory legislation.

The risk to Slovakia from regional contagion is declining as the country, unlike others in the V4 region, is becoming increasingly set on its course towards joining the euro area. The region's most vulnerable currency remains the forint

We expect that a determining factor in the further mitigation of regional contagion risk to Slovakia will be the financial markets' increasing confidence in Slovakia adopting the euro. The region's most vulnerable currency remains the Hungarian forint. Given the relatively large structural imbalances and uncertainty over how to address them in a sustainable way,²⁴ the currency is the most exposed to changes in global risk appetite. In the medium-term

horizon, the risk arising from the region's exposure to foreign investor moods could be eliminated by euro adoption.

Other risks to financial stability also need to be reckoned on

Other risks to financial stability are risks independent of macroeconomic and financial development. They are related to the consequences of isolated events that are very difficult to predict. Events such as terrorist attacks, wars, natural disasters and epidemics could lead to short-term but severe disruptions in the real economy and financial sector. Their longer-term adverse effect could be seen in the fact that they, as trigger events, may raise uncertainty and risk aversion and bring about a decline in consumer and investor confidence. Considering the current condition of the global financial system, where the search for yield and low risk aversion has led individual financial institutions to further increase their exposures to risks and to each other, any such event could have considerably adverse consequences for its stability.

²⁴ For these reasons, the credit rating agency Moody's downgraded its rating on Hungarian government bonds denominated in both the domestic and foreign currency, from A1 to A2, in December 2006.

2 Slovak economy developments as they affect financial stability

2.1 Overall development of the Slovak economy

The economic situation in Slovakia in 2006 was conducive to maintaining financial stability. In the first half of the year, uncertainties were temporarily raised over increasing prices, rising interest rates, and the exchange rate's volatility, but towards the end of the year the effect of these factors abated and evidence for the economy's growth potential was underpinning a more optimistic outlook. The NBS reacted to inflation developments by tightening monetary policy through the interest rate channel, while the exchange rate channel determined the resulting expansionary monetary stance. Although, unlike in previous years, the fiscal stance was expansionary, Slovakia proceeded towards fulfilment of the Maastricht criteria within the timeframe set out for adoption of the euro.

Given the character of the converging economy, the strengthening of the Slovak koruna's exchange rate in 2006 was to a large extent supported by the appreciation of the equilibrium exchange rate. Despite the appreciation of the Slovak koruna, the competitiveness of Slovak enterprises was not substantially impaired and exporters even managed to increase their shares of foreign markets.

Recognition of the economy's positive development came in October 2006 when Moody's upgraded its rating for Slovakia. The country is now classified by major credit rating agencies as investment grade A with a stable outlook.

Because of its sound fundamentals, the domestic economy's sharp growth in 2006 did not pose any direct risks to the country's financial stability

The environment of strong economic growth supported an increase in both profits of non-financial corporations and household income. Growth accelerated in the second half of the year, to a year-on-year figure of 8.3% at constant prices. The structure of growth was different to that in 2005, with the rise in both domestic and foreign demand having a pro-growth effect. Growth was supported by all the main components of domestic demand: the contribution of consumption increased (including a higher share of general government consumption and a lower share of domestic consumption), while that of investments was lower than in 2005. The strengthening of economic activity in other EU countries fostered a sharp rise in exports and therefore also the positive contribution of net exports to overall growth. The domestic economy's growth was based on an increase in labour productivity (higher than in 2005) and rising employment. The financing of the private sector with loans from domestic monetary financial institutions rose to 38.3% in ratio to GDP (the figure for 2005 was 34.5%).

Given the growth in the economy's potential, the risks of the economy overheating diminished

The economy in 2006 was positioned in a slightly positive output gap, indicated by sharp growth, high investment activity and rising employment. Certain signs of overheating, apparent mainly since the end of 2005, abated over the course of 2006. The development of labour productivity and wages were more favourably proportioned than in 2005, when, at the aggregate level, real labour productivity increased more sharply than real wages. At the industry level, these relations did not show an even development: in energy, financial intermediation and the public sector, real wages grew more quickly than labour productivity. As domestic consumption

**Chart 10 Contributions to GDP growth
(in p. p.)**

Source: Statistical Office of the Slovak Republic.

**Chart 11 Price developments
(year-on-year change in %)**

Source: Statistical Office of the Slovak Republic, Eurostat.

slowed down so did the growth in nominal wages. The structural development of economic growth indicates that stronger growth has occurred against a background of rising production capacity in the economy, which creates conditions for maintaining non-inflationary growth.

Inflationary risks were temporarily highlighted

The rate of HICP inflation declined to 3.7% year-on-year, while core inflation increased and ended the year at 2.7%. The growth in prices was conditioned mainly by world oil prices and the development of raw energy prices. An inflationary effect was also exerted by regulated prices, foodstuff prices, and prices of manufactured goods (oil prices declined substantially at the end of the third quarter). Industrial producer prices rose by 8.4% year-on-year. Inflation was pushed up by prices of non-mineral raw materials, electricity, gas, steam and hot water, as well as refined oil products. The decline in oil prices in autumn 2006 was favourably reflected in declining prices of manufactured products. Oil prices, regulated prices and foodstuff prices remain risk factors for the future development.

An expansion of production capacities was reflected in a temporary widening of the trade deficit

The current account deficit increased to SKK 135.6 billion in 2006, largely under the effect of widening deficits in the trade balance and income balance (payment of dividends) with a surplus in the services balance. The ratio of the current account deficit to GDP came to 8.3%, and if the effect of dividend payments and reinvested earnings were excluded, it would be 3% of GDP. Considering that the continuing investment imports should be converted into export growth within the near future, the deterioration in the trade balance may be seen as temporary.

The structure of the capital and financial account changed to the favour of long-term funds

The large surplus in the capital and financial account in 2005 (then at SKK 176.7 billion) declined substantially in 2006 (to SKK 32.4 billion), but the account structure was more favourable from the point of view of financial stability. Foreign direct investment increased and financing with short-term capital declined. The change from an outflow to inflow trend occurred in the case of portfolio investment (conditioned substantially by the issue of government Eurobonds). The inflow of long-term capital also increased (especially through the inflow of funds from financial loans drawn in the corporate sector).

Chart 12 Coverage of the current account deficit (SKK billion)


Source: NBS.

Note: The current account in 2005 and 2006 excludes reinvested earnings from FDI.

Chart 13 Foreign debt and foreign reserves (USD billion)


Source: NBS.

Note: The current account in 2005 and 2006 excludes reinvested earnings from FDI.

Gross foreign debt declined in relative terms, and the coverage of short-term foreign debt by official foreign reserves decreased

In 2006, the foreign reserves of the NBS declined to SKK 13.4 billion and, due to interventions undertaken, they covered 86% of the short-term foreign debt at the year-end. Although the short-term debt rose only slightly, its structure changed, with the share of commercial banks declining to 39.5% (from 69.1% in 2005) and the share of entrepreneurial entities rising (with the government and NBS having a zero short-term debt). In nominal terms, long-term debt recorded a more substantial increase, especially the government's debt (an issue of Eurobonds) and corporate debt. Short-term foreign debt as a share of total foreign debt fell from 56% in 2005 to 48% in 2006. Gross foreign debt relative to GDP declined to 51.6% (compared with 58.4% in 2005). The country's net external debt (the external balance of Slovakia's assets and liabilities) in 2006 increased in ratio to the size of the economy, to 8.7% of GDP (from 3.1% of GDP in 2005).

Price competitiveness declined in 2006 as the exchange rate strengthened, but the position of exporters in foreign markets remains stable owing to growth in productivity

The strong appreciation of the exchange rate of the Slovak koruna in the fourth quarter of 2006 outweighed the effect of the koruna's temporary weakening, and therefore price competitiveness, as measured by the nominal effective exchange rate (NEER) index, weakened more sharply than in previous years. Given the existing inflationary differential vis-à-vis countries of main trading partners, the real effective exchange rate (REER)²⁵ indexes, based on consumer prices and industrial producer prices, also increased. The relatively lowest rise was recorded by the real exchange rate index, based on unit labour costs (in line with ECB's methodology), and the manufacturing products index. Despite the appreciation of the exchange rate, real exports displayed strong dynamics in 2006.

As inflation rose and the economy faced the risk of overheating in 2006, it became necessary to tighten monetary policy

²⁵ The REER calculation is based on the consumer price index (CPI), the producer price index (PPI), i.e. the manufacturing products price index excluding prices of mining and quarrying products, electricity, gas, steam and hot water (PPI manufacturing), and the unit labour cost (ULC) index. The base year for the calculations is 1999, and likewise the selected weights correspond to the structure of the Slovak trade balance in 1999 based on the nine largest trading partners.



Chart 14 Indexes of the nominal and real effective exchange rate and exports
(year-on-year change, %)

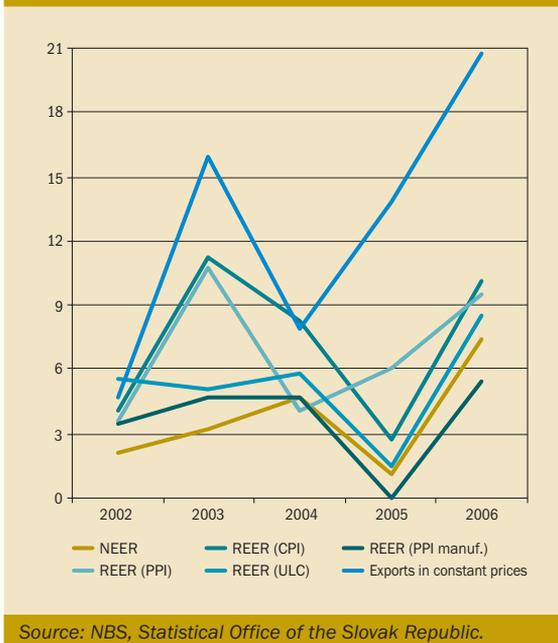
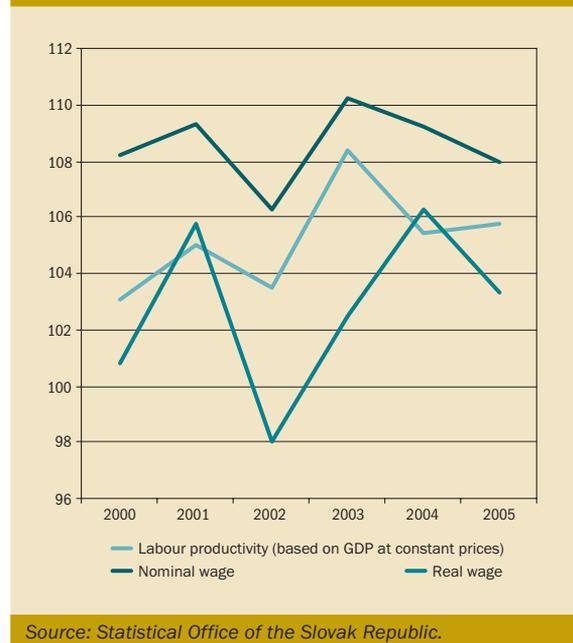


Chart 15 Labour productivity and wages
(year-on-year change, %)



From the end of the first quarter, the NBS began tightening monetary policy – it increased the base rate in four steps by a total of 1.75 percentage points, up to 4.75%. The NBS was prompted to act by higher than predicted inflation, which it perceived as a serious risk to the fulfilment of medium-term inflation targets and the Maastricht inflation criterion. At the same time, the NBS made upward adjustments to its medium-term forecasts for 2006 and 2007, while keeping the forecast for 2008 unchanged.

The effects of monetary conditions in the economy were expansionary

The effects of monetary conditions (evaluated on the basis of the real monetary conditions index) were expansionary for most of 2006, with their components counteractive – whereas weakening of the nominal exchange rate (in the second and third quarters) had a loosening effect, the raising of NBS interest rates caused a tightening of monetary conditions. In the fourth quarter of 2006, monetary conditions were neutral overall. Because of the strong growth in the economy's potential, the estimated equilibrium exchange rate also strengthened considerably during the year.

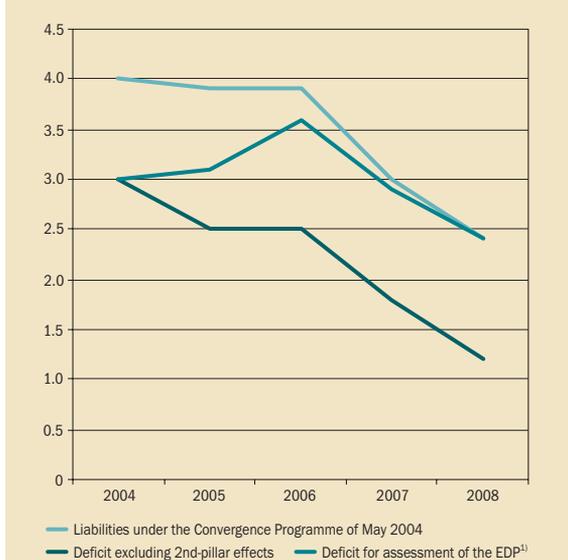
The new Government subscribed to the medium-term fiscal targets defined in the Convergence Programme of the Slovak Republic

Slovak fiscal policy remained directed at meeting the medium-term target of a structural (cyclically adjusted) deficit of 0.9% of GDP in 2010. The general government deficit for 2007 – the reference year for evaluating Slovakia's preparedness for joining the euro area – was set at 2.9% of GDP, including pension reform costs.

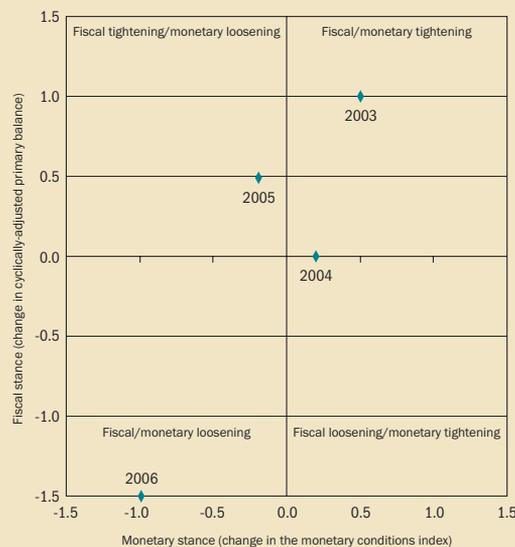
Public finances in 2006 performed more favourably than budgeted, although strong economic growth provided scope for even more substantial consolidation

The public finance deficit in 2006 came to 3.4% of GDP, including the impact of introducing a funded pillar into the pension system (equivalent to 1.1% of GDP). That performance was better than what the state budget had projected, reflecting the effects of both budgetary savings and higher growth in nominal GDP.

Gross general government debt continued to decline

**Chart 16 General government deficit
(in % of GDP)**


Source: Ministry of Finance of the Slovak Republic.
1) Excessive Deficit Procedure.

Chart 17 Policy-mix in 2003-2006


Source: NBS, Ministry of Finance of the Slovak Republic.

Gross general government debt ended the year at 30.7% of GDP (SKK 503.1 billion). The substantial year-on-year decline in the debt-to-GDP ratio was largely the effect of nominal GDP rising sharply and debt declining slightly in nominal terms. The debt reduction was supported by the possibility of using the refinancing system of the State Treasury, the maturing of risky liabilities arising from government guarantees, as well as the decrease, arising from exchange rate movements, in debt denominated in foreign currencies.

The Debt and Liquidity Management Agency continued in its strategy of reducing government debt servicing costs

Given the favourable development of the state budget and the scope for using temporarily surplus funds of the State Treasury, there was little need to acquire funds from the financial market; the Debt and Liquidity Management Agency (Agentúra pre riadenie dlhu a likvidity – ARDAL) did not need to acquire short-term funds and did not issue any Treasury bills in the market in 2006. Government bonds denominated in the domestic currency were issued in the amount of only SKK 33.2 billion, compared to an original projection of SKK 60 billion.

The Slovak government issued in the European market in 2006 a 15-year bond with a nominal value of EUR 1 billion and a fixed coupon of 4% per annum, which, among government bonds of central and eastern Europe, had the lowest interest rate differential vis-à-vis benchmark instruments (only 7 basis points up the Asset Swap average).

The temporary increase in interest rates in the domestic market in 2006 was reflected in a rise in interest expenses of new issues in the domestic market, up to 4.06% (from 2.95% in 2005), although the interest expenses of the “live” portfolio of government bonds declined slightly, to 4.841% (4.998% in 2005).

The effect of monetary and fiscal policy on aggregate demand in 2006 was on the whole expansive

Given the current cyclical position of the economy, the monetary and fiscal stances may be described as procyclical. The size of the fiscal impulse was conditioned by the favourable economic results in 2005, while the tightening of monetary policy through the interest rate channel was offset by weakening of the koruna.



2.2 Domestic financial market developments in terms of risks to financial stability

As the first half of the year came to an end, the stability of the financial market was slightly disturbed by a temporary withdrawal of capital from emerging markets and by the market reaction to uncertainty over the country's efforts towards joining the euro area. In response to the volatility of the koruna's exchange rate against the euro, the NBS made repeated interventions in the market in order to curb excessive weakening of the koruna. By contrast, the second half of the year saw the currency steadily appreciate and reach strongest ever levels. At the end of the year, the NBS had to intervene against rapid strengthening of the koruna.

Money market interest rates rose in the first half of the year, owing to the rise in inflationary expectations and the tightening of monetary policy by the NBS. As the koruna gained steadily from the third quarter, foreign investors sought to deposit proceeds gained from foreign exchange conversions in the interbank market, and this was reflected in a decline in market interest rates. Because of expectations for higher interest rates, the yield curve shifted upwards, but by the end of the year a fall in rates was being anticipated and the slope of the yield curve flattened out and even declined slightly.

2.2.1 Foreign exchange market

The transmission of impulses from emerging markets to foreign exchange markets in the region, as well as domestic political developments, raised volatility in the foreign exchange market

Investor interest in buying the domestic currency continued into the second quarter of 2006. Then, as foreign investors became increasingly averse to emerging market currencies and as political uncertainty developed due to the calling of an early general election in Slovakia, the Slovak koruna weakened, and for the first time since Slovakia entered ERM II, the currency moved above the central parity. The NBS dealt with the exchange rate's instability by making three interventions (on

Chart 18 Koruna exchange rate against the euro and dollar (in 2006)



Source: NBS.

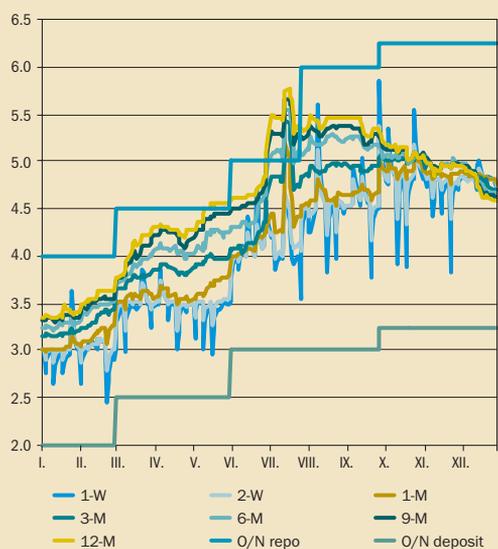
21 June, 29 June and 12 July), spending a total amount of EUR 3.085 billion.

Investor interest in emerging market currencies was restored after the cycle of rising interest rates in the United States came to an end. This resulted in weakening of the US dollar against the euro and in the repeated strengthening of emerging market currencies. The Slovak koruna appreciated, too, and in the last two months of the year it began recording its strongest ever levels. Having evaluated the situation as excessively volatile, the NBS entered the market on 29 December, when the exchange rate was at EUR/SKK 34,060 (the koruna's strongest position vis-à-vis the euro in 2006), and in seeking to prevent further appreciation of the koruna, it purchased EUR 495 million. Therefore in the net balance of foreign exchange interventions in 2006, the NBS sold EUR 2.59 billion.

The koruna's exchange rate against the euro and dollar strengthened on average over the year

The exchange rate of the Slovak koruna vis-à-vis the euro appreciated by an average of 3.5% during 2006, and against the US dollar it gained 4.2%. The Slovak koruna turned out to be slightly more volatile than the Czech koruna, but continued to be considerably less volatile than the Polish zloty and Hungarian forint.

Chart 19 Money market interest rates (BRIBOR) in 2006 (%)



Source: NBS.

Chart 20 BRIBOR yield curves in 2006 (%)



Source: NBS.

2.2.2 Interbank money market

Money market interest rates underwent a turnaround during the year

From the beginning of 2006 until August, money market interest rates increased, mainly because of the rise in inflationary expectations and expectations for the tightening of monetary policy by the NBS (the central bank began to tighten monetary policy at the end of the first quarter, raising interest rates four times between then and the end of the third quarter). As the year drew to a close, market expectations and the interest rate trend underwent a change, largely because of the strengthening exchange rate of the koruna and market expectations for rate cutting by the NBS. The change in expectations was more markedly reflected in longer maturity interest rates, which rose and subsequently fell more sharply than shorter maturity rates. After rising for most of the year, the slope of the yield curve flattened out at the year-end and even declined slightly.

Shorter maturity transactions were predominant

The most popular transactions in the money market were swaps (performed mainly by foreign

entities), followed by deposit transactions (mostly used by domestic banks). Concerning maturities, shorter-term predominated, since foreign investors were looking to speculate and domestic banking institutions had to settle daily positions and secure liquidity.

Funds sterilized by the NBS in the money market declined in 2006

Transactions between the NBS and banking entities were made mostly through sterilization repo tenders, and demand for issues of NBS bills declined sharply. The sterilization position of the NBS fell from SKK 400 billion in the first half of the year to just below 300 SKK billion in the second half, as a result of liquidity conditions becoming less loose after the NBS intervened because of excessive volatility of the koruna.

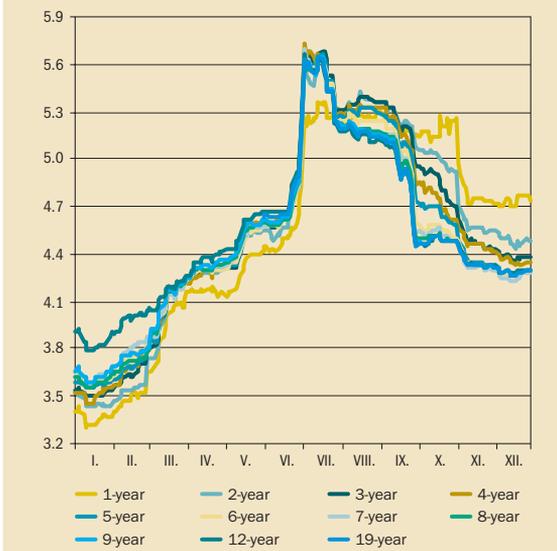
2.2.3 Capital market

The primary capital market was dominated by government bond issues

In the capital market, which is above all a bond market, developments reflected efforts to extend the maturities of government security portfolios. Government bonds worth in total SKK 33.2 billion



Chart 21 Benchmark government bond yields in 2006 (% , p. a.)



Source: Ministry of Finance of the Slovak Republic.

Chart 22 Shift in the bond market yield curve in 2006 (% , p. a.)



Source: Ministry of Finance of the Slovak Republic.

were issued in the domestic market. A 20-year bond (with the longest maturity among Slovak government bonds) was brought to market by the Ministry of Finance, with a fixed coupon of 4.5% and target amount of SKK 40 billion. Given the favourable development of the state budget, the possibility to use temporarily surplus funds of the State Treasury, and an issue in foreign markets (a 15-year issue worth EUR 1 billion), the need to acquire liquidity was lower and this allowed the ARDAL to select auction bids.

Yields on price-setting government bonds rose in 2006

Yields on price-setting government bonds were affected by events in the domestic money and foreign exchange markets. The yield curve for government bonds changed during the course of the year from standard to inverse, and in comparison with the beginning of the year it shifted upwards. The raising of interest rates by the NBS affected mainly yields on shorter maturities.

The stock market and corporate debt market stagnated

The capital market in Slovakia continued to be marked by low market capitalization, and the ratio

of market capitalization to GDP ended the year at only 9.16%. The financial value of transactions was slightly lower than in 2005.

2.3 Medium-term risks from the macroeconomic environment and from financial markets in Slovakia

Macroeconomic developments and macroeconomic policymaking are not at present creating conditions that could impair the country's financial stability in the short-term horizon. In the mid-term horizon, however, potential risks could arise in the following areas:

- Changes in expected entry of Slovakia into the euro area
- Insufficient utilization of the potential for fiscal consolidation
- Capacity limitations of the economy
- The risk of a price bubble emerging in the property market

On the one hand, strong economic growth is providing scope for economic entities to create financial reserves in their balance sheets and is increasing demand for financial services. On the other hand, the risk of excessive indebtedness could potentially

rise if the expectations of economic entities prove to be overly optimistic.

Financial market developments in 2006 confirmed that Slovakia is perceived not only as part of the V4 region but also as one of the emerging markets. Any rise in instability in these markets could be considered a significant source of risk to the domestic market. Developments in the first half of 2006 showed that expectations for the entry of Slovakia into the euro area probably play the main role among domestic factors, and the markets are reacting sensitively to information that calls these expectations into question. If an unexpected event occurred which prevented the conditions for euro adoption from being met, the effect on the functioning of the country's financial system could be adverse.

Although fiscal policy may be viewed as on a sustainable course, there remains scope for the deeper consolidation of public finances. Consolidation needs to be pursued, and the current period of rapid economic growth is especially conducive to it. At this stage of the business cycle, it is not necessary to introduce demand-side stimuli into the economy. The priority of public spending should

be the development of human capital and the innovation potential of the country.

There is a risk that the economy could hit certain capacity limitations – e.g. in the workforce structure or in production capacities of certain industries (for example, construction) – which in turn could translate into a faster increase in costs and prices.

Although the current construction boom and growth in real estate prices in Slovakia is not as strong as in some other EU countries (e.g. Portugal and Spain), there is a growing risk of a price bubble emerging, which would adversely affect the balance sheets of real estate owners, borrowers, and lending financial institutions. According to an analysis by the NBS (see Annex 2) housing prices could rise sharply over a short period, mainly because flat purchases are good value at current prices, even factoring in the costs of financing the purchase with a long-term mortgage. The key factor in this rise is insufficient supply and high effective demand, accelerated by the availability of loans. Contributing to the increase of housing prices in Slovakia is the underestimation of costs and market risks, and, in particular, the short-term expectations of rapid price growth.

3 Non-financial corporations and households

Non-financial corporations and households are the most significant debtors in the private sector²⁶

The importance of the non-financial corporations sector to financial stability is conditioned by the large amount of funds that these corporations have at their disposal, as well as the extent to which their financial liabilities exceed their financial assets – the basis on which the net debtor position of the non-financial corporate sector is established. Although the financial liabilities of households were relatively low in the past, they have been rising sharply in recent years.

The dynamics of real growth in loans to non-financial corporations and households slowed down in 2006

3.1 Non-financial corporations sector

Economic sentiment developed favourably in all sectors under review

Business survey indicators conducted in 2006 pointed to growing confidence among corporate entities and favourable outlooks for future growth in all sectors under review. The economic sentiment indicator²⁷ fluctuated at levels exceeding the average for the EU-25 countries.

Corporate financial performance continued to rise

Corporate financial performance as measured by the profits-to-GDP ratio increased to 17.1%. Non-financial corporations reported profits amounting to SKK 280.4 billion. All sectors made a profit in

Table 4 **MFI claims on non-financial corporations and households**

	2003	2004	2005	2006
Claims on the private sector, SKK bn year-end balance	–	397.7	507.5	627.4
Non-financial corporations	244.6	225.3	271.4	326.5
Households+non-profit institutions	93.7	128.2	181.0	237.9
Loans to non-financial corporations, % of GDP	20.2	16.6	18.4	19.9
Loans to households, % of GDP	7.7	9.5	12.3	14.5
Loans to non-financial corporations, real growth in % ¹⁾	–	-10.9	15.1	11.0
Loans to households, real growth in % ²⁾	–	27.3	37.5	25.8
Loans to non-financial corporations, year-on-year change in SKK bn	–	-19.3	46.1	55.1
Loans to households, year-on-year change in SKK bn	–	34.5	52.8	56.9
Debt of non-financial corporations, % of GDP	137.3	125.5	130.7	–
Debt of households, % of GDP	17.9	17.5	23.1	–

Source: NBS, Statistical Office of the Slovak Republic.

MFI – monetary financial institution

1 Deflated by the industrial producer price index

2 Deflated by the consumer price index

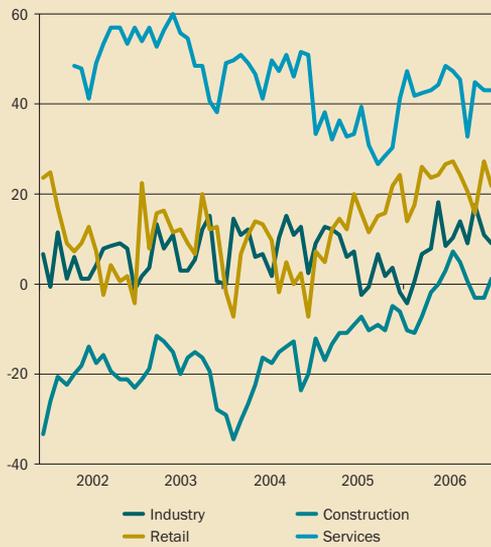
Note: Debt of non-financial corporations and households – liabilities of the sectors in the financial account of the national accounts.

²⁶ The private sector comprises the sectors of non-financial corporations, households, non-profit institutions serving households, other financial intermediaries, financial auxiliaries, insurance companies, and pension funds.

²⁷ It is composed of confidence indicators in industry, construction and retail, and the consumer confidence indicator.

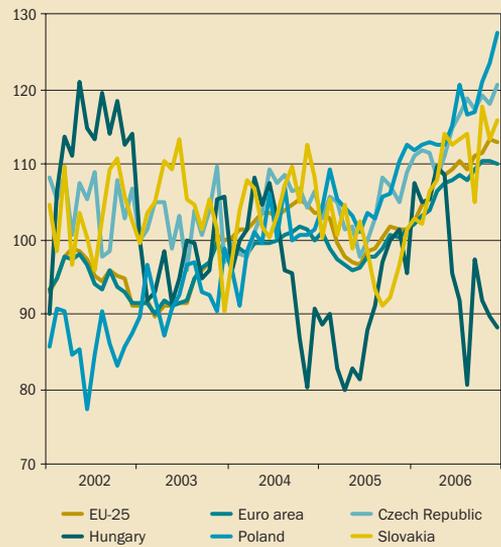


Chart 23 Confidence indicators in economic sectors (%)



Source: Statistical Office of the Slovak Republic.

Chart 24 Economic sentiment index (year 2000 = 100)



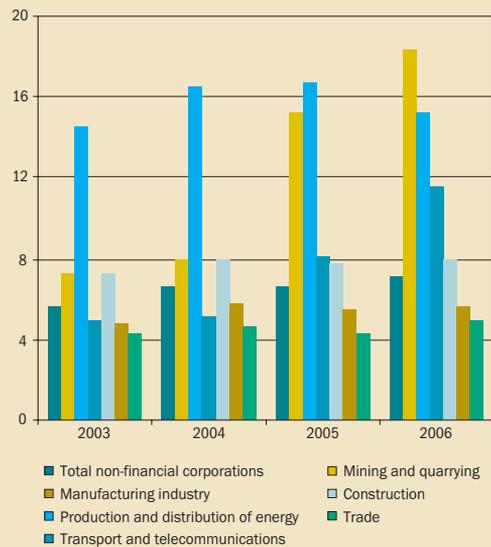
Source: Statistical Office of the Slovak Republic, Eurostat.

2006, with agriculture and education also moving into the black. In terms of contribution to overall profits, manufacturing remained in trend decline and the sector of transport, storage, post and telecommunications recorded the largest increase.

A certain imbalance in the profitability of non-financial corporations (noted in the Financial Stability

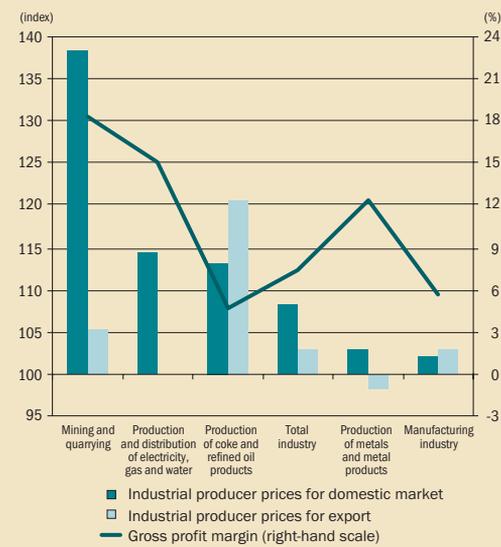
Report 2005) persisted in 2006. The sharpest rise in profitability was reported by the mining and quarrying sector, followed by the production and distribution of electricity, gas and water sector. The rise in profitability in these sectors was also related to the highest increase in sector's product prices in the domestic market. In the production of metals and metal products sector, the gross profit

Chart 25 Gross profit margins in the non-financial sector (%)



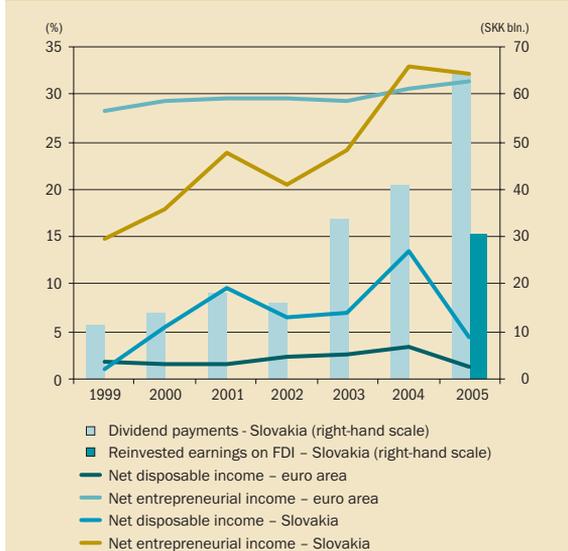
Source: Statistical Office of the Slovak Republic.
Note: Gross profit margin = gross profit / revenue.

Chart 26 Producer price index and gross profit margin (year 2005 = 100)



Source: NBS.
Note: Gross profit margin = gross profit / revenue.

Chart 27 Net entrepreneurial income and net disposable income (share of net value added) (%)



Source: Eurostat.

Chart 28 Average interest rates on new loans in 2006



Source: NBS.

margin increased despite prices rising more slowly than in 2005.

At the aggregate level, corporate performance is approaching EU-25 parameters

The improving financial position of non-financial corporations is also reflected in the development of net entrepreneurial income²⁸ (the income of non-financial corporations before payment of dividends and net of depreciation). The ratio of net entrepreneurial income to net value added generated in the non-financial corporations sector is close to the profit margin. From 1999 to 2005, it rose sharply and even surpassed the average level for euro area countries and for the EU-25. The relatively high proportion of own funds of financing, expressed as the ratio of net disposable income²⁹ to net value added, declined in 2005, largely because of the high level of dividend payments and reinvested earnings on FDI.

Firms are financed from several sources; bank loans are not predominant

As regards sources of financing, the liabilities' structure of non-financial corporations includes a large proportion of funds (53%) under other liabilities (trade credits and advances, outstanding liabilities), which indicates a high share of trade credits and inter-company debt. Shares and other interests accounted for 20% of total liabilities, while bank loans (the direct relationship with the banking sector) constituted 18%. Bond issues were the least significant source of financing in the sector, with a 9% share of financial liabilities.

Loans to non-financial corporations rose, while credit risk indicators improved

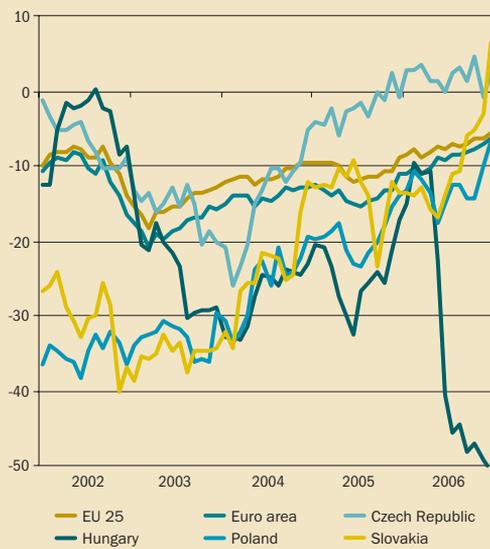
Loans extended by domestic banks to enterprises rose slightly in 2006, to 20% (compared with 17.5% in 2005). Loans in foreign currencies recorded the stronger growth and increased their share of total corporate loans to 33%. In the breakdown by sector, there was an increase in lending to the non-tradable sector (including the sectors of real estate and business services, wholesale trade, retail trade, transport, construction). Loans to

²⁸ Net entrepreneurial income is the indicator in the System of National Accounts (SNA) which is closest to the concept of current profit in corporate accounting. It represents a company's net operating profit after meeting expenses directly related to their production activities, plus property income from asset holdings and less interest and rent paid (in relation to land).

²⁹ For non-financial corporations, net disposable income is the income remaining after liabilities to employees, the state, shareholders and other creditors have been met.



Chart 29 Consumer confidence indicator



Source: Eurostat, seasonally adjusted data.

Chart 30 Savings rate (percentage of gross disposable income)



Source: Statistical Office of the Slovak Republic, Eurostat.

manufacturing enterprises remained at the same level as in 2005.

The quality of the credit portfolio showed a modest improvement in 2006: the proportion of corporate loans that are non-performing was 3.9% as at the year-end, representing a decline of 2.2 percentage points year-on-year. Non-performing loans also fell in absolute terms (by more than SKK 4 billion), mainly due to non-performing loans being written off with previously created provisions.

3.2 Household sector

The trend of growing consumer confidence continued

The consumer confidence indicator fluctuated above its long-term average in 2006, with the mood of confidence rising particularly sharply in the second half of the year. Growing optimism (a rise in the share of positive assessments and decline in negative ones) was recorded for each component of the consumer confidence indicator – expectations for the economy, for unemployment, for the financial position of households and for saving. By the end of the year, the consumer mood in Slovakia was at a higher level than the EU-25 average.

Rising household confidence was based on growth in employment and household income

The demand for labour in the labour market continued, with the employment rate rising by 3.8% (according to a labour force survey) and the unemployment rate falling to 13.3%. Real wages increased in all sectors of the economy, albeit more slowly than in 2005.

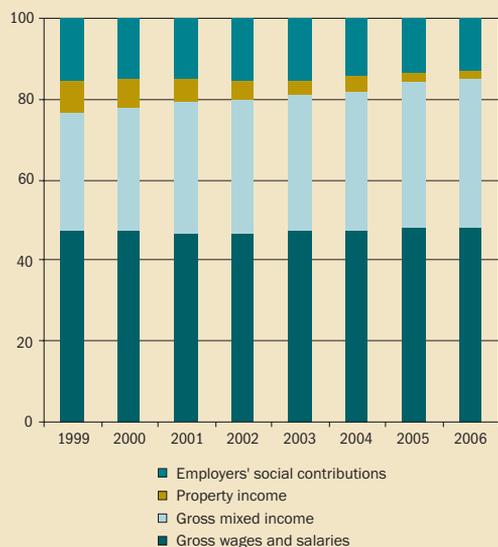
The gross household savings rate rose sharply

The trend rise in the household savings rate can be seen as a positive development given that households need to create reserves in order to finance their liabilities. Even excluding savings in pension funds, the savings rate increased in 2006. In comparison with savings rates in other EU-25 countries and in the euro area, the rate in Slovakia remains relatively low.

Household disposable income rose, mainly owing to growth in wages and entrepreneurial income

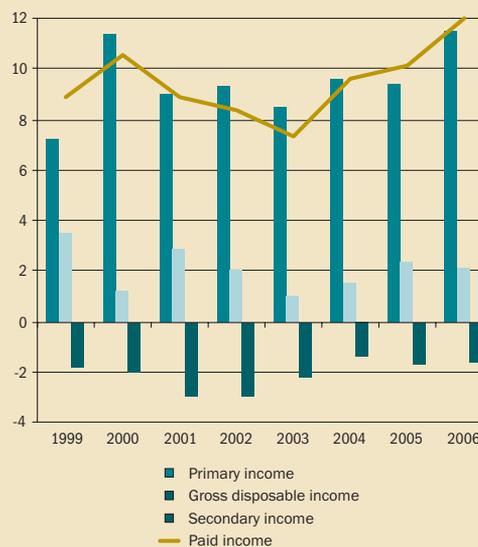
The growth in the gross disposable income of households was largely accounted for by higher primary income,³⁰ out of which the bulk of household debt repayments are met. The rise in secondary

Chart 31 Primary income structure of households (%)



Source: Statistical Office of the Slovak Republic.

Chart 32 Contributions to growth in gross disposable income (p. p.)



Source: Statistical Office of the Slovak Republic.

income³¹ made a much smaller contribution to the growth in disposable income. Another factor behind the higher disposable income was the slight decline in paid income of households.³²

As interest rates rose, households turned their attention to bank deposits

The movement in yields on different products brought about a change in the structure of financial assets in 2006. Investment in mutual fund (money market) shares had begun to decline in 2005, and this trend accelerated in 2006, with households transferring some of their money into shares of mutual funds other than money market funds. To some extent, households also revisited bank deposits, especially time deposits. The growth in bank deposits in 2006 indicates that financial assets are again being partly transferred from less liquid to more liquid forms, which households can utilize at shorter notice in order, where necessary, to meet debt repayments. The fastest growing segment of the Slovak financial sector was Pillar II of pension saving.

Households are changing the structure of their assets in favour of non-financial assets

Over the longer run, there is a clear trend of households shifting their assets into non-financial forms. Comparing the cumulative rises of financial and non-financial assets from 1996 to 2005, the ratio of non-financial assets to total assets increased from 15% in 1996 to 30% in 2005. Household liabilities have increased at a similar pace to non-financial assets (see Annex 1 for more details).

Household debt vis-à-vis income and financial assets has increased

The liabilities of households increase more quickly than their financial assets, and, therefore, the ratio of liabilities to financial assets is rising; after reaching 43.5% in 2005, it has already exceeded the ratio in euro area countries. Likewise, the debt of Slovak households in relation to their gross disposable income is going up, although it remains relatively low in comparison with euro area countries. The ratio of loan repayments to

³⁰ Primary income comprises income from work (wages and salaries), income from business (gross mixed income) and property income (income less expenditure).

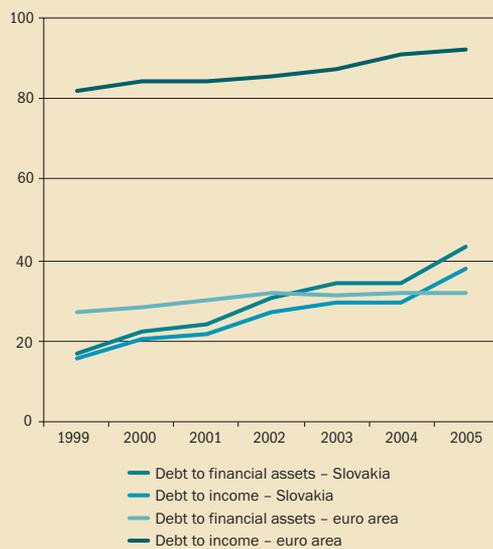
³¹ Secondary income comprises social benefits and other current income transfers.

³² Paid income comprises current taxes on income, property, social contributions and other current expenditure transfers.



Chart 33 Household debt ratios

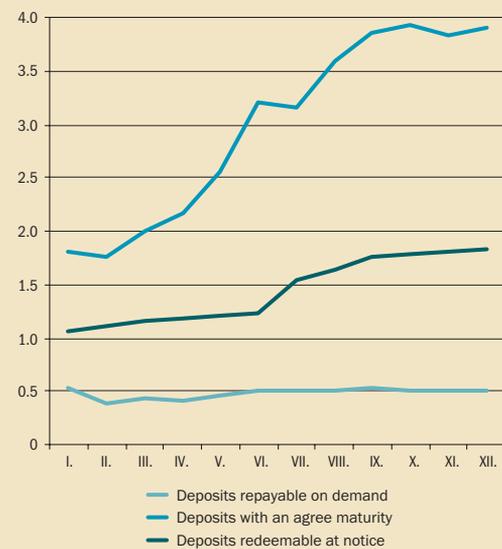
(%)



Source: NBS.

Chart 34 Interest rates on new deposits

(in 2006, %)



Source: NBS.

gross disposable income continues to climb, and in the third quarter of 2006 it stood at 4.2% of gross disposable income. At the aggregate level, households have sufficient income to meet their liabilities.

At the micro level, household debt was concentrated within a narrow group

An indication of household debt³³ at the micro level is given by the Survey of Income and Living Conditions of Households that the Statistical Office of the Slovak Republic conducted in 2005. Indebted households made up 3.5% of the total sample of households.³⁴ Borrowing was higher among higher-income households. The average ratio of monthly repayments of loans for house purchases to monthly disposable income stood at 21%, rising to 24% if the number of household members in relation to current expenditure is taken into account. As regards household credit risk, it is significant that a relatively risky group of households with a high ratio of loan repayments

to income (more than 60%) held 16% of the total amount of loans. Simulations of the effect of an interest rate increase on loan repayment have revealed that the ability of households to repay their loans would not be significantly affected by a rise in instalments, but they would be more adversely affected by a decline in disposable income.

Households continued to draw an increasing amount of credit in 2006, although the pace of growth was slower than in 2005

Among household loans, house purchase loans and consumer loans recorded the highest growth in 2006. The raising of interest rates in 2006 was reflected in household behaviour: the preference of loans secured by real property on an initial rate fixation of up to one year declined from a significant level in 2005. The proportion of non-performing loans as at the end of 2006 stood at 3.2%, representing a slight increase year-on-year. Relatively the highest default rate was reported by consumer loans.

³³ A detailed analysis can be found in the Report on the Results of the Slovak Financial Sector Analysis for the first half of 2006. As the information is based on a sample statistical survey, it is affected by statistical error.

³⁴ The survey did not include building loans, intermediate loans, consumer loans, or current account overdrafts.

3.3 Medium-term risks in the non-financial corporations sector and household sector

The strong growth in loans extended to households and to non-financial corporations means that developments in these sectors are making the banking sector increasingly dependent on the domestic business cycle. There is, however, a reverse connection: by taking the opportunities offered by the domestic environment and by being ready to lend to the private sector, banks are supporting the economic boom, that is, they are acting pro-cyclically. Any shocks in the domestic environment and in the financial balance sheets of the corporate and household sectors could have a greater effect on increasing banks' credit risk. But given the strong ties between banks and their parent undertakings, mostly based in euro area countries, the dominant factor may in fact be developments in the home countries of these parent undertakings.

- Changes in the sectoral structure of lending to non-financial corporations in favour of the non-tradable sector
- Indebtedness of lower-income households
- The short-sighted and pro-cyclical behaviour of households when investing in funds is exposing them to the risk of an inefficient allocation of savings, or rather an unfavourable risk/return ratio

At the macrolevel, the financial position of the non-financial corporations sector is now stable and credit risk in the sector is on the whole mild

In the medium term, however, a risk could arise if financing of the non-tradable sector became more firmly established (especially the financing of commercial real estate and residential real estate construction), which could eventually squeeze growth in more productive investments. Another risk to this segment is its sensitivity to real estate price development.

A part of loans to enterprises are in foreign currency, but that share is considerably lower than in other new EU Member States. As a result, Slovakia has less of a problem with exposure to

foreign currency (euro) developments. We expect, moreover, that enterprises are hedging these loans in their balance sheets. The foreign exchange risk of Slovak households is insignificant owing to the low proportion of household loans that are in a foreign currency.

Non-financial corporations could face a certain risk from external debt exposure, which has been rising in recent years. Especially the short-term debt of entrepreneurial entities rose. On the other hand, some of the debt is in the form of intercompany loans from foreign parent undertakings.

Rising debt is making households more vulnerable to negative shocks

Indebted lower-income households represent a particular credit risk, since they are the first whose debt servicing ability could be affected by a decline in disposable income. The current quality of the credit portfolio appears to be good. Because of the growth in new loans, the ratio of non-performing loans to total loans is not increasing.

The fact that small investors are allocating savings inefficiently on the basis of incorrect investment decisions points to the need for financial education of retail investors

From previous developments, it can be concluded that retail investors are behaving short-sightedly when investing their disposable funds. The growth in investments in mutual funds in 2004 and 2005 was largely related to low interest rates in financial markets and the efforts of customers to earn more on their disposable money by making riskier investments. Conversely, the interest rate rise in 2006 and decline in returns on several funds gave households the incentive to again keep their money in bank time accounts. Another risk is the procyclical behaviour of small investors when deciding to invest in higher-yielding – and therefore riskier – assets, such as shares. Investors have a tendency to buy equity fund shares in a rising market and to sell in falling market, or they make their decisions on the basis of the fund's past returns. This phenomenon is widespread in developed foreign markets and may now to a certain extent be present in Slovakia, too. The result is that small



investors are not allocating savings optimally in regard to the risk-return ratio. It is clear that investing in financial markets, even when done through

professional intermediaries, requires knowledge and information. This also points to the need for financial education of retail investors.³⁵

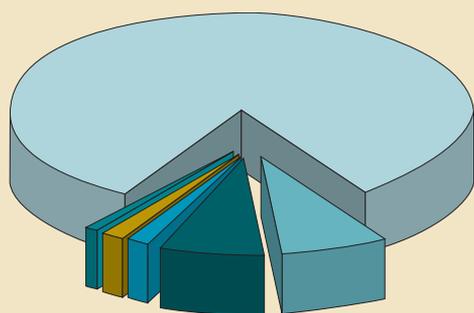
³⁵ *The same conclusions also apply to the short-sighted behaviour of banks' customers in regard to the interest rate fixation on mortgage loans (mostly fixed for the short term) and the fact that customers are increasingly opting for unit-linked life insurance (see Part 4.2.1). In both cases, the banks or insurance companies are transferring the interest-rate or market risk to their customers. This raises the question of whether customers understand the risks and are able to manage them better than financial institutions. Financial education is also covered by the Green Paper on Retail Financial Services, published on 2 May 2007, in which the European Commission sets out its vision of future EU policy in retail financial services.*

4 Financial sector

In 2006, the Slovak financial sector³⁶ comprised mainly banks, insurance companies, asset management companies (collective investment), pension fund management companies, supplementary pension companies (insurance companies)³⁷ and securities dealers (SDs). As at 31 December 2006, these institutions managed assets worth almost SKK 1,759 billion, which represented nearly 107% of GDP at current prices. For the year from December 2005, the amount of managed assets and assets increased by SKK 62.5 billion, or 3.7%. That represented a substantial slowdown in comparison with the 12 months of 2005, when the financial

sector reported growth of SKK 318 billion, or 23%. The main change occurred in banks' assets, which increased by only SKK 4 billion mainly owing to an outflow of short-term foreign capital in the second half of 2006. Although the banking sector recorded minimal growth in 2006, it maintained its dominant position in the Slovak financial sector. As at the end of 2006, banks held net assets worth SKK 1,409 billion, representing 80.1% of the assets and managed assets in the financial sector (see Chart). Overall, therefore, the long-term trend decline in the banking sector's proportion of total assets is continuing (down from 83% in 2005).

Chart 35 **Financial institutions by share of assets and managed assets of the financial sector in 2006** (%)



□ Banks	80.1%
■ Supplementary pension companies and supplementary pension insurance companies	1.2%
■ Pension fund management companies	1.6%
■ Non-bank securities dealers	1.5%
■ Mutual funds	7.4%
■ Insurance companies	8.2%

Source: NBS.

Note: For banks and insurance companies, the share is evaluated using net assets, and for other sectors, by the value of assets under management.

4.1 Banking sector

4.1.1 Key performance trends in banking sector liabilities in regard to financial stability

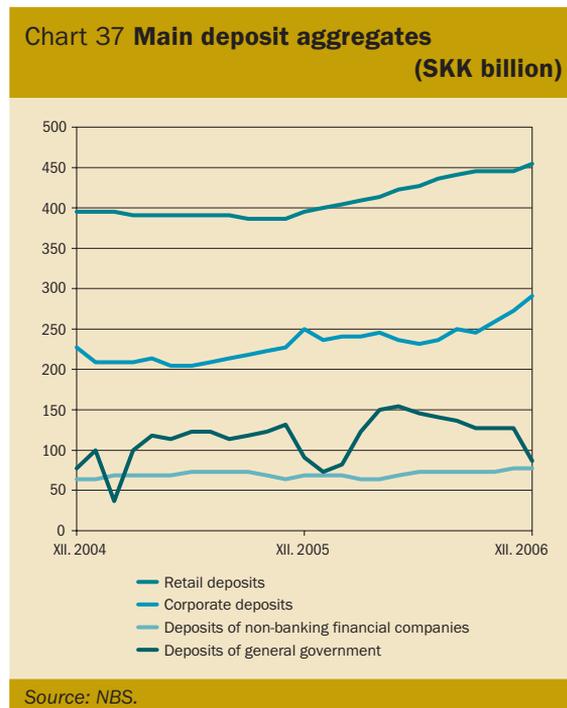
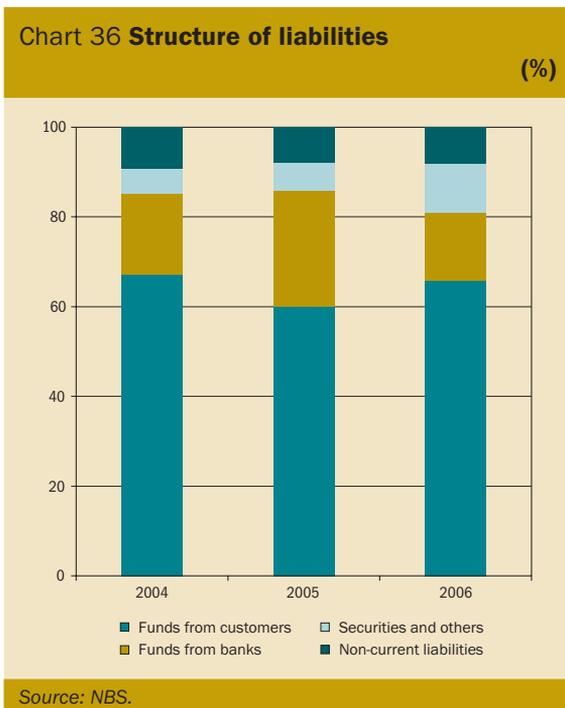
The Slovak banking sector as a whole has so far had sufficient stable domestic funds at its disposal

In 2006, the structure of banking sector assets was most altered in July, when deposits of foreign banks fell by SKK 98 billion.³⁸ This resulted in a sudden rise in the proportion of claims against customers and in liabilities arising from securities issues (Chart 36). For the financial stability of both the banking sector as a whole and individual banks, it is positive that lending growth in 2006 was accompanied by an increase in customer deposits (retail and corporate) and by the issuance of bonds (Chart 37 and Chart 38). Most banks reported a slight decline in the loan-to-deposit ratio during 2006 and an end to the rising trend in the ratio average

³⁶ The financial sector is understood to mean financial companies subject to regulation by the NBS.

³⁷ In 2006, the transformation of three supplementary pension insurance companies into supplementary pension companies was completed; as at the year-end there remained one supplementary pension insurance company operating on the market, and its figures for December 2006 are estimated.

³⁸ Foreign deposits declined by SKK 131 billion year-on-year (43%) and amounted to SKK 170.4 billion as at 31 December 2006.



that dated back to 2005. Therefore, in comparison with other EU countries, the Slovak banking sector has at its disposal a sufficient amount of customer funds and funds from bond issues.

correlation between time deposits of households and interest rates, no such link can be seen with corporate deposits. Given the approximately constant

The largest growth in retail deposits was in household deposits and time deposits

Retail deposits increased by 15% year-on-year, from SKK 396 billion to SKK 456 billion, mainly as a consequence of rising interest rates. Time deposit balances recorded the fastest growth, as they were the most responsive to interest rates and represent the most logical alternative to investments in mutual funds.³⁹ From the view of currencies and counterparties, the increase in retail deposits was almost exclusively confined to koruna deposits of households.

Growth in corporate deposits is related to increasing activity

The second most important component of funds from customers is liabilities to enterprises (non-financial corporations). Whereas there is a positive

Chart 38 Security issues and their ratio to total assets



³⁹ On the one hand, a relatively strong correlation can be seen between the amount of retail deposits and the interest rate on these deposits; on the other hand, there is a certain negative correlation between the net asset value of mutual funds and the rate of return on these funds, which in the case of bond funds is related to interest rates. All the indications are that the amount of household financial assets, and especially its growth, is invested either in bank deposits or mutual funds, depending on interest rates developments.

number of enterprises, the growth in their deposit balances has more to do with the expansion of their activities or rather the creation of surplus liquidity.

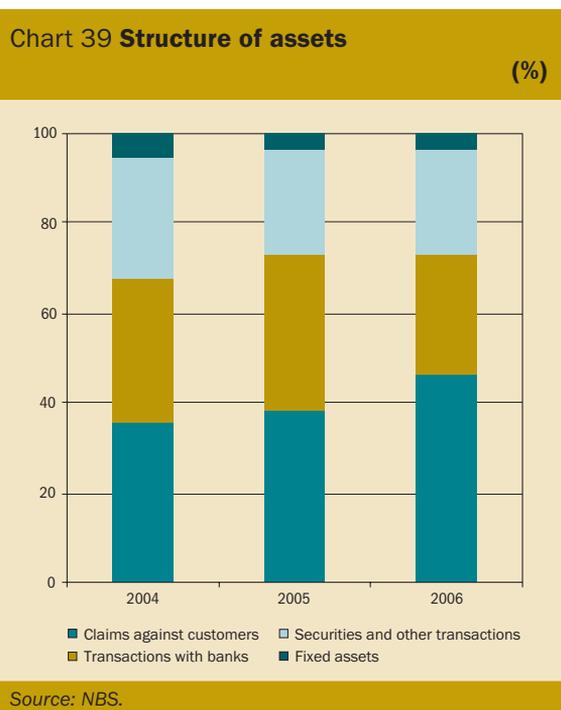
4.1.2 Key performance trends in banking sector assets in regard to financial stability

Loans to customers were the fastest growing asset item, maintaining a trend of recent years

The main effect of continuing growth in loans to customers has been on the structural change in banking sector assets. In 2006, the volume of lending in the banking sector rose by 20% year-on-year and accounted for 46% of total assets as at December (Chart 39). Most of the growth was in loans to households and enterprises. Banks' investments in securities also declined, largely caused by the maturity of a portion of government bonds. The share of foreign equity and debt securities also declined substantially.

The increase in corporate lending in 2006 was driven mainly by loans to small and medium-sized enterprises and loans for commercial real estate

In 2006, loans extended to enterprises rose by 20% in absolute terms. The proportion denominated in



the domestic currency increased by 26% year-on-year, to almost 70% (Chart 40). Foreign currency loans also increased, but to a lesser extent than koruna loans. According to information from banks' lending staff, the focus of bank lending is increasingly on small and medium-sized enterprises, primarily for the financing of long-terms investments

Chart 40 Volume of loans and the concentration on the lending market (SKK billion)



Note: CR 5 represents the five largest banks by share of the corporate lending market.

Chart 41 Corporate lending broken down by sector (SKK billion)

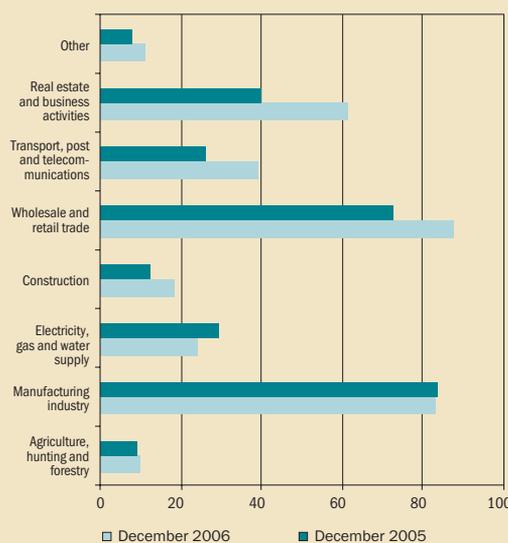
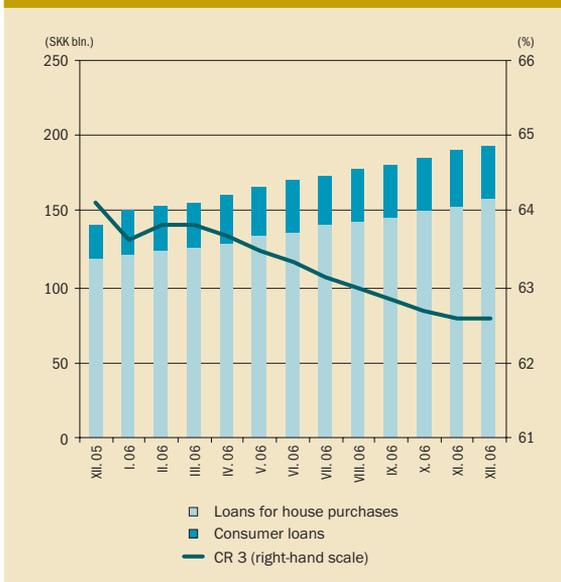


Chart 42 Volume of loans and the concentration on the retail lending market



Source: NBS.

Note: CR 3 represents the three largest banks by share of the retail lending market.

as well as operating capital. At the same time, some banks have been relaxing credit standards for small and medium-sized enterprises, mainly in response to competition from other banks. As for lending to large enterprises, standards have tended to remain unchanged. Even so, some banks have also been tightening standards because of the riskiness of selected sectors and changes in the risk management system. Broken down by sector (Chart 41), the growth in corporate lending in 2006 was driven mainly by loans for real estate development (up by SKK 15 billion year-on-year), loans for retail and wholesale trading (SKK 15 billion), loans in the transport sector (SKK 10 billion) and loans in the construction sector (SKK 6 billion).

Retail loans were predominantly extended to households, whose increasing demand was mainly for house purchase loans

Retail loans increased year-on-year by almost SKK 58 billion, or 32%. More than 98% of them were denominated in the domestic currency, and over 92% were extended to households. House purchase loans continued to report the fastest growth,

and accounted for almost 65% of retail loans as at the end of 2006. With a share of 13%, consumer loans were the second most significant item in the retail lending portfolio (Chart 42). The increase in demand was largely based on positive macroeconomic developments and growth in household income, as well as positive expectations for the future. Another key factor was the rising prices of real estate⁴⁰ and the related change in spending on property purchases. For banks, it is also relevant that as property prices increase, so too does the value of collateral. In the second half of the year, some banks relaxed credit standards particularly for house purchase loans. This was largely related to competition from other banks and banks' expectations of an increase in property prices. Certain banks tightened standards for consumer loans as well as for house purchase loans, mainly because of changes in the quality of the portfolio and in the risk appetite of the banks

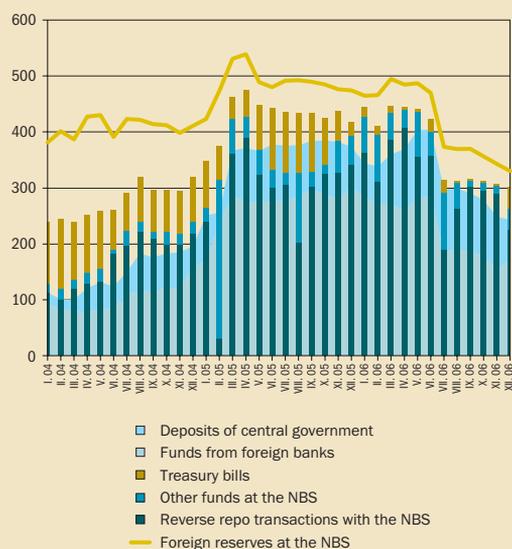
The high concentration in the banking sector's lending activities continued

The increase in corporate lending was spread relatively unevenly across the sector. Three banks accounted for 75% of the sector's total growth in corporate lending in absolute terms. Since these banks had extended the most corporate loans during the previous period, too, there was naturally an increase in the concentration of this lending. At the end of 2006, the five banks with the largest corporate loan portfolios by amount accounted for 63% of the total corporate lending in the sector (Chart 40). The growth in retail lending was also led mainly by large banks. The top five banks accounted for 83 percent of the year-on-year rise in the sector's retail lending. At the end of 2006, the three banks with the largest retail loan portfolios accounted for 63% of the total retail lending in the sector (Chart 42).

4.1.3 Key performance trends in the inter-bank market in regard to financial stability

After a period of stability in the first half of 2006, asset and liability transactions underwent a sharp change in June

⁴⁰ Property prices rose at a slower pace in 2006, according to the National Association of Slovak Real Estate Agencies. In the second half of the year, the price per square metre of residential property in Slovakia rose by 7%.

Chart 43 Interbank assets and liabilities and general government funds (SKK billion)


Source: NBS.

Note: The chart does not include transactions between domestic banks.

Chart 44 Deposits of non-resident banks and the implied interest rate


Source: NBS.

It is worth noting that both asset and liability transactions declined by more than SKK 100 billion in June 2006, and by the year-end they had fallen slightly further, to their lowest levels for two years. In comparison with December 2005, interbank assets⁴¹ declined by SKK 115.5 billion, or 23%, and interbank liabilities⁴² fell by SKK 151 billion, or 41%. This development is reflected in the structure of banking sector assets and liabilities by a decline in the share of transactions with banks and/or funds from banks in the sector's total assets (Charts 36 and 39).

The sharp decline in bank's claims on the NBS was directly related to a decline in the koruna liquidity of banks induced by NBS interventions in the foreign exchange market

The largest component of the decrease in interbank assets was the fall in funds that the NBS sterilized through deposits and loans from commercial banks, through minimum reserves, or through the issuance of NBS bills for banks' portfolios. The de-

cline in the NBS's sterilization positions was related to the foreign exchange interventions made by the central bank in 2006.⁴³ These led to a decline in the volume of Slovak currency in the banking system, which could be deposited by banks with the NBS or used for the purchase of its treasury bills. As at December 2006, the average sterilization position of the NBS represented SKK 301 billion, a drop of 27.5% year-on-year (Chart 43).

The decline in interbank liabilities was largely accounted for by the decrease in foreign banks' deposits

Overall, deposits of foreign banks amounted to SKK 170.4 billion as at 31 December 2006, which represented a decline of SKK 131 billion year-on-year, or 43%. In July alone, these deposits fell by SKK 98 billion, to SKK 184.5 billion (Chart 44). This was caused by the global rise in investor risk aversion in May and June (see Part 1.2), which resulted in a general outflow of funds from emerging markets (and therefore from Slovakia, too). In conjunction

⁴¹ Interbank assets represent the sum of claims against the NBS, domestic and foreign banks, and treasury bills other than treasury bills held to maturity.

⁴² Interbank liabilities represent the sum of deposits and loans received from the NBS and domestic and foreign commercial banks.

⁴³ The NBS entered the foreign exchange market on four occasions in 2006 in order to curb the volatility of the Slovak koruna. In the final balance of foreign exchange interventions for the full year, the NBS sold EUR 2.59 billion.



Table 5 Year-on-year changes in basic expense and income categories (SKK billion)

	XII. 2005	XII. 2006	Changes
(a) Operating costs	28.01	29.86	7%
(b) Gross income	42.67	51.79	21%
Net interest income	29.69	34.58	16%
Net non-interest income	12.98	17.21	3%
Net income (b – a)	14.66	21.93	50%
Net profit after tax	13.92	15.86	14%

Source: NBS.

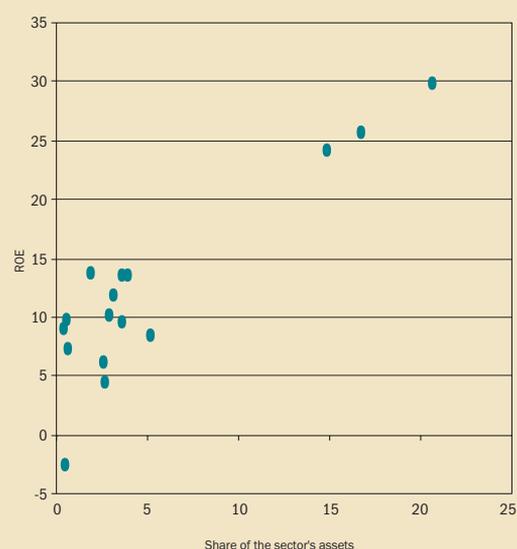
with this outflow, the currencies of many emerging currencies weakened rapidly. Contributing to the outflow of short-term foreign funds and the adverse effect on the koruna's exchange rate was investor uncertainty over the policy direction of the newly elected governing coalition, especially in regard to the previous government's commitment to introduce the euro in 2009. As we have already mentioned, these events prompted the NBS to react through interventions in the foreign exchange market.

4.1.4 Profitability

The profitability of the banking sector maintained the positive trends of recent years

The average return on equity (ROE) weighted by capital stood at almost 18.8%, compared with 17.7% in the same period of the previous year.⁴⁴ The after-tax profit reported by the banking sector for 2006 was 14% higher than in 2005. What is particularly positive is the sharp growth in net income, meaning the income earned exclusively from banking activities and net of operating expenses. Net income increased by 50% year-on-year, indicating that banks were able to raise profitability on primary banking activities. Only one bank reported a loss for 2006. For all but one of the branches of foreign banks, the development of profitability was more negative than positive. This was mainly affected by the relatively short time that some branches had been operating in the market, a fact reflected in operating costs being higher than operating income.

Chart 45 Relationship between bank size and ROE (in December 2006)



Source: NBS.

The concentration of profitability in the three largest banks remained high in 2006

The three largest banks by profits generated in 2006 accounted for fully 66% of banking sector profits, but only for 52% of assets (Chart 45). The contribution of the three largest banks to the sector's profits declined year-on-year, partly because one of them recorded only a slight rise in profits, and partly because two medium-large banks increased their profits substantially.

Banks increased their net interest income in 2006 as lending increased and interest margins widened

⁴⁴ The year-on-year comparison of banks' profitability is complicated by the implementation of International Accounting Standard and other changes in the accounting procedures of banks.

The net interest income of the banking sector rose by 16% year-on-year, yet as recently as the end of 2005 it had fallen by 6% year-on-year. The return to growth was caused by a steady rise in lending and the widening of interest margins. Income from loans and other claims accounted for 82% of interest income as at December 2006. As much as 25% of the interest income from claims consisted of income from the NBS. Approximately 30% of interest income came from loans to households. The proportion of income from securities continued to decline. Interest expenses comprised mainly interest on deposits. The interest rate spread widened in the corporate sector and remained unchanged in the retail sector (Chart 46).

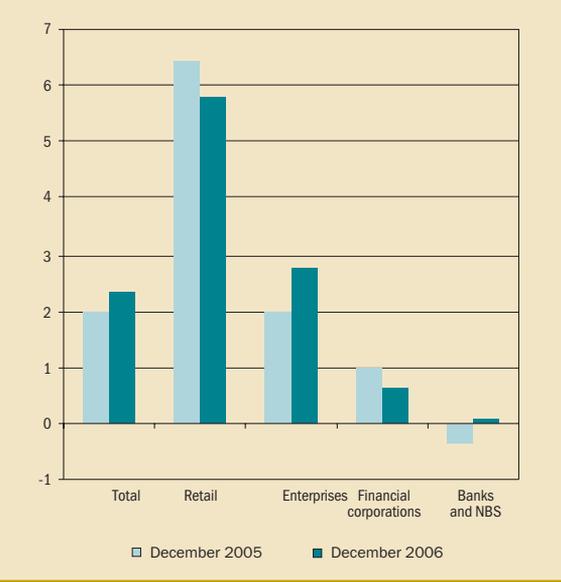
Non-interest income also continued to rise, while net fee income recorded a slight decline

Like interest income, non-interest income in the banking sector continued to increase in 2006. Its share of gross income rose year-on-year to as high as 46%. Non-interest income included a rise in income from participations (dividends). Unlike in previous years, there was a year-on-year decline in trading income and in net fee income (down by 1%). Because of changes in the charging of fees, however, it is difficult to assess the actual development of fee income for the whole banking sector. Overall, no fewer than ten banks recorded a decline in fee income year-on-year, mostly accounted for by a decrease in fee income from customers.

Trading income decreased year-on-year; income from foreign exchange transactions rose

Income from securities transactions declined at almost all banks, by a total of SKK 1.2 billion year-on-year. The rise in interest rates was adversely reflected in the revaluation of debt securities to fair value. The loss made by the banking sector as a whole on the revaluation of securities came to SKK 560 million. Income from foreign exchange transactions and derivative transactions must be evaluated together, since a majority of banks use derivative transactions to hedge their open foreign exchange positions. Net income from these transactions rose by more than SKK 850 million year-on-year, with most banks reporting an overall

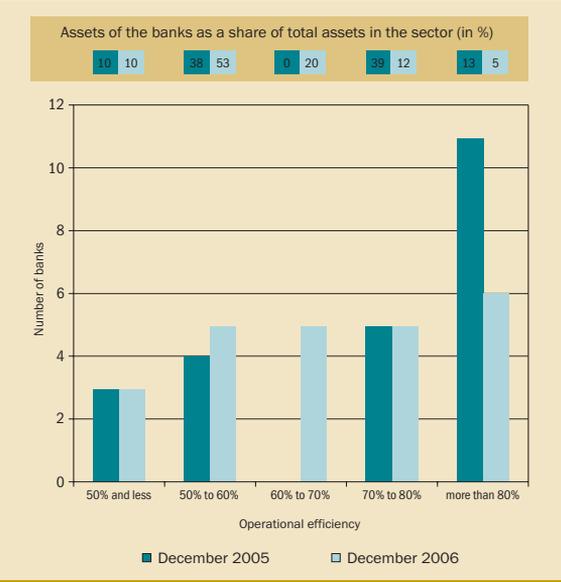
Chart 46 Interest rate spread¹⁾ (%)



Source: NBS.
 1) The interest rate spread represents the difference between, on the one hand, the share of cumulative interest income in the average value of selected assets provided to a given counterparty, and, on the other hand, the share of cumulative expenses in the average value of selected liabilities provided to this counterparty.

gain. The sector's net gain on foreign exchange operations (after taking into account currency derivative positions) was almost SKK 7.3 billion as at December 2006.

Chart 47 Breakdown of operational efficiency in the sector



Source: NBS.

**Although operating costs rose, operational efficiency improved**

Banks' operating costs rose by 7% year-on-year. Personnel costs accounted for a significant share (45% as at the year-end), and they were also the largest component of the annual increase in operating costs. In December 2006, the ratio of operating costs to gross income for the banking sector as a whole stood at 57.7%, while in 2005 it had been fluctuating at around 65.6%. The number of banks in which this ratio represented more than 80% declined notably (Chart 47).

Expenses related to the creation of provisions declined

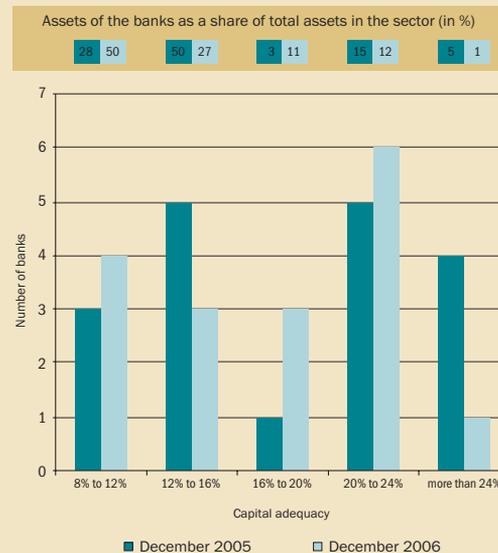
The amount of provisions created in the banking sector fell by SKK 4.2 billion year-on-year, and income from the reversal of provisions decreased by SKK 6.8 billion. The total net income from the creation of provisions (the difference between income from the reversal of provisions and expenses related to their creation) fell by SKK 2.6 billion year-on-year.

4.1.5 Capital adequacy**The capital adequacy ratio of the banking sector continued to decline**

As double-digit percentage growth in risk-weighted assets continued,⁴⁵ on the one hand, and own funds increased by less than 2%, on the other hand, the capital adequacy ratio of the Slovakia banking sector maintained its downward trend (from 14.79% as at 31 December 2005 to 13.06% as at 31 December 2006).⁴⁶ A majority of banks saw their capital adequacy ratio decline, and those with a ratio of less than 12% were managing more than half of the sector's assets by the year-end. In comparison with the end of the previous year, that represents an almost twofold rise in the percentage of assets managed by this group of banks (Chart 48). This reduction in capital adequacy occurred within the stipulated regulatory rules, since all banks, throughout the year, had at their disposal

⁴⁵ Because banks last year increased the proportion of their asset positions that carry greater risk weights, at the expense of those with smaller risk weights, the sector's RWAs rose by almost 18%.

⁴⁶ The data does not cover branches of foreign banks, and they are weighted by the denominator.

Chart 48 Breakdown of capital adequacy ratios in the banking sector

Source: NBS.

sufficient own funds to easily meet the 8% minimum regulatory requirement.

The quality of own funds in the Slovak banking sector is very high

The amount of own funds held by banks to cover particular risks rose by 1.86% year-on-year. Most of these funds come out of equity capital or profits. As much as 97% of the own funds in the Slovak banking sector are classified as Tier I, the highest quality category. The share of Tier II capital is, from the aggregate view, insignificant. Tier III capital is only used by one Slovak bank and accounts for around 5% of its own funds.

4.1.6 Risks in the banking sector

The strategic direction as well as operational activity of the Slovak banking sector is to a large extent under the control of foreign banking groups. This is also reflected in the (changing) structure of domestic banks' balance sheets. There exists a risk of fallacy of composition, where the attempt to diversify risks at the group level can cause a rise in individual risk at the lower level.

The preceding parts of this report (4.1.1 and 4.1.2) outlined the changes in the banking sector's assets and liabilities that naturally also affect the development of risk in the sector. As well as the decline in the importance of securities, transactions with banks and the NBS decreased in absolute terms, too. By contrast, loans to customers continued to increase their share of the sector's assets, and accounted for 46% of the total as at December 2006.⁴⁷ The main increase came in credit exposure to households and enterprises, which at the end of the year accounted for 37% of the banking sector's assets. The fact that loans to households and enterprises are an increasingly significant part of banks' assets does, on the one hand, send a positive signal (in contrast with the recent past) that the banking sector is functioning in a more standard way in fulfilling its role as an intermediary of capital for productive opportunities. On the other hand, the very close correlation between banks and the domestic business cycle may pose a (credit) risk. The degree and significance of the adverse effect is very difficult to estimate, given the insufficient experience of a link between an economic downturn and the performance of the banking sector. For the moment, however, only certain banks are diversifying their assets and income in geographical and product terms.⁴⁸

FOREIGN EXCHANGE RISK

The foreign exchange risk of the banking sector in 2006 was negligible

The exchange rate of the Slovak koruna showed considerable volatility in 2006, but since the overall foreign exchange position of the banking sector was closed, the exposure of banks to foreign exchange risk appeared negligible. The balance-sheet foreign exchange position at the level of the whole banking sector remains substantially short and mainly comprises a large amount of foreign

exchange deposits from foreign banks and short-term foreign exchange deposits of the general government – banks have deposited a sizeable share of them, in Slovak koruna, with the NBS.⁴⁹ Banks closed the open foreign exchange position on the balance sheet by means of derivative transactions.

In most banks, value at risk (VaR) in 2006 did not exceed 2% of own funds

Because of the low correlation between different exchange rates, banks can incur a loss even on a closed foreign exchange position. For most banks, the VaR as at the end of each month in 2006 did not exceed 2% of own funds.⁵⁰ It should be noted, however, that this analysis does not take into account the time consistency of individual instruments used to close currency positions, and it is therefore based on the assumption of high liquidity in the foreign exchange market.

Indirect foreign exchange risk is difficult to evaluate clearly

Apart from their direct exposure to foreign exchange risk, which appears to be insignificant, banks are indirectly exposed to the effects of exchange rate fluctuations. As mainly enterprises and financial corporations receive a rising amount of foreign currency loans,⁵¹ their ability to meet the repayments could come under threat in the event of weakening of the domestic currency. However, the data needed to make a more detailed analysis of this situation are not available.

INTEREST RATE RISK

Interest rate risk was concentrated in the banking book, i.e. excluding the impact on capital adequacy. The interest rate risk of the banking sector as measured by VaR is low

⁴⁷ In Austria, for example, this ratio was 34.5% as at the end of 2006 (excluding loans to non-residents).

⁴⁸ For a detailed analysis of banks' credit risk exposure to households and enterprises, see Chapter 3.

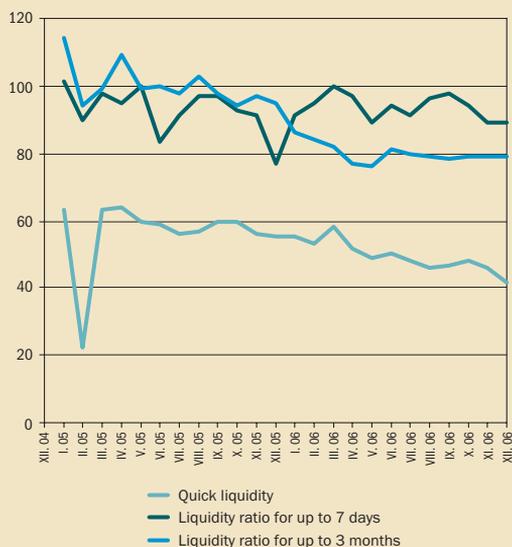
⁴⁹ By contrast, the short foreign exchange position arising from interbank deposits and loans (including deposits of the Slovak Ministry of Finance deposited with banks through the ARDAL) was sharply reduced in comparison with December 2005, from SKK 152 billion to SKK 83 billion. That decline was mainly related to the fall in foreign bank deposits in July 2006 (see Chapter 4.1.3 for more details).

⁵⁰ For the assessment of risks, VaR was calculated as the maximum loss over a period of 10 days that will not be exceeded in 99% of cases.

⁵¹ The foreign exchange risk of households is negligible. Only 1.5% of loans to households are denominated in a foreign currency, compared to 33% of loans to enterprises.

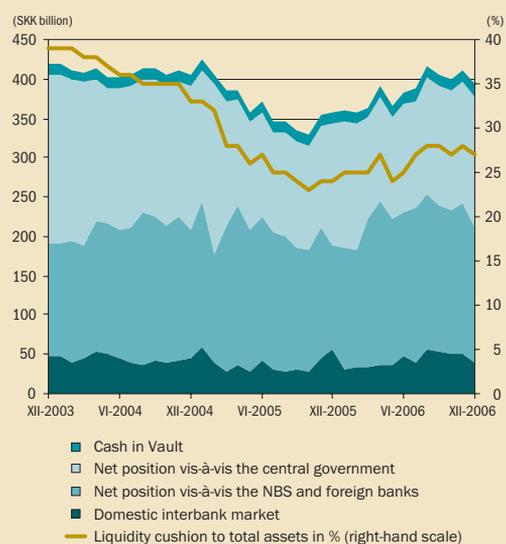
Chart 49 Liquidity ratios

(%)



Source: NBS.

Chart 50 Liquidity cushion – composition and ratio to total assets



Source: NBS.

Since assets outweigh liabilities in longer maturities, it should be the case that rising interest rates, especially for longer maturities, adversely affect banks by reducing net financial worth. Interest rate risk arises mainly from positions in the banking book, comprising mainly balance-sheet instruments. In the event of a change in interest rates, however, this risk would not affect the reported gain or loss, and therefore not the capital adequacy ratio, either. By contrast, interest rate positions in the trading book are basically closed, partly owing to the hedging of on-balance-sheet positions with off-balance-sheet positions. This is mainly the case with positions that have longer fixed interest rate periods, where the interest rate risk generally has a greater impact. The aggregation of the results for each bank shows that, with this loss taken into account, the median capital adequacy ratio of the banking sector declined from 18.8% to 18.4%.

LIQUIDITY RISK

Liquidity ratios were more stable in 2006 than in the previous year

Whereas changes in the volume of lending and changes in the amount of deposits are continually opening a liquid position, securities purchases and funds sterilized at the NBS (even after deducting

the deposits of foreign banks and the ARDAL) are creating a liquidity cushion for the possible coverage of an open position. The continuing decline in the quick ratio basically means that customer deposits (regardless of type and maturity) increased more sharply than did the liquid assets that banks may use to meet any run on deposits (Chart 49). When interpreting this ratio, it is important to note that the main increase was recorded by household time deposits, which are less volatile than current accounts and are more responsive to interest rates. As they developed in 2006, the median liquidity ratios for up to 7 days and for up to 3 months reflected the less hectic nature of this year in comparison with 2005. It was important for the banking sector that the median of the ratios fluctuated at above 90% (7-day) and around 80% (3-month) in a majority of months. This means that the banking sector was able, in theory, to use quick assets and assets maturing within 7 days or 3 months to cover 90% or 80% of deposits falling within the respective maturity. A more precise treatment of this issue is provided by stress testing.

The liquidity cushion increased

It was positive for the banking sector that the liquidity cushion and its ratio to total assets ended several years' of decline in 2005 and increased during 2006 (Chart 50). As regards the structure

of the liquidity cushion, investments in securities continue to be an important pillar, as is the fact that the banking sector places more funds in sterilization repo tenders than foreign banks and the ARDAL deposit with the banking sector.

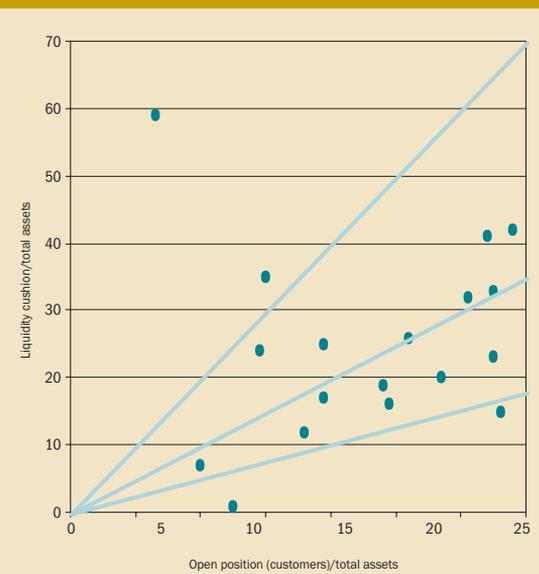
Most banks have less than 50% coverage of the open position on customer transactions for up to three months

The comparison between the liquidity cushion⁵² and the open position for up to 3 months⁵³ at individual banks (Chart 51) illustrates the extent to which a given bank can use the liquidity cushion to cover the time inconsistency arising from transactions with customers. Both quantities are calculated as a share of total assets so that their significance in the particular bank is apparent. If, for example, the ratio of the open position on customer transactions to total assets is the same as the ratio of the liquidity cushion to total assets, it means that the bank is able to cover the entire open position by the liquidity cushion. That situation is depicted in the upper half of the chart. These banks not only have a sufficient liquidity cushion, they also have a very small open position on customer transactions. The central band includes banks whose liquidity cushion is sufficient to cover more than half of the open position on customer transactions. Within this group, it is necessary to distinguish between banks according to the ratio of the open position to total assets. The majority of banks are concentrated below the line denoting 50% coverage of the open position on customer transactions for up to three months.

4.1.7 Stress testing

The focus of this part is how to estimate the sensitivity of the banking sector to exceptional but plausible changes in market conditions from the view of the risks identified earlier in this report. The stress testing was based on estimating the impact of stress scenarios on individual banks, and

Chart 51 Comparison between the liquidity cushion and the open position for up to 3 months



Source: NBS.

Note: The chart does not include banks in which the open position with customers or the liquidity cushion is negative.

these impacts are presented in aggregate form. When interpreting individual results, however, the assumptions and limitations of the methodology used in the particular type of stress test need to be taken into account.⁵⁴

CREDIT RISK

The results of credit risk stress testing may be evaluated as generally satisfactory, insofar as they have not shown the banking sector to be substantially exposed to counterparty risk. It should be added, however, that the simulated effects of certain specific scenarios at certain banks have sent a number of warning signals. The scenario that had the most adverse impact was the first one representing an increase in non-performing loans from the existing portfolio alongside a credit crunch: in that event, the selected banks could have had relatively serious difficulties in meeting the capital adequacy requirement.

⁵² The liquidity cushion is the sum of cash in vault, government bonds, Treasury bills, NBS bills, deposits with the NBS and current accounts with other banks, after deducting banks' liabilities (except long-term liabilities) towards foreign banks and the ARDAL and assets provided as collateral.

⁵³ The open position for up to 3 months is the difference between, on the one hand, the sum of claims against customers and debt securities issued by banks and enterprises which have a residual maturity of up to 3 months, and, on the other hand, the sum of liabilities to customers and issued securities which have a residual maturity of up to 3 months.

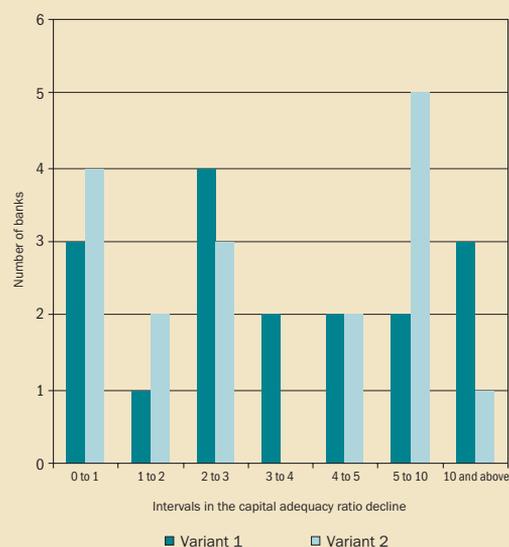
⁵⁴ The stress tests are described in detail in Part 1 of the Annex to the NBS Report on the Report of the Slovak Financial Sector Analysis, published on www.nbs.sk.

The first scenario simulates an increase in the default rate of old loans, combined with a credit crunch. The impairment of credit portfolios is based on either the historically largest rise in non-performing loans in the given bank (variant 1), or the existing default rates obtained from the Register of Bank Loans and Guarantees (variant 2), the respective values are further stressed by the factor M. The meaning of the multiplier varies between variants. In variant 1, M can be understood as the number of months in which there would be a repetition of the largest increase, but in the second variant it should be interpreted as a coefficient of the rise in the loan default rate. The evaluation of the effects of both versions of the first scenario is based mainly on the results obtained for the selection of multiplier M=2 or M=5. Whereas the lower parameter value represents a slight and sufficiently probable impairment of the portfolio, the higher one should cover the situation of an exceptionally unfavourable development in the bank.

The combination of an increase in the default rate of old loans and a credit crunch in the banking sector would have an adverse effect only on particular banks, and in some of them could result in a serious problem with capital adequacy

In the event of a doubling of the historically worst increase over the course of one month, banks would be able to absorb it without severe consequences. The only exception is one bank whose capital adequacy ratio would be adversely affected in such a scenario (especially under the second variant). However, if the past situation were to be repeated with a fivefold increase (Chart 52), or for a period of at least five months, it could cause complications in several banks. For four banks (variant 1) or five banks (variant 2), the scenario would result in the capital adequacy ratio dropping to below 8% (in one case, the ratio would even be negative). In the case of one bank, even M marginal values below 1 constitute warning signals (in both variants), because of which its capital adequacy ratio would decline to the 8% limit. For the banking sector as a whole, the median capital adequacy ratio would decline by more than 5 percentage points, to 13.4% (variant 1) or 12.0% (variant 2), which can still be considered a relatively safe level.

Chart 52 Distribution of capital adequacy ratio decline in the sector, under Scenario 1 with the selection of parameter M=5 (p. p.)

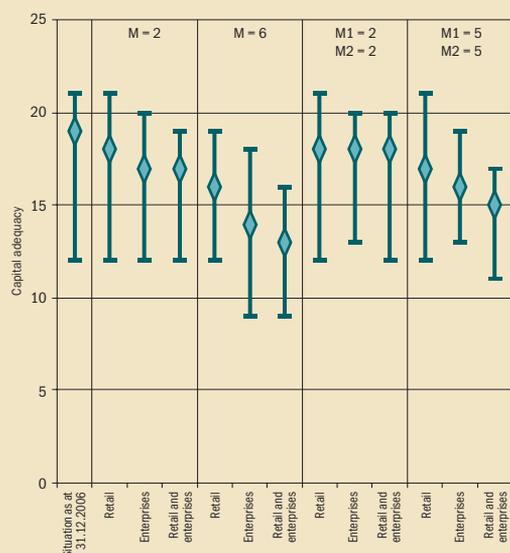


Source: NBS.

Scenario 2 depicts a situation in which banks seeking to increase their market share offer an abundance of new loans; in doing so, they also lend to less solvent entities, which leads to these loans having a higher default rate. This scenario is also realized in two variants, and uses a pairing of multipliers, M_1 and M_2 , each of which has the same meaning in both variants. Multiplier M_1 expresses the relationship between, on the one hand, what was in 2006 the highest proportion of total loans that were non-performing, and, on the other hand, the proportion of new loans that will in future be non-performing. Multiplier M_2 is used for simulating an increase in bank lending given the average month-on-month relative changes in the lending volume over the past year. The second interpretation involves extending the time period during which the stress test scenario applies. The analysis of the second scenario is similar to that of the first scenario, based on two simulations capturing the more moderate ($M_1=2, M_2=2$) and more adverse ($M_1=5, M_2=5$) development of credit risk.

Individual banks and the sector as a whole showed low sensitivity to the scenario of an increase in loans to creditworthy customers and their subsequent default

In general, the effects of this scenario are smaller than those of scenario 1 (Chart 53). That is also because the second scenario assumes an in-

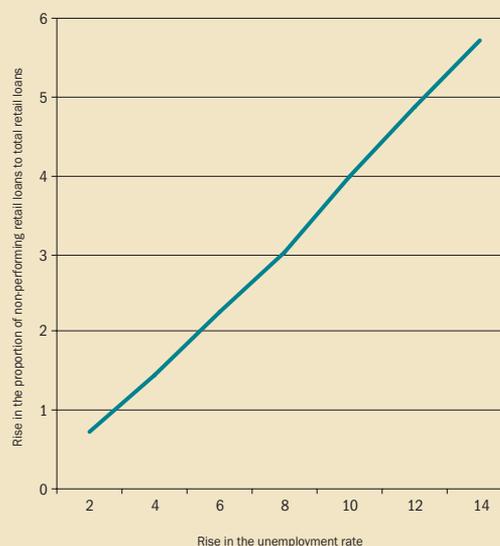
Chart 53 Comparison of the effects of individual scenarios on the distribution of capital adequacy ratios in the banking sector (%)


Source: NBS.

Note: The chart shows the lower quartile, median, and upper quartile of the distribution of estimated capital adequacy ratios in the sector following the application of the first variant of scenarios 1 and 2.

crease in the default rate only among new loans, which constitute a relatively small base. In the second variant of the scenario, banks were shown to have a very low sensitivity. The more severe effects were only revealed in variant 1 in combination with the larger multipliers. According to the results, the ratio of the most strongly affected bank would decline by 8.4%. Such inputs would see the median capital adequacy ratio fall from 18.8% to 14.9%.

The third scenario focuses on assessing the impacts of changes in real estate prices. The potential effect that a decline in the prices of real estate serving as collateral would have on the additional creation of provisions and, subsequently, on the capital adequacy ratio is assessed. The scenario of declining real estate prices works on the assumption that the unsecured parts of loans in different credit categories (three in all) are sequentially covered by provisions to the extent of 0%, 10% and 100%. The decrease in prices on the property market is set at 30% or 50%.

Chart 54 Increase in the default rate of retail loans in relation to a rise in the unemployment rate (p. p.)


Source: NBS.

The scenario of a decline in the prices of real estate used as collateral for bank loans had little effect on banks

Despite the extreme values selected for the decline in real estate prices, the effect on the vast majority of banks was minimal. The only notable result was that two banks recorded a fall of 2 percentage points in the capital adequacy ratio when the prices were halved.

Each increase of one percentage point in the unemployment rate is reflected in the loan default rate rising by around 0.4 of a percentage point

The fourth scenario is designed to evaluate the effect of an increase in unemployment on the ability of households to meet their loan commitments. The output indicator is the increase in the proportion of retail loans that are non-performing (Chart 54). Given the data,⁵⁵ the simulation of unemployment growth was produced only for the sector as a whole, and that is why it is not pos-

⁵⁵ The data was drawn from the Survey of Income and Living Conditions of Households (EU SILC 2005) conducted by the Statistical Office of the Slovak Republic.



sible to assess the sensitivity of individual banks to the scenario.

The last stress test scenario, combining elements of certain previous scenarios, would have an adverse effect only on home savings banks

It is assumed that both unemployment rises and real estate prices in the economy decline. The scenario assumes that the unemployment rate rises by 10 percentage points, which according to the results of the previous test would mean a rise of 4 percentage points in the proportion of non-performing loans. It also assumes that real estate prices decline by 50% and that provisions are created for the entire unsecured amount of non-performing loans (i.e. in the amount of 100%). Even in this case, the effect is weak, with the exception of three home savings banks that would see their capital adequacy ratios decline by around 5%.

MARKET RISKS

Stress testing has shown that equity risk and direct foreign exchange risks in the banking sector are low, or rather comfortably covered by own capital. The effects of interest rate movements would be more unfavourable. Most banks would be exposed to an adverse effect in the event of an increase in interest rates, largely because of the relatively high interest rate risk in the banking book. The revaluation of these securities, however, only affects the change in the net present value and would not in fact affect the reported financial results or the capital adequacy ratio.

Equity risk

Risks to the banking sector from equity positions are low, since individual banks have minimal holdings of shares

As at the end of 2006, only three banks had an equity position of any significance and in none of these cases did the ratio of shares to assets exceed 2.5%. Stress testing was performed for these banks, nevertheless, using the standard VaR method based on historical observations. The considered interval of reliability was 99%. Since identification of the specific shares held by any

one bank was precluded by the availability of data, the historical development of share prices was approximated using time series of the share indices of the national stock exchanges on which the shares are listed. Information on the composition of equity portfolios by country of origin was obtainable from the statement on the breakdown of balance-sheet items according to countries of non-residents. The actual values at risk in the tested banks indicate that the risk arising from equity positions is low. The effect on the capital adequacy ratio was calculated to be a few tenths of a per cent.

Foreign exchange risk

The direct effect of foreign exchange risk on banks' own funds – through the revaluation of balance sheet and off-balance-sheet items – does not represent a threat to the banking sector

The banking sector as a whole would suffer the largest loss in the event of a repeat of the exchange rate development recorded in the period from 23 November to 7 December 2006. This loss would, however, stand at only SKK 76.8 million, or 0.5% of the banking sector's net profit for 2006. Although that period saw substantial appreciation of the Slovak currency, particularly against the US dollar (by 3.5%) as well as other currencies, it cannot be concluded from this that a majority of banks would be sensitive to strengthening of the domestic currency. The resilience of the banking sector to direct foreign exchange risk is also confirmed by the simulation of exceptional movements in exchange rates. Table 6 shows two extreme scenarios of fluctuations in particular exchange rates. These scenarios were calculated on the assumption of a 15% shift in the SKK/EUR exchange rate, while changes in other exchange rates were worked out using an estimate of correlations in the stressed periods, which in general are higher than the correlations in quiet periods (with some currencies the difference is twofold).

As Chart 55 shows, the conclusion regarding the low effect of extreme changes was valid not only at the end of 2006, but also during 2005 and 2006. The stress testing of foreign exchange risk performed at the end of each month in 2006 using the simulated exceptional movements in

Table 6 Simulated movements in exchange rates, obtained by estimating mutual correlations in stressed periods (%)

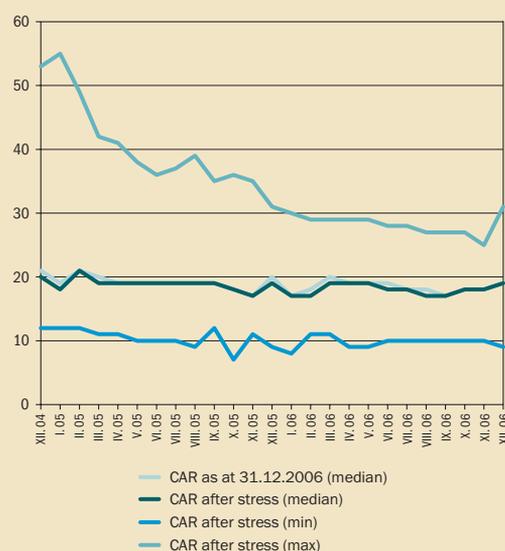
Currency	Estimated change upon the koruna weakening against the euro by 15%	Estimated change upon the koruna strengthening against the euro by 15%
CHF	16	-16
CZK	8	-8
DKK	15	-15
EUR	15	-15
GBP	14	-14
HUF	4	-4
JPY	15	-16
PLN	2	-2
SEK	14	-14
SIT	15	-15
USD	16	-17

Source: NBS.

exchanges rates stated in Table 6 did not reveal any potential decline in the capital adequacy ratio to below the 8% limit.

Interest rate risk

For stress testing interest rate risk, two approaches were used. The first assesses the sensitivity of interest rates in terms of changes in the financial worth of all interest-sensitive assets and liabilities on the balance sheet. Under this approach, sensitivity is therefore not expressed as the effect on financial results. Indeed, it takes into account the change in the revaluation of all assets and liabilities to fair value, including those which are not in fact revalued to fair value. The advantage of this approach is that it also captures any changes in the net financial worth of instruments held to maturity in the event that the bank decides to sell them. The second approach assumes that a change in the NBS base rate is gradually translated into individual interest rates on deposits, loans and interbank transactions and on income from securities. This serves as the basis for estimating the gradual effect on net interest income from deposits and loans, on the one hand, and on the change in the fair value of securities and interest rate derivatives, on the other hand. At the same time, it is expected that fluctuations in the amount of deposits and loans maintain the existing trend and that portfolios of securities and interest rate derivatives remain unchanged. An advantage of this approach, apart from its modelling of the gradual translation of an interest rate shock into other rates, is that it aims to capture more reliably the effect of

Chart 55 Time series of the effects that the exchange rate movements stated in Table 6 have on capital adequacy ratios (CAR)


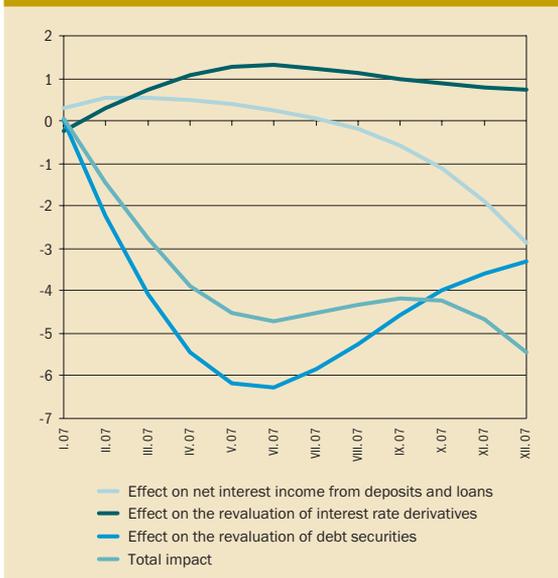
Source: NBS.

Note: For each bank, the change in the capital adequacy ratio was estimated for that exchange rate movement which would have an adverse effect on the bank. The calculation did not cover branches of foreign banks.

shocks on the reported profit or loss and to do so sequentially over the period of one year. The problem remains, however, that all securities and derivatives, including those which a bank holds to maturity, are revalued to fair value.

An increase in interest rates would have a more significant impact on net financial worth

Chart 56 Estimate of the effect of a base rate increase of 2 percentage points in a time horizon (1 year, SKK billion)



Source: NBS.

Note: The data express the estimated loss or gain (in SKK billion) resulting from an increase in the NBS base rate by 2 percentage points. Deposits and loans include, in addition to transactions with customers, interbank deposits and loans.

Given the structure of the net position of interest-sensitive assets and liabilities, a majority of banks should be affected more by an increase in interest rates than by their reduction. The size of this effect on net financial worth was estimated in two versions of the shock – moderate (a parallel rise in interest rates of 2 percentage points), and crisis (a parallel rise in interest rates of 5 percentage points). The effects of these scenarios are stated in Table 7. It should be noted, however, that this estimate does not take into account off-balance-sheet transactions.

The sensitivity to interest rate increase is further confirmed by the second approach to estimating the effect of interest rate shocks. This approach also allows a time series of this effect to be tracked.⁵⁶ Given that an interest rate shock is not, in reality, immediately passed on to individual interest rates (especially not long-term ones), the effect would steadily rise over the course of the

first five to six months (Chart 56). This would be caused mainly by a revaluation of the debt securities portfolio, which includes both purchased and issued securities. Because the residual maturity of these securities is shortening, the effect would gradually decline and the impact of the fall in net interest income would become more apparent. After around one year, this impact would have the more significant influence on the change in the financial results. This confirms the previous conclusion on the significance of interest rate risk in the banking book. In summary, therefore, it can be said that an unexpected rise in the NBS base rate by 2 percentage points would have approximately the same effect on net interest income from deposits and loans as on the fair value of debt securities in the horizon of one year. Each of these effects would amount to around SKK 3 billion. Although interest rate positions arising from derivatives are included in this approach, in most banks they would not have a significant effect on reducing the interest rate risk arising from balance-sheet transactions.⁵⁷

The median capital adequacy ratio, taking into account the impact on net interest income and on the revaluation of the fair value of securities and interest rate derivatives, would decline over a single year from 18.8% to 17.9%.

LIQUIDITY RISK

From the view of liquidity, the riskiest scenario appears to be an unexpected withdrawal of a large percentage of customer deposits. This is related to the increasing dependence of certain banks in financing long-term low-liquidity assets with potentially highly volatile funds. The sensitivity of certain banks to this scenario increased during the second half of the year. There was, by contrast, a decline in sensitivity to the stress test scenario in which 90% of the deposits of non-resident banks are withdrawn. This relates to the decline in foreign banks' deposits and in funds deposited with the NBS in July 2006. In both cases, however, the liquidity cushion in a majority of banks would have been sufficient.

⁵⁶ The development of interest rates was estimated in the context of both an unexpected base rate increase and without such increase, using a model that is described in detail in Part 1 of the Annex to the Report on the Results of the Slovak Financial Sector Analysis.

⁵⁷ It should be pointed out that these general conclusions on the decline in the net interest income and fair value of securities apply only to the banking sector as a whole. The situation in some banks appears to be relatively different.

Testing was not carried out on the capital adequacy ratio (because of its unclear connection with liquidity risk), but on three selected liquidity ratios (the quick ratio and the ratios of liquidity for up to 7 days ratio and for up to 3 months). Each indicator is calculated as a ratio of the liquid assets and volatile funds in the respective category. The size of the shock was considered in regard to the absolute value of the average month-on-month change in these ratios. For the stress testing of liquidity risk, three basic scenarios were selected: a decline in the value of government bonds by 10%; a decline in the amount of customer deposits by 20%; and a decline in the amount of foreign banks' deposits by 90%.

The first scenario would not have a significant effect on banks. The impact of a decrease in the value of government bonds by 10% would be greatest on banks that include a high share of government bonds in their total assets. In comparison with the situation in June 2006, the banking sector's sensitivity to the second scenario increased. Of the three scenarios, it is this one that would have the most impact on the banking sector. This may be related mainly to the increase in deposits as a share of total assets. By contrast, the scenario in which deposits of non-resident banks decline by 90% had a reduced effect during the second half of 2006. This effect would mostly be reflected in a decline in the quick ratio. The impact on the 3-month liquidity ratio would be relatively small (Chart 57).

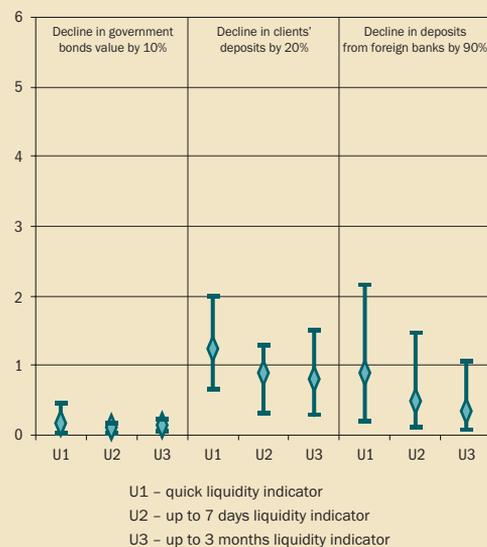
CONTAIGNON RISK⁵⁸

The results of stress testing show that as at the end of each month in 2006, the sector included no more than four banks whose capital adequacy ratio would fall below the 8% limit in the event of another bank failing to meet its liabilities (Chart 58).

As a share of total assets in the banking sector, banks' claims on other domestic or foreign commercial banks are low

In regard to contagion risk, it is also important to track the further spread of the domino effect that may be brought on by the failure of one or more

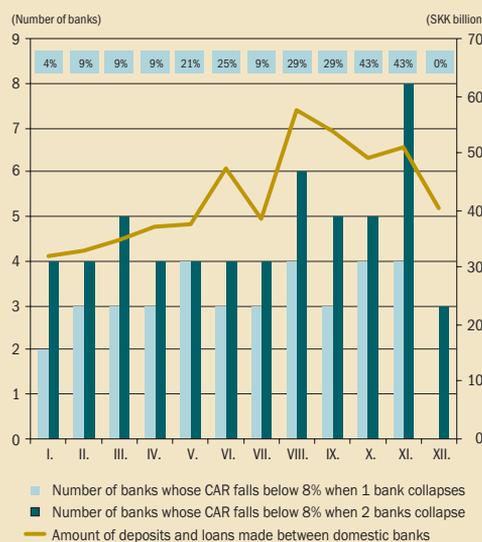
Chart 57 Comparison of the effects of different scenarios of liquidity risk



Source: NBS.

Note: The chart shows the lower quartile, median, and upper quartile of the distribution of the share of liquidity indicators changes after applying the individual scenarios to the average month-on-month changes during 2006.

Chart 58 The impact of contagion risk stress testing on the domestic interbank market



Source: NBS.

Note: The left vertical scale shows the number of banks whose capital adequacy would fall below 8% in the event of the collapse of one or two banks. The right-hand scale shows the amount of deposits and loans made between domestic banks, in SKK billion (outstanding amount as at the month-end). Figures above the chart show the assets of banks whose CAR would fall below 8% after the collapse of one bank as a share of the total assets of the banking sector.

⁵⁸ In this analysis, contagion risk denotes the risk that the collapse of one domestic bank brings about a deterioration in the situation, or even collapse, of other banks. The principal reason for this may be the links between banks in the form of deposit and loan transactions in the interbank market. In this respect, therefore, contagion risk is related to the credit risk arising from interbank claims and it depends on the diversification of the portfolio of claims in the interbank market.

Table 7 VaR figures and the impacts of stress test scenarios on the capital adequacy ratio

Capital adequacy ratio	Level as at 31 December 2006	Ratio of profit to own funds	Foreign exchange risk ¹⁾				Interest rate risk			Equity risk VaR ²⁾	Market risks - total VaR ²⁾	Credit risk			Contagion risk
			VaR ²⁾	Historical scenario ³⁾	EUR/SKK +15% ⁴⁾	EUR/SKK -15% ⁵⁾	VaR ²⁾	Parallel rise of 2 p.p. ⁶⁾	Parallel rise of 2 p.p. ⁷⁾			Parallel rise of 5 p.p. ⁶⁾	Scenario 1 ⁸⁾	Scenario 2 ⁹⁾	
Lower quartile	12.5	1.4	12.5	12.5	12.5	11.9	9.8	11.2	6.3	12.5	11.3	12.2	11.3	11.7	9.0
Median	18.8	1.9	18.8	18.7	18.8	18.4	15.7	17.9	14.3	18.8	18.2	16.8	14.9	16.7	13.5
Upper quartile	21.3	2.7	19.9	19.9	19.9	21.0	19.0	19.4	17.5	21.3	19.8	19.2	16.9	19.3	16.8

Source: NBS.

- 1) The calculation of the foreign exchange position includes only balance-sheet assets and liabilities (with the exception of positive and negative derivative values) and the nominal values of spot and forward transactions and option transactions.
- 2) The capital adequacy ratio after taking into account the highest loss that a bank will suffer over a period of 10 business days in 99% of cases (calculated on the basis of historical simulations using data for one year).
- 3) The capital adequacy ratio after taking into account the highest loss that a bank could suffer in the event of a repetition of the exchange rate development which occurred between 23 November and 7 December 2006.
- 4) The capital adequacy ratio after taking into account revaluation under a simulated depreciation of the Slovak koruna against the euro of 15%; the movements of other exchange rates were estimated on the basis of correlations in the stress test periods and they are stated in Table 6.
- 5) The capital adequacy ratio after taking into account revaluation under a simulated appreciation of the Slovak koruna against the euro of 15%; the movements of other exchange rates were estimated on the basis of correlations in the stress test periods and they are stated in Table 6.
- 6) The capital adequacy ratio after taking into account the immediate change in the net financial worth of balance-sheet items, occurring upon a parallel rise in the whole interest rate curve by 2 or 5 percentage points.
- 7) The capital adequacy ratio after taking into account changes in net interest income and revaluation of the portfolio of debt securities and interest rate derivatives, in a time horizon of one year from when the base rate is raised by 2 percentage points.
- 8) A credit crunch with the assumption that the increase in non-performing loans recorded in 2006 will double (1-month time horizon).
- 9) The provision of loans with a higher default rate together with the assumption that the proportion of non-performing new loans to total new loans increases by five times in comparison with the existing proportion of non-performing loans and that the average month-on-month increase in lending volume rises fivefold (1-month time horizon).
- 10) The unemployment rate rises by 10 percentage points and real estate prices decline by 50% (1-month time horizon, taking into account only the effect on retail loans).

banks. The analysis of the Slovak banking sector shows, however, that although the failure of one bank can lead to a reduction in capital to below the stipulated limit, the probability of the failure spreading further is very small, provided that certain other conditions do not also deteriorate. Even if a bank's capital adequacy ratio were to decline following the collapse of another bank, the ratio would remain above 4%. This is related to the fact that banks' claims on other domestic or foreign commercial banks account for a relatively low share of total assets in the banking sector. During 2006, this share fluctuated between 4% and 10%.

MACRO STRESS TESTING⁵⁹

From the results of macro stress testing of the Slovak banking sector, it is clear that any slowdown of the Slovak economy, even a more severe one, should not threaten the financial stability of the banking sector. That is the case insofar as any such slowdown is accompanied by sound monetary policy measures. A more significant threat could be posed by shocks that persist without a corresponding response from other factors. Although such shocks are at variance with the historical development to date, they cannot be completely ruled out. In assessing the exposure of the Slovak banking sector to interest-rate and foreign-exchange risks, the extent to which banks could be indirectly affected by a potential deterioration in the financial position of debtors has been revealed. That is because of the relatively significant proportion of loans with a short initial rate fixation as well as the high degree of openness of the Slovak economy.

4.2 Insurance sector

4.2.1 Premiums written and technical premiums written⁶⁰

Total technical premiums written reported another slowdown in growth

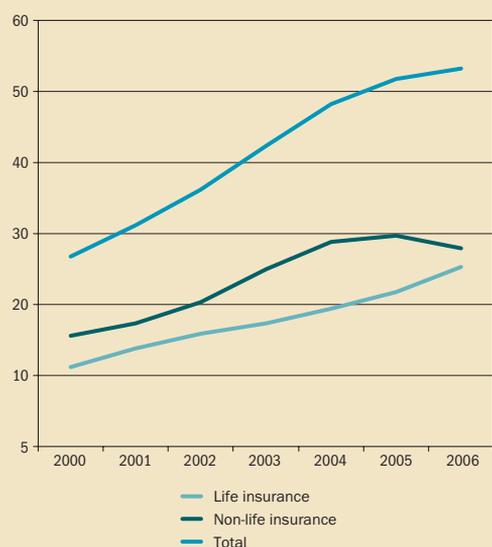
In life insurance, technical premiums written rose by 15.6% in 2006, confirming the trend growth

⁵⁹ For more details, see Annex 3.

⁶⁰ Because premiums written were reported in accordance with Slovak accounting standards up to the end of 2005 and in

Chart 59 Technical premiums written

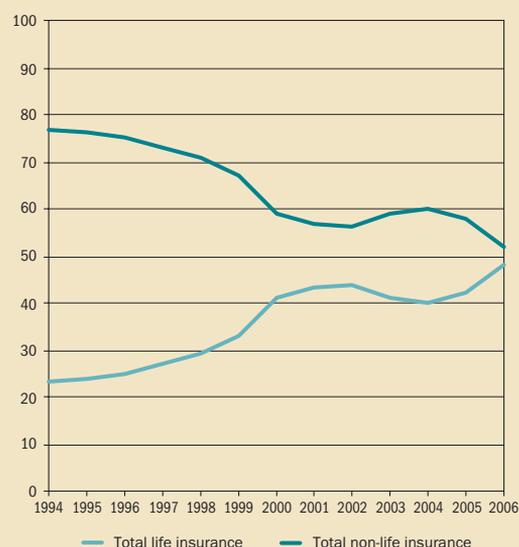
(SKK billion)



Source: NBS.

Chart 60 Life insurance and non-life insurance by share of total technical premiums written

(%)



Source: NBS.

in this area of premiums. In non-life insurance, technical premiums written declined by 6.2%. That is the first decrease in this indicator since it started to be tracked, the result being consistent with the trend of recent years and attributable to a methodological change in the reporting of bonuses. Total technical premiums written rose by 3.1%, representing the third consecutive year in which their growth has declined (Chart 59).

After a period of sharp growth in the 1990s, followed by stagnation until 2005, the share of life insurance in the insurance market rose again in 2006

Since technical premiums written rose in life insurance and declined in non-life insurance, life insurance naturally increased its share of total technical premiums written (from 42% in 2005 to 48% in

2006), which is consistent with expectations and the situation in the insurance markets of advanced EU countries (Chart 60).

The fastest growing area of life insurance was unit-linked insurance

In life insurance, the insurance group⁶¹ with the largest share of technical premiums written has over the long term been “Life insurance other than unit-linked insurance”.⁶² For this group, technical premiums written amounted to SKK 16.7 billion as at 31 December 2006, which represents an increase of 12.2% year-on-year. In comparison with 2005, the sharpest rise in technical premiums written was recorded by unit-linked insurance, which rose by 36.2% to SKK 5.2 billion. Unit-linked insurance has been showing a steadily rising trend in recent years, which mirrors the development in European markets.

accordance with IAS/IFRS standards from 2006, the NBS, for the purposes of this report, analysed technical premiums written; these may be defined as the price agreed in individual insurance contracts without regard to the method of their financial reporting. Gross premiums written as defined by IAS/IFRS standards amounted to SKK 50.9 billion as at 31 December 2006, which is equivalent to 3.1% of GDP (insurance penetration).

⁶¹ As of 31 December 2006, the Národná banka Slovenska changed how insurance companies and branches of foreign insurance companies are to report data on their activities. Reporting based on insurance classes as defined in the Insurance Act was replaced with reporting based on insurance groups classified by risk. Under this reporting method, 4 insurance groups were established in life insurance and 11 in non-life insurance.

⁶² In the case of unit-linked insurance, a proportion of the funds from premiums paid is used to cover insurance events and the rest is invested by professional asset managers in the financial markets. Insurance companies thereby pass on market risks to the customer, whereas in capital insurance, they guarantee the customer a certain return and bear the market risks themselves.

Table 8 **Ceding of technical premiums to reinsurers**

	2006 SKK billion	2005 SKK billion	Change %	Share of premiums written in %	
				2006	2005
Total	9.7	10.3	-5.7	18.2	19.9
Life insurance	1.4	1.3	2.4	5.4	6.1
Non-life insurance	8.3	8.9	-6.9	29.8	30.0

Source: NBS

Technical premiums written in non-life insurance have been declining largely because of their decrease in compulsory third party motor insurance (CTMI) as a result of strong competition

The decline in technical premiums written in non-life insurance was largely attributable to their decline in compulsory third party motor insurance. This insurance group reported a decrease of SKK 1.8 billion year-on-year, to SKK 9.7 billion. Although its share is currently falling, motor insurance (CTMI and comprehensive motor insurance) still accounts for the substantial majority of technical premiums written in non-life insurance (64% in 2006).

Technical premiums ceded to reinsurers recorded another year-on-year decline in 2006

As a share of technical premiums written in 2006, premiums ceded to reinsurance companies amounted to SKK 9.7 billion (18.2%), which represents a decline of 5.7% year-on-year (Table 8). Ceded premiums as a share of total technical premiums stood at 18.2%. The major part of ceded technical premiums (85.6%) pertained to non-life insurance. Of the total technical premiums written in non-life insurance 30% were ceded. Nevertheless, reinsurers underwrote SKK 177 million of insurance claim payments, which represents 2.5% of the total.

4.2.2 Claims incurred and loss ratio⁶³

Claims incurred rose sharply in non-life insurance and declined slightly in life insurance

Chart 61 **Loss ratio since 1997**

(%)



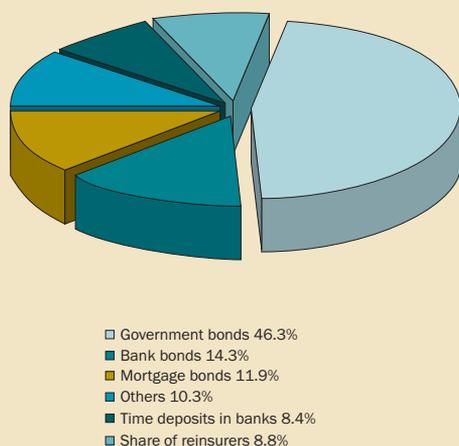
Source: NBS.

Claims incurred in 2006 increased by 8.0% in comparison with the previous year, and amounted to SKK 18.4 billion. Whereas claims incurred in life insurance fell slightly against 2005, to SKK 7.2 billion, those in non-life insurance rose sharply by 15.1%, to SKK 11.2 billion. But although claims incurred in non-life insurance increased by substantially more than the long-term average of 10%, this indicator is very volatile and, furthermore, the rise last year followed a decline of 4.7% in 2005 – in other words, the average increase in claims incurred over the last two years is only 5%, far below the long-term average.

⁶³ As it did with technical premiums written, the NBS, for the purposes of this report, analysed technical claims incurred (in this report "claims incurred" shall be understood to mean "technical claims incurred"). Claims incurred as defined by IAS/IFRS standards amounted to SKK 19.8 billion.

⁶⁴ The loss ratio is a percentage ratio of the following: the sum of claims incurred and the change in the gross technical provision for claims (PC) to gross technical premiums written after deducting the change in the gross technical provision for unearned premiums (PUP) – i.e. premiums earned. The loss ratio is tracked only in non-life insurance.

Chart 62 Investment of technical provisions (%)



Source: NBS.

Note: The term "government bonds" means bonds issued by the Slovak or other EU governments, bonds issued by the NBS or other central banks, bonds guaranteed by Slovakia, and bonds issued by the EIB, EBRD or IBRD.

Chart 63 Total profits of insurance companies (SKK billion)



Source: NBS.

Following a steep fall in 2005, the loss ratio rose modestly in 2006⁶⁴

The loss ratio for the whole of non-life insurance in 2006 stood at 44% (an increase of 4 percentage points). Despite the decline in technical premiums written, that figure is one of the lowest ever recorded (Chart 61).

4.2.3 Technical provisions and their investment by the insurance companies

As insurance products develop and the liabilities of insurance companies rise, so technical provisions are increasing. They are invested conservatively

The gross technical provisions of insurance companies as at 31 December 2006 totalled SKK 103.7 billion, representing a year-on-year increase of 15%. Provisions in life insurance came to almost SKK 76 billion, or 73% of total technical provisions. The net technical provisions of insurance companies represented nearly SKK 95 billion as at 31 December 2006, meaning that the contribution of reinsurers to technical provisions was SKK 8.7 billion, or 8.4% of gross technical provisions (an increase of

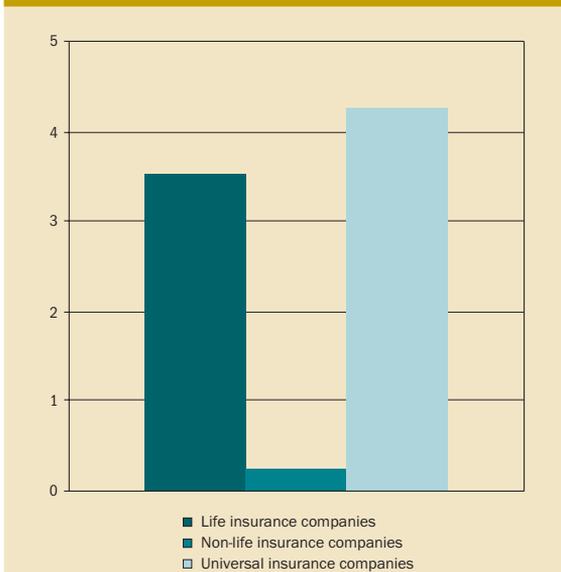
2.2 percentage points compared with 2005). The bulk of provisions continue to be invested in low-risk assets (Chart 62) and no substantial changes in their investment have been recorded.

4.2.4 Financial position of the insurance sector

As many as 14 insurance companies, i.e. more than half, reported a loss in the technical account

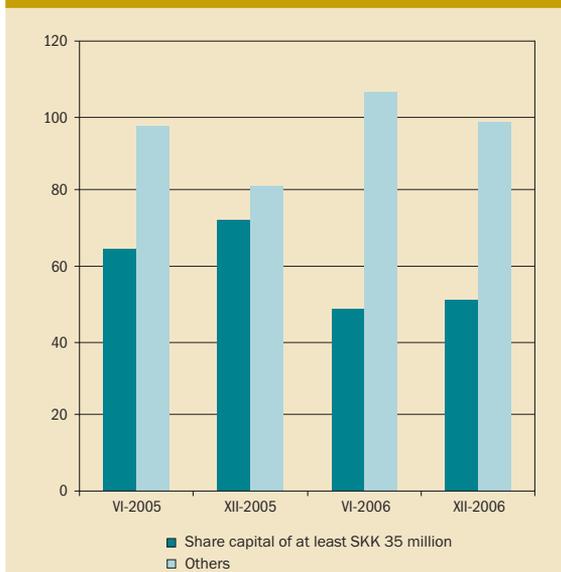
Insurance companies reported profits of SKK 3.5 billion for 2006, an increase of 28% in comparison with 2005 (Chart 63). Profitability ratios were up: ROA rose from 2.22% in 2005 to 2.4%, and ROE increased from 12.33% to 13%. Although insurance companies continue to report a loss in the technical account of life insurance, in 2006 it fell by 31% year-on-year to stand at SKK 1.1 billion (the financial results are not included in the technical results). This result was achieved despite a sharp rise in operating costs (by 21%) and in claims incurred (20%), and it was largely based on the lower creation of technical provisions and growth in premiums earned. The technical account of non-life insurance reported an even sharper rise in operating costs (41%) and ended the year with

Chart 64 Insurance company categories by ratio of VaR to interest rate instruments (%)



Source: NBS.

Chart 65 Average capital adequacy ratio of non-bank securities dealers (%)



Source: NBS.

an overall gain of SKK 2.1 billion, down by 21% on 2005. But whereas the financial transactions result declined by 10%, the loss on other activities not further specified stood at only 3% of the 2005 figure. Three of the 24 insurance companies reported a loss.

4.2.5 Risks in the insurance sector

The analysis of risks in the insurance sector is based on positions arising from the investment of technical provisions. Since their structure indicates the dominant position of interest rate instruments, the analysis is confined to interest rate risk. This risk is measured in a standard way, using value-at-risk (VaR) calculated on the basis of an historical simulation method. It proceeds on the assumption that all interest rate instruments are revalued to fair value. The calculation of a 10-day VaR at the level of 99% was made as at 31 December 2006. The VaR for individual insurance companies are calculated separately for life and non-life insurance.

The VaR results do not indicate that insurance companies are substantially more exposed to interest rate movements. The most exposed are universal insurers

In life insurance,⁶⁵ the median decline in the value of interest-sensitive assets was 3.5%, and in non-life insurance it was only 2.4%. This means that the interest rate sensitivity of life insurance provisions was higher than that of non-life provisions. On the other hand, the impact in non-life insurance is less evenly distributed. When insurance companies are broken down by activity – life (operating only in life insurance), non-life (operating only in non-life insurance) and universal (operating in both types of insurance) – it is shown that the most at risk are universal insurers, followed close behind by life insurers. The provisions of insurance companies specializing in non-life insurance face the smallest risk of decline (Chart 64).

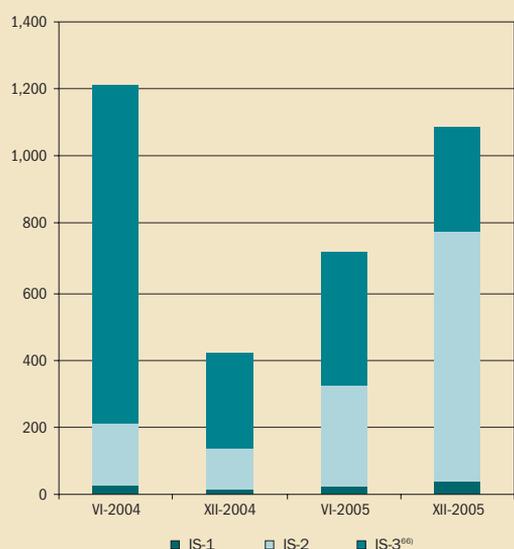
4.3 Securities dealers

The capital adequacy ratio fluctuated above the statutory minimum limit of 8%

During 2006, the capital adequacy ratios of all non-bank securities dealers fluctuated above the statutory minimum limit of 8% (Chart 65).

⁶⁵ In this case, the category of life insurance includes all insurance companies that are engaged in life insurance, whether exclusively or in combination with non-life insurance.

Chart 66 Amount and structure of customer transactions by type of investment service (SKK billion)



Source: NBS.

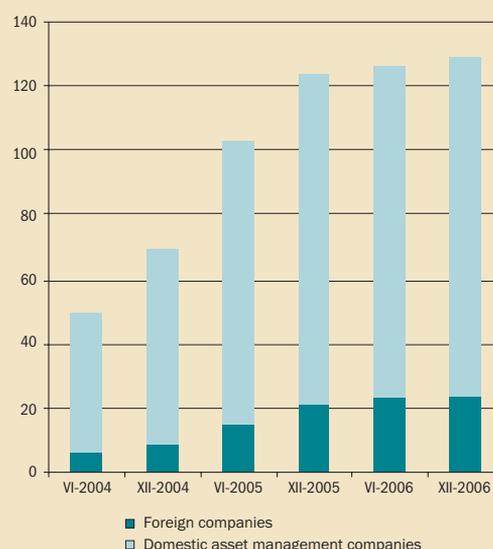
Customer transactions increased in absolute terms and underwent a change in structure

Customer transactions conducted within investment services IS-1 to IS-3⁶⁶ had a total value of SKK 1,810 billion in 2006, and transactions accounting for 95% of that figure were made through banks. In comparison with 2005, customer transactions rose by 10% in absolute terms and their structure underwent a change. The proportion of transactions made for the customer's account rose sharply, from 19% in 2005 to 57% in 2006. The bulk of these transactions (81%) were bond transactions (Chart 66).

The structure of traded instruments also changed significantly

Whereas in 2005 the most traded instruments were forward contracts (SKK 570 billion) and money market instruments (SKK 492 billion), in 2006 most of the trading was in bond instruments (SKK 857 billion). Other instruments were traded in smaller volumes (including forward contracts

Chart 67 Investments in open-end mutual funds in Slovakia (SKK billion)



Source: NBS.

worth SKK 284 billion and options worth SKK 242 billion).

The increase in customer assets under management was accounted for by one company

Customer assets managed by securities dealers (including banks) rose during 2006 from SKK 18 billion to SKK 28 billion. That entire growth was, however, accounted for by a single company, which as at 31 December 2005 did not report any managed assets and as at 31 December 2006 reported SKK 10 billion worth. Most other companies reported a decline or very slight increase in managed assets.

4.4 Collective investment

4.4.1 The sector in 2006

The net asset value of mutual funds was virtually stagnant, largely because of negative sales of

⁶⁶ IS-1= investment service as defined in Article 6(2)(a) of the Securities Act, i.e. acceptance of a customer's instruction to buy, sell or otherwise use investment instruments and the subsequent forwarding of the customer's instruction for the purpose of its execution. IS-2 = investment service as defined in Article 6(2)(b) of the Securities Act, i.e. the acceptance of a customer's instruction to buy or sell an investment instruments and its execution for an account other than the account of the service provider. IS-3 = investment service as defined in Act 6(2)(c) of the Securities Act, i.e. the acceptance of a customer's order to buy or sell an investment instrument and its execution for own account.



fund shares. Sales of shares in riskier types of funds increased

The total net asset value of domestic open-end mutual funds and foreign mutual funds, insofar as they pertain to sales to investors in the Slovak Republic, increased by 4.2% last year. That represented a rise from SKK 124 billion as at 31 December 2005 to SKK 129 billion as at 31 December 2006 (Chart 67). Most of the money invested in domestic mutual funds (82%) comprised shares purchased by households. That percentage was, however, less than at the end of 2005, when households accounted for 92% of the total amount invested in domestic open-end mutual funds.

Investments in mutual funds recorded a significantly lower rise in 2006 than in the previous years of their growth run. For 2005, total net sales of fund shares came to SKK 38.7 billion, but the figure for 2006 was negative – investors sold SKK 2.6 billion worth of fund shares more than they bought. The redemption of fund shares over the course of 2006 occurred mainly in bond funds and money market funds, from which investors withdrew, respectively, SKK 16.8 billion and SKK 5.3 billion. This money was then transferred mainly into funds of funds, whose net sales for 2006 stood at SKK 9 billion, and equity funds, with net sales of SKK 7.4 billion for the same year.

Profitability of asset management companies developed favourably

All the larger asset management companies (reporting net managed assets of more than SKK 1 billion) made a profit in 2006. The average ROE of asset management companies, weighted by capital, was 21.84%.

4.4.2 Risks in collective investment

The analysis of risks focused on market risks (equity, foreign exchange and interest rate risks), since this is the most significant type of risk to which mutual fund investments are exposed. The risks are examined through their impact on funds' net fair value, which corresponds to the assessment of risks in regard to the funds' investors and not the asset management companies. Another limitation of the analysis is that

data on the portfolios of individual asset management companies were not available as at 31 December 2006, and therefore the risks were assessed as at 31 January 2007. Even as at this date, however, data were only available for funds whose combined net asset value represented around two thirds of the net asset value of domestic mutual funds.

The most significant risk is foreign exchange risk

The most significant risk to which mutual funds are exposed is foreign exchange risk (especially in the case of equity, bond, mixed and closed-end funds). In no fund, however, did the VaR for foreign exchange risk exceed 5% of the net asset value. The second largest risk is equity risk, with the VaR in individual funds representing between 0% and 6% of the net asset value, or 0% and 11% of the value of shares. Overall, the ratio of VaR for equity risk to the value of shares was 4% in equity funds and 5% in mixed funds. Interest risk appears to be less significant, even in the case of bond funds. That may be down to the rise in interest rates in 2006 (both koruna and euro rates), when it was more advantageous to reduce the term of bonds and thereby mitigate their exposure to interest rate risk. None of the funds for which data was available registered a VaR for interest rate risk of more than 3% of the fund's net asset value.

4.5 Pension saving

4.5.1 The sector in 2006

Pension fund assets rose sharply; the market shares of PFMCs remained unchanged

The number of people enrolled in retirement pension saving was 1.54 million as at 31 December 2006. Pension account assets managed by pension fund management companies (PFMCs) more than tripled from the end of 2005, to stand at SKK 27.9 billion. The market share of each PFMC remained, however, substantially unchanged. The three largest PFMCs managed 73% of all pension fund assets (compared to 78% as at 31 December 2005).

Although the substantial majority of pension fund assets are in growth funds, the investment of assets is largely conservative

Most pension fund assets (66%) are managed in growth funds, which offer a higher-risk investment method and promise the highest appreciation of funds over the long-term. Balanced funds cater for 30% and conservative funds for only 4% of the total. Despite the predominance of growth funds, the investment structure of pension fund assets remains quite conservative. As much as 48% of the money is invested in bank accounts and 38% in bonds. The only substantial increase during 2006 was in the ratio of bonds to total assets (Chart 68).

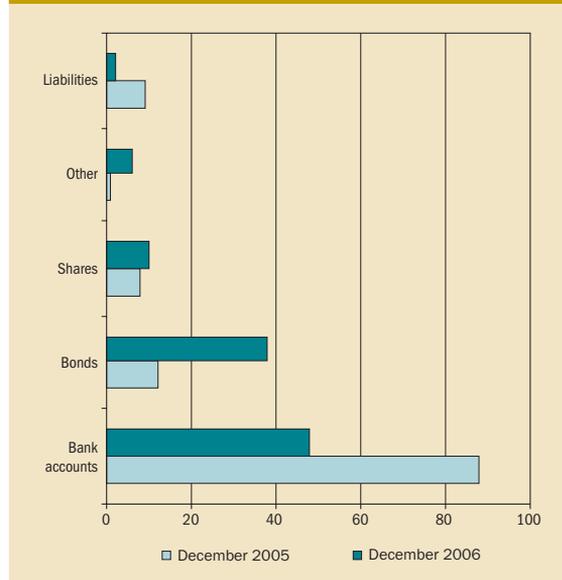
4.5.2 Risks in pension saving

Like the assessment of risks in collective investment, the analysis of risks in pension saving focused on market risks (interest rate, equity and foreign exchange risks). These risks are again analysed through their impact on the net asset value (NAV) of pension funds. The distribution of the potential loss among customers and pension fund management companies (owing to the minimum rate of return requirement in regard to other funds) is not analysed. Another limitation of the analysis is that data on the portfolios of individual PFMCs were not available as at 31 December. The risks were therefore assessed as at 21 March 2007, when data from five PFMCs were available.

PFMCs did not utilize the permitted limit on the proportion of riskier instruments in the portfolio

The VaR figures indicate that the rate of return on balanced and growth funds should not fall by more than 2 percentage points and the rate of return on conservative funds by not more than 0.5 percentage points. The riskiness of balanced funds was only slightly lower than that of growth funds. This is because individual PFMCs have not so far taken full advantage of the legally permitted upper limit on the proportion of shares in the portfolio of pension funds; the ratio of shares to net asset value differs only slightly between balanced funds and growth funds.

Chart 68 Total managed assets by investment type (%)



Source: NBS.

The most significant market risk is equity risk

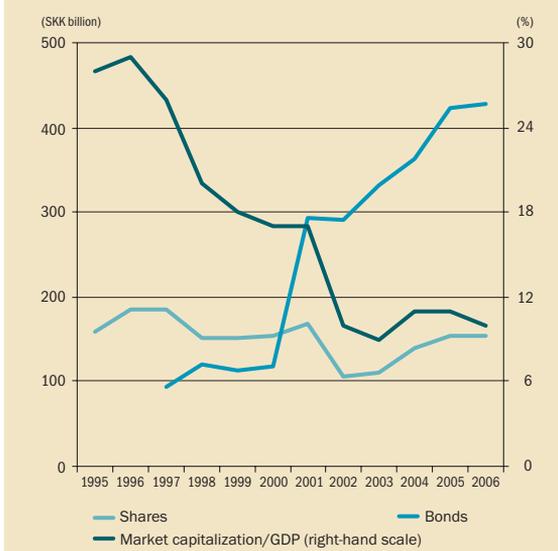
The ratio of VaR for market risk to the total net asset value of the said five PFMCs is 1.3%. The most significant risk here is equity risk, with a ratio of 1.2%. For interest rate risk and foreign exchange risk, the figures were, respectively, 0.4% and 0.0%.

While balanced funds and growth funds are exposed to equity risk, conservative funds are exposed only to interest rate risk. The riskiness of the equity portfolios of individual funds is fluctuating in a range from 3% to 9%. In the conservative funds of all five PFMCs, interest rate risk is the only risk affecting the movement of net asset value. As for the impact of foreign exchange risk, it would be negligible in all 12 pension funds.

4.6 Stock exchange

The bourse remains an insignificant source of financing for the private sector

The total market capitalization of securities listed on markets of the Bratislava Stock Exchange (BSSE) amounted to SKK 581.7 billion as at the last day of 2006 (a rise of 1.4% in comparison with

**Chart 69 Market capitalization of shares and bonds (SKK billion)**

Source: NBS.

2005). Shares accounted for SKK 153 billion of that amount, representing 9.4% of GDP (Chart 69). During 2006, no shares were admitted to a listing on BSSE equity markets, and nor did any listed company increase its quoted share capital. The capital newly admitted to BSSE markets in 2006 had a total value of SKK 54.9 billion (of which 32 issues of domestic debt securities accounted for SKK 28.7 billion and new tranches of already listed government bonds for SKK 26.2 billion).

Most transactions were made in relation to takeover bids

A total trading volume of SKK 992.1 billion was reported in 2006. Although that represented a slight decline of 1% year-on-year, the number of transactions rose by 126.8%. The rise in trading activity was mainly related to the successful completion of takeover bids. Indeed, the number of transactions made under takeover bids rose by 16.8 times year-on-year, and their share of total transactions came to 58.9%.

Trading volume was dominated by transactions in government bonds

Transactions in government bonds accounted for fully 99.2% of the trading volume, or SKK 984.6 billion. Trading in other bonds amounted to 4.9 billion. Investors did not focus on share trading in 2006. The value of their share deals amounted to SKK 2.6 billion, or 0.3% of the total transactions. Of the total trading turnover in 2006, transactions by non-residents constituted 49.4% (SKK 490.1 billion), of which 50.2% were purchase transactions and 48.6% sale transactions.

4.7 Risks arising from financial sector developments in 2006

- The relatively high credit exposure is related to the greater risks arising from changes in the business cycle or saturation of certain markets (e.g. the commercial property market).
- High concentration in the banking sector represents a potential risk to financial system stability.
- The long-standing insignificance of the capital market as a source of financing for the private sector.

Rapid lending growth is bringing higher profits, but also risks

The growth in the banking sector and its profitability in 2006 were largely attributable to the sharp rise in lending. It is a natural development, considering that the market still has a relatively large potential. Nevertheless, loans to customers in ratio to banking sector assets reached 46 per cent.⁶⁷ Although a substantial, sudden decline in the proportion of interbank transactions was a contributing factor, it did nothing to alter the fact that banking sector assets are weakly diversified and that the sector is to an ever-increasing degree exposed to risks arising from business cycle fluctuations. Stress testing of credit risk has also sent out a warning signal: the exceptional but plausible scenario in which an increase in non-performing loans of the current portfolio happens at the same time as a credit crunch would cause certain banks serious difficulties in regard to meeting the minimum capital adequacy requirement.

⁶⁷ Retail and corporate loans together account for 85% of total loans to customers.

The banking sector is dominated by three banks

The concentration of the Slovak banking sector is relatively high. At the end of 2006, the three largest banks by retail lending volume accounted for almost 64% of total retail loans in the sector. The same three banks are also the largest by amount of assets – their combined share of banking sector assets is 52% – and they generated 66% of the sector's profits in 2006. A factor in this could be their large branch network and focus on retail, where the interest rate margins are highest. But besides potentially greater contagion risk, such a high concentration has a restrictive effect on competition, especially in the retail market. The leading banks are laying down the conditions for the market, and the other players are simply adapting.

The capital market is still not functioning adequately as a source of financing for the private sector

The capital market still fails to fulfil its basic function as a source of financing for the private sector. Economic factors are one of the reasons: in comparison with the banking sector, the capital market is less efficient in mediating free capital resources, despite several systemic measures have been put in place in order to cut the costs and shorten the time required in the previous two years for the preparation of initial public offerings. Another factor is the fact that the Bratislava Stock Exchange has failed to reach the “critical mass” of issuers, the result of which is the current low liquidity of the capital market. In raising new capital, even local players started to prefer more developed, organized markets in the neighbouring countries. Not even the performance of pension management companies in recent time has brought about expected developing stimuli for the Slovak capital market. As a result, the concentration of credit risk in the banking sector⁶⁸ has continued to increase.

⁶⁸ *The banks themselves have sufficient capacity to undertake and manage these risks. But from the view of financial system stability and the efficiency of the economy as a whole, the persistent, high and only slightly declining domination of the banking sector is not necessarily optimal.*

5 The Slovak Interbank Payment System – security and reliability in 2006

From the view of financial stability, the operation of the SIPS in 2006 may be evaluated as positive

The SIPS worked reliably and without disruptions in 2006. The payment system functions are being continuously developed so as to deliver a more efficient and operationally reliable system. Regular testing of the emergency transmission of data was performed. The number and value of processed transactions increased moderately.

The number of direct participants was expanded in 2006 by the inclusion of two branches of foreign banks operating in Slovakia under the single banking licence

The year ended with the NBS operating the Slovak Interbank Payment System for 30 participants, of which 28 were direct participants and two were third parties.

In relation to the expected adoption of the euro from 1 January 2009, a new concept for the payment system in Slovakia was put forward at the end of 2006

The core features of the new concept for the payment system in Slovakia include integration into the TARGET2 system – through which all payments will be processed in real time (i.e. priority payments) and minimum reserves will be maintained – and the construction of a new interbank payment system (working name: SIPS RETAIL) for the processing of payments that do not require immediate settlement finality (typically, customer payments of small value with a low priority). This system will become an “affiliate” to TARGET2, working on the basis of multilateral netting and settlement of the resulting

positions in TARGET2. The new payment system concept is the fruit of a consensus between the Národná banka Slovenska and banks represented by the Slovak Banking Association, as well as other participants in the SIPS.

TARGET2 is to be the real-time gross settlement system (RTGS) for the euro, allowing payments to be settled in central bank money. At the legal level, TARGET2 will be a set of RTGS systems: each central bank of the Eurosystem will operate its own RTGS as part of TARGET2. Unlike the current decentralized infrastructure, TARGET2 will be a single shared platform provided by the 3CB group (the central banks of Germany, Italy and France), which will ensure harmonized access to the system of all Eurosystem participants.

The number of transactions made through the SIPS increased by 8.6% in comparison with 2005

Altogether, the SIPS processed almost 130 million transactions in 2006, thereby maintaining the stable rising trend of recent years (Chart 70).

The value of transactions also rose

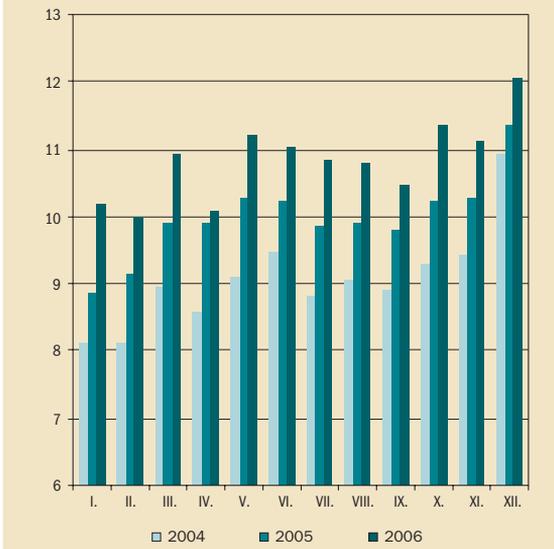
The trend rise in the value of processed transactions continued in 2006. The SIPS processed transactions worth more than SKK 85,600 billion, which represents an increase of 7.5% in comparison with 2005 (Chart 71).

The fastest growth among all types of transactions was recorded by client and interbank priority payment orders

Although priority payments as a share of the total number of executed transactions represented only

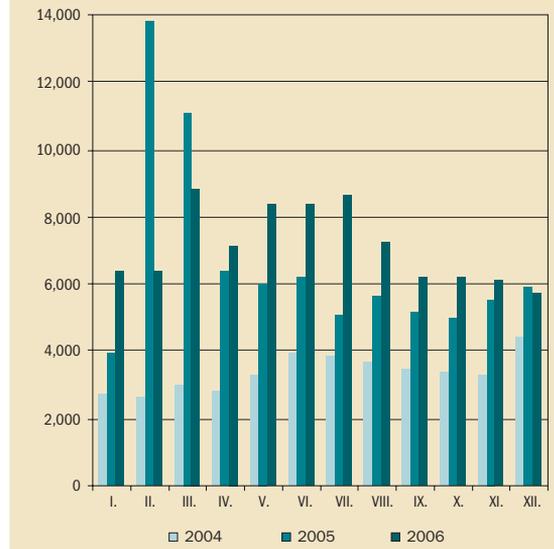


Chart 70 Number of transactions processed in the SIPS (million)



Source: NBS.

Chart 71 Value of transactions processed in the SIPS (SKK billion)



Source: NBS.

0.25% in 2006 (and 0.13% in 2005), their settlement value accounted for 65% of the value of all processed payments (63% in 2005). The number of priority payments rose from 156,000 in 2005 to 320,000 in 2006, representing an increase of more than 100%.

by collateral, i.e. securities in a sufficient quantity and the relevant value, which are registered in the Central Register of Short-Term Securities maintained by the NBS.

The smooth functioning of the payment system is supported by the provision of intraday credit

The intraday credit provided to SIPS participants in 2006, upon their application, amounted to more than SKK 3,646 billion (Chart 72). The tracking of intraday lending to participants is conducted on a weekly basis. The average weekly amount of intraday credit extended by the Národná banka Slovenska was SKK 69,887 billion.⁶⁹

Chart 72 Intraday credit in 2006 (SKK billion)



Source: NBS.

The Národná banka Slovenska provides intraday credit to those SIPS participants that are required to meet minimum reserve requirements. It is extended as a facility to draw funds from a monetary reserve account, up to the stipulated overdraft limit. Intraday credit is payable within a single business day and must be fully secured

⁶⁹ The amount of intraday credit represents the value of the securities (less deduction) that the NBS accepted from participants as collateral for the credit. This is the limit up to which participants may draw the intraday credit. The actual drawing of the credit is not at present subject to statistical tracking.

Among the most used instruments of the non-cash payment system are electronic payment instruments (mainly bank payment cards and electronic banking applications). As the acceptance of bank payment cards develops, there is a clear trend of faster growth in the number of EFT POS terminals compared to the number of ATMs. Although cash withdrawals from ATMs continue to predominate, their ratio to EFT POS payments is in decline.

The number of active bank payment cards in circulation was 4,475,861 as at 31 December 2006, which represented an increase of 11% year-on-year. Bank customers could use a network of 2,009 ATMs (up by 8% on 2005) and 22,665 EFT POS terminals (up by 19 %). Bankcard transactions in 2006 numbered 120 million and amounted to almost SKK 290 billion, with the number rising by 11% and the overall value of transactions by 17% in comparison with 2005. A total of 79.58 million cash withdrawals amounting to SKK 242.84 billion were made from ATMs in 2006, which compared with the previous year represented an increase of 10% in the number of withdrawals and 13.5% in their value. EFT POS terminals were used for 41.2 million payments

in 2006 (up by 29% on 2005), which had a total value of SKK 58.02 billion (a rise of 38 %).

The NBS cooperates closely with international institutions in the payment systems sector

The NBS is providing cooperation in the drafting of European legislation,⁷⁰ in the collection of statistical data for compilation of the Blue Book, and in preparations for the SEPA⁷¹ and TARGET2.

Credit risk in the payment system is small. Demands on the system's operational reliability are increasing

The Slovak Interbank Payment System features a high degree of reliability and a low credit risk for both its operator (the NBS) and participants. Credit risk is eliminated by the fact that a payment will only be made if the participant has sufficient funds on account with the NBS or is able to cover it by drawing intraday credit secured by collateral. The increase in both the number and average value of priority payments and the further automating of payment system operations is putting added demands on the operational reliability of the payment system, on its software and hardware specifications, and on its organization.

⁷⁰ In 2006, work continued on drafting of the Proposal for a Directive of the European Parliament and of the Council on payment services in the internal market and amending Directives 97/7/EC, 2000/12/EC and 2002/65/EC.

⁷¹ Establishing the Single Euro Payments Area is one of the priorities for the euro area. Its purpose is to ensure that all payments made in the euro area are equal to domestic payments in regard to their speed, security and cost. The introduction of the SEPA will involve mainly a transition from national payment instruments – credit transfers, direct debits and payment cards – to European ones. In December 2006, the European Payments Council approved and published rulebooks for SEPA Credit Transfers and Direct Debits (version 2.2). These rulebooks set out the basic commercial standards designed for the implementation of SEPA payment instruments.

C Annexes

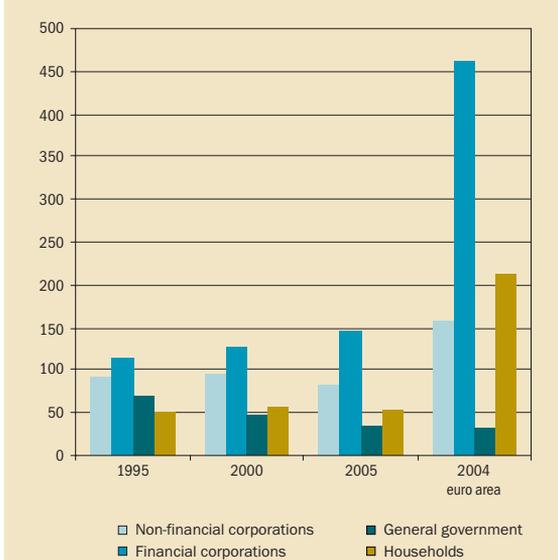
1 Financial structure developments in the Slovak economy according to the financial balance sheet of institutional sectors

The focus of this part is to analyse developments in certain financial aspects of the Slovak economy, as recorded in the financial account of the national accounts – i.e. in accumulated savings (financial assets), accumulated liabilities, their distribution across institutional sectors, their composition in terms of individual financial instruments, and the significance of external sector financial relations vis-à-vis Slovakia. The total asset position of sectors according to increase in net worth is subsequently evaluated. The asset and liability balances and structures of economic sectors in Slovakia and the euro area were compared on the basis of national accounts data: over the period 1996-2005 in the case of Slovakia, and 1999-2004 for euro area countries. The data are in the ESA 95 methodology.

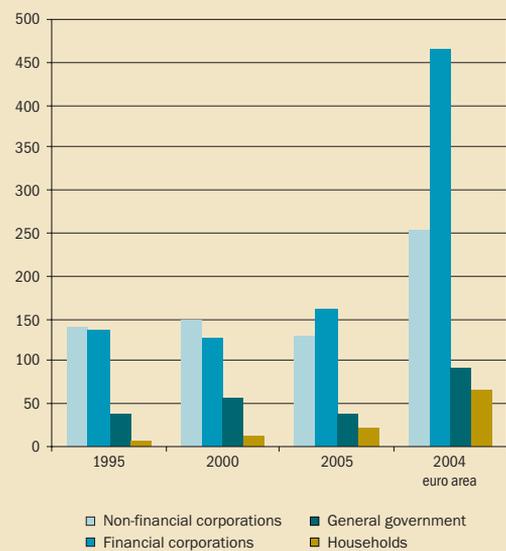
The main trends in the financial balance sheet of the Slovak economy between 1995 and 2005 may be summed up as follows:

- The indebtedness of the Slovak economy increased – a creditor position of 6% of GDP became a debtor position of 34% of GDP.
- Growth in GDP was exceeded only by growth in the balance sheet of the financial corporations sector (by 34 percentage points in financial assets and 23 percentage points in liabilities) and in liabilities of the sector of households and non-profit institutions serving households (by 18 p.p.). The largest relative decline was recorded by financial assets of the general government sector (by 35 p.p.).
- The high level of foreign investments in Slovakia was reflected in the rising share of residents' external liabilities (up to 22% of Slovakia's liabilities). Foreign ownership was particularly dominant in equity securities (60% in 2005).
- The development of the financial sector and financial market manifested in the increasing role of securities (debt and equity) as instruments of financing and accumulation – the proportion of securities in total financial assets and liabilities rose from 20% to 30%.
- Although equity capital played an increasing role in financing (from 9% to 13%), it did not match equity financing in the euro area, where it is the dominant form of financing (27%).
- Even though the proportion of financing with long-term⁷² debt instruments (long-term loans and long-term debt securities) increased in Slovakia (from 20% to 23%), financing with short-term securities retained a relatively high share in comparison with the euro area (16% in Slovakia against 7% in the euro area). A clear preference for using long-term funds for financing was seen only in the general government sector and the sector of households and non-profit institutions serving households.
- At a highly aggregated level, the financial structure of the economy may be said to have developed towards that typical for the euro area.
- From 1995 to 2005, net wealth rose in the sectors of non-financial corporations and households, and declined in the sectors of financial corporations and general government.

⁷² In the System of National Accounts (SNA), short-term financial assets/liabilities are defined as those with an original maturity period of 1 year or less, or, in exceptional cases, two years or less; long-term liabilities are those with an original maturity period of 1 year or more, or, in exceptional cases, two years or more.

**Chart 73 Financial assets – ratio of sectors to GDP (%)**

Source: Eurostat.

Chart 74 Liabilities – ratio of sectors to GDP (%)

Source: Eurostat.

1.1 Overall financial position of sectors

In ratio to GDP, total financial assets and liabilities in the Slovak economy (Chart 73) are substantially lower than in euro area countries, reflecting the fact that Slovakia is a country with lower income per capita and lower capitalization. Therefore the ratio of financial assets and liabilities to GDP (3.4 times) is lagging behind that in euro area countries (8.6 times in 2004). That ratio in Slovakia is generally lower for all institutional sectors – non-financial corporations, financial corporations, general government, and households and non-profit institutions serving households (hereinafter referred to only as “households”) – than it is in euro area countries (Chart 73, Chart 74). In terms of financial assets, the most undercapitalized sector in relative terms is households, which attained only a quarter of the level of the euro area household sector; the financial corporations sector registered one third and the non-financial corporations sector around one half. By contrast, the general government sector had a ratio of financial assets to GDP that was one sixth higher than the euro area figure.

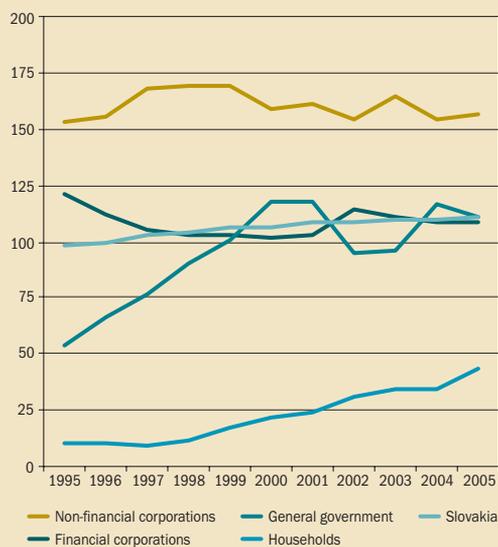
As for liabilities, the financial corporations and non-financial corporations sectors reported a structure similar to that in financial assets. The indebtedness of the general government sector was two fifths lower in comparison with the euro area and that of

households was a third lower. Most of the debt was accounted for by the financial and non-financial corporations sectors, whose business is typically conducted with external funds.

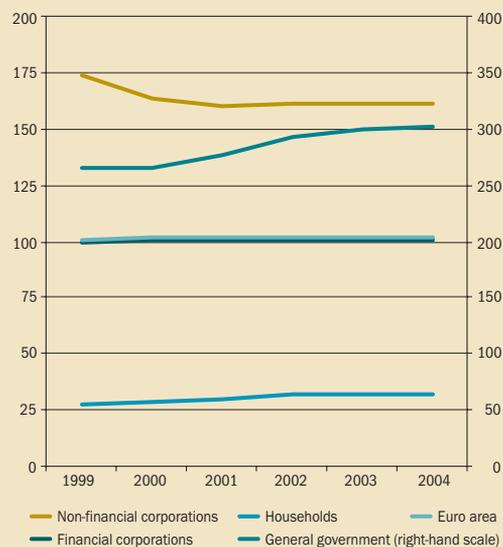
In terms of the ratio of debt to own financial assets (Chart 75 and Chart 76), the highest debt burden is recorded by the general government sector in the euro area, whose liabilities amounted to three times its financial assets. Non-financial corporations in Slovakia and in the euro area had roughly the same level of debt in this respect, at 1.5 times (Slovakia) and 1.6 times (euro area) the level of financial assets. In both economies, the household sector has net creditor position even while the position of the sector weakened (more so in Slovakia than in euro area countries). In the economy’s balance sheet since 1996, liabilities have exceeded financial assets, i.e. Slovakia has an external debtor position. It is a similar situation in other new EU Member States, which have required more funds for growth than their domestic economies are able to provide.

1.2 The external sector in Slovakia’s financial relations

The intensity of financial relations with the rest of the world sector (ROW)⁷³ can be assessed using

Chart 75 Financial positions of Slovak sectors, ratio of debt to financial assets (%)


Source: Eurostat.

Chart 76 Financial positions of euro area sectors, ratio of debt to financial assets (%)


Source: Eurostat.

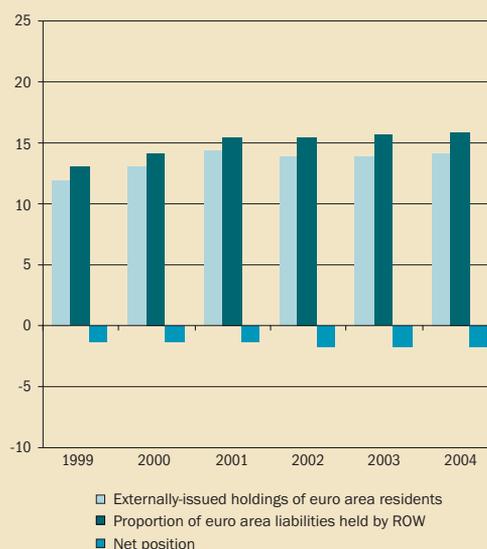
an indicator of financial internationalization. In financial assets, financial internationalization is shown by the ratio of externally issued holdings of financial instruments to total financial assets, while on the liabilities side, it is indicated by the ratio

of external debt to total liabilities of the economy. The net position – the difference between the internationalization ratios of financial assets and liabilities – indicates whether the economy as a whole has a creditor or debtor position.

Chart 77 Financial internationalization ratio – Slovakia


Source: Eurostat.

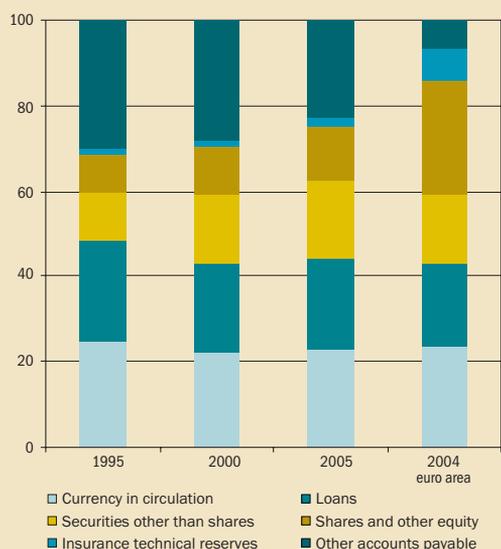
Note: A negative net position means that the economy has net debtor position.

Chart 78 Financial internationalization ratio – euro area


Source: Eurostat.

Note: A negative net position means that the economy has net debtor position.

⁷³ The rest of the world accounts record transactions made with the domestic economy from the position of non-resident. ROW financial assets comprise claims of non-residents (external) on residents of Slovakia, while ROW liabilities are the liabilities of non-residents (external) to residents of Slovakia.

**Chart 79 Structure of liabilities – portfolio (%)**

Source: Eurostat.

Chart 80 Structure of debt liabilities – by maturity (%)

Source: Eurostat.

The extent of the Slovak economy's external creditor position – the proportion of the economy's total financial assets which comprises resident holdings of financial instruments issued abroad – represented 14% at the end of the analysed period. The external financing of the Slovak economy – the proportion of the economy's total liabilities which comprises resident liabilities to non-residents – increased after 2001 (especially in relation to the privatization of enterprises in the energy and banking sectors) and came to exceed 20%.

The difference of more than 8% between the financial internationalization ratio of financial assets and liabilities indicates that Slovakia has a significantly negative net external position in relative terms (Chart 77). Euro area countries also have a net external debt position, though to a much lesser extent: 1.7% in 2004 (Chart 78).

1.3 Structure of financial assets and liabilities by financial instruments

The structure of the economy's balance sheet gradually changed in terms of its component financial instruments (Chart 79). The largest component was currency in circulation and deposits, followed by loans, which together accounted for more than

40% of liabilities. Although securities (securities other than shares, shares and other equity) made a gradually increasing contribution to the financing of the Slovak economy (up to 30% of liabilities), it still fell short of that in the euro area (40% of liabilities). The greater part of securities financing (at 20% of liabilities) was accounted for by securities other than shares (hereinafter debt securities), while shares and other equity (hereinafter shares/equity securities) had a relatively stable and slightly rising share (10%).

Insurance technical reserves were a substantially smaller item of the balance sheet for Slovakia than for the euro area (owing to the relatively recent development of the insurance sector in Slovakia and the lower significance of pension funds to date). Although the proportion of financing with other accounts payable was relatively high in Slovakia, it declined steadily.

Debt financial instruments – loans and debt securities – had a slightly higher share of the financing in Slovakia than in the euro area (Chart 80). As regards their maturities, short-term debt instruments accounted for a higher share of the financing in Slovakia.

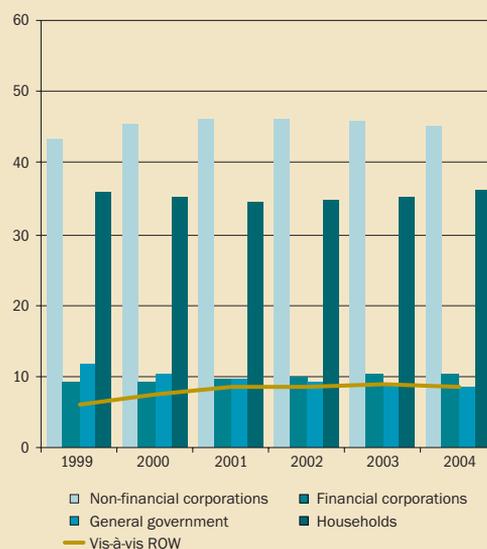
In regard to financing with the main types of financial instruments – loans, debt securities and equity securities (Charts 81-86) – the development since

Chart 81 Loan debtors in Slovakia
(% of total)



Source: Eurostat.

Chart 82 Loan debtors in the euro area
(% of total)



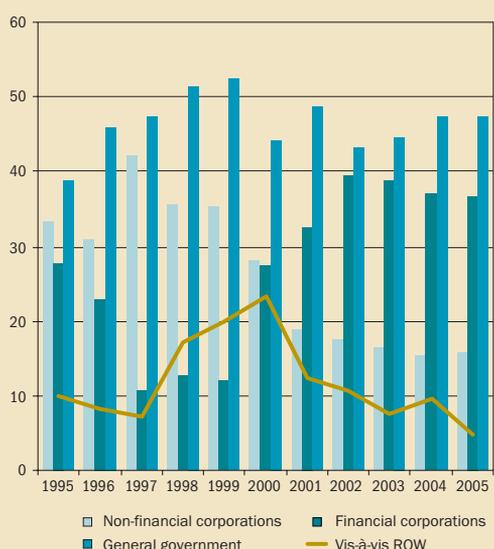
Source: Eurostat.

1995 has been towards greater resemblance to the structure in the euro area, although there remain certain particularities, for example, the relatively high share of financing through loans in the financial corporations sector and the relatively low share of loans to households. The sectoral structure of debt security issues has become more similar to that of the euro area – where the general govern-

ment sector is dominant, non-financial corporations follows, and non-financial corporations account for a relatively low share.

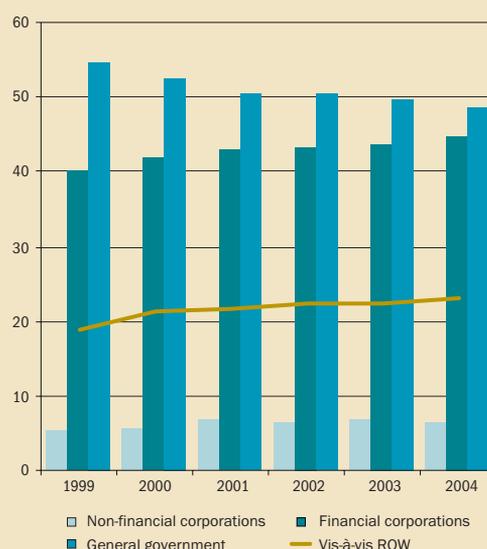
Equity financing has been dominant in the non-financial corporations sector, while mutual funds have in recent years accounted for an increasing share of financing in the financial corporations sector (Chart 85).

Chart 83 Debt security issuers in Slovakia
(% of total)

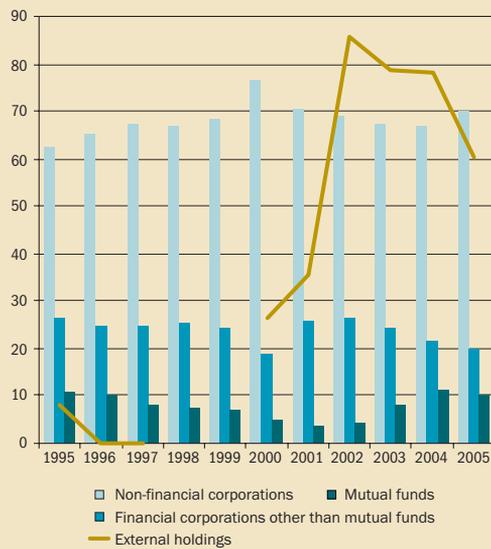


Source: Eurostat.

Chart 84 Debt security issuers in the euro area
(% of total)

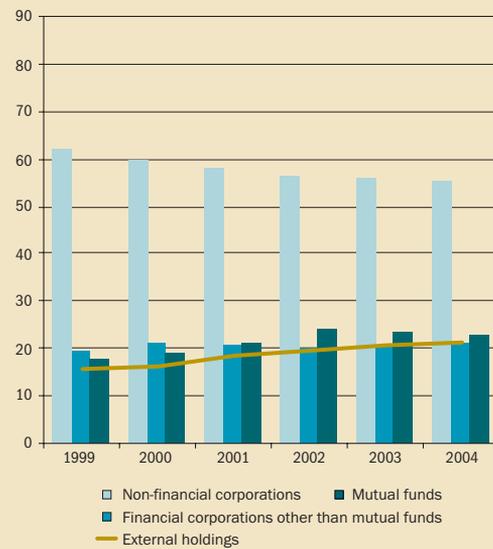


Source: Eurostat.

**Chart 85 Share issuers in Slovakia**
(% of total)

Source: Eurostat.

Note: Data on external holdings of issued shares are not available for the years 1998–1999.

Chart 86 Share issuers in the euro area
(% of total)

Source: Eurostat.

Note: Data on external holdings of issued shares are not available for the years 1998–1999.

In comparison with euro area countries, a relatively high share of the external financing in Slovakia is provided through equity capital (60%) and loans (around 15%) (Chart 81, Chart 85). In the euro area, however, externally held debt securities have a higher share (Chart 84).

1.4 Financial position of domestic economic sectors

1.4.1 Non-financial corporations

Non-financial corporations in Slovakia and the euro area are in a debtor position, since the nature of their business is based on the use of external sources of financing. Because the balance sheet size of non-financial corporations in Slovakia is smaller than that of their euro area counterparts, their debt-to-GDP ratio is lower (Chart 74); the ratio of liabilities to financial assets is at approximately the same level in Slovakia and the euro area (Chart 75 and Chart 76).

The financing structure of non-financial corporations in Slovakia has certain particularities com-

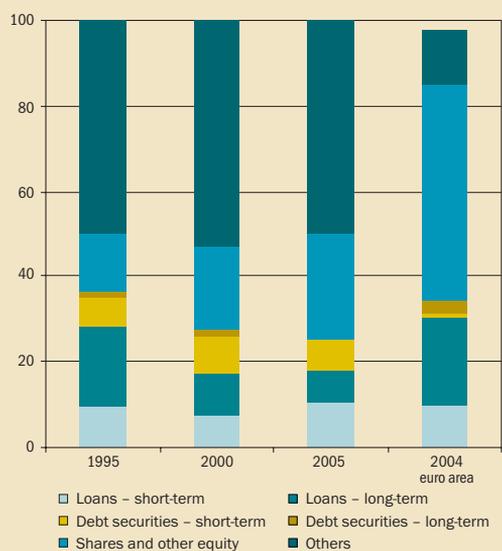
pared with the structure in the euro area. In the euro area, securities financing (especially equity financing) is predominant, but, in Slovakia, other receivables (commercial loans) account for the largest share of financing in the economic activity of non-financial corporations. Enterprises in Slovakia have a lower share of equity financing owing to the country's less developed capital market. In comparison with euro area countries, Slovak enterprises have a relatively high share of debt security financing (mostly short-term). The share of loan financing has declined to below the level in euro area countries.

In 2004, the structure of assets, other receivables and payables (commercial loans) had by far the largest share (65%), followed by currency in circulation and deposits (20%). The percentage of shares and other interests and of loans was similar. Non-equity securities had the lowest share, as they did in euro area countries.

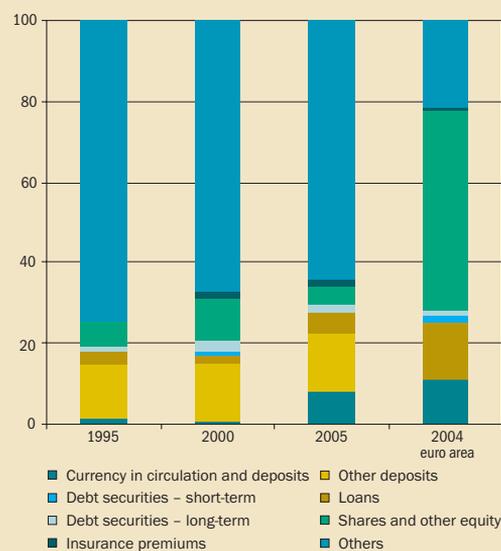
1.4.2 Financial corporations

Financial corporations⁷⁴ represent the main source of financial instruments for other sectors

⁷⁴ The sector balance sheet also includes the central bank.

Chart 87 Financing structure of non-financial corporations (% of total)


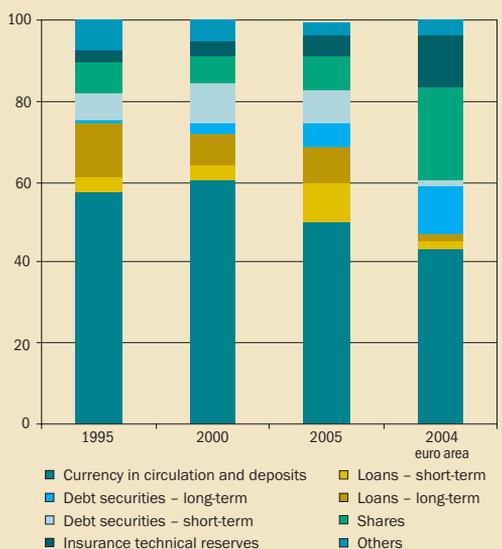
Source: Eurostat.

Chart 88 Assets of non-financial corporations (% of total)


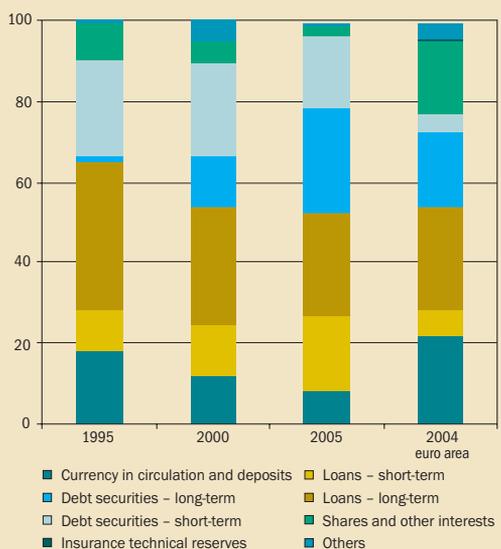
Source: Eurostat.

of the economy. Even at the end of the analysed period, their asset and liability structure was different in Slovakia than in the euro area. Among liabilities, currency in circulation and deposits had a predominant, albeit declining, share of 50%. Securities increased their percentage, but whereas debt securities had the larger percentage in the Slovak financial sector, equities dominated

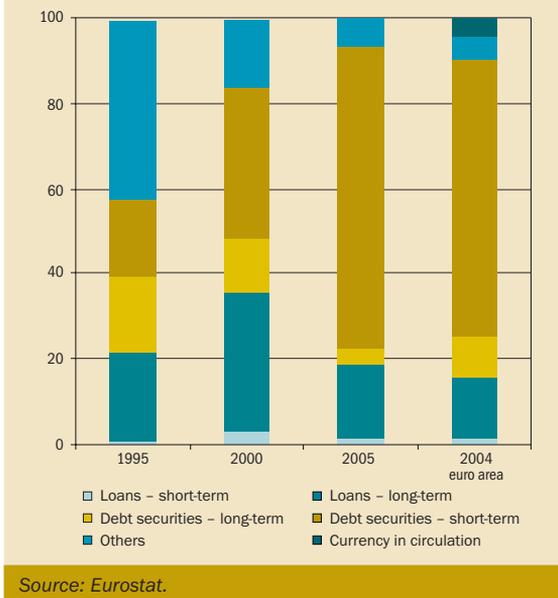
in the euro area. Although insurance sector commitments in the form of technical reserves rose gradually, their share in comparison with the euro area remained relatively low. As for financial corporations in Slovakia, their liabilities include a relatively high share of loan commitments. In regard to the maturity of instruments, the financial corporations sector in Slovakia had a higher

Chart 89 Financing structure of financial corporations (% of total)


Source: Eurostat.

Chart 90 Financial asset structure of financial corporations (% of total)


Source: Eurostat.

**Chart 91 Financing structure of the general government sector (% of total)**

share of short-term liabilities: 18% compared to 3.5% in the euro area.

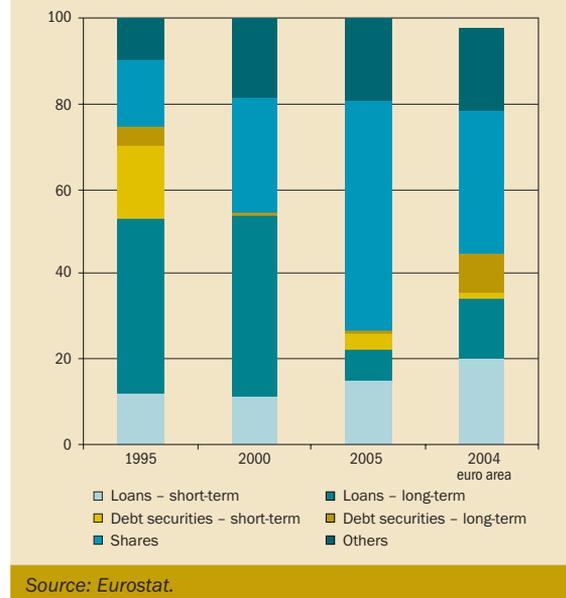
Securities holdings (mainly debt securities) had an increasing presence in the structure of financial assets. Altogether, 45% of financial assets were in the form of securities. Assets in the form of loans had a relatively high share, but currency in circulation and deposits, by contrast, reported a decline.

Short-term financial instruments accounted for a larger part of financial assets in Slovakia (36%) than in the euro area (11%).

1.4.3 General government sector

The financing structure of the general government sector in Slovakia substantially mirrored that in the euro area. Debt securities became the main instrument of financing in the sector, increasing their share to as much as 75%. All in all, the main issuer of debt securities in the domestic economy is the general government sector (Chart 91). The proportion of loans in the sector fell to below 20%, with most of these loans being long-term. In 2005, short-term liabilities accounted for an even lower proportion in Slovakia than in the euro area.

Share holdings became the major asset item of

Chart 92 Financial asset structure of the general government sector (% of total)

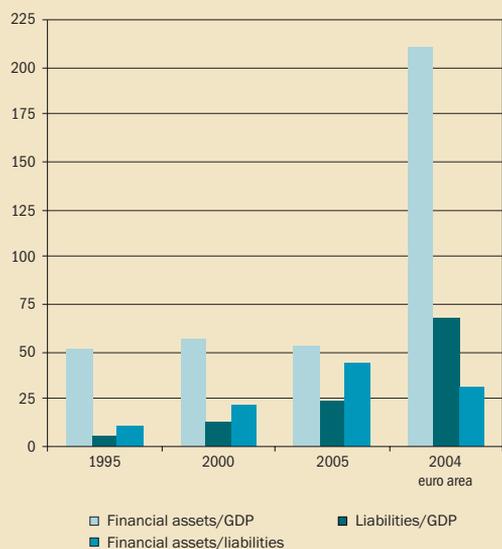
the general government sector in Slovakia, as in the euro area. The proportion of loans granted fell substantially in comparison with 1995.

1.4.4 Household sector

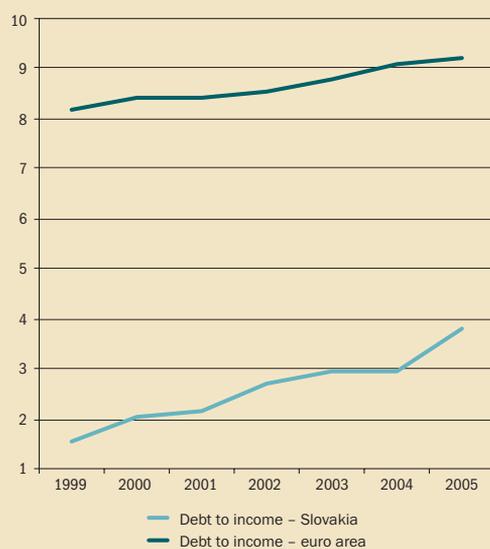
A related and complementary aspect of real convergence is household wealth accumulation (measured by GDP growth per capita), which is captured in more detail by the rise in non-financial and financial assets. Households may also finance their investments by borrowing through loans.

The large disparity between Slovak and euro financial assets is largely attributable to the inter-generational transfer of financial wealth, which has a key place in advanced market economies. In Slovakia, the growth in the financial assets is to a greater degree conditioned by current household income.

The liabilities of Slovak households were at a relatively low level for a long time. Particularly after 2000, however, households acquired greater access to credit as mortgage loans were launched in the market and competition in retail banking intensified. This was reflected in a sharp rise in household liabilities, which was reflected in an

Chart 93 Financial assets, liabilities and debt burden in Slovakia and the euro area (%)


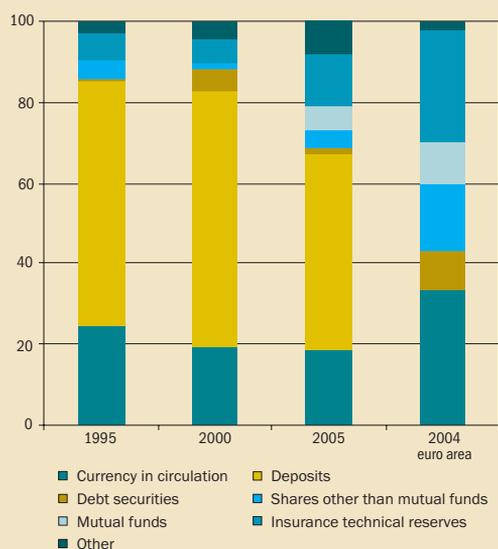
Source: Eurostat.

Chart 94 Debt to income in the household sector (%)


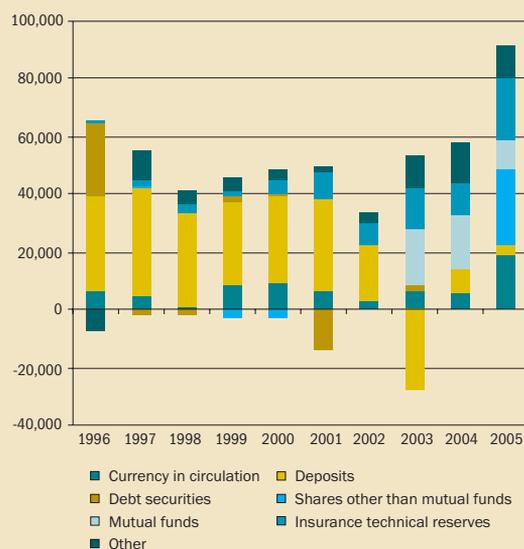
Source: Eurostat.

increase in the household debt burden measured as the ratio of liabilities to financial assets (Chart 75 and Chart 93). From 2003, the household debt burden measured in this way was higher in Slovakia than in the euro area. Although the ratio of debt to current household income (to gross disposable income) in Slovakia is substantially lower than in the euro area, it is rising sharply.

The increase in the debt burden is cast in a slightly different light if developments in non-financial assets are taken into account. Over the long term, a clear trend emerges of households transferring their assets into a form of non-financial assets. Within the cumulative rises in financial and non-financial assets, the ratio of non-financial assets to total assets has been increasing. A similar pace of

Chart 95 Financial asset structure (% of total)


Source: Eurostat.

Chart 96 Household financial assets, year-on-year changes (SKK million)


Source: Eurostat.

Chart 97 **Financial liability structure**

(%)



Source: Eurostat.

Chart 98 **Household liabilities**

(year-on-year changes, SKK million)



Source: Eurostat.

growth is seen in both the non-financial assets and liabilities of households. The increase in net worth – measured as the aggregate rise in financial and non-financial assets, less the increase in liabilities – has therefore reached positive figures in Slovakia (Chart 98). The rise in net worth has, however, declined in comparison with gross disposable income. As a result, the net worth increase has slowed down vis-à-vis the rise in current income. Over the period 1995–2005, however, additions to non-financial assets were offsetting the rising debt.

In the financial asset structure, the allocation of household funds into different types of financial assets is steadily becoming more uniform. Although the household portfolio is still dominated by deposits, it is patently and gradually diversifying, with an increasing share of non-bank financial assets and riskier products. The rise has been particularly marked in financial instruments such as insurance and equity securities. The share of debt securities in the portfolio of household financial assets is low.

Although a shift towards long-term financing in household liabilities has occurred, the proportion

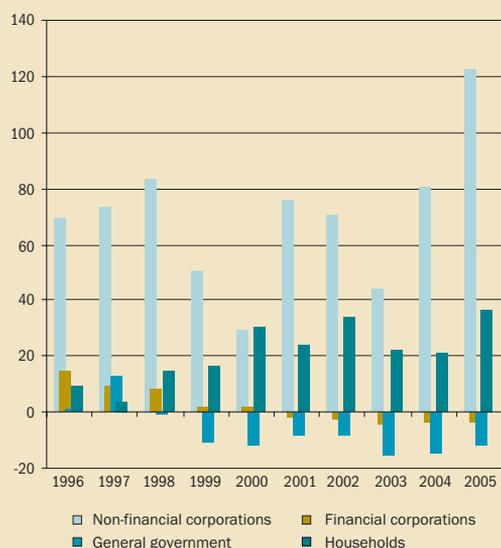
of short-term financing was in 2005 still higher than in the euro area.

1.5 Total asset position of sectors – development of net worth

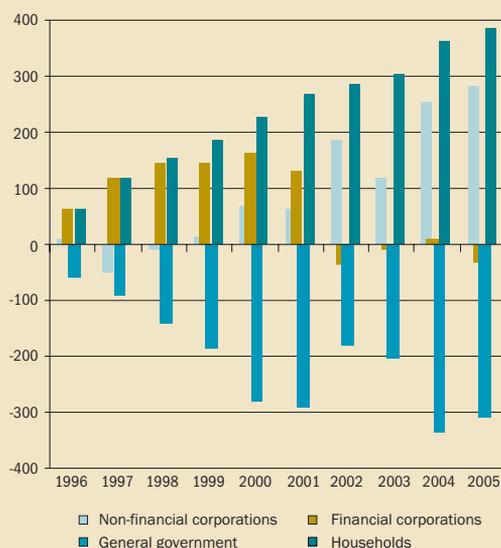
Financial assets constitute only a part of total assets. To gain a picture of the sectors' total asset position, it is necessary to take account of non-financial assets, too.⁷⁵ A sector's net worth represents the sum of the total value of assets (i.e. financial and non-financial), less commitments (financial liabilities). In the case of Slovakia, data are not available for the balance of non-financial assets, and so net worth is only analysable on the basis of additions (flows) of non-financial assets (Chart 99). By cumulating annual additions to non-financial assets, net additions to financial assets and net new liabilities for the period 1995–2006, it is possible to obtain information on the increase in net worth for that period (Chart 100).

Throughout the period 1995–2005, non-financial assets were continuously rising in the sectors of

⁷⁵ Non-financial assets comprise production assets, such as fixed assets (buildings, machinery, equipment, software), inventories and valuables, and non-production assets, such as land, patents, publishing rights, trademarks, etc. Consumption of fixed capital (depreciation) is deducted.

Chart 99 Sectors' non-financial assets, additions (SKK billion)


Source: Eurostat.

Chart 100 Cumulated additions of net worth (in 1996 – 2005)


Source: Eurostat.

non-financial corporations and households (Chart 99). In the sectors of general government and financial corporations, it happened sometimes that additions to investment assets were lower than investment assets consumed through normal wear and tear and foreseeable obsolescence – in other words, non-financial assets did not increase year-on-year, but declined. From 1995, the household sector accumulated the highest net worth (Chart

100), followed by the non-financial corporations sector. In comparison with that year, the sectors of financial corporations and general government reported a decline in net worth.

Relative to disposable income, however, the non-financial corporations reported the highest accumulation of net worth (Table 9), while the household sector saw its ratio gradually declining.

Table 9 Cumulative additions to net worth relative to cumulative growth in disposable income (from 2005, in %)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Non-financial corporations	9.6	-26.7	-3.9	3.8	12.3	9.3	21.3	11.4	20.0	18.9
Financial corporations	636.8	441.8	354.0	269.3	234.1	149.4	-31.2	-5.6	3.9	-13.9
General government	-35.7	-26.2	-25.9	-25.6	-30.0	-25.6	-13.4	-12.7	-17.9	-14.3
Households	16.5	14.2	12.0	10.2	9.4	8.8	7.7	6.8	6.9	6.3

Source: Eurostat, NBS calculations.

2 Selected issues of the Slovak housing market equilibrium

Prices of flats in Slovakia rose by 80% between 2002 and 2006.⁷⁶ Such strong growth raises the questions of whether the increase is justified in regard to real, particularly economic, factors and whether a price bubble is not emerging in the flat market. Data that would allow developments in the flat market to be analysed thoroughly and reliably are not at present widely available.

Those facts which are at our disposal indicate that, as with economic activity, developments in the flat and housing market have been, and remain, strongly differentiated in local and regional terms. The rapid rise in flat and housing prices is above all a consequence of strong and burgeoning demand and the concentration of that demand in areas with bright prospects for economic development. The rapidly increasing demand is being largely driven by strong economic growth, a rise in household income, a marked improvement in the availability of loans and a decline in interest rates.

The current consensus is that the construction of flats and supply of housing is not sufficient and is reacting inadequately and belatedly to local demand. This is largely because the preparedness of the respective localities for intensifying construction is insufficient in regard to zoning and site preparations and the development of networks and transport infrastructure. Recently, too, a tightening of building capacities has been increasingly apparent.

An analysis of these issues, especially the imbalance between supply and demand in the housing

market, still needs to be supplemented with the necessary data. On the basis of partial information, this brief study points out a few of the facts that are, and will be, contributing to developments in the flat and housing market. We examine the relationship between housing prices and rents and the correspondence between flat prices and rents.

An approach to measuring the cost of home ownership has been proposed by Himmelberg, Mayer and Sinai.⁷⁷ Using this approach, it is possible to assess equilibrium in the housing market in terms of the correspondence between flat prices and rents. We apply the core ideas of this approach as a framework for the evaluation of the flat and housing market in Slovakia. Our focus is on discussing the parameters that determine home ownership costs and on the repercussions that the current state of these parameters could have for the imbalance between flat prices and rents, equilibrium in the flat market, and the development of flat prices.

2.1 Equilibrium between flat prices and rents

Annual cost of flat ownership

The starting point in assessing the situation is to determine the costs of flat ownership. The annual cost of flat ownership is expressed by the following formula:

ACO = Annual cost of ownership

⁷⁶ 4Q2006/2002.

⁷⁷ Himmelberg, Ch., Mayer, Ch., Sinai, T.: *Assessing High House Prices: Bubbles, Fundamentals, and Misperceptions*. NBER, Working paper No. W11643.



= $P*ra$	(expected) foregone interest income or other income from an alternative investment
+ $P*txi$	property tax
+ $P*m$	maintenance and running costs, insurance
- $P*gp$	(expected) capital gain (expected rise in flat prices)
+ $P*x$	risk premium and transaction costs

where P is the price of the flat, ra is the (net) interest or (net) annual income from another investment, tx is the rate of property tax, m is the annual rate of amortization (level of contribution to the repairs fund), gp is the annual rate of the flat's appreciation (inflation in the flat market), x is the risk premium and transaction costs related to the purchase of the flat, its renting, moving, etc.

Net rent

Annual net rent, excluding costs of energy and services, is determined using the following (simplified) formula:

ACR	=	
= ACRG		Annual gross rent (monthly payment * 12)
+ $ACRG*r/2$		interest on rental income
- $(ACRG-CM)*txf$		tax on (adjusted) rental income

Condition for equilibrium

Where a household is deciding between buying a flat and renting the property for an (annual net) rent ACR, the condition of equilibrium is that the cost of ownership is equal to the cost of renting:

$$ACO = ACR \quad (1)$$

The purchase of a flat (its price) is only advantageous if $ACO < ACR$. The same condition applies if a household decides to buy a flat in order to let it out or decides to retain a flat for the purpose of letting it out.

If flat prices and rents are in equilibrium at the beginning of a given period, and then the costs of home ownership rise more quickly than rents, the flat prices will come under downward pressure and flat rents under upward pressure. Conversely, if the costs of ownership increase more slowly than rents, flat prices will rise and rents decline. (In general,

of course, flat prices and rents can also decline, depending on their mutual movement).

Loan financing of a flat purchase

Most purchases of flats in Slovakia are made with a combination of own funds and a loan (a mortgage or home savings loan). Where such a combination of financing is used, the formula for assessing the preferability of buying or renting needs to be expanded to include the (interest) costs of the loan:

+ $P*LVR*rhu$	interest on mortgage (indefinite repayment term)
- $P*LVR*b$	interest rate bonus

where rhu is the mortgage interest rate, LVR is the loan-to-value ratio, and b is the interest rate bonus. Where a non-repayable subsidy is provided for the purchase of a flat, the price of the flat is reduced by the amount of the subsidy. In the formula, P is then replaced by $P-D$ as the price less the subsidy.

For determining the equilibrium in the flat market in regard to the decision on whether to buy or rent a flat, the following formula is used:

$$P(1-LVR)*ra + P*txi + P*m - P*gp + P*x + P*LVR*rhu - P*LVR*b = ACRG$$

When deciding on whether to buy to let, it is also necessary to take account of the income tax on rent:

$$P(1-LVR)*ra + P*txi + P*m - P*gp + P*x + P*LVR*rhu - P*LVR*b = ACRG + ACRG*r/2 - (ACRG-CM)*txf \quad (2)$$

2.2 Analysis of equilibrium – stylized considerations

The most important factor in price developments in the flat market is the demand for housing and supply of housing. Demand is reflected in the prices of flats and market rents to the extent that this demand is met by the supply of housing. In this respect, the supply side is primarily the problem in Slovakia.

Discussion of parameters

Flat prices are affected by the income (current and expected) that households would have received by investing the capital in an alternative way (the opportunity cost of capital). As far as most households are concerned, that is almost exclusively related to bank deposit rates and returns on mutual funds – these are currently low and are expected to remain low in the long-term horizon, at around 2–3%, particularly after entry in the euro area. For a part of the entrepreneurial segment of households, the opportunity cost of capital is based on entrepreneurial investments; it fluctuates at a substantially higher level and even more so during an economic recovery. For the sake of simplicity, we can assume that this nominal annual income fluctuates over the long term at the same rate as growth in potential (nominal) GDP. The standard level for households is hovering at around 5%, but in Slovakia it is expected to rise in the long term, to between 6% and 7%. Entrepreneurial income may in the long term be higher still.

Property taxes are levied by local authorities. The property valuations used to set the level of the tax are divorced from the market prices, and therefore the rate of property tax (implicitly calculated) is usually low, less than 0.5 per mille. It is likely, however, that this rate will have to be higher in future (at least 2 to 3 per mille) if cities and municipalities are to be able to maintain and modernize their properties, especially their infrastructure, out of these funds.

Maintenance costs are usually met from the Maintenance and Repairs Fund (FÚO), but contributions to the fund are often very low and fail to cover sufficiently the costs related to the maintenance of blocks of flats. The maintenance (and modernization) of flats is usually carried out from savings and occasionally through a loan. These costs have recently come to be seen in a different light, in connection with the need to address failures and

systemic shortcomings in blocks of flats: certain parts of the buildings and mains infrastructure are coming to the end of their lifespan and their technical parameters do not meet current requirements. We estimate that appropriate maintenance and modernization costs per flat should be more than 2% of the flat price, whether met directly by the flat owner or through the accumulation of payments in maintenance and repairs funds.⁷⁸

The rise in flat prices, especially the expected increase, is currently the main driver of demand for buying flats. The pace of growth is in double digits, at between 10% and 20% per year, and the expected rise in prices is also high – more than 10%.

The risk premium and transaction costs in annual terms are currently around 2–3% of the flat price. The fact that the estimated risk value is low in comparison with the realistic long-term value of at least 4% arises from the relatively clear-cut development of flat prices. Besides risks related to changes in market conditions, expectations, prices, interest rates, and income, this item also includes the annualized (one-time) transactions costs of the purchase and sale of the flat.

Under the conditions currently offered by banks, the purchase of a flat can be financed with a mortgage loan worth up to 70-100% of the flat's price. As for financing through home savings loans, the basic financing model consists of 50% of own (saved) funds and 50% of borrowed funds.

Flat purchase in cash for the purpose of housing

In order to better understand the factors affecting prices and equilibrium in the flat market, we shall mention a few situations typical for decisions on buying a flat. Although the prices and other parameters were in each case selected by us, they were approximate to certain real situations:

⁷⁸ The 2% rate of amortization corresponds approximately to the depreciation of the building and facilities over a period of 40-50 years. In regard to prefabricated blocks of flats, it is clear that the replacement and modernization costs could be even higher, given the shorter lifespan of these constructions. At present, this fact is being completely neglected by the owners and buyers of such flats.

**Case 1: flat purchase⁷⁹ in cash for the purpose of housing – short-term horizon**

Price	SKK 2.8 million
Opportunity cost of capital (long-term investments)	3%
Property tax	SKK 1,000
Maintenance costs (minimum payment to maintenance and repairs funds)	SKK 5,000 (per year)
Appreciation of investment (expected annual increase in flat price)	10%
Risk premium	2%
Rent (annual, market rate for an unfurnished flat)	SKK 150,000

Evaluation: The cost of ownership is minus SKK 134,000 (in thousands, $84 + 1 + 5 - 280 + 56$). The annual rent of SKK 150,000 is higher than the annual cost of ownership when the flat is bought (rather than a cost, there is a “gain” of 134,000). The flat is worth buying. In the circumstances, the price of the flat could be higher.

The equilibrium price (in the short term) does not actually exist in this case (it is infinitely large) since the conditions are laid down in such a way that prices can rise arbitrarily. For a household to make cash investment in housing that it needs is very advantageous (given the parameter values, therefore, in the short term).

Buy in cash to let

The same conclusion applies here. The situation is different only in that the net rent, after taking into account deductible items (depending on the particular case) is lower. Since the appreciation of the investment continues to outweigh the costs and the opportunity cost of capital, such purchases continue (in the short term) to be advantageous.

Loan financing

Cash purchases are not typical, although sellers often give them preference owing to the lower transaction costs involved. If we proceed on the more realistic assumption that 50% of the flat price will be met with a loan (6% interest), the situation

is substantially changed. The cost of ownership will be minus SKK 92,000 (in thousands, $42 + 1 + 5 - 280 + 56 + 84$). Under the given conditions, the purchase of the flat is advantageous even if the total price is paid out of a loan. This conclusion is based on the underestimation of maintenance and modernization costs and on optimistic short-term expectations vis-à-vis flat price developments.

2.3 Long-term (sustainable) parameter values

One of the causes of the “anomaly” – the advantage of buying a flat in comparison with renting it – is the fact that several of the parameters which favour the purchase of a flat are set at unsustainable levels and express only short-term, or at most medium-term, expectations. Where there is strong demand for buying flats and the supply to match, the result must eventually be the easing of market tensions, satisfaction of housing demand, and a lowering of demand for renting with a commensurate decline in rents.

Flat purchase in cash – long-term expectations and sustainable parameters versus the short-term view

If the given parameters are set at levels sustainable in the long-term, the situation is changed (approximately) as follows:

Case 2: flat purchase in cash for the purpose of housing – long-term horizon

Price	SKK 2.8 million
Opportunity costs of capital (long-term investments)	3%
Property tax	0.2%
Maintenance costs (maintenance and repairs funds, and a provision for modernization of the flat)	2%
Appreciation of investment (expected annual increase in flat price)	6%
Risk premium	2%
Rent (annual, market rate for an unfurnished flat)	SKK 120,000

⁷⁹ A three-room flat in a prefabricated block of flats in Bratislava–Petržalka, 2006.

Evaluation: The cost of ownership is SKK 33,600 (in thousands, $84 + 5.6 + 56 - 168 + 56$). The annual rent of SKK 120,000 is higher than the annual cost of ownership when the flat is bought. If a household has the cash for the flat and needs it for housing, the price of the flat could, in these circumstances, also be substantially higher and could rise in the long term. The flat is worth buying in the long-term view, too.

Loan financing

If, where the purchase of a flat is partially financed with a loan, we use parameters that are more realistic in the long-term – i.e. higher maintenance and modernization costs and lower expected growth in the price of the flat – we get the cost of home ownership as follows: SKK 75,600 (in thousands, $42 + 5.6 + 56 - 168 + 56 + 84$). In this case, too, it is more advantageous to purchase the flat (using a long-term loan) than to rent it. Even if the purchase were fully financed with a loan (giving an annual cost of ownership of SKK 117,600), it would still be the better option. To purchase a flat with 100% loan financing for the purpose of letting it out would, however, be disadvantageous (after meeting tax obligations).

2.4 The opportunity cost of capital and the equilibrium of prices and rents

Before we finish assessing the relative merits of buying and renting a flat, we will mention another case where the opportunity cost of capital pertains to a higher yielding investment.

The example concerns an entrepreneur (household). One reason why it is preferable for a household to purchase a flat for cash is that it has no other way to profitably invest its funds, except in a bank deposit. If it has the opportunity to earn more on its disposable funds, then that changes the situation when deciding on whether to buy or rent a home. Assuming that the household's opportunity cost of capital has the same rate as the current growth in nominal GDP (11%), then the (short-term) evaluation of the costs of ownership will come to SKK 202,000 (in thousands, $308 + 1 + 5 - 168 + 56$). In that case, it is not more advantageous

to purchase the flat for cash than to rent it. A high opportunity cost of capital substantially alters the evaluation of whether the purchase or renting of a flat is preferable. Moreover, if in the evaluated case it were possible to include rents in business costs, than the advantage of renting the flat would be greater still.

Although taking into account long-term (sustainable) parameters for an expected (assumed) long-term return on investment of 8% would result in the opportunity cost of capital falling to only 8%, from 11%, the cost of ownership would be raised by the realization of other costs and would at the aggregate level be higher than the (long-term) annual rent:

(in thousands, $224 + 5.6 + 56 - 168 + 56 = 173.6$)
 $> 120,000$.

Even in this case, it would be more advantageous (in the long-term) for the entrepreneur to rent the flat than to buy it with his own funds.

If the opportunity cost of capital is based on a mutual fund investment with the rate of appreciation (nominal, net) assumed to be 5% per year, then renting the flat will be less advantageous than buying it:

(in thousands, $140 + 5.6 + 56 - 140 + 56 = 89.6$)
 $< 120,000$.

Conclusion

It is generally assumed that flat prices and rents are, with the exception of short-term fluctuations, interrelated. The development of flat rents and prices is determined above all by the overall demand for flats and housing and the supply of flats and housing. What is decisive in a given period, however, is the supply of flats for sale and for rent and the demand for buying and renting flats, i.e. the marginal situation in the market.

The preceding analysis points out certain relations between flat prices and rents as well as facts and factors which, at a given price and rent, affect how the situation is evaluated in terms of the equilib-



rium between prices and rents in the flat market. In Slovakia, the most important situations relate to centres of economic development, especially Bratislava.

As for what are the most important factors in shaping the flat and housing market, both in the recent period and in the medium-term horizon, they are in our view as follows:

- the sharp rise in demand in centres of economic development and their environs, as the result of people relocating for (better paid) work. Conversely, this factor will have a negative effect on demand in other areas;
- the slow increase in supply in centres of economic development, in regard to both new constructions and flats that have fallen vacant (because of death or counter-demographic movement). In other areas of Slovakia, however, the existing stock of flats and housing will act as a brake on price growth;
- the low interest rates on deposits, which for most households are the only acceptable alternative investment. The effect of this factor will probably become stronger following entry into the euro area, especially since real deposit rates will be low;
- the lack of longer experience in investing in mutual funds and the current low returns on mutual fund investments. The effect of this factor over the longer term will depend on the ability of fund managers to increase the return on these investments;
- the rapid growth in new loans, which is largely a reaction to the consolidation and standardization of relations in the banking sector, the low debt ratio of households, declining interest rates, and future growth in household income;
- the various forms of housing support, predominantly directed at supporting demand for flats;
- the situation in the flats construction sector. Rising tension in the construction market is currently accelerating growth in flat prices;
- the expected running costs for flats, in particular, property taxes, modernization and maintenance of flats in regard to normal wear and tear. In most cases, these costs are significantly

underestimated and they are only gradually being adjusted to real levels;

- the perception of risk in the housing market, the expected volatility of market prices for flats, and the level of transaction costs in flat trading. These are probably underestimated at present, particularly the long-term risk of a growth slowdown, or even decline, in prices.

Another important factor regarding flat prices in Slovakia is that most households cannot afford to buy a flat with their own savings and will therefore finance the purchase of a flat with a loan. The situation is even less favourable among young people and families – their lack of solvency is often an insurmountable barrier to meeting the price of a flat and determines their purchase of smaller and cheaper “starter” flats (assisted by funds from parents). The fact that there are still too few of such flats in the market is contributing to the rise in their prices (in the case of small and/or older flats).

The housing market in Slovakia is also characterized to a significant extent by underestimation of the real state of old flats, underestimation of market risk, and short-term, overly optimistic expectations for market developments. The first two factors are substantially subduing the evaluation of flat ownership costs and raising demand for older flats. Unless this situation changes, these factors may in future be a significant cause of distortion in flat ownership costs and prices. The most important factor in flat prices and their growth is their expected rise. This factor will cause a sharp acceleration in flat prices in the forthcoming period.

In summary, we can say that flat prices may rise sharply in the short term mainly because the prices as they now stand make the purchase of flats advantageous, even after factoring in the financing costs of a long-term mortgage. The key factor in this rise is the shortage of supply and the high effective demand that is fuelled by the availability of loans. In Slovakia, the acceleration of growth in flat prices is being driven by the underestimation of maintenance and modernization costs, transaction costs and market risk, and, in particular, by short-term expectations of a sharp increase in prices.

3 Macro stress testing

A consequence of the credit boom in central and eastern European countries has been the increased exposure of their banking sectors to credit risk, with lending to households recording an especially sharp rise in recent years. The banking sector has therefore become more vulnerable to various adverse scenarios of economic development, and that is why it is important to know which channels such adverse economic shocks act through and to quantitatively estimate their impact.

The purpose of this piece is to present a simple macroeconomic model that may be used to specify the effects of macroeconomic shocks – particularly on credit risk, but also on interest-rate and foreign-exchange risks – and to estimate their impact on the capital adequacy ratio of the aggregate banking portfolio.

Credit risk

The indicator typically used to describe the quality of the banking portfolio is the ratio of non-performing loans to total loans (NPL ratio). The development of this ratio in Slovakia is shown in Chart 101.

As the Chart shows, the NPL ratio was as high as 40% until as recently as 2000. The turnaround came when loss-making loans were transferred to the Konsolidačná banka (Consolidation Bank) and the Slovenská konsolidačná agentúra (Slovak Consolidation Agency) within the restructuring of the banking sector that took place in 1999 and 2000. The NPL ratio has been declining systematically since 2001 and by the end of 2006 it stood at 2%. But although the portfolio quality has been improving since 2001, it should be noted that the decline in this ratio may not be entirely the result of better quality, but may

also be caused by accelerated lending growth. Another cause could be the sale of non-performing assets, which does not represent an actual improvement in the quality of the portfolio. When interpreting NPL ratio developments, account should also be taken of several methodological changes relating to the definition of non-performing loans.

Model(s)

Our aim in this part is to assess the effects of the macroeconomic environment on the quality of the banking portfolio. Which macroeconomic variables affect the NPL ratio and how? In order to identify suitable macroeconomic variables, we used a bivariate regression, i.e. a regression between the NPL ratio and individual macroeconomic variables.⁸⁰

Chart 101 NPL ratio (quarterly data)



Source: NBS, own calculations.

⁸⁰ For the regression, we in fact used the differences between the variables, rather than the variables themselves, on the grounds that the original variables are non-stationary.

Table 10 **Estimated coefficients of the multivariate OLS¹⁾ mode**

Dependent variable: change in the NPL ratio	Coefficient	t-statistic
NPL ratio change (-1)	0.66	7.07
Real GDP growth	-0.0054	-3.63
BRIBOR(-1)	0.0015	3.14
Exchange rate rise (-3)	-0.0041	-3.31

Source: Own calculations.

Table 11 **Long-term relationship in the VEC¹⁾ model**

Dependent variable: NPL ratio	Coefficient	t-statistic
Logarithm(GDP)	-0.602	6.09
BRIBOR	0.0086	-5.13
Logarithm(SKK/EUR exchange rate)	-0.517	3.30

Source: Own calculations.

We found that the following quantities have a significant effect on the NPL ratio and therefore on the quality of the portfolio: real GDP, the nominal interest rate (BRIBOR) and the SKK/EUR exchange rate.

Two econometric techniques were used in the construction of the two models.

Using a univariate regression, we identified the OLS model mentioned in Table 10.

As we can see, the NPL ratio has a strong correlation with its past value (the fact that the ratio is currently high will cause it to be high in subsequent quarters); it is a negative function of real GDP growth (as GDP growth increases, the ratio declines); it is a positive function of the nominal interest rate with a lag of one quarter (a higher interest rate raises costs for debtors); and it is a negative function of movement in the SKK/EUR nominal exchange rate, with a lag of three quarters (depreciation of the koruna increases the competitiveness of domestic products, and the financial position of firms is thereby improved).

Using vector error correction technique (VEC), we identified the subsequent long-term relationship mentioned in Table 11.

From this model, too, it is clear that growth in GDP and depreciation of the koruna reduce the NPL ratio in the long term, whereas an increase in the interest rate raises it.

Macroeconomic scenarios

Besides estimates of the models, the designing of macroeconomic scenarios represents another essential element in the quantification of the effects of the macroeconomic environment on the quality of the portfolio. We shall consider three types of scenarios:

- 1. Changes in individual risk factors (real GDP, the exchange rate, and the BRIBOR) and their impact on the NPL ratio.** Each scenario deals with a change in only one factor; the relationship between the factors is disregarded. Such shocks can be used for bivariate and multivariate OLS models. An advantage of the multivariate model is that it allows fixing of the other factors.
- 2. A simultaneous change in all risk factors and their effect on the NPL ratio.** This type of scenario models hypothetical changes in risk factors having a negative impact on the banking sector, while it ignores the interrelationship between individual factors. Such shocks can be applied in the multivariate OLS model.

Table 12 Summary of scenarios

Shock	Type	Version	Scenario	Description
Interest rate shock	1	Moderate	1A	Rise in the BRIBOR by 1 p.p. over three consecutive quarters
	1	Strong	1B	Rise in the BRIBOR by 2 p.p. over three consecutive quarters
Exchange rate shock	1	Moderate	2A	3% appreciation of the koruna against the euro over four consecutive quarters
	1	Strong	2B	6% appreciation of the koruna against the euro over four consecutive quarters
Slowdown in economic growth	1	Moderate	3A	3% growth in real GDP in each quarter of 2007
	1	Strong	3B	3% decline in real GDP in each quarter of 2007
Macroeconomic shock (relationship between variables is not modelled)	2	Moderate	4A	6% decline in real GDP, rise of 1 p.p. in the BRIBOR, and 3% appreciation of the koruna against the euro, in the first quarter of 2007 (compared with the fourth quarter of 2006)
	2	Strong	4B	12% decline in real GDP, rise of 2 p.p. in the BRIBOR, and 6% appreciation of the koruna against the euro, in the first quarter of 2007 (compared with the fourth quarter of 2006)
Macroeconomic shock (relationship between variables is modelled)	3	Moderate	5A	6% decline in real GDP
	3	Strong	5B	12% decline in real GDP

Source: Own calculations.

3. A change in one risk factor (e.g. GDP growth) and its effect on other risk factors and on the NPL ratio. This type of scenario, unlike the previous ones, takes into account the historical relationship between individual factors. It may be used with both the multivariate OLS model and the VEC model.

The size of individual shocks is determined on the basis of historical data. Each scenario has two versions. The more moderate version represents the most adverse values recorded for the individual risk factors in the period 2002–2006,⁸¹ while the stronger version covers the whole period 1997–2006. The reason for using two versions in

Table 13 Impacts of scenarios 1-4 (p.p.)

Scenario	Impact on the NPL ratio over 1 year			Impact on the NPL ratio over two years		
	Bivariate OLS model	Multivariate OLS model	VEC model	Bivariate OLS model	Multivariate OLS model	VEC model
1A	0.34	0.66	-	0.79	1.52	-
1B	0.91	1.74	-	2.15	4.10	-
2A	1.20	1.51	-	2.40	3.02	-
2B	13.33	12.32	-	25.90	23.93	-
3A	5.24	8.30	-	10.01	15.85	-
3B	5.36	9.49	-	10.23	18.12	-
4A	-	-	1.79	-	-	4.35
4B	-	-	3.58	-	-	8.70

Source: Own calculations.

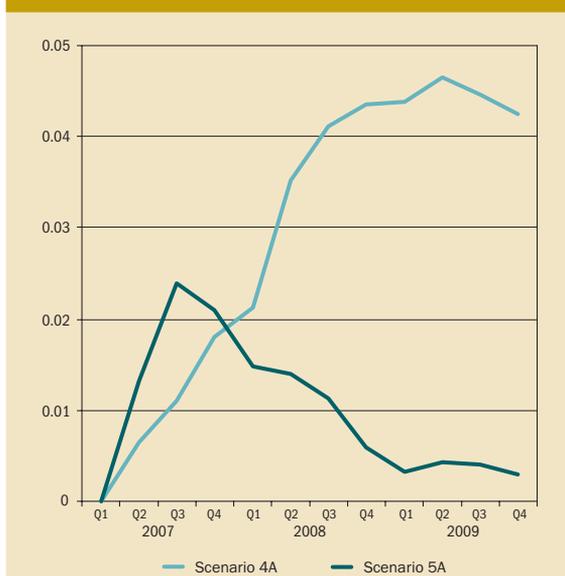
⁸¹ In the case of the BRIBOR, we determined the largest changes in relative, not absolute, terms: for example, a rise in the BRIBOR from 2% to 5% is more extreme than a rise from 10% to 13%, although the absolute change is the same. In the case of the SKK/EUR exchange rate, appreciation of the koruna was treated as a negative change since, according to estimated econometric models, the currency's appreciation would have an adverse effect on the NPL ratio. As for GDP growth, a figure of 3% would represent a slowdown of 6 percentage points in comparison with the rate of growth of 9% as at the end of 2006.

Table 14 Impacts of scenario 5

Scenario	Impact over 1 year			Impact over 2 years		
	SKK/EUR exchange rate	BRIBOR (p. p.)	NPL ratio (p. p.)	SKK/EUR exchange rate	BRIBOR (p. p.)	NPL ratio (p. p.)
5A	Depreciation of 1.5%	Decline of 0.7	Rise of 2.1	Depreciation of 1.1%	Decline of 1.2	Rise of 0.6
5B	Depreciation of 3.1%	Decline of 1.4	Rise of 4.2	Depreciation of 2.2 %	Decline of 2.3	Rise of 1.4

Source: Own calculations.

Chart 102 Impacts of scenarios 4A and 5A on the NPL ratio (quarterly data)



Source: NBS, own calculations.

adverse shock in one of the variables has on the others. So, for example, the monetary authority will tend to respond to a slowdown in the economy by loosening monetary policy through a cut in the interest rate. This has the consequence of reducing the cost of loans with adjustable rates, which subsequently improves the quality of the portfolio. The opposite applies in the second-type scenario, where an economic slowdown is accompanied by a rise in the interest rate. The development of the NPL ratio under these two types of scenario is shown in Chart 102.

In scenario 4A, the NPL ratio rises during the first two years, whereas in scenario 5A it initially rises under the effect of the economic slowdown and then gradually declines, probably because of the reduction in the interest rate.

Capital adequacy

each scenario is that the economy went through a turbulent period from 1997 to 2001 with several structural changes, and certain risk factors acquired exceptional values that are too exceptional even in the context of stress testing. The scenarios are set out in Table 12.

The impacts of the scenarios on the increase in the NPL ratio are shown in Tables 13 and 14.

It is clear that the third-type scenarios that take into account the relationship between macroeconomic variables (from the VEC model) will have a lesser impact on an increase in the NPL ratio than the second-type scenarios, in which this relationship is disregarded. In fact, it may be assumed that the historical development captures a correction mechanism which corrects the effects that an

In the previous part, we quantified the effects of the macroeconomic environment on credit risk. An increase in credit risk translates into a rise in the NPL ratio for the aggregate banking portfolio. If we take the simplified (and most conservative) assumption that all non-performing loans must be provisioned (LGD=100%), then as a result of the credit risk, own funds will be reduced by the amount of the increase in non-performing loans. This represents an indirect effect of the appreciation of the exchange rate and the raising of the interest rate on the capital adequacy ratio. But where there is an open interest-rate and/or foreign exchange position, the change in the interest rate or exchange rate can itself cause a loss. This represents a direct effect on the capital adequacy ratio. A methodology addressing the quantification of market risks (i.e. interest-rate and foreign-exchange risks) is

Table 15 Impacts of stress testing on banks' capital adequacy ratios (1 year)

Scenario	Description (estimated change over 1 year)			Capital adequacy ratio (%)		
	Change in NPL ratio (p.p.) ¹⁾	Change in SKK/EUR exchange rate (%)	Change in BRIBOR (p.p.)	First quartile	Median	Third quartile
Basic scenario				12	19	21
1A	Increase of 0.5		Increase of 3.5	9	15	18
1B	Increase of 1.5		Increase of 7	4	12	14
2A	Increase of 1.5	Appreciation of 12.5 ²⁾		11	17	20
2B	Increase of 125	Appreciation of 26 ²⁾		0	5	9
3A	Increase of 8			4	10	14
3B	Increase of 9			3	9	13
4A	Increase of 2	Appreciation of 3	Increase of 1	9	16	19
4B	Increase of 3.5	Appreciation of 6	Increase of 2	7	13	16
5A	Increase of 2	Depreciation of 1.5	Reduction of 0.7	10	17	20
5B	Increase of 4	Depreciation of 3	Reduction of 1.4	9	15	19

Source: Own calculations.

1) The change in the NPL ratio was estimated using the given econometric models (see Table 4).

2) An appreciation of 12.5% or 26% corresponds approximately to an appreciation of 3% or 6% in four consecutive quarters.

provided by Jurča and Rychtárik (2006),⁸² and we have used its results to estimate the effect of the individual scenarios on the capital adequacy ratio of the banking sector, acting through the channels of interest-rate and foreign-exchange risk. It should be noted that changes caused by foreign exchange risk appear immediately, but those arising from interest rate risk may, if caused by open interest rate positions in the banking book, show through only gradually. By aggregating the changes arising from credit risk and from market (interest-rate and foreign-exchange) risk, we arrive at the overall effect of the scenarios on the capital adequacy ratio of banks. These results are shown in Table 15.

These results need to be interpreted with caution owing to the various limitations and simplifications in the modelling approaches, scenario designs and estimation of the impacts on capital adequacy. Nevertheless, the results given here can clarify the relative significance of the impacts of the individual macroeconomic shocks.

A rise in the interest rate (scenarios 1A and 1B) causes, on the one hand, an increase in the amount of non-performing loans (indirect effect) and, on the other hand, a reduction in the value

of the banks' portfolio (direct effect). The value of the banks' portfolio declines because the amount of long-term assets substantially exceeds the amount of liabilities with a long-term fixed interest rate. The calculations show that the direct effect is more significant than the indirect effect and accounts for around 75% of the decline in the capital adequacy ratio.

Conversely, an exchange rate shock has a negligible direct effect. Banks mostly have closed foreign exchange positions and therefore even a larger shock will not have a significant effect on the portfolio value. A change in the exchange rate affects the capital adequacy ratio indirectly through the credit channel, via a change to the amount of non-performing loans. An extreme appreciation (scenario 2B) can bring down the capital adequacy ratio to below the 8% minimum limit.

Finally, we attempted to estimate the consequences of a slowdown in the economy. Without a simultaneous change in the other risk factors, this effect could be quite significant (scenario 3B). In reality, however, a change in one factor brings about a change in others as a result of the monetary policy response. In scenario 4, these changes

⁸² Jurča, P. and Rychtárik, Š. (2006): *Stress testing of the Slovak Banking Sector*. BIATEC, Volume XIV, 4/2006, Národná banka Slovenska.



are defined without regard to the historical long-term interrelationship, whereas scenario 5 takes account of this relationship. These scenarios have a similar effect on the capital adequacy ratio over a period of one year, but the difference becomes apparent over the longer term.

Conclusion

The results of macro stress testing of the Slovak banking sector indicate that any slowdown in the Slovak economy, even a more severe one, should not significantly threaten the Slovak banking sector, provided that the slowdown is accompanied by appropriate monetary-policy measures. Another positive conclusion, given the current portfolio of the Slovak banking sector, is that such a monetary policy would have a favourable effect on the Slovak banking sector also through a direct increase in the real value of the portfolio. A greater threat could

be posed by shocks that operated without a corresponding response from other factors. Although such shocks are contrary to the past developments, they cannot be completely ruled out. In this regard, it is necessary to point out the structural changes related to the entry of Slovakia into the euro area, after which the exchange rate and interest rate will be fixed by the ECB. In the event of asymmetric adverse shocks, monetary conditions will not be able to offset the negative impact that the slowdown in the Slovak economy will have on the financial sector. In assessing the exposure of the Slovak banking sector to interest-rate and foreign-exchange risks, the extent to which banks could be indirectly affected by a potential deterioration in the financial position of debtors has also been revealed. That is because of the relatively significant proportion of loans with a short initial rate fixation as well as the high degree of openness of the Slovak economy.

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Abbreviations

ATM	Automated Teller Machine
ARDAL	Debt and Liquidity Management Agency
BRIBOR	Bratislava Interbank Offered Rates
BSSE	Bratislava Stock Exchange
CDS	Credit Default Swap
CPI	Consumer Price Index
CRT	Credit Risk Transfer
ECB	European Central Bank
EFT POS	Electronic Fund Transfer at Point of Sale
EC	European Commission
ERM	Exchange Rate Mechanism
EU	European Union
GDP	Gross Domestic Product
HICP	Harmonised Index of Consumer Prices
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
ISDA	International Swaps and Derivates Association
LGD	Loss Given Default
NEER	Nominal Effective Exchange Rate
NPL	Non Performing Loans
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares Method
REER	Real Effective Exchange Rate
RGTS	Real Time Gross Settlement
ROA	Return of Assets
ROE	Return of Equity
ROW	Rest of World
SAX	Slovak Share Index
SEPA	Single Euro Payment Area
SDX	Slovak Bond Index
SIPS	Slovak Interbank Payment System
TARGET	Trans-European Automated Real-time Gross Settlement Express Transfer
VaR	Value at Risk
VEC	Vector Error Correction Model