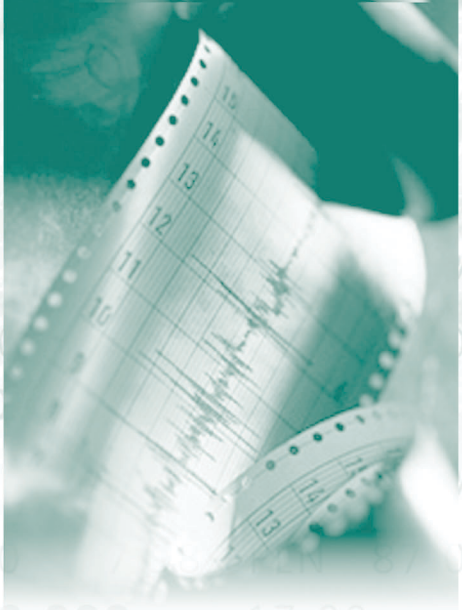

Financial Stability Report 2005

Warsaw, June 2006

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Executive summary

The year 2005 saw diminished threats to the stability of the Polish financial system. Economic growth accelerated during the year, which resulted from the increased domestic demand, including but not limited to gross fixed investment. Exports grew dynamically. These developments led to improved standing of customers of financial institutions.

The income position of households picked up. It resulted from, *inter alia*, a decline in the unemployment rate and an increase in the number of employed persons. The value of financial assets of households increased considerably. An improvement in consumer confidence, combined with a more favourable assessment of their creditworthiness by banks, contributed to sustained high growth rates of housing loans and accelerated growth of consumer loans. The increase in loans to households was reflected in a higher debt repayment burden on household incomes. However, debt servicing expenses in proportion to household incomes in Poland are still considerably lower than in EU-15 countries. An analysis of experience of other EU countries which experienced a high growth rate of loans in the past indicates that the growth rate of loans in Poland observed at present does not pose an imminent threat to financial system stability by itself. The impact of the observed growth in loans on financial system stability in the forthcoming years will largely depend on whether banks adopt a prudent approach to the selection of their borrowers, and whether the conditions in which banks and their customers operate are favourable (i.e. whether the conducted macroeconomic policy is proper, and structural reforms, indispensable for sustained economic growth, are implemented).

In spite of the sustained exceptionally high level of liquid funds held by enterprises and a very good financial standing of this sector, the downward trend in loans to enterprises observed in the previous year was reversed through 2005. At the same time, an increase in the value of corporate assets and good performance of enterprises contributed to a decline in their financial leverage. The process of debt repayment by enterprises in a good financial condition and by those with the greatest debt was still observable.

During most of the analysed period, maintenance of financial system stability was supported by a lack of rapid price movements on domestic financial markets. In 2005, the zloty strengthened against the euro, although the scale of the appreciation was smaller than in 2004. In line with the decreasing inflation and NBP interest rates, yields on Polish Treasury bonds were also on a downward trend for most of 2005. The level of market risk undertaken by banks was still relatively moderate, in spite of an increased duration of the securities portfolio.

2005 was another year in which the quality of banks' loan portfolios improved. The average quality of loans (measured by the irregular loans ratio) extended to all groups of borrowers picked up and the share of non-performing loans in banks' loan portfolios diminished as well.

An increase in the value of loans extended, and in particular of foreign currency housing loans, was accompanied by strong competition among banks in some market segments that led banks to ease credit standards as well as loan terms and conditions. It indicates that credit risk is gradually accumulating in banks' balance sheets. Another factor that may constitute a source of threat to banks' asset quality is households taking out foreign currency loans on the basis of expectations of continuation of the observed upward trend in the zloty exchange rate. The expected upward movement of interest rates in the most developed countries (in Switzerland in particular) may also have an impact on a rise in the costs of servicing of these loans, and thus contribute to deterioration of their quality. Expectations as to the scale and sustainability of the economic growth are significant for the assessment of loan portfolio quality. Forecasts for this economic category in a 2-year horizon indicate a continuation of the high growth rate of economic activity. However, it is not possible to rule out a scenario of a deterioration in the economic situation in the future, which could for example be related to possible negative impact of a rapid adjustment of economic imbalances in the world. Such a change may lead to credit risk crystallising in the form of deteriorated quality of loan portfolios and increased credit losses of banks. The analyses presented in the *Report* indicate, however, that Polish banks are prepared to absorb even a significant increase in credit losses. The level of capital maintained currently by banks is adequate to the risk undertaken. In particular, simulations of shocks in the quality of loan portfolios suggest that, despite a slight drop in the capital adequacy ratios in the period under review, induced, *inter alia*, by the increased lending of banks, the capital resources of the banking sector are sufficient to absorb possible losses resulting from a decline in the loan portfolio quality, even without support from strategic investors.

In 2005, banks' profits, which are the main source of increasing the capital of the banking sector, reached a record level again. Apart from the impact of expanding the scale of their activity and the improvement in asset quality, which were related to the prevailing good economic climate, the surging profits of banks were supported by the increased efficiency of operation of banking institutions as well as the application of the International Financial Reporting Standards by some of them. However, the influence of change in accounting standards on the earnings of banks was relatively small. Higher profits were attained in spite of strong competition among banks, observed particularly on the housing loans market. The continuous improvement of banks' operational efficiency ratios strengthens the long-term ability of domestic financial institutions to compete on the common European market of financial services.

Non-bank financial institutions are an increasingly important component of the Polish financial sector. Their assets rose more quickly in 2005 than the assets of banks. However, banks remain the most important entities in terms of the volume of assets. Non-bank financial institutions also reported increased profits and improved efficiency of operation, although the progress, particularly in the sector of insurance companies, was uneven. Banks' exposure to the risk related to the operation of non-bank financial institutions remains low.

The significant share of non-bank financial institutions, and of open pension funds in particular, in the capitalization of the Warsaw Stock Exchange, combined with the increasing inflow of pension fund contributions as well as cash inflow to the investment funds, may raise concerns whether the valuation of shares may deviate from economically justified levels. However, the developments in equity prices in 2005 did not pose a threat to financial system stability,

which is indicated by a comparison of the present market valuation of shares listed on the Polish market with the valuation of shares on world markets. The observed growth in equity prices reflected, first and foremost, the improvement of corporate earnings. This situation did not significantly influence the performance of banks, due to the small share of corporate shares in their assets, and an insignificant scale of lending for the purchase of corporate shares.

An analysis of trends on the property market does not provide solid grounds to assert that the observed price increases pose a threat to financial system stability in the mid-term. Price changes partly reflect natural phenomena of market diversity as well as a mismatch of the hitherto-existing structure of housing supply and demand. It increases the possibility of particularly high growth of prices of flats in the most attractive locations. However, the sustained excess of demand over supply on the housing property market in some regions of Poland (mainly in big cities and their surroundings) brings about the necessity of close monitoring of the processes, due to the increasing significance of mortgage loans. The lack of reliable price indices in the sector is an obstacle here. The growth in housing property prices also results from limits (barriers) on the supply side of the market. The emergence of numerous developer companies, including large and foreign parties, will support the restoration of balance in the long term. However, the issues of supply limits related to, *inter alia*, the lack of district area development plans and the limited availability of service infrastructure, still remain unresolved.

An efficiently operating payment system is one of the most important elements of the financial infrastructure and, to a large extent, determines its stability. In the period under review, no significant disruptions in the availability of payment systems occurred. In 2005, businesses were provided with new payment instruments that streamline settlements – in particular, systems enabling euro settlements – SORBNET-EURO and EuroELIXIR – were launched. Thus Poland was the first among the new EU Member States to implement such solutions.

Chapter 1.

Impact of real economy on financial sector stability

The condition of customers of financial institutions was good in 2005, despite the slower rate of economic growth compared to the previous year.[1] Year-on-year GDP growth was accelerating steadily (see Figure 1.1). From the second quarter of 2005 onwards, economic growth compared to the previous quarter (seasonally adjusted) also accelerated.

GDP growth was increasingly based on increases in gross fixed capital formation, strengthening the supply foundations of future economic growth. Domestic demand recovered gradually owing to an increase in household consumption and faster investment growth. The increase in investment expenditure was, among other things, the result of high capacity utilisation. At the same time, the role of net exports as a driver of economic growth decreased.

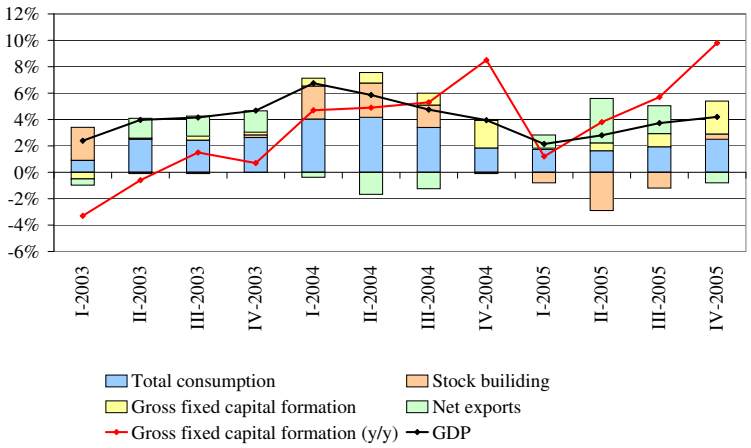
Growth outlook for 2006 is also favourable. According to the April 2006 NBP projection, year-on-year GDP growth may be expected to reach 4.5% in 2006,[2], and in the years 2007–2008 it may rise to 4.5–5%. The projection also indicates that in this period, economic growth will be accompanied by a gradual convergence of inflation towards the inflation target. The economic growth structure resulting from the GDP projection allows to expect an improvement in the financial standing of consumers, positively influencing consumer confidence. Combined with rapidly rising real wages and employment, this fuels consumption. The GDP projection also takes into account the influence of indexation of old-age and disability pension benefits on consumer demand.

On the basis of the results of NBP macroeconomic projection, it may be expected that the rapid increase in investment will be sustained, *inter alia*, due to the capacity utilisation level, which is rising at most enterprises (see Figure 1.2), and may prompt more firms to initiate or intensify investment processes. Favourable economic growth prospects may also encourage more investment. According to the assumptions adopted in the projection, the improving

[1] High GDP growth rate in 2004 was largely the result of the so-called accession shock related to Poland's accession to the European Union.

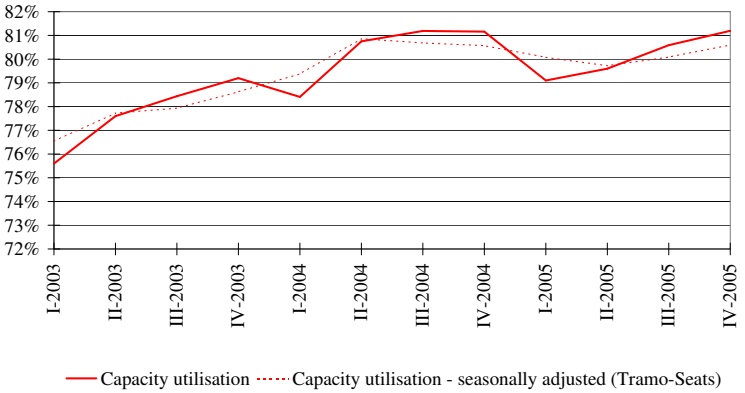
[2] The growth rate may turn out to be even higher than projected, due to an upward correction of data concerning GDP growth in 2005 by GUS. Due to the date of publication of the revised data, they could not have been taken into account in the inflation projection.

Figure 1.1. Increase in gross fixed capital formation vs. decomposed GDP growth (y/y)



Source: GUS.

Figure 1.2. Average capacity utilisation



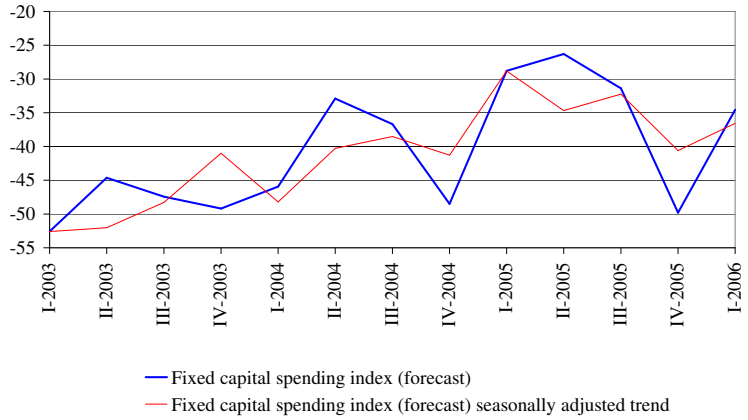
Source: NBP quick monitoring survey data.

absorption of European Union structural funds should contribute to strengthening this trend as well.

Currently, on the basis of the results of NBP macroeconomic projection, it may be stated that the high level of capacity utilisation will most probably cause the rapid investment growth to continue. Moreover, the historically low interest rates as well as the considerable amount of funds accumulated by enterprises, enabling them to fund new projects, should contribute to rising investment. However, despite the generally optimistic assessment of the economic situation, factors that may constitute risks to future growth are present. Uncertainty concerning the government's future economic policy may prompt undertakings to postpone investment decisions. As evidenced by the events of late 2004 and early 2005, high capacity utilisation ratios are not by themselves a sure sign of a future surge in investment.[3]

[3] At the end of 2004, as at the end of 2005, a very high degree of enterprise capacity utilisation was observed and all market analysts expected a considerable acceleration in investment in 2005. However, the data

Figure 1.3. New investment index – corporate expectations



Source: NBP quick monitoring survey data.

Problems with absorbing EU funds, which may occur due to complicated procedures, could be another factor threatening investment growth.

While analysing the possible scenarios of further economic developments, it should be borne in mind that the future course of economic processes may differ from their assessment based on NBP macroeconomic projection. The description of projection risk factors, presented in the "Inflation Report"[4], indicates the uncertainty concerning statistical data and the adequacy of the model used for the description of Polish future economic developments. The scale of this uncertainty increases in line with occurrence of new phenomena in the economy, such as globalization and the end of the period of economic growth not accompanied by a growth in employment as well as concerns about the nature of economic adjustments to the shocks that occurred in the recent years (first and foremost, the shocks related to Poland's accession to the European Union).

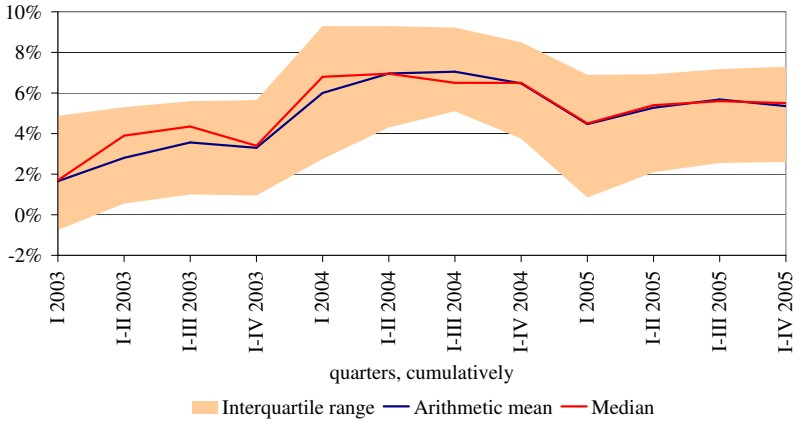
Barriers to economic growth resulting from structural weaknesses may come to light more explicitly in the period following the year 2008 than now, when the Polish economy is undergoing a recovery and the world economy is fuelled by good economic climate. If relatively high public finance deficits are maintained, they will exert a negative impact on private investment, interest rates, and public debt. Potential negligence on the part of macroeconomic policies, the fiscal and systemic reform policies in particular, especially during a shift in business cycle, puts off the moment of Poland's accession to the euro area. It will prevent Poland from taking advantage of long-term benefits, since acceleration of the economic growth resulting from accession to the euro area would be driven by an increase in investment and trade dynamics, a drop in macroeconomic risk, intensified competition and integration of financial markets.

Both lower macroeconomic risk that would result from an improvement in public finances and faster GDP growth contribute to the continued stability of the financial system.

published later by the Central Statistical Office pointed to a lower-than-expected investment growth at the beginning of 2005.

[4] "Inflation Report. April 2006", National Bank of Poland, Warsaw, April 2006.

Figure 1.4. Pre-tax profit margin by section



Source: NBP calculations based on GUS data.

1.1. Corporate sector

The financial condition of enterprises[5] may still be considered sound. However, analyses indicate significant variation within this group. The earnings of the entire sector are good – the pre-tax profit margin ratio, after a temporary slide in the first quarter of 2005, stabilised at a high level, comparable to the record high of 2004 (see Figure 1.4).

A clear division between enterprises depending on their size may be observed: the condition of large ones is the best, while that of small ones – the worst (the average profitability of enterprises in the first quartile of the size distribution is negative).

The high profitability of the entire sector and the still relatively low (in terms of the entire 2005) investment growth rate, combined with the enterprises' ability to expand their operations using own funds, meant that firms accumulated available funds as deposits and increased their bank debt only moderately.[6] The scale of those processes was, however, smaller than in 2004 – the growth of deposits was slightly slower. The total loans to corporate sector (adjusted for exchange rate movements) have also been rising since December 2004. As a result, the corporate loan-to-deposit ratio, which reflected those phenomena, declined slightly slower than in 2003 and 2004 (see Figure 1.5).

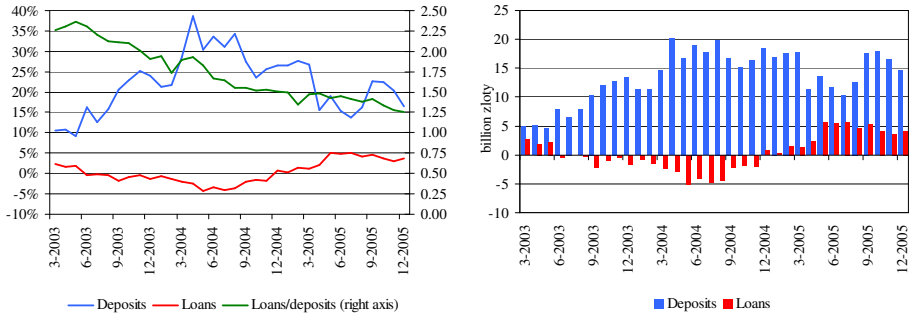
The decrease of the loan-to-deposit ratio in the corporate sector, albeit somewhat slower, reflected a further improvement in the liquidity of firms. Changes in this ratio were influenced by the enterprises' sound earnings and the shortening of the liability settlement cycle. Coupled with an increase in deposits, this led to the increase of the cash and quick liquidity ratios to record highs in the third quarter of 2005 (see Figure 1.6).

The aforementioned increase in loans pertained primarily to the largest enterprises, those that invested and exporters. At the same time, the composition of corporate bank debt was

[5] The analysis presented in this section primarily pertains to enterprises employing more than 49 persons, based on the data reported on F-01 forms to the Central Statistical Office.

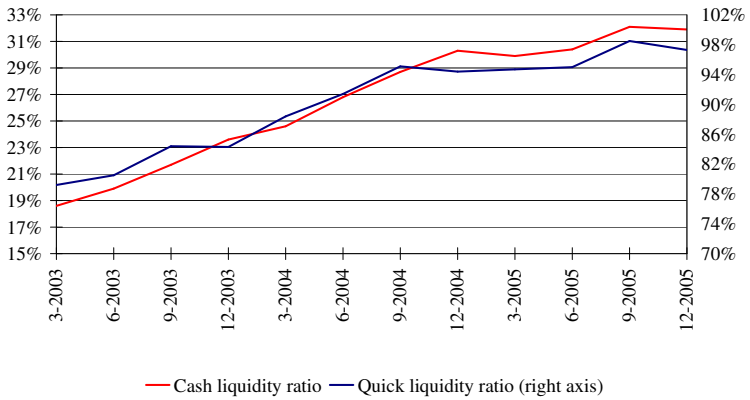
[6] At the initial phase of an investment cycle, a slow growth rate of lending of banks should be deemed typical, as long as high profitability ratios among enterprises persist.

Figure 1.5. Increase in corporate loans and deposits (y/y)



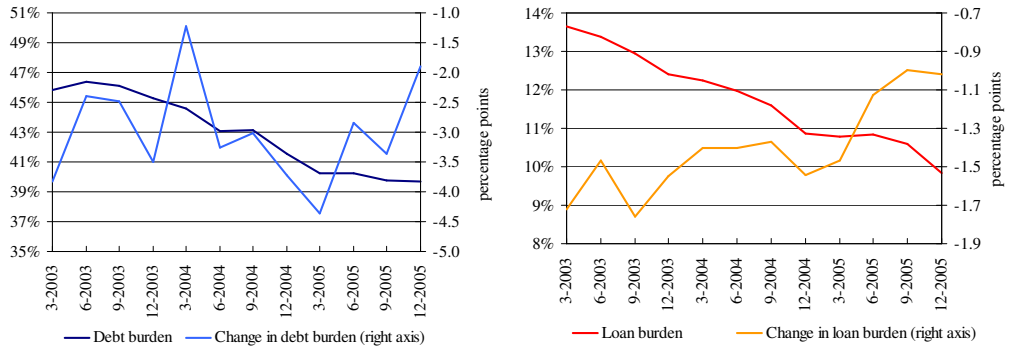
Note: Growth rates (left panel) and amounts of increases (right panel) calculated for data adjusted for exchange rate movements. Loan-to-deposit ratio calculated for unadjusted data.
Source: NBP.

Figure 1.6. Corporate sector liquidity



Source: GUS.

Figure 1.7. Debt and loan burden in the corporate sector



Note: Debt burden ratio = liabilities/total assets; loan burden ratio = bank loans/total assets; both ratios have been calculated using aggregate data for the corporate sector.
Source: NBP calculations based on GUS data.

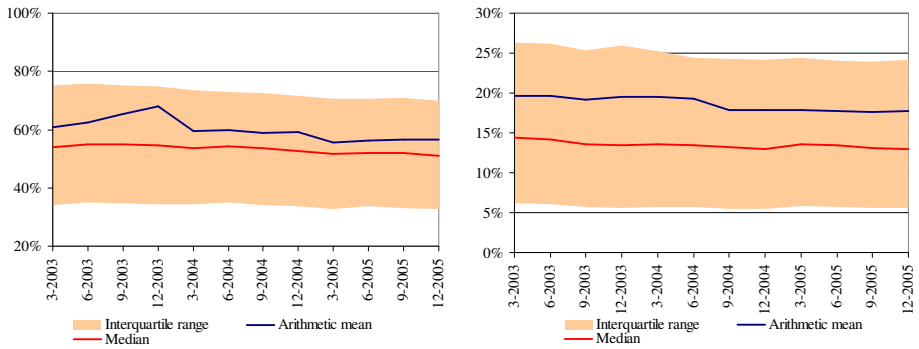
changing. Enterprises reduced foreign currency debts and increased zloty ones. From the point of view of banking sector stability, this is a favourable trend since the banks' credit risk resulting from the corporates' FX risk is reduced. It is possible that this process also reflects the growing awareness of FX risk among enterprises, since NBP data indicate that the reduction of foreign currency debt pertained chiefly to those firms that were not exporters (i.e. those that had no natural hedge against FX risk – foreign currency revenue). At the same time, surveys conducted by the NBP demonstrated the increasing use of derivatives in order to hedge open FX positions (in 2005, 34% of importers used them compared to just 23% in 2002).

In 2005, corporate debt burden ratios decreased, albeit insignificantly (see Figure 1.7). This favourable phenomenon was not, however, the result of a drop in liabilities, but stemmed from the fact that assets in the corporate sector grew faster than debt. This may signify the end of the financial consolidation process in the corporate sector; in this case, an increase in liabilities, including bank loans, will be required to fund further expansion. Stronger competition from enterprises from other EU countries as well as Asian (particularly Chinese and Indian) ones, which will probably force some domestic firms to increase their productivity rapidly, may also contribute to the rising demand for loans.

Data pertaining to individual enterprises confirm the continuing trend towards a decrease in both the debt and loan burden, particularly at firms which have the highest debt burden (see Figure 1.8). This is favourable from the perspective of financial system stability, as a reduction in the borrowers' financial leverage ratios usually mitigates their risk of bankruptcy. At the same time, the financial cost and interest burden ratios stabilised at levels similar to the corresponding periods of the previous year (see Figure 1.9).

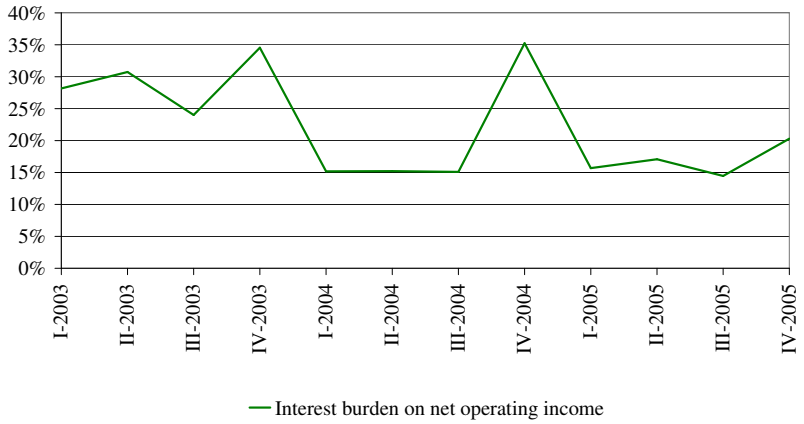
Another group of companies that reduced their debts were enterprises exhibiting a very good financial standing (with pre-tax profit margin ratios of over 10%). It was possible due to the still high financial results of economic entities. At the same time, the banks' exposure to enterprises that recorded losses grew (from zloty 15.3 billion in the fourth quarter of 2004 to

Figure 1.8. Dispersion of debt (left panel) and loan burden ratios (right panel)



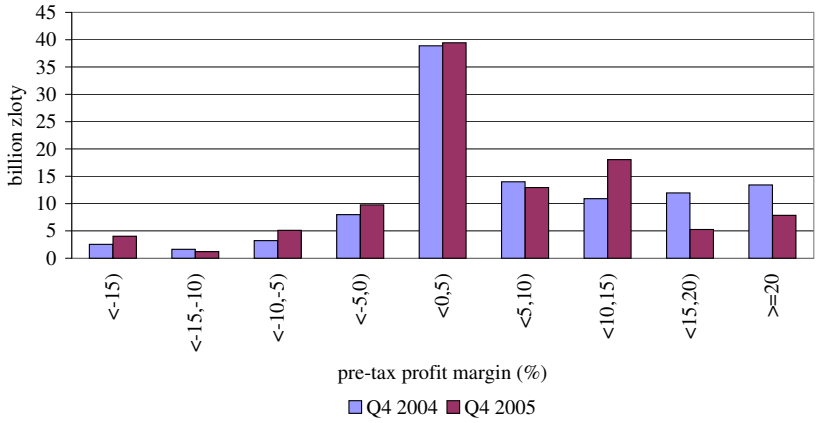
Note: Debt burden ratio (left panel) = liabilities/total assets; loan burden ratio (right panel) = bank loans/total assets; the ratios have been calculated using micro data for individual enterprises on the basis of GUS F01 reports; distribution means are substantially higher than aggregate burden ratios, since only borrower enterprises were considered.
Source: NBP calculations based on GUS data.

Figure 1.9. Interest burden on net operating income in individual quarters



Note: Interest burden on net operating income = interest included in financing costs/(operating profit – operating loss).
Source: NBP, GUS.

Figure 1.10. Distribution of bank loans by borrower enterprise profitability



Source: NBP calculations based on GUS data.

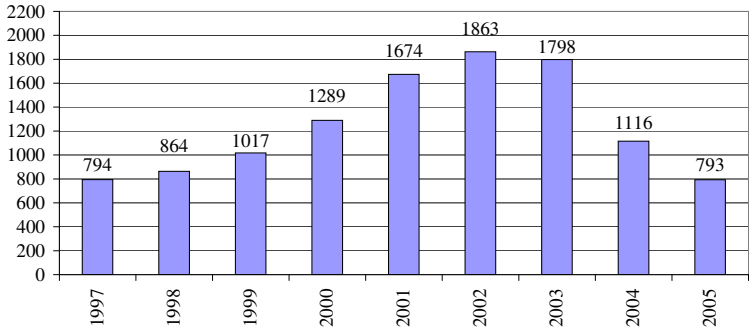
20.1 billion in the fourth quarter of 2005, i.e. from 14.7% to 19.4% of loans to corporates). As a result, the enterprises that were the banks' safest customers (the most profitable ones) used the improved economic climate primarily to repay their earlier liabilities to banks. Thus, the risk present in the banks' portfolios (understood as the ratio of expected losses to portfolio value) grew (see Figure 1.10). Given the generally better financial situation of the corporate sector, the absolute increase in lending to firms that record losses indicates that banks may expect a further upswing in economic climate and an improvement in the standing of undertakings that are currently unprofitable. The increase in relative exposure to riskier customers may mean that banks are trying to boost their interest income in this manner (through higher margins charged for the credit risk incurred and assuming that a further improvement in economic climate will help those enterprises that are currently running losses and have obtained funding from banks to achieve positive earnings).

The interpretation of the increased exposure to enterprises whose financial condition is currently unfavourable as a deliberate action on part of the banks, which aim, among other things, to enhance their interest income, is confirmed by the fact that credit risk in the corporate sector, as measured by the number of bankruptcies and arrangements, is low. The number of bankruptcies and arrangements in the corporate sector has currently dropped to the 1997 level, i.e. one recorded during the economic boom (see Figures 1.11 and 1.12). In terms of individual months, however, the end of the downward trend in arrangements and bankruptcies may be observed since in the second half of 2005 their number was slightly higher than in the first half.

1.2. Household sector

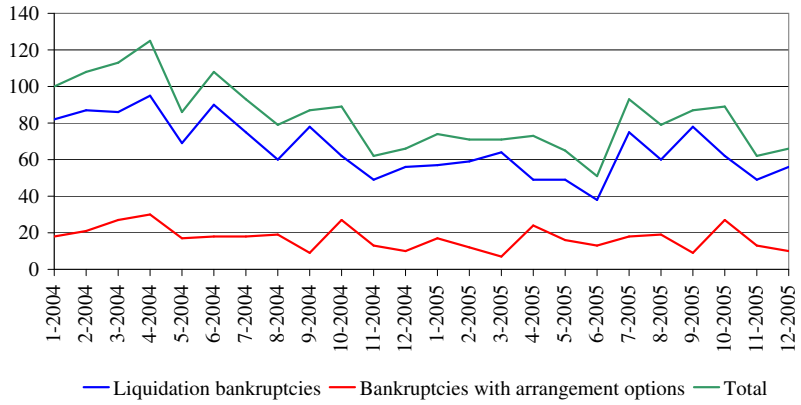
The improvement in general economic situation also boosted the financial condition of households in 2005. In line with the expectations formulated in the latest *Financial Stability Review*, the household consumption growth rate increased in the second half of the year. This was

Figure 1.11. Bankruptcies and arrangements in Poland, 2004–2005



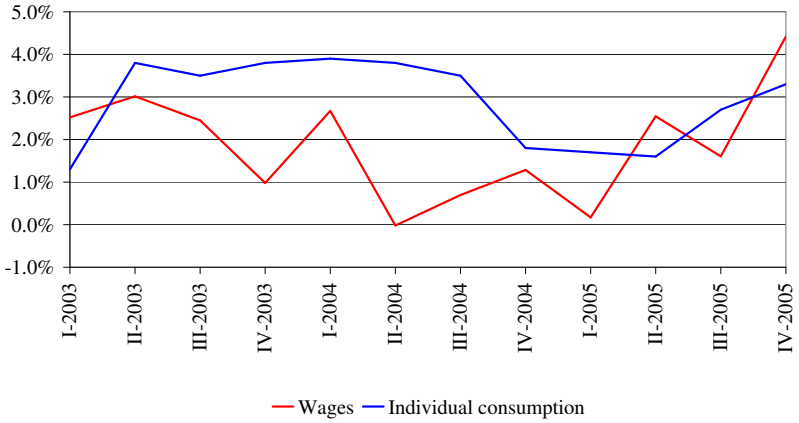
Source: Coface Intercredit, http://www.cofaceintercredit.pl/.

Figure 1.12. Bankruptcies and arrangements in Poland, by type, 1997–2005



Source: Coface Intercredit, http://www.cofaceintercredit.pl/.

Figure 1.13. Increase in real wages vs. household consumption (y/y)



Note: Wages deflated by CPI.
Source: NBP estimates based on GUS data.

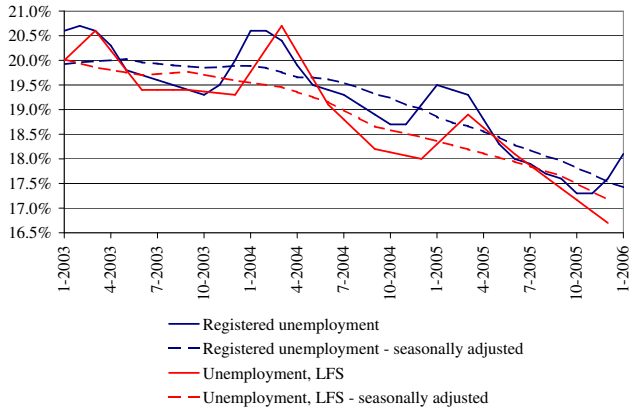
brought about by a considerable rise in real wages (by 4.4% year-on-year in the fourth quarter of 2005) and an improvement in labour market conditions (reflected by an increase in employment and the continuing downward trend in unemployment).

The increase in employment certainty caused by the improvement in labour market conditions as well as rising wages fuelled the households' demand for loans. Combined with declining nominal interest rates, the improvement in the financial standing of households also led to the increase in the number of households meeting minimum credit standards. At the same time, banks eased their lending policies due to strong competition (as indicated by the results of Senior Loan Officer Opinion Survey, SLOS). The increase in both demand and supply on the loan market led to a rapid growth in lending to households, particularly in the housing loan segment (see Figure 1.15).

The improvement in the financial condition of households led not only to an increase in demand for loans, but also to a rise in the households' financial assets. Investment fund assets grew at the highest rate. Throughout 2005, the assets of funds in which individuals could participate rose by zloty 23.3 billion (i.e. by 68%), of which cash inflows accounted for zloty 18.5 billion. This proved that the increase in the amount of savings accumulated was not only the result of the recovery on the WSE and the debt market. Unfortunately, since data for individual households are not available, no further conclusions can be drawn concerning the distribution of financial assets and the relationship between the financial assets held and the loans contracted. It may be supposed, however, that the simultaneous rapid growth in lending and financial assets of households means that financial assets are concentrated in those households that do not have to use property loans currently.

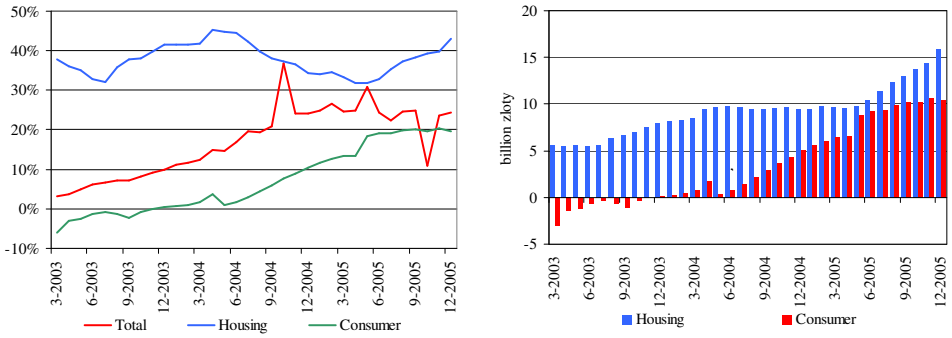
The analysis of aggregate data yields a very optimistic picture of household loan burden (see Figure 1.16). Currently, total household debt does not exceed 2.5 times monthly gross disposable income of households. However, existing data indicate that this debt is very

Figure 1.14. Registered unemployment and unemployment according to Labour Force Survey



Source: GUS, seasonally adjusted by NBP.

Figure 1.15. Increase in loans to households, y/y – growth rate (left panel) and amounts of increases (right panel)



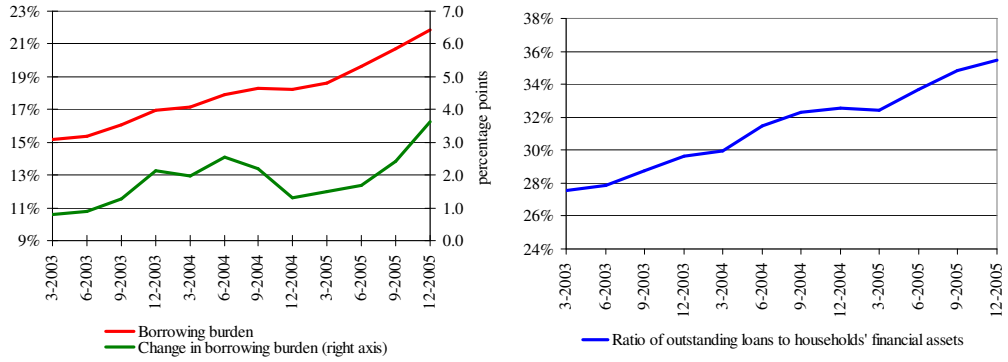
Note: Data adjusted for exchange rate movements. Total loans include loan categories other than housing and consumer loans as well, e.g. loans for the purchase of securities. Significant changes in total loan growth in October 2004 and 2005 were the result of PKO BP privatisation.
Source: NBP.

Table 1.1. Financial assets of households

	Year end (billion zloty)	Change y/y (billion zloty)	Change y/y (%)	Structure (%)
Total, of which	398.0	44.8	12.7	100
1. Bank deposits, zloty	185.7	9.0	5.1	46.7
2. Bank deposits, foreign currency	32.7	2.2	7.2	8.2
3. Assets at investment funds[1]	57.8	23.3	67.5	14.5
4. Life insurance undertakings[2]	42.6	7.4	20.9	10.7
5. Deposits at credit unions	5.0	1.1	27.0	1.3
6. Treasury bonds	15.2	-1.8	-10.5	3.8
7. Treasury bills	1.6	-1.7	-50.9	0.4
8. Notes and coin in circulation (excluding vault cash)	57.2	6.4	12.6	14,4
9. Bank bonds	0.2	-1.0	-8.63	0.0

[1] No account has been taken on figures given by funds that are known to handle only corporate clients.
[2] Figures represents the value of technical provisions in life insurance (including provisions where investment risk is borne by the policyholder).
Source: NBP.

Figure 1.16. Loan burden in the household sector



Note: Loan burden ratio (left panel) = loans to households (residents)/annual gross disposable income.
Source: GUS, NBP.

concentrated – only an estimated 30% of households have debts currently,[7] while only 3% of households have housing loans outstanding. The share of housing loans in the overall loans to households portfolio in December 2005 came to 37.1%.

Due to the optimism on part of households and banks, loans grew more rapidly than household disposable income. As a result, the household loan burden increased; its growth rate rose in the second half of 2005. In spite of this, the burden ratio remains low compared to other EU countries, which is the result of the relatively low level of indebtedness in Poland.

In recent discussions, the question emerged whether the loan growth rate in Poland was excessive or not. The main source of growth in the lending of banks in Poland are loans to households. However, international surveys of this phenomenon relate, in most cases, to the growth of total loans. In this context, it is worth comparing the situation in Poland to that of some other EU countries. During periods of rapid growth in lending in Portugal, Ireland and Greece, the loan-to-GDP ratio doubled in around eight years.[8] This had no adverse effects such as any significant macroeconomic imbalance or a sizeable increase in inflation. In order for the loan-to-GDP ratio in Poland to double within eight years (i.e. from 26.5% in December 2005 to 53% in December 2013), the overall loan portfolio would have to grow by 16.8% each year in nominal terms (assuming GDP growth in line with the projection – at 4.5%, and inflation in line with the MPC target – at 2.5%). In 2005, the overall loan amount grew by 13.1%. Although this growth rate is higher than the average lending growth in 2003–2005 (7.7%), it remains lower than the growth dynamics observed in the aforementioned countries. Assessment of the impact of such lending growth rate on financial system stability depends on macroeconomic and institutional conditions in which the growth takes place. It is particularly important whether, in the forthcoming years, appropriate macroeconomic policy, coherent with Poland's accession to the euro area, will be conducted, and whether necessary structural reforms will be implemented. If these conditions are fulfilled, the data presented

[7] Debt includes liabilities to banks and other entities.
[8] In those countries, the rapid growth in loans was also, to some degree, linked to financial market deregulation.

may lead to a statement that the lending growth rate is not excessive at the moment.

Whilst coming to such conclusion, differences in the circumstances in which the lending growth took place in the economies under review should be borne in mind. Institutional conditions underlying the growth in lending have an impact on the emergence of additional sources of risk or on risk reduction. In Portugal, Ireland, and Greece, high growth of lending took place in the circumstances of, among other things, progressing liberalization of services markets. Experience to date shows that a rapid increase in loans occurring simultaneously with financial market liberalisation processes may constitute a significant factor in the emergence of financial crises. It results from the fact that financial institutions offer new financial products whose risk structure has not been fully diagnosed. Deregulation processes in Poland, however, were completed several years ago, thus they do not constitute a risk factor. On the other hand, additional risk sources may be indicated. They result from smaller than in EU15 countries experience of some borrowers in drawing financial commitments. It means that a risk arises of some households making excessively optimistic assessment of their loan repayment capacity, what may lead to immoderate growth in demand for loans.

On the basis of the presented comparative analysis of loan growth rate in Poland a conclusion may be drawn that the observed lending growth rate does not pose an imminent threat to banking system stability. Nevertheless, this process needs to be closely monitored.

The relatively rapid growth of housing loans was not accompanied by significant changes in debt service burden ratios. In 2005, the overall housing loan service burden ratio grew by only 0.13 percentage points (i.e. 13.3%) to 1.19%. The zloty housing loan service burden decreased, so the upward movement in the ratio was the result of the relatively rapid rise in the foreign currency housing loan service burden, which went up by 0.14 percentage points, i.e. 35.4%, to 0.53%.

The levels of household debt service burden and interest burden ratios in Poland are low compared to the euro area, which may suggest a relatively large reserve in the households' ability to repay their liabilities. It should be remembered, though, that those ratios have been calculated for aggregate data and include all households, and not only those that have bank debts. In view of the low utilisation of bank loans,[9] the actual loan service burden of borrower households is higher.

Box 1. Analysis of household liability service burden using individual data

The debt and debt service burden ratios calculated using aggregate data for the entire household sector do not yield the complete picture of the risk to financial system stability. Data concerning the burden of households in individual income brackets are also important, since a greater burden on those household groups whose financial condition is less favourable may translate to a higher probability of default if lending rates rise or the zloty depreciates.

[9] According to a survey by Pracownia Badań Społecznych, a market research company, around 10% of households had bank debts in 2004: 3% of respondents reported mortgage loans and 7% – consumer loans. Source: "Raport z badania na temat korzystania z produktów finansowych przez Polaków," PBS, April 2005.

Results of the Central Statistical Office (Główny Urząd Statystyczny – GUS) surveys entitled "Household Budgets" (*Budżety gospodarstw domowych*) give some insight into debt burden distribution. Apart from a significant amount of data on consumption expenditure, households participating in the survey also declare the amounts of debt service payments, broken down into four categories: building society loans, other bank loans, loans from other financial institutions, and loans from private persons.

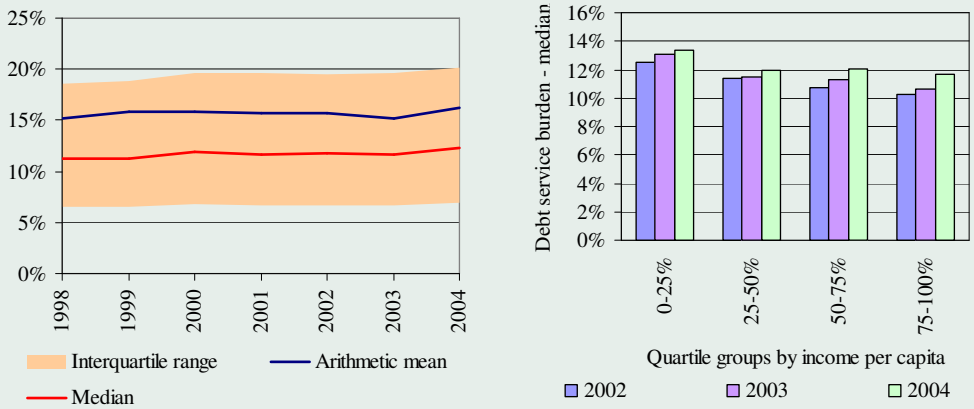
For the purpose of analysis of the distribution of household debt service burden, two ratios have been defined: the debt service burden ratio and the bank loan service burden ratio. The debt service burden ratio is the proportion of payments arising from all four debt servicing categories in total household income. On the other hand, the bank loan service burden ratio is defined as the proportion of payments arising from building society loans and other bank loans in total household income. The ratios were only calculated for those households that indicated a non-zero amount related to debt payments in any category during a given month (each household reported its expenditure for one month of the year when the survey was conducted). The subsample of households which inhabit flats or houses with mortgages have also been distinguished within the sample of households taken into account for calculation of the loan service burden ratio. For this subgroup, the dispersion and distribution of the loan burden ratio have been calculated separately, which should provide some data on the mortgage burden on households.[1]

Survey data indicate that the proportion of households that indicated any debt servicing expenditure during the survey month amounted to 30.4% in 2004 and was by one percentage point lower than in 1998. On the other hand, the proportion of households indicating bank loan payments increased (from 18.8% in 1998 to 22.1% in 2004) during this period.

The analysis of debt service burden ratio dispersion shows that a higher number of households exhibited relatively high debt service burden ratios. This is evidenced by the fact that the mean exceeds the median, which represents the typical burden ratio level (see Figure 1, left panel). During the seven-year period covered by the survey, household debt burden did not increase considerably – the mean and the median rose by just one percentage point. The absence of significant increases in the debt service burden ratio despite the rapidly rising household debt during the period under examination was the result of an improvement in the households' financial standing as well as a drop in interest rates, which reduced interest payments.

From the viewpoint of financial system stability, the distribution of debt burden among households depending on per capita income is highly significant. Household budget surveys indicate that households in the lowest income bracket (the first quartile group in terms of equivalent income per household member according to the OECD equivalence scale) exhibit the highest debt service burden. The household burden ratio did not vary significantly among the remaining income groups in 2004 (see Figure 1, right panel).

Figure 1. Household debt service burden – dispersion (left panel) and distribution in terms of equivalent income per person (right panel)

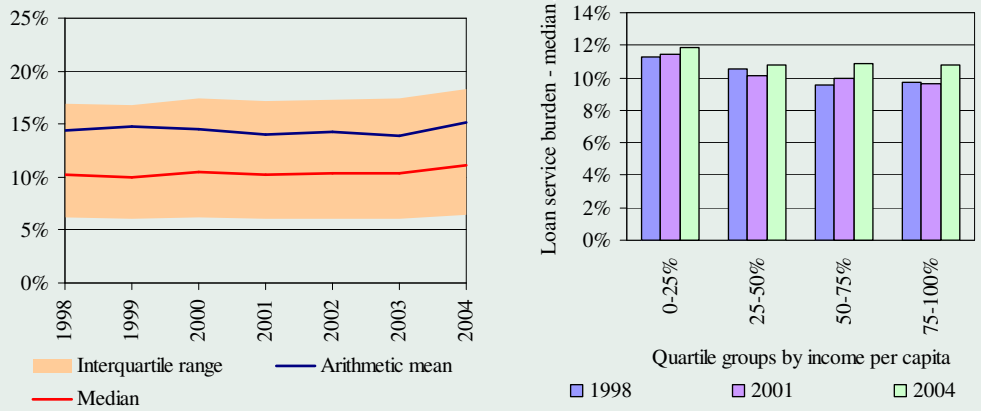


Source: NBP calculations based on GUS data.

Among individual household debt burden components, the largest part of debt payments is related to bank loans, therefore the loan service burden is only slightly lower than the debt service burden. The loan service burden ratio remained stable between 1998 and 2003, but grew in 2004 (see Figure 2, left panel). These changes may be explained by the rate of growth in loans to households, which was higher in 2004 than in the preceding years. It appears that in 2004, the impact of this factor prevailed over trends which had contributed to the reduction of the ratio in previous years, i.e. the decrease in interest rates and the increase in household income. Despite the fact that no 2005 data are available yet, it may be confidently expected that in 2005 the loan service burden increased, since the banks' lending accelerated during this period. It should, however, be taken into account that household debt grew largely due to housing loans. Since such loans are usually extended for longer periods and at lower interest rates than consumer loans, their impact on the increase in loan servicing burden is smaller than in the case of other loans (lower average principal instalments and average interest payments).

The distribution of the loan service burden as a proportion of household income is similar to that of the debt burden ratio (see Figure 2, right panel). Lowest-income households (in the first quartile group) exhibit the highest burden ratios, but differences compared to other income brackets are not very significant. There is also a weak trend towards an increase in the loan service burden in higher-income groups (third and fourth quartile groups). Higher loan burden ratios for households in lower income brackets are typical of EU-15 countries. In Poland, a significant increase in burden may be particularly important for financial system stability, since potential defaults on credit liabilities may occur for lower burden ratios due to the fact that the proportion of basic living costs in total consumption expenditure is higher for Polish households than for EU-15 ones.

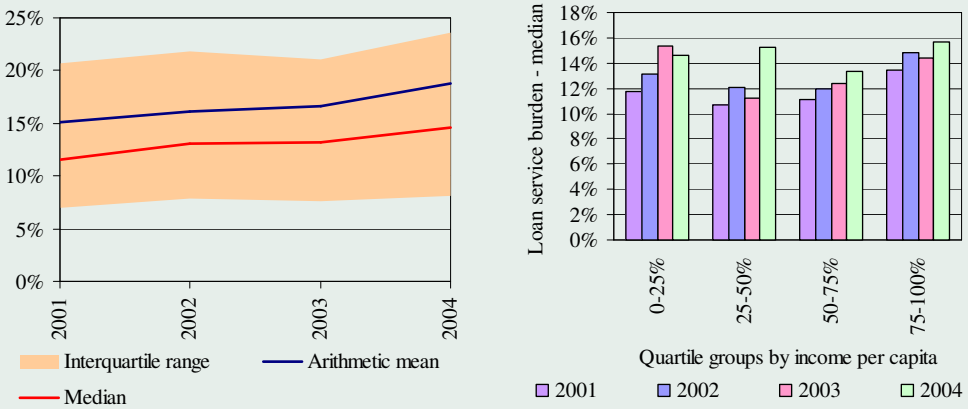
Figure 2. Household loan service burden – dispersion (left panel) and distribution in terms of equivalent income per person (right panel)



Source: NBP calculations based on GUS data.

For households inhabiting flats or houses with mortgages, the loan burden ratio has grown more rapidly. The Central Statistical Office survey only makes it possible to examine this household subsample separately from 2001 onwards. Despite the fact that the analysis covered a shorter period, the household loan burden in this subsample has risen significantly – the mean ratio has increased by 3.7 percentage points, and the median has grown by 3 percentage points. Mean and median increases were chiefly the result of the rising number of households with relatively higher burden ratios, which is evidenced by an increase in the upper quartile by 2.9 percentage points and the widening of the interquartile range.

Figure 3. Household loan service burden for households living in flats or houses with mortgages – dispersion (left panel) and distribution in terms of equivalent income per person (right panel)



Source: NBP calculations based on GUS data.

The distribution of loan service burden as a proportion of household income in this subsample is more dispersed than for debt and loan burden ratios both over time[2] and between quartiles. The loan service burden for households that are repaying housing loans has increased significantly in all income quartile groups, but between 2001 and 2004 this ratio

grew the most in the first two quartile groups. This appears to be a sign that the banking sector has matured and has extended services to new customer segments. Initially, housing loans were extended primarily to households with higher average incomes. As interest rates decreased and the banks' lending policies were eased, mainly as a result of extended loan terms and a reduction in loan margins, loans have also become available to households with lower average incomes. Therefore further movements of the loan burden ratio for quartile groups with lower per capita income should be observed, especially that the easing of credit standards as well as loan terms and conditions in the housing loan segment was primarily caused by increased competition among banks.[3]

The loan service burden ratio for households inhabiting flats or houses with mortgages may be compared to the mortgage debt service-to-income ratio calculated by the ECB on the basis of the European Community Household Panel survey conducted in EU-15 countries.[4] For EU-15 countries, where the median for the years 1996–2001 was around 20%, this ratio is higher than in Poland (where the median grew from 11.6% in 2001 to 14.5% in 2004), despite the fact that the ratio calculated by the ECB only takes into account the burden arising from housing loan repayments. Therefore, compared to EU-15 countries, the potential exists in Poland for the further growth of housing loan burden. At the same time, the distribution of the mortgage debt service ratio among individual income groups in EU-15 countries[5] indicates that in lower income brackets, the housing loan service burden is higher than the average. It should, however, be pointed out that the proportion of fixed consumption expenditure in Polish household budgets is higher than in more affluent EU-15 countries. Therefore it cannot be ruled out that in Poland the level of housing loan burden that is safe for banks may be lower, particularly with regard to households with lower average incomes.

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[1] The manner in which this household subgroup has been distinguished does not guarantee that the loan burden is the result of a mortgage loan only, since the household may be repaying e.g. a consumer loan that is not secured by mortgage at the same time. From the point of view of banking sector stability, however, it is important to determine the actual household burden and not only the burden arising from the repayment of mortgage loans.

[2] The higher variance is partly attributable to smaller subsample size.

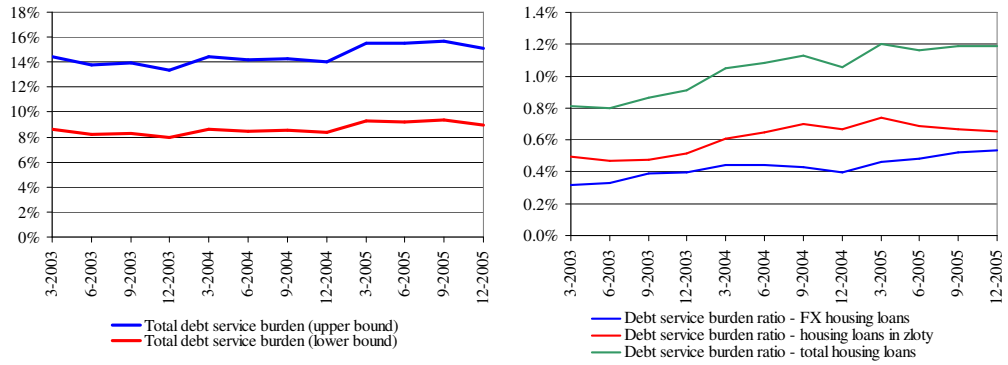
[3] See "Senior Loan Officer Opinion Survey on Bank Lending Practices and Credit Conditions," NBP, 2004–2005.

[4] See "Monthly Bulletin," ECB, December 2005, available at: http://www.ecb.int/pub/mb/html/index.en.html, pp. 45–48.

[5] See "Monthly Bulletin," ECB, December 2005, available at: http://www.ecb.int/pub/mb/html/index.en.html, p. 47.

The difference between the burden calculated based on aggregate data and individual data may be considerable. For example, the household mortgage debt service burden ratios in the euro area estimated by the ECB using macroeconomic data (national accounts data including all households) are equal to only one quarter of the ratios yielded by microeconomic data

Figure 1.17. Overall debt service burden (left panel) and housing loan service burden (right panel) in the household sector



Note: The debt service burden is the ratio of total principal and interest instalments paid by households to disposable income. Due to lack of data on maturity of consumer loans, the average maturity of one year (upper limit) or two years (lower limit) has been assumed.
Source: NBP calculations.

(European Community Household Panel data).[10] Due to the fact that around 20% of euro area households have contracted mortgage loans, while in Poland the proportion is much lower, it should be expected that the difference between burden measures calculated in those manners will be even larger here. Box 1 presents a preliminary analysis of household liability service burden using individual data.

Currently, the household debt service burden may increase significantly, since in the beginning, housing loans were extended to households with higher average incomes. With time, lending maturities were extended and other loan terms and conditions were eased. Currently, it is possible that loans are granted to households that have smaller safety buffers against a rise in loan interest rates or a depreciation of the zloty against the euro and the Swiss franc.

[10] Source: "Monthly Bulletin," December 2005, ECB, pp. 45–48.

Chapter 2.

Financial Markets and Property Market in 2005

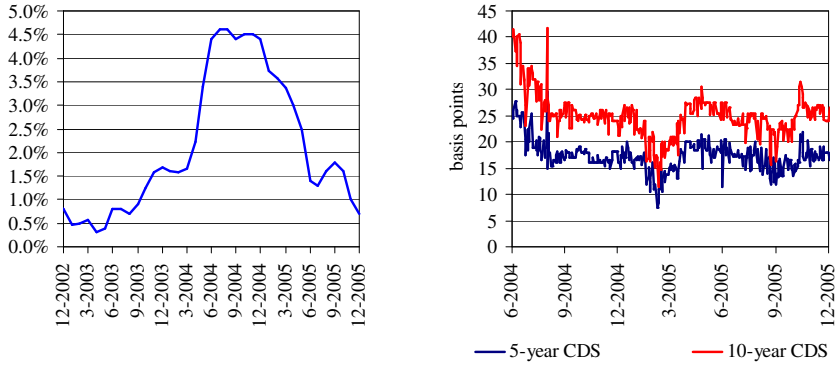
The price trends observed on financial markets in Poland in 2005 changed only slightly in comparison with the developments in the second half of 2004. The most important changes consisted in a slow-down of the zloty appreciation and the waning of expectations of further interest rate cuts towards the end of the year.

Inflation expectations and the related expectations concerning interest rate changes constituted the main factors that shaped the quotations of financial instruments on domestic financial markets. Investors' attitude was also strongly influenced by their uncertainty as to the direction of the economic policy of the government following the parliamentary elections, which had an impact on the rise of risk premium (observed in the quotations of Credit Default Swap contracts[11] – see Figure 2.1), which translates to an increase in the yield of Polish Treasury bonds.

The developments on world markets also had a big impact on the trends on the Polish financial market. Interest rates (especially short-term rates) on core markets in the years 2001-2005 remained low, compared to their level in the second half of the 1990s (see Figures 2.2 and 2.3). A low rate of return on assets on markets in the most developed countries prompted investors to place their resources on less developed markets that offered higher rates of return but at the same time involved higher investment risk. In these conditions, investments on the Polish financial market offered investors an attractive ratio of the achievable rate of return to the risk incurred. As a result, foreign capital flowed into the Polish stock market and Treasury bond market, which contributed to the zloty appreciation. The rise of interest rates in the USA, having an impact on the cost of refinancing by some investors of their positions in Polish instruments, contributed to curbing of the growth of involvement of non-residents on the Polish bond market in the second half of 2005, and to its subsequent decline. The yields

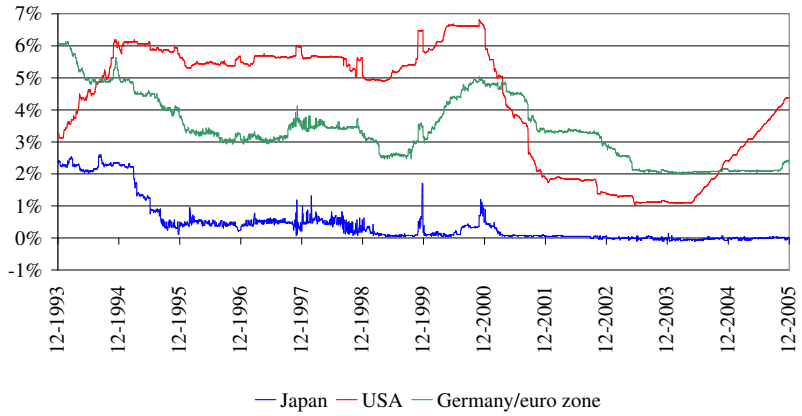
[11] In a CDS transaction, the credit protection buyer makes periodic payments, typically expressed in basis points of the value of a given underlying instrument. In return for that, the credit protection seller agrees to pay out a financial benefit in the case of growth in the credit risk of the underlying credit instrument. The payment may be effected in the case of bankruptcy of the borrower, lowering of the borrower's credit rating, delay in interest payments, etc., defined in the agreement as a credit event, event of default or default. See Mirosław Pawliszyn, "Development of the market of credit derivatives", Bank and Credit 11-12/2004.

Figure 2.1. Inflation – Consumer Price Index (y/y, left panel) and premium on Credit Default Swap contracts on Polish Treasury Eurobonds (right panel)



Source: GUS, Thomson Datastream.

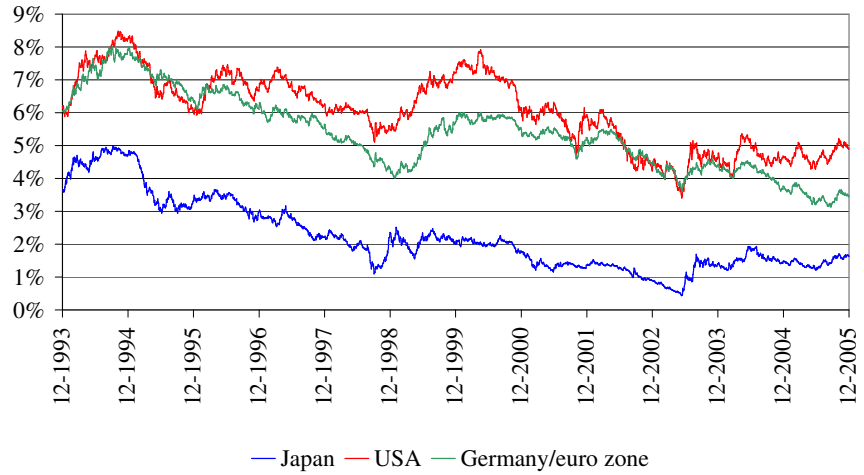
Figure 2.2. One-month interbank-market interest rates on core markets



Source: Thomson Datastream.

on Polish bonds, being on a downward trend as a result of interest rate cuts, limited their attractiveness for investors who considered a purchase of bonds and their long-term holding in the portfolio. However, it should be noted that expectations of interest rate cuts (leading to a rise in prices of fixed coupon Treasury bonds), observed during most of the period under review, encouraged investors to purchase bonds in order to record short-term capital gains, which could in turn lessen the effect of growth of refinancing costs. An additional factor encouraging short-term investors to purchase Polish bonds was the evident upward trend of the zloty.

Figure 2.3. Ten-year interest rates (IRS rates) on core markets



Source: Thomson Datastream.

2.1. Interest rates

The factors shaping both the level of short-term interest rates and the yield of long-term instruments in 2005 were changes in inflation and in inflationary expectations as well as in the related expectations as to the reaction of the monetary policy. The year 2005 saw a drop in inflation, which was linked to evaporating effects of the factors which triggered a one-off rise of price levels in 2004.

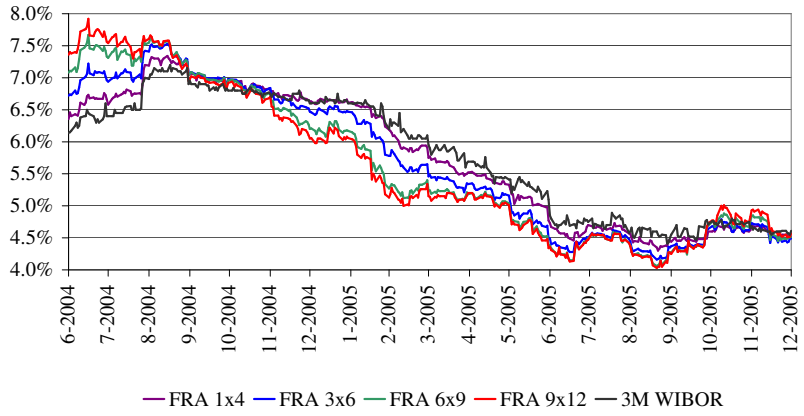
As of the beginning of 2005, together with the decline in inflation and the adoption by the MPC of the easing bias in the monetary policy, expectations of interest rate reductions appeared on the market. They were evident in FRA contracts quotations (see Figure 2.4). The anticipation of interest rate reductions was the strongest at the turn of the first and the second quarter, when FRA quotations pointed to expectations of interest rates cuts of 75–100 basis points by the end of the year.

The sustained downward trend in interest rates remained in place throughout the first half of 2005. In line with the declining inflation and falling interest rates, expectations of further rate cuts waned in the third quarter. In the last months of the year, money-market interest rates and FRA quotations rose slightly, which was influenced by an increase in Treasury bond yields.[12] A comparison of the path of money-market rates with interest rates anticipated for a given period derived from FRA contracts (see Figure 2.4) shows that until the period directly preceding the beginning of the rate cut cycle investors did not expect a rapid decline in interest rates in 2005.

Treasury bond yields behaved similarly to money-market interest rates. At the end of the first quarter, upon the emergence of strong expectations of interest rate cuts in a one-year perspective, the yield curve of Treasury bonds with longer maturity flattened out (see Figure 2.6). This could suggest that market participants expected long-term stabilization of interest

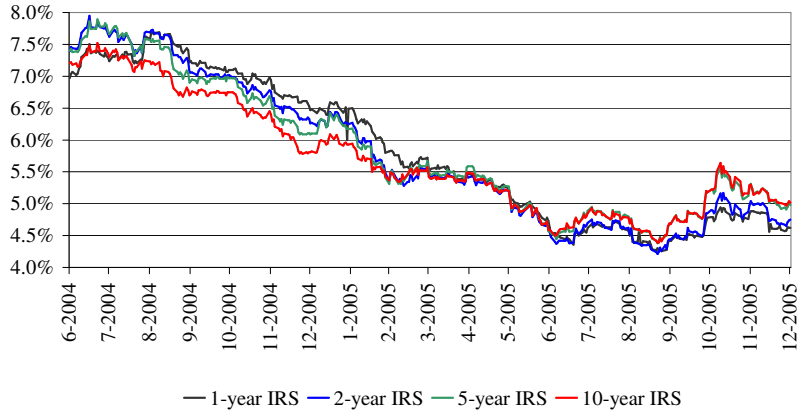
[12] The rise of short-term interest rates in a situation of growing bond yields was influenced by the possibility to carry out arbitration by market participants in the case of no reaction on the part of short-term rates.

Figure 2.4. FRA quotations on the 3-month interest rate versus 3M WIBOR rates



Source: NBP.

Figure 2.5. Long-term interest rates – IRS rates



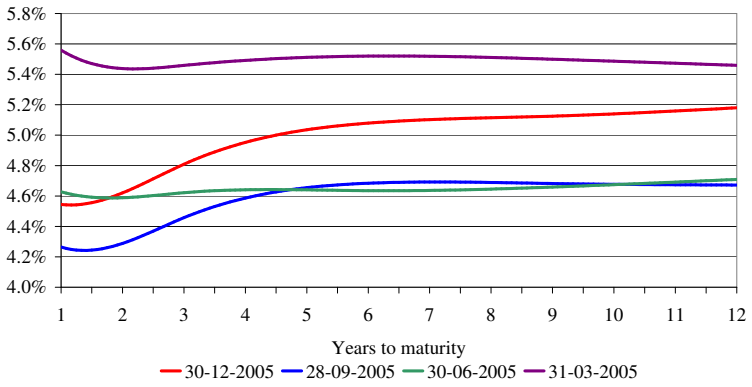
Source: NBP.

Table 2.1. Interest rates on the Polish market in the years 2003–2005, %

	12.2003	12.2004	12.2005	Change in 2004	Change in 2005
NBP reference rate	5.25	6.50	4.50	1.25	-2.00
WIBOR 3M	5.55	6.60	4.61	1.05	-1.99
Yield on Polish 2-year Treasury bonds	6.28	6.24	4.40	-0.04	-1.84
Yield on Polish 10-year Treasury bonds	6.60	5.80	5.01	-0.80	-0.79

Source: NBP.

Figure 2.6. Changes in the shape of the zero-coupon yield curve



Source: NBP.

rates after the expected reductions.[13] A further decline in inflation and interest rates in the second quarter resulted in a uniform lowering of the yield curve over all maturities.

An important factor shaping the Treasury bond yield were changes in the involvement of foreign investors on this market (see Figure 2.7). This was the main channel of impact of the developments on global markets on the Polish bond market, especially visible in March and October – in the periods of increase in bond yields. The drop in bond prices in the first half of the year was induced by high oil prices.[14] The rising oil prices increased the uncertainty as to the outlook for inflation in the USA, which brought about an increase in expectations of rate hikes by the Federal Reserve and, in consequence, a decline in US bond prices. In order to compensate for losses incurred on the US market, some global investors realized profits gained on investments outside the core markets, which slowed the inflow of foreign capital to the Polish bond market, and contributed to the occurrence of a short-term correction on this market (see Figure 2.7). Persistent interest rate cut expectations contributed to the return of an increased involvement of foreign investors, whose market share reached its maximum level close to 30% in August 2005.[15]

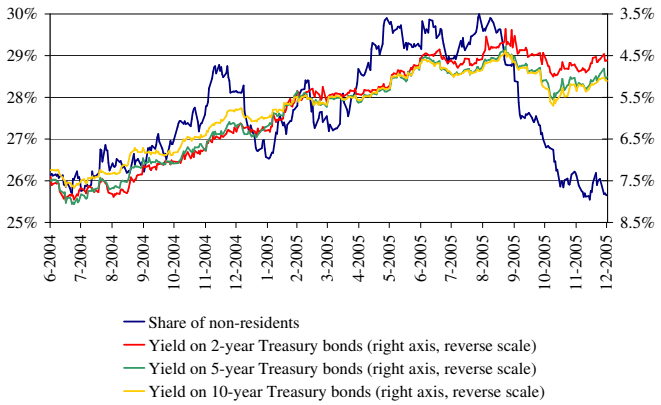
In the second half of the year, the rising uncertainty as to the future economic policy, linked to the pending parliamentary elections, had a visible impact on the bond market, causing an increase in bond yields. The waning expectations of further interest rate cuts as well as the rise of US bond yields in September prompted foreign investors to curb their engagement in the Polish bond market. An additional impulse for the decline in bond prices as a result of their sell-off by foreign investors came in the form of a breakdown of coalition-building negotiations at the end of October. Quotations stabilized at the end of the year as the government won

[13] The flat yield curve can also be construed as expectations of further interest rate cuts, under the assumption that investors expect extra premium for entrusting the issuer with capital for a long term. One may expect that the average level of such premium depends on the market share of investors purchasing bonds in order to maintain them to maturity (a higher share of this category of investors will increase the average premium level).

[14] The price of the Brent oil barrel in spot transactions in London exceeded 53 USD in the first week of March 2005, thus reaching its then all-time high.

[15] The share is calculated for the market of wholesale bonds (earmarked for institutional investors).

Figure 2.7. Share of bonds held by non-residents in the portfolio of wholesale Treasury bonds (by market value) against the yields of Polish Treasury bonds

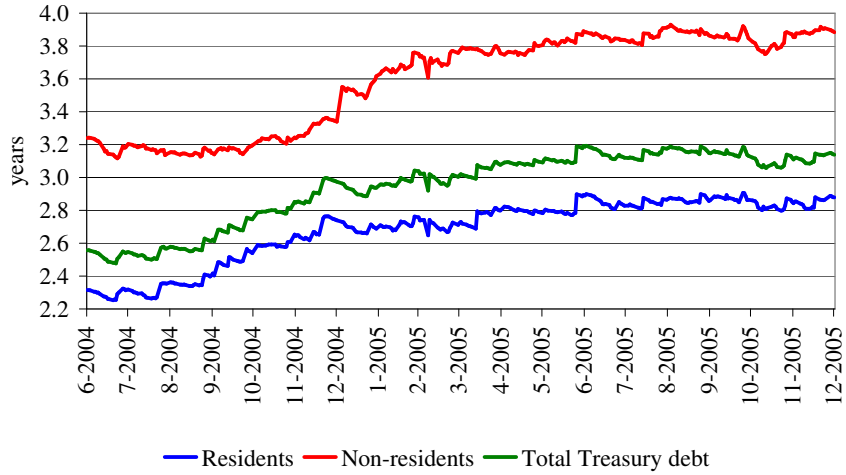


Source: NBP.

the confidence vote.

The upward trend in bond prices, visible in market quotations in the first half of the year, prompted some market participants to increase their exposure to interest rate risk. In the first half of 2005, this tendency covered all analysed investor groups, except for domestic insurance companies and investment funds. Banks operating in Poland, in spite of increasing the risk of their Treasury securities portfolio (the growth of duration), still exhibit the most conservative approach to risk on this market (the duration of the portfolio of wholesale Treasury bonds held by banks is by far smaller than the duration of the total State Treasury debt due to issues of such bonds). In the second half of the year, foreign banks became the investors most inclined to take up the interest rate risk (see Figure 2.9). Foreign non-bank financial institutions lowered the duration of their portfolios in the second half of the year; however, the portfolios of both categories of foreign investors still had higher duration than those of residents. High duration of portfolios of foreign investors may suggest that they purchased bonds with a view to post short-term gains as a result of falling market interest rates or following long-term expectations of interest rate reductions, which might have resulted from the narrowing spread of the yields of zloty-denominated and euro-denominated instruments.

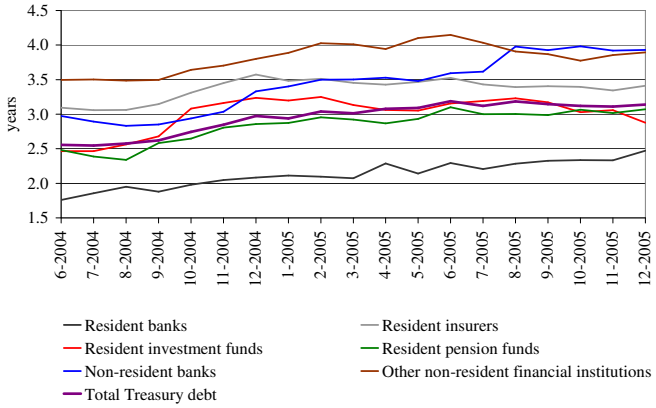
Figure 2.8. Duration of portfolios of wholesale Treasury bonds held by residents and non-residents



Note: Total Treasury debt – the average value of duration of all wholesale Treasury bonds traded on a given day

Source: NBP calculations based on National Depository for Securities (KDPW) data.

Figure 2.9. Duration of portfolios of wholesale Treasury bonds held by individual categories of financial investors



Note: Total Treasury debt – the average value of duration of all wholesale Treasury bonds traded on a given day

Source: NBP calculations based on National Depository for Securities (KDPW) data.

2.2. Foreign exchange market

In the first months of 2005, the zloty appreciation trend observed since March 2004 slowed down. However, over the whole year, the zloty strengthened by 5% to the euro (whilst in 2004, the appreciation amounted to 13%). The strengthening of the US dollar against the euro by 12% led to a weakening of the zloty against the US currency by 7%. As a result of more than a year-long appreciation, the exchange rate of the zloty to the euro was lower than the average from the previous 5 years.

After a two-month period of weakening, in the second half of the year the zloty exchange rate resumed its upward trend, which was interrupted twice by short periods of weakening in July and October. The July weakening of the zloty was linked to the rise in bond yields on the markets of developed countries, which contributed to slower foreign capital inflows onto the markets of Central Europe (see Figures 2.11 and 2.12). Depreciation of the zloty at the end of October resulted from the impact of a domestic factor – the growth of uncertainty as to the future economic policy, following the breakdown of coalition-building negotiations. Obtaining a vote of confidence by the government, which mitigated the risk related to the possible early elections, contributed to calming the market sentiment and favoured the rebound of the zloty.

Factors beneficial for the zloty appreciation to the euro prevailed throughout the year. They included good macroeconomic results, first and foremost – low inflation, low current account deficit and the accelerating economic growth. Strong expectations of interest rate reductions prompted short-term investors to purchase bonds and could also attract investors interested in short-term speculations on the money market. In the second half of the year, an additional factor beneficial for the zloty appreciation was the market exchange of foreign currency funds obtained from issues of Eurobonds by the Ministry of Finance.[16]

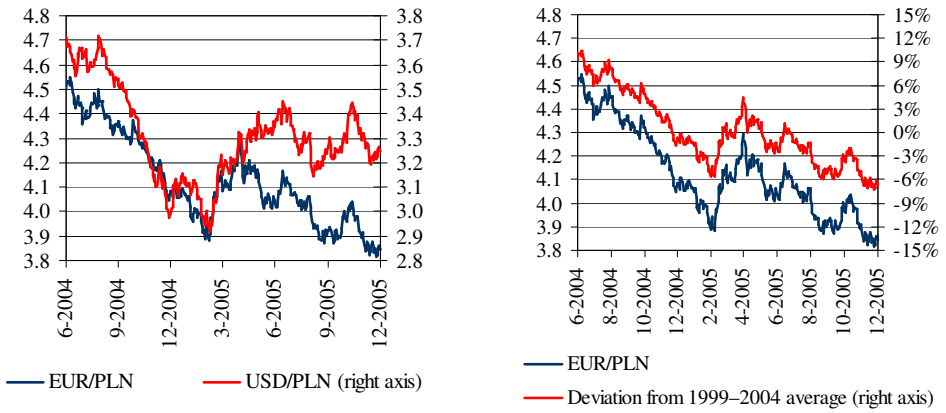
The zloty appreciation was limited by the decreasing disparity of long-term interest rates between the Polish market and the markets of the most developed countries.[17] It must be noted, however, that in the case of the market of long-term instruments, the current yield is the most important for investors planning to maintain the instrument to its maturity. For foreign short-term investors, on the other hand, expectations of changes in interest rates and exchange rates are of great significance. In a short time-span of an investment, the decisive factor is the rise of the value of debt securities portfolio expressed in foreign currencies, which takes place when market rates fall and the zloty appreciates. In a situation of expectations of further zloty appreciation and falling interest rates (which was the case in 2005), the impact of the decreasing disparity of interest rates could have been curbed.

The halted upward trend in the first half of the year and the subsequent depreciation of the zloty resulted in a rise of the implied volatility of the exchange rate, especially for options with short maturities. This indicated that investors, with the overall tendency of the zloty appreciation, took into consideration the possibility of a short-lived, rapid zloty depreciation.

[16] Changes in quotations on August 1, 2005, when the zloty appreciated against the euro by more than 1% following the public announcement by the Ministry of Finance of information concerning the foreign currency sale transactions effected in July, may serve as an example here.

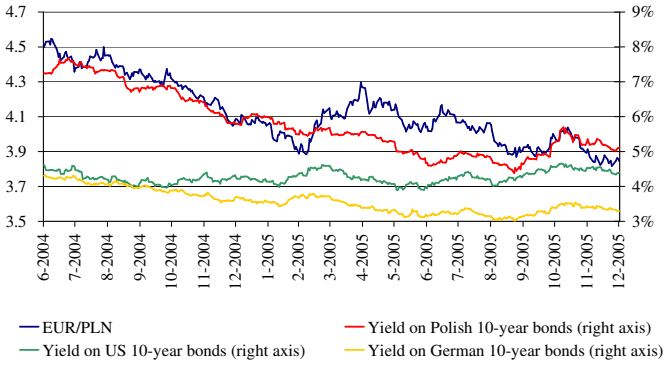
[17] This decrease limits the premium which is received by an investor as a result of purchasing Polish Treasury bonds, as compared to investments in bonds of the most developed countries. The decrease of this premium, with the perception of investments in Polish Treasury papers as more risky than investments on the core markets, may lower the interest of global investors in purchasing Polish bonds.

Figure 2.10. EUR/PLN and USD/PLN exchange rates (left panel) and relative deviation of the EUR/PLN exchange rate from the average for 1999-2004 (right panel)



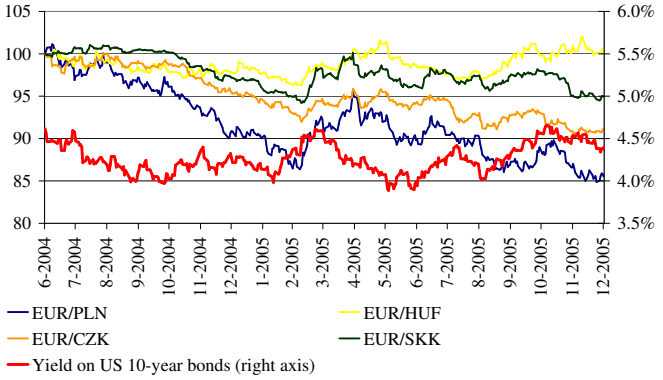
Source: NBP.

Figure 2.11. Zloty to euro exchange rate against the yields of Polish, German and US Treasury bonds



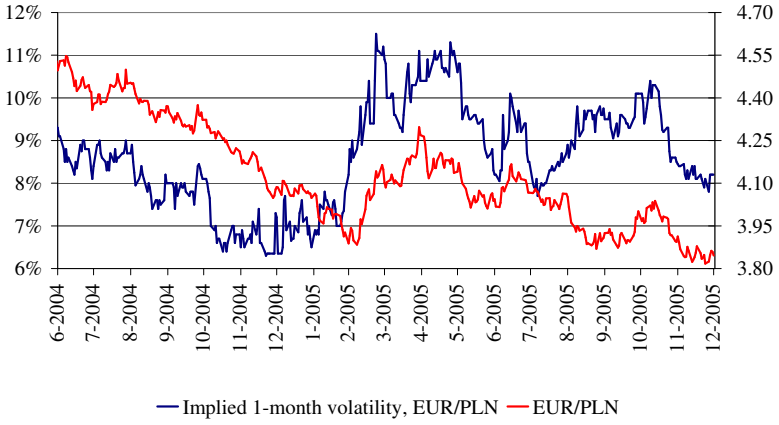
Source: NBP, Thomson Datastream.

Figure 2.12. Exchange rates of currencies of Central European countries against the yields of US Treasury bonds



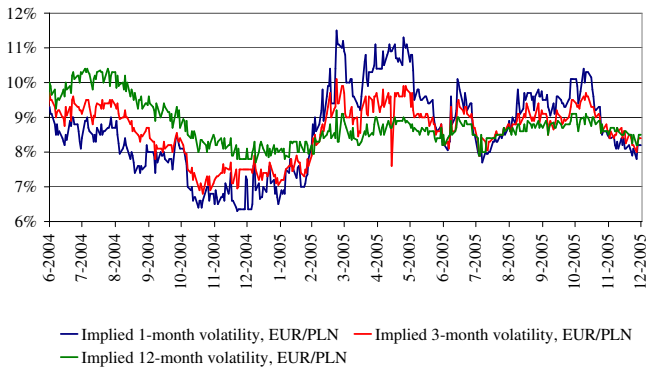
Note: Exchange rates as at 30 June, 2004 = 100. A decline of the index means appreciation of a currency to the euro.
Source: NBP, Thomson Datastream.

Figure 2.13. EUR/PLN exchange rate and implied volatility of EUR/PLN rate



Source: NBP.

Figure 2.14. Term structure of implied volatility of EUR/PLN exchange rate



Source: NBP.

Together with the return of the appreciation tendency, the implied volatility also decreased[18], and stabilized on a level similar to the historical volatility. In the second half of the year, as the term of the parliamentary elections approached, the implied volatility was rising. This reflected the uncertainty as to the line-up of the government coalition and the direction of the economic policy conducted by the new government. Throughout the period under review, the implied volatility for options with the longest maturities was stable and low as compared with previous years, which may suggest the lack of concerns about a rise in the volatility of the zloty exchange rate in the mid-term.

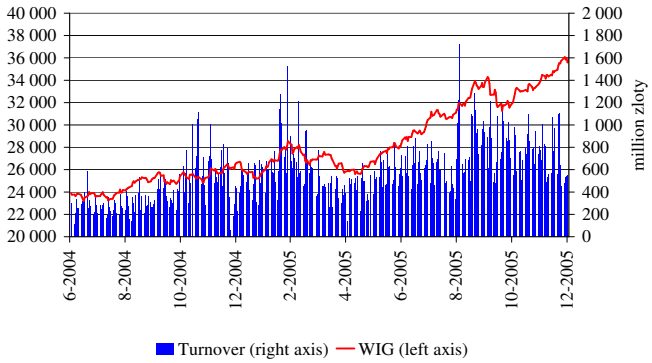
2.3. Stock market

Throughout most of 2005, an upward trend was visible on the stock market (see Figure 2.15). This reflected good financial results of listed companies. Stock prices on the markets of the most developed countries also had a significant influence on the quotations on the Polish stock exchange as well as on stock exchanges of other countries of the region. This was especially evident in the periods of share price falls in March and October, when concerns about a rise of inflation in the USA sparked corrections on worldwide markets translating into profit-taking and decline of quotations on the markets of less developed countries, including the countries of Central Europe (see Figure 2.16).

The impact of quotations on the most important world markets on the Polish market is connected with the significant share of foreign investors in equity trading. Their share in turnover in 2005 amounted to 41% and has been rising gradually over the past two years. Despite higher share prices, the average level of the price/earnings per share ratio (estimated at around 14 in December 2005) is still lower than for the US market (where it amounted to 18 in the corresponding period).[19] This allows to assume that the share of foreign investors

[18] Implied volatility (estimated from quotations of currency options) may be construed as the exchange rate volatility within the period to the option expiry date, as anticipated by market participants.
[19] The level of the price/earnings per share ratio on the Warsaw Stock Exchange in December 2005 was

Figure 2.15. The WIG index and stock market turnover



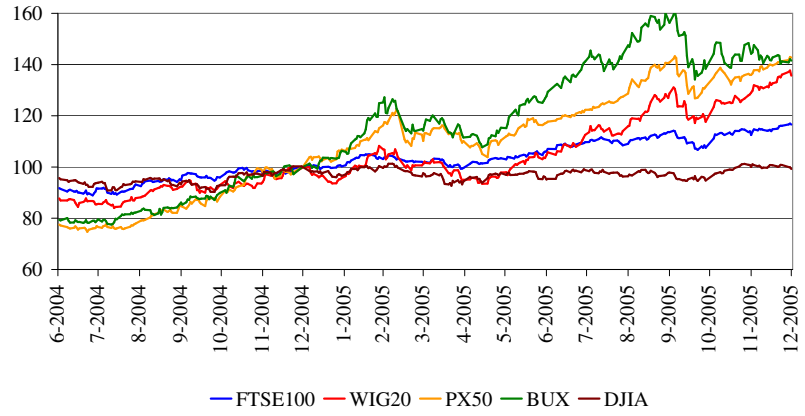
Source: WSE.

Table 2.2. Main indices of the Polish stock market in 2003–2005

	12.2003	12.2004	12.2005	Change in 2004 (%)	Change in 2005 (%)
WIG	20820.07	26636.19	35600.79	28	34
WIG20	1574.04	1960.57	2654.95	25	35
MIDWIG	1269.34	1730.10	2207.74	36	28

Source: WSE.

Figure 2.16. WIG20 against indices of the stock exchanges of Central Europe and on the most important world stock exchanges



Note: Quotations as at December 30, 2004 = 100.
Source: Thomson Datastream.

in transactions on the Polish stock exchange will continue to be significant.

The growth of share prices on the Warsaw Stock Exchange was supported by good macroeconomic results of the Polish economy, reflected in the rise of profits of listed companies. Quotations of share prices of commodity and energy sectors' companies were boosted by high prices of natural commodities (which translated into expectations of high future profits of these companies). At the end of the year, investors took more interest in smaller companies and entities from the technology sector (within the last two months of the year, the MIDWIG and TECHWIG indices rose faster than the market as a whole).

Good investment climate on the stock exchange encouraged new companies to float their shares. For the second year in a row, the WSE was among the leading European stock exchanges in terms of the number of new companies (in 2005, there were 35 IPOs on the WSE, which was the third best result in Europe, after the London and the Norwegian stock exchanges).

Box 2. Implied volatility of share price quotations on the WSE

Price stability on a stock exchange and difficulty of forecasting exchange securities' quotations may be both measured by historical volatility and the so-called implied volatility. Historical volatility of share prices on a stock exchange describes the band of share prices fluctuation in the past. Implied volatility, in its turn, can be construed as a measure of uncertainty of investors as to future quotations. It is calculated on the basis of

close to the level observed on the Budapest stock exchange (13.5) and on stock exchanges in the countries of Western Europe (the ratio calculated for the FTSE Eurotop 100 and the MSCI Europe indices amounted to 13.8). Higher levels of the ratio were reported on the Japanese market (20.7 for the TOPIX index) and the Czech market (21.2 for the PX50 index).

stock options or stock indices. During 2005, the WSE's trading in options on WIG20 was on the rise, and in the second half of 2005 options on shares also appeared on the trading floor. An analysis of whether these instruments can be used to assess market expectations as to future stability of quotations is presented below.

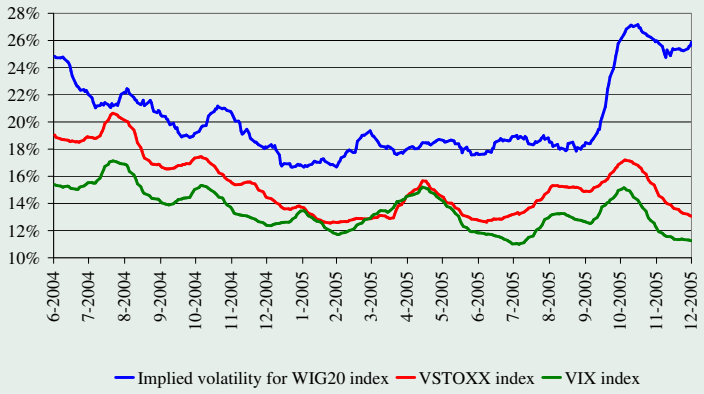
On developed financial markets, synthetic volatility indices are the indicators of price volatility. Such indices facilitate the assessment of stability of average quotations on the market without the need to analyze individual shares. They are built on the basis of option prices on the levels of stock exchange indices (e.g. VIX for the CBOE market or VSTOXX for the EURO STOXX index). These indices are widely used by investors to assess the risk of future changes in share quotations. The construction of a similar index for the WSE is difficult due to the following reasons:

- The stock option market has low liquidity – it was set up only in the fourth quarter of 2005 and investors are not very active on this market. In November 2005, the volume of trading in stock options amounted to 2,270 items (versus more than 470 thousand stock index future contracts). An index built directly on the basis of their quotations would not be reliable.
- An alternative for the stock option market could be the market for stock index options (options on WIG20), which are more liquid instruments both in Warsaw and on other stock exchanges (more than 30 thousand transactions per month). Notwithstanding the liquidity of stock index options being higher than that of options on individual shares, the WSE notes such days when there are no liquid pairs of call and put options with the same maturity date and the same settlement rate. Such pairs are the basis for, e.g., calculating the VIX index.
- For an index to be used for inter-period volatility comparisons, it should be built on the basis of quotations of options with similar expiry dates and strike prices close to the prices of underlying instruments. In this way, the disturbances of the volatility index level against the actual volatility, sparked by the effect of *volatility smile* or a short period to expiration, are minimised. Options on the WIG20 index have standardised expiry dates (the third Friday of the last month of each quarter). Prices of European options are strongly volatile shortly before their expiry ty dates, hence the usefulness of options which are close to their expiry dates in the assessment of the expected market volatility is rather doubtful. Such apparent so-called volatility of volatility may be eliminated by expanding the set of options which serve as the basis for the calculations. In the case of the VSTOXX index, the so-called *next-term options* are used, i.e. options with subsequent expiry date and the same strike price. A similar solution has been adopted in the estimates presented below.

Notwithstanding the significant obstacles to the construction of an index, it is possible to compare the volatility trends on the WSE with the volatility on the world markets. For this purpose, an index was defined for each trading day as the average of implied volatility of call and put options on the WIG20 index with the highest volume of trading and the respective options with subsequent expiry date (see Figure 1). Thus the most liquid instruments, whose strike prices do not diverge greatly from the current price of the underlying

instrument, could have been considered. The most liquid options on the WIG20 index are options with the closest possible expiry date. Application of next-term options allowed for limiting the fluctuation of volatility for the periods shortly before the standard expiry dates.

Figure 1. Implied volatility estimated for the WIG20 index and volatility indices of the most important world markets



Notes: Implied volatility for the WIG20 index – the average weighed by the product of turnover and time to maturity of the following options on WIG20: call and put options with the highest turnover on a given day and options with subsequent expiry date and the same strike price; thus, options with short period to execution had a low weight and the fluctuation of volatility was dampened. The options whose turnover was higher and whose price took into consideration expectations of a wider part of the market had more impact on the index value.
VSTOXX – volatility index on the basis of quotations of options on Dow Jones EURO STOXX 50, which comprises 50 big European companies.
VIX – calculated on the basis of quotations of options on the S&P 500 index.
Source: NBP calculations on the basis of WSE data, Reuters.

Estimated implied volatility of share prices changed in 2005 according to the trend set forth by the levels of volatility of the DJ EURO STOXX 50 and S&P 500 indices. It can even be stated that in the analysed period, volatility on the WSE only slightly exceeded that on world markets. On the other hand, deterioration of macroeconomic data in the USA at the turn of September 2005 had an impact on a significant rise in uncertainty on stock markets, especially on the WSE. An additional domestic factor could be the increased uncertainty of investors as to the shape of the government coalition and the future economic policy of the Polish government. A repeated rise in share price quotations at the end of 2005 did not contribute to a significant fall in volatility, which might signal an increase in the expectations of a correction. Similar conclusions result from the analysis of historical volatility in the period under review. However, the rise in implied volatility was not so clear-cut in the periods of short-term corrections, when the historical volatility increased significantly.

2.4. Property market

Residential property market

After price falls in 2001–2002, residential property prices have been steadily rising since 2003. Estimated data for the largest urban areas[20]allow for an assessment of the 2005 price growth at around 15% on the primary market and 15–20% on the secondary market. In order to assess the impact of price trends on financial system stability, it is important to note to what extent the price increase is caused by cyclical factors and to what extent it may have the characteristics of the so-called speculative bubble[21]. If the price growth was primarily speculative in nature, it would increase the likelihood of a sudden correction on the property market. This correction could negatively impact the quality of assets and banks' financial results, especially if it was accompanied by worsening of the economic climate leading to an increase in customers' problems with paying back the loans drawn to finance residential property.

In 2005, effective demand for flats was on the rise due to a number of factors, both short-term and mid-term in character, as well as due to long-term processes. A transitional factor which contributed to the rise in demand in 2005 was, similarly to 2004, uncertainty as to the VAT rate on flats sales after 2008. Currently binding solutions suggest that in the case of the majority of flats, the preferential VAT rate will be applicable, hence this factor should no longer have any impact on price changes. The upward trend of property prices could also have been strengthened by expectations of further price increases, which could induce the households to move their demand forward in time, thus increasing current demand for flats.

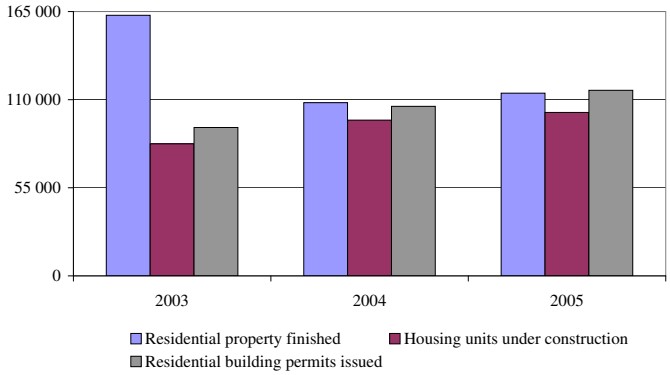
The most important mid-term factors include the growth in wages and the increasing accessibility of housing loans rooted in falling interest rates and easing of credit standards by banks. An important reason for easing credit standards was the rising intensity of competition among banks (see Chapter 1). An additional factor contributing to the growth in demand was the foreign investors' interest in the domestic property market, which has been gradually on the rise since as Poland's accession to the European Union. The media-reported estimates of the scale of flat purchases by foreign investors show that in 2005 they bought less than 2–3% of completed housing units. One can assume, however, that their interest is focused on highest-standard flats in the most prestigious locations; in a longer-term perspective, prices of these flats may rise the most. The influence of this group of investors on the market may be rising in the years to come.

Long-term factors contributing to the growth in demand are demographic processes (baby boom of the turn of 1970s/ 1980s, having an impact on the rise of the number of households) and migration of population from rural areas to cities.

[20] The property market is strongly diversified regionally. The analysis presented in this section is confined to the developments in selected biggest cities (Warsaw, Kraków, Wrocław, Trójmiasto), which is rooted in the availability of information.

[21] The phenomenon of a speculative bubble on the property market may be defined (using an analogy to capital markets) as a deviation of market prices from the values set by "fundamental" changes in supply and demand. In a situation where the speculative bubble occurs, a significant part of transactions may have a short-term character and be aimed exclusively at profit-taking from the rise of asset prices – in this case, property.

Figure 2.17. Flats – the number of units finished, constructions commenced, permits issued



Source: GUS.

Supply of new flats in the last three years was on the rise, which is certified by the rising number of construction permits and the number of constructions commenced[22] (see Figure 2.17). This implies that developers react to the growing demand. However, the possibilities of increasing supply of flats in the most attractive locations are constrained by relatively small supply of land plots with valid area development plans. This makes it harder to obtain a construction permit and lengthens the time of realizing the project. In a longer-term perspective, limited stock of land plots with infrastructure necessary for the realization of housing investments poses a barrier to the growth of supply of new flats.

Notwithstanding the rise in expectations of price growth, the analysis of factors shaping the demand and supply on the housing market allows for a statement that the currently observed price increase does not pose a threat to financial system stability in the mid-term. There is a significant imbalance in demand and supply on the market, resulting from a fast-growing demand stimulated by increased accessibility of housing loans with limited possibilities of increasing supply in the short-term.

In the years to come, one may expect a further rise in demand on the housing market, as the majority of factors stimulating the demand will remain in place. The government-planned subsidies to housing loans[23] may additionally increase the accessibility of housing loans, which will be yet another impulse increasing the effective demand. However, due to the limits present in the draft act, this influence should be moderate. On the supply side, the rising prices and high margins posted by developers (which is indicated by, among others, a relatively low growth rate of prices of construction and assembly production as compared to the rise of flat prices) should encourage new entrepreneurs to enter the market of residential property. However, the limited supply of land plots equipped with the necessary infrastructure may constitute a long-term barrier to growth in supply. For this reason, the reaction of on the

[22] Since a significant number of newly build flats is sold before they are put at use (usually shortly after the construction is started), for an analysis of the proportion of flats' supply and demand, the statistics concerning the number of flats put at use are of lesser importance.

[23] See the government draft act on financial support to families in purchasing their own flats, parliamentary document No. 393.

supply side will probably not be quick enough to balance the rising demand. It must be noted that the current scale of this imbalance is big enough for the majority of flats to be sold at an early stage of construction works. Hence, one can expect that in the years to come, demand will continue to outweigh supply, which will lead to price growth. A key factor for balancing the housing market will be the creation of conditions for increasing the supply of flats, especially in respect of area development plans and infrastructure development.

Office space market

The most important office space market is the Warsaw market, where the majority of modern buildings are located and where the majority of investments are realized. Office space markets in other cities feature a by-far smaller scale of new investments. According to available information, in 2005, there were no significant changes in rent rates on these markets. They may gain in significance alongside the increasing inflow of foreign direct investments in the services sector (e.g. accounting centres of international corporations), the location of which may be largely influenced by the costs of office space. In 2005, the Warsaw market still featured the falling trend of initial rent rates, observed from 1999 and resulting from the continued supply of available office space outweighing the demand. Moreover, *effective* rent rates are lower than nominal ones, due to the owners applying various discounts to attract potential tenants. However, a certain decline in the scale of discounts offered can be observed, which may indicate to a gradual balancing of demand and supply on this market. It is also confirmed by information on the decreasing share of vacant office space. The lowering of rent rates has also influenced the drop in the capitalization rates (describing the return on investment), which are currently estimated at 6–7% for the Warsaw market.[24] The decline in rates of return could have also been influenced by the increasing interest of specialized funds investing in property, which increased the purchase prices of attractive properties from entities carrying out the construction, and lowered the rate of return on renting of the purchased properties.

Over the next 2–3 years, one can expect stabilization of rent rates alongside the balancing of demand and supply of office space. In this period, the supply of new office space will be moderate as no big investment projects are envisaged to be put at use. The present developments on this market and forecasts as to its development do not seem to show a threat of a speculative bubble.

2.5. Potential threats arising from developments on financial markets

The next 3–4 years will feature higher interest rates in the most developed countries than those of the years 2002–2005. Apart from the increases of interest rates in the US, started in 2004, the increasingly rapid economic growth in EMU countries has influenced the interest rate hikes by the ECB. Optimistic news coming from the German economy suggest that the economic growth rate and inflationary pressure in EMU countries may increase in the near term. The economic growth rate stepped up also in Japan, which may prompt the Bank of Japan to tighten its monetary policy.

[24] The current level of estimated rates of return is close to the average rate of return in EU countries.

The rise in yield on core markets may prompt part of global investors to lower the share of instruments from the countries with a lower level of development in their portfolios. If this process is gradual and the resulting changes in capital flows are not sudden, one should not expect any significant market disturbances. The decreasing involvement of foreign investors on the market of Polish Treasury bonds in the fourth quarter of 2005 might have been a symptom of this process.

The developments in the US economy under the conditions of higher interest rates are an important source of uncertainty. The "soft landing" scenario, i.e., gradual increasing of the savings rate, curbing the current-account deficit and the rising property prices as well as stabilization of the economic growth rate and the level of interest rates, does not pose a threat of any bigger market disturbances. However, a source of such disturbances may come in the form of "hard landing"– should rising interest rates lead to a slump on the property market, contributing to a significant reduction of consumer spending. A source of disturbances on the world markets may also come in the form of sustained high current-account deficit of the US economy. Should the high deficit translate into a significant depreciation of the dollar, disturbances on the markets of the most developed countries could negatively impact prices of instruments on the markets of less developed countries, including Poland. This could take place as a result of investors striving for profit-taking from their positions on these markets in order to compensate for losses on core markets. Occurrence of significant disturbances on world markets may also result in increased risk aversion among global investors, which would also trigger a withdrawal of capital from the markets of less developed countries.

Disturbances on the Polish financial markets may also be sparked by domestic factors. It must be noted that at the end of 2005, the yields of Polish Treasury bonds were close to those of the corresponding American and German instruments[25], and the market lacked clear-cut expectations as to future movements of the exchange rate and interest rates. In such a situation, market quotations are more influenced than in previous years by investors' opinions on economic fundamentals and the direction of economic policy. One may expect that investors, while assessing the risk of investment in Polish bonds, will pay special attention to analyzing the fiscal policy, the plans of the public finances reform and the perspective of Poland's entry into the euro area in particular.

The trends on property markets observed in 2005 do not provide any reasons to state that price growth visible on some markets poses any threat to financial system stability in the mid-term. Nonetheless, the sustained outweighing of supply by demand on the property market increases the possibility of a strong price surge on some markets. Limited supply of property in the most attractive locations may bring about the risk of price increases of a speculative character on some local markets. The extent of losses which a burst of such a bubble would bring about to the financial system will depend on the value of the exposure of individual institutions. One may expect that the appearance of a local speculative bubble will have the biggest impact on smaller banks, with limited geographical diversification of their portfolios of property loans. A threat to the stability of the entire financial system may come only in the form of a burst of a speculative bubble formed on several markets with a significant share in banks' loan portfolios. However, the likelihood of such a situation is small at present.

[25] As at the end of 2005, the yields of Polish ten-year Treasury bonds were higher than the yields of American bonds by about 70 basis points, and than the yields of German bonds by about 180 basis points.

Chapter 3.

Banking sector stability

The sound standing of real economy sector undertakings and the favourable climate on financial markets were reflected by a very good financial performance of the banking sector in 2005. The banks' efficiency improved for another consecutive year. Combined with stable income from the lending and deposit business as well as lower expenses related to credit risk, this enhanced their profitability. In 2005, owing to the continued improvement in loan portfolio quality, the expense of establishing specific provisions decreased. Phenomena such as the surge in housing loans (particularly foreign currency ones) and strong competition in some markets should, however, be carefully observed. They indicate that credit risk may accumulate in the banks' balance sheets, potentially leading to negative consequences in the future. The banking sector's capitalisation was adequate to the risk assumed, as demonstrated by capital adequacy ratios. Simulations involving loan portfolio quality shocks indicate that despite the lending expansion that occurred throughout the year and the slight decrease in capital adequacy ratios, the amount of the sector's regulatory capital is sufficient to absorb potential losses resulting from a deterioration in loan portfolio quality.

The assessment of the banks' financial standing in 2005 has been affected by their introduction of International Financial Reporting Standards. The new principles have had impact on the banks' balance sheets (*inter alia*, quality of claims) as well as on profit and loss account items.

3.1. Credit risk

3.1.1. Overall claim quality

In 2005, favourable changes regarding the quality of the banks' claims occurred,[26] which reflected the smaller scale of realised credit risk. The average quality of loans to all groups of banking sector customers improved. As at end 2005, the overall irregular loan ratio (defined as the proportion of irregular loans[27] in total loans) for all sectors amounted to 7.4%. The ratio

[26] The terms "claims" and "loans" are used interchangeably. The data quoted always refer to claims.

[27] A claim is classified as irregular when the delay in payments exceeds 3 months (in the case of retail loans the delay period is 180 days) or if the economic standing of the borrower suggests that they may experience difficulties with debt repayment. This definition, which is stipulated in the Regulation of the Minister of Finance on procedures for establishing specific provisions against the risk of banking operations of

Table 3.1. Irregular loan ratios by sector of borrower, %

	2003	2004	2005
Total	15.7	10.1	7.4
Financial institutions	3.0	1.3	1.1
Non-financial customers	21.2	14.9	11.0
General government	2.4	1.6	0.8

Source: NBP.

Table 3.2. Shares of loans and deposits by client sector in banking sector assets, % (assets = 100%)

	2003	2004	2005
Financial institutions	15.7	19.8	20.8
- of which non-resident	7.9	10.5	12.2
Non-financial customers	44.4	42.0	42.3
General government	4.0	3.8	3.5

Source: NBP.

was much lower for financial industry and general government, at 1.1% and 0.8%, respectively, while for non-financial customers it stood at 11% (see Table 3.1).

Loans to non-financial customers are the primary source of credit risk in the banking sector. Not only the composition of the banks' balance sheets, where claims on undertakings from this sector prevail, but also the consistently better quality of claims on undertakings from other sectors contribute to this. As a result, around 96% of claims classified irregular are those on non-financial customers (see Tables 3.2 and 3.3).

The improvement in loan portfolio quality was a consequence of the good financial standing of enterprises and households, which enhanced the performance of loans and decreased the amount of loans that were classified irregular due to the borrowers' economic standing. The increase in bank lending (10.6% y/y) and in the amount of claims on financial corporations,

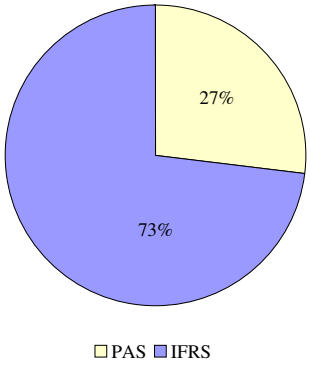
Table 3.3. Composition of irregular loans (total irregular loans = 100%)

	2003	2004	2005
Financial institutions	4.6	3.7	3.2
Non-financial customers	94.5	95.4	96.0
General government	0.9	0.9	0.7

Source: NBP.

December 10, 2003 (*Dziennik Ustaw* [Journal of Laws] No. 218/2003, item 2147), applies to banks that apply Polish accounting standards (PAS). Other banks draw up the sections of their financial statements concerning irregular loans in a format consistent with the categories required for banks that comply with PAS. This means that for banks that use IFRS, the results of portfolio classification obtained on the basis of internal loan impairment models are mapped into categories approximating those stipulated in the Regulation of the Minister of Finance.

Figure 3.1. Assets of banks using IFRS and PAS as at the end of 2005



Note: Banks observing PAS (Polish Accounting Standards) include several commercial and all cooperative banks.
Source: NBP.

mostly banks (14.7% y/y) also contributed to the drop in the irregular loan ratio through a statistical effect.

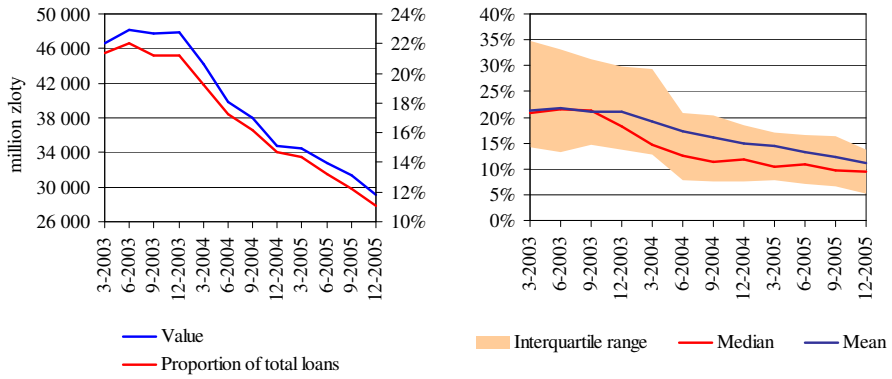
The fact that banks adopted International Accounting Standards and International Financial Reporting Standards (IAS/IFRS, further referred to as IFRS) for the first time also had a positive impact on loan quality ratios. Since 2005, the banks that adopted IFRS have used internal models for assessing claim impairment. Claim classification based on those models will probably yield results different from those arrived at with use of the methods stipulated by domestic regulations concerning the principles of loan classification to particular risk categories[28]. However, it is difficult to state unequivocally how the adoption of IFRS will affect the reported quality of loans, as banks are introducing individual standards gradually. Preliminary survey data indicate that the impact may be significant, though (see Section 3.1.2).

Differences between the methods adopted by banks that use Polish and international accounting standards for portfolio classification purposes render the aggregate data for the entire banking sector less informative than in previous years. Consequently, in addition to the average data, the present chapter also includes information on portfolio quality broken down according to the accounting standards applied by individual groups of banks. Due to the high proportion of the assets of banks that use IFRS in total banking sector assets, those banks have a decisive influence on aggregate data (see Figure 3.1).

Due to high loss potential exhibited by loans to non-financial sector, where most of credit risk is concentrated, further analysis shall concern the quality of loans extended to enterprises and households.

[28] Prior to 2005, all banks applied the principles of claim classification to risk categories stipulated in the Regulation of the Minister of Finance. The Regulation allowed banks to use their internal models, yet no bank requested the required authorisation from the Commission for Banking Supervision.

Figure 3.2. Irregular loans in the banking sector (left panel) and dispersion of irregular loan ratios at commercial banks (right panel)



Source: NBP.

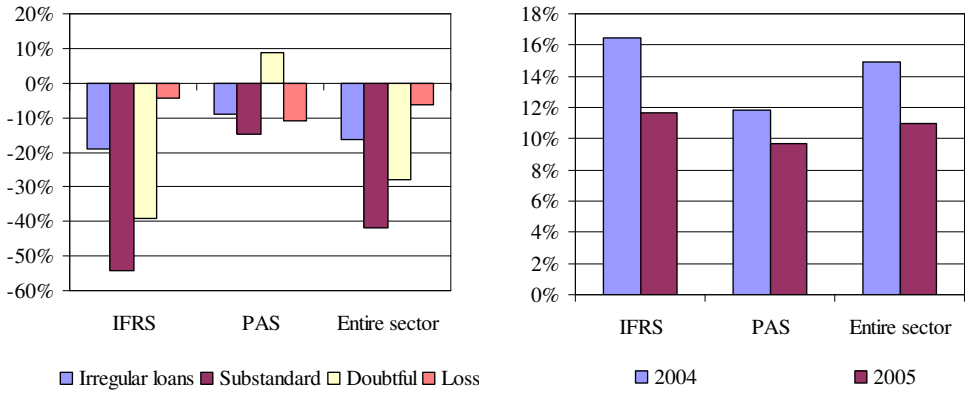
3.1.2. Quality of claims on non-financial customers

In 2005, the irregular loan ratio for the portfolio of loans extended to real economy sector undertakings dropped by around one-fourth and was at its lowest since the first quarter of 1999. Differences in portfolio quality between commercial banks decreased further as well, which indicates that factors common for all banks – the borrowers' improved standing, among other things – played a role (see Figure 3.2). However, loan quality ratios in the loans to households and loans to corporates segments improved to different degrees. Data indicate that the decrease in the irregular loan ratio in the household segment resulted from statistical factors, i.e. a considerable increase in the denominator of the ratio (by around 23%). On the other hand, the significant improvement in the quality of loans to corporates was caused by both economic and accounting factors.

Despite the improvement in irregular loan ratios, the assessment of the credit risk situation is not clear-cut. The rapid growth in loans, particularly those to households, may raise concerns. Due to the low growth rate of loans to corporates (despite the banks' relatively lenient lending policies), banks have focused on the housing and consumer loan market for the past three or four years in order to compensate for lower interest income in the corporate sector. Signals from the banking sector concerning loan quality suggest that, at certain banks, competition for retail customers and the pressure on increasing sales have led to a relaxed observance of credit procedures and the large number of loans extended has hindered proper monitoring of credit portfolios. The chiefly statistical reason for the improvement in the ratio of irregular loans to households and supervisory information regarding credit risk management shortcomings at certain banks may point to the accumulation of credit risk. The consequences of risk accumulation may manifest themselves later, when an economic slowdown sets in (see Section 3.1.3).

Banks that applied international and domestic accounting standards exhibited loan quality differences. A significantly larger improvement occurred at banks that estimated loan impairment as per IAS 39, and a less pronounced one at those that observed the principles stipulated in the Regulation of the Minister of Finance (see Figure 3.3). Based on the survey

Figure 3.3. Percentage change in irregular loans at banks observing IFRS and PAS in 2005 (left panel) and irregular loan ratios for those bank groups (right panel)



Source: NBP.

conducted among banks, it may be estimated that the introduction of IFRS accounted for around 45% of the decrease in the amount of irregular loans in the banking sector. Apart from methodological changes, differences in borrower structures could have played a role in the discrepancies in portfolio quality improvement between the banks observing IFRS and those observing PAS. Banks that applied international standards had more loans to corporates in their portfolios (around 53%) than those applying domestic standards (around 36%). Amid the persistently high earnings of enterprises in 2005, this could have had a stronger impact on the improvement in portfolio quality.[29]

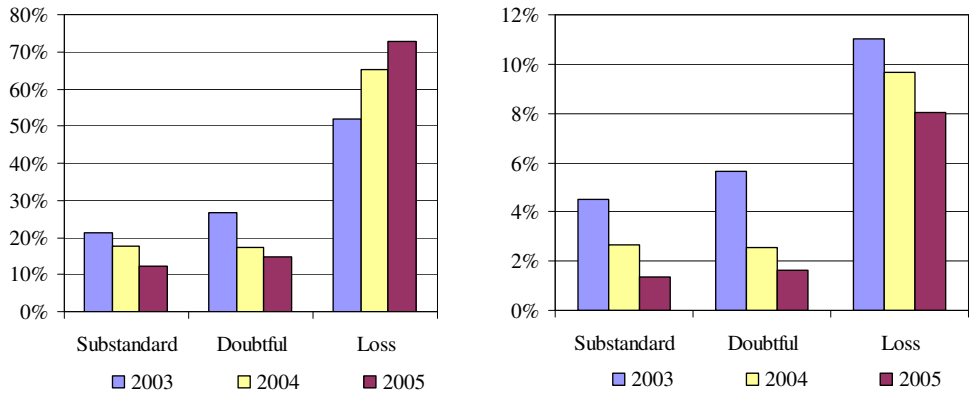
The decrease in the amount of irregular loans was mostly the result of the drop in loans with shorter repayment delays or smaller impairment, i.e. *substandard* and *doubtful* ones (the amount of claims classified to the *substandard* category was almost halved and the corporate loan portfolio accounted for 95% of this change). On the other hand, the decrease in the amount of claims with the longest repayment delays and most severely impaired ones, i.e. *loss* claims was primarily related to the gradual writing off (and posting as memo items) those claims that were 100% covered by specific provisions and the sale of *loss* claims to specialised investment funds that subsequently commission debt recovery companies to recover them.[30] Had the banks not performed those operations, the amount of *loss* claims would have been higher by several percent.

As a result of the aforementioned movements in the amounts of loans from individual quality buckets, the amount of loans classified as irregular and *performing* at the same time decreased (by around 30%, i.e. by PLN 4 billion). It should be noted, however, that the drop in this part of irregular loans was much smaller in 2005 than in the previous year, when quality

[29] When claim classification results yielded by PAS and IFRS are different, IFRS results take priority for portfolio quality reporting for supervisory purposes.

[30] The sale of irregular claims to specialised investment funds results in removing the credit risk attached to them from the banks' balance sheets. The risk of potential valuation errors and failures to recover the amounts planned is borne by the debt recovery companies, which are among the major holders of the funds' certificates. Debt recovery companies will then attempt to collect on the claims purchased by the funds, using their long-standing experience in this area.

Figure 3.4. Shares of individual irregular loan categories in the irregular loan portfolio (left panel) and in the overall loan portfolio (right panel)



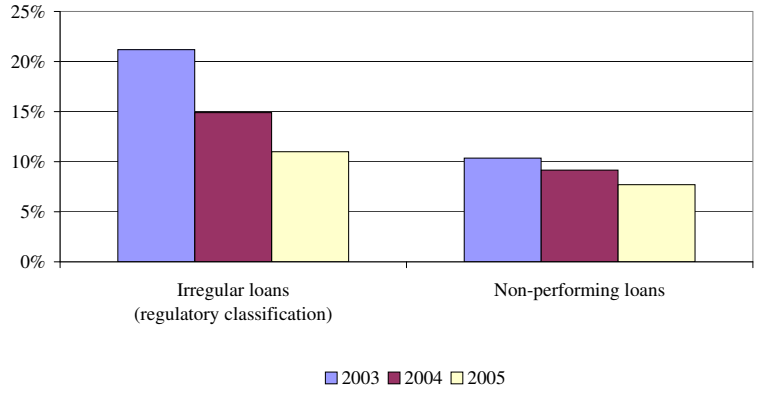
Source: NBP.

changes in the loan portfolio had been strongly influenced by amendments to the regulations concerning loan classification (in 2004, the amount of performing irregular loans fell by PLN 11.5 billion, i.e. was roughly halved).[31] The amount of *non-performing* loans[32] dropped by around 5% (PLN 1.1 billion), as a result, *inter alia*, of the decrease in the amount of *loss* loans.

For historical reasons, the irregular loan ratio does not accurately reflect the loan portfolio risk of the Polish banking sector, since the majority of irregular loans are *loss* ones, which have often been present in the banks' balance sheets for many years. Tax obstacles to removing such loans from balance sheets have caused the accumulation of amounts that do not expose banks to any new risks, since such loans are covered by specific provisions. The legal uncertainty concerning the writing off *loss* loans from balance sheets and posting them as memo items (without surrendering them)[33] was only removed in December 2003 and banks have gradually begun to use this option since that time.[34] Another solution, i.e. the sale of irregular loans including *loss* ones to specialised funds, only became possible in 2005 pursuant to the 2004 Act on Investment Funds.[35] The first results of the introduction of this Act could be observed in the fourth quarter of 2005, when PKO BP sold some of its retail loans to such a fund. Based on statements by bank and fund representatives, it may be expected that more such operations resulting in the cleaning up of the banks' balance sheets and bringing the irregular

[31] Those regulatory amendments were discussed in "Financial Stability Report 2003," NBP, 2004, p. 40. The most important changes included adjusting delinquency triggers for principal and interest payments to correspond with those in force in other EU countries, introducing a simplified classification for retail exposures (with two categories of satisfactory and loss), and allowing security to be taken into consideration at the classification stage (e.g. including the provision that assessing the financial condition of the debtor can be replaced by assessing the condition of the security provider).
[32] Loans with payment delays exceeding 3 months.
[33] Regulation of the Minister of Finance of December 2, 2003 amending the Regulation on detailed principles of bank accounting (*Dziennik Ustaw* [Journal of Laws] No. 211/2003, item 2061).
[34] In 2005, banks posted loans to non-financial customers with a gross value of around PLN 2 billion as memo items, which corresponds to roughly 8% of the amount of loss loans as at end December 2004.
[35] Act on Investment Funds of May 27, 2004 (*Dziennik Ustaw* [Journal of Laws] No. 149/2004, item 1546).

Figure 3.5. Ratio of irregular vs. non-performing loans



Source: NBP.

loan ratio closer to the value reflecting current changes in portfolio quality will be conducted in subsequent quarters of 2006. Market participants expect that *loss* loans ranging from PLN 2 to 10 billion, i.e. around 10% to 50% of the entire portfolio amount as of end 2005, will be sold. Taking into account the possibilities created both by the Regulation of the Minister of Finance and the Act on Investment Funds, it may be estimated that the irregular loan ratio might drop from the current 11% mark[36] to around 4.7%, and the non-performing loan ratio from 7.7% to 2.4%.

Because of the high level of old *loss* loans, and the resulting high total amount of irregular loans, the volume of specific provisions/impairment provisions has been high. Irregular loans are covered by provisions to an extent similar to that in EU countries (see Table 3.4). The fact that over 95% of non-performing loans are covered by provisions indicates that the banks' losses resulting from a potential decline in the quality of loans with repayment delays of over three months would impact the sector's earnings only slightly. The ratio of specific provisions to total claims (i.e. satisfactory, special mention and irregular ones) is also very high. As at the end of 2005, this ratio stood at 5.5%, i.e. 2.5 times more than the EU average. Still, it has to be emphasised that this is the result of the small amount of loss loans that are being written off. If the coverage ratio of the loan portfolio with specific provisions were adjusted for loss loans and the corresponding specific provisions, its level would slide to 0.5%. The aforementioned indicators suggest that although banks in Poland are well prepared for a deterioration in the quality of non-performing loans or those that are not serviced in a timely manner, they may be adversely affected by a potential deterioration in the quality of loans that are currently serviced on a regular basis. However, the high level of the banks' capital enabling them to cover potential credit losses justifies the lower amount of specific provisions (see Chapter 3.8). Nevertheless, the decreasing coverage of loans with specific provisions has to be carefully monitored.

The coverage of irregular loans to non-financial customers with specific provisions differs depending on the quality of the security accepted by the bank and the results of collection

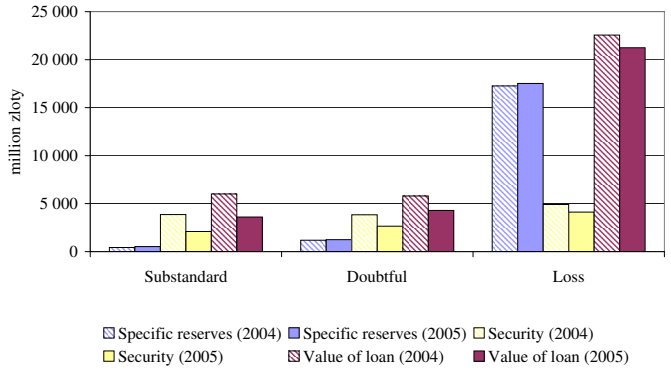
[36] The estimate is based on the assumption that 100% of the *loss* loans that are covered by specific provisions/impairment provisions will be written off or sold.

Table 3.4. Loan portfolio coverage with specific provisions, %

	2003	2004	2005	EU 2004
Specific provisions/irregular loans	42.4	55.5	64.5	-
Specific provisions/non-performing loans	91.8	93.2	96.5	67.61
Specific provisions/(satistactory, special mention, irregular loans)	6.7	5.5	5.0	1.95
(Total specific provisions - specific provisions for loss loans)/((satisfactory, special mention, irregular loans) - loss loans)	0.9	1.7	0.5	-

Note: The definition of irregular loans adopted by the ECB is similar to that of non-performing loans adopted by the NBP.
Source: NBP, ECB.

Figure 3.6. Irregular loan coverage by security and specific provisions



Note: For banks using PAS, eligible security has been taken into account.
Source: NBP.

attempts using loan security.[37] With regard to *loss* loans, most of which were extended before 2002, banks have established provisions covering around four-fifths of their value. The remaining amount is secured. For *doubtful* and *substandard* loans, which were usually granted not long ago, the proportions between specific provisions and security are reversed (see Figure 3.6). This is, among other things, a result of changes in the banks' lending policies at the end of the 1990s and paying greater attention to the quality of security accepted.

Loan portfolio quality by borrower and loan type

Loans to households

Traditionally, the quality of the portfolio of loans to *households* has been better than that

[37] Where the claim collection process has been initiated and an amount smaller than the face value of security has been recovered, additional specific provisions must be established.

Table 3.5. Irregular loan ratio by non-financial sector borrower group, %

	2003	2004	2005
Corporates	27.4	19.5	14.6
Households	13.3	9.7	7.8
- of which individuals	11.1	7.2	6.1

Source: NBP.

of loans to corporates (see Table 3.5). Compared to previous quarters, the improvement in quality indicators of loans to households in 2005 was less pronounced and stemmed, to an overwhelming extent, from an increase in the amount of new loans (the increase in the denominator of the ratio of irregular loans to total loans). The amount of irregular claims changed only slightly (the drop by around 0.5% was the result of a bank having sold retail loans to an investment fund in the fourth quarter). During the year, the amount of loans with short delinquency periods (up to 30 days), which are not classified as irregular loans, also grew. This is attributable to the rapid growth of loans in previous periods. The proportion of those loans in the portfolio did not rise, however.

The gradually rising popularity of credit cards among less wealthy customers and the rapid increase in the amount of debt incurred through their use have brought about a rise in both the volume and ratio of irregular loans. However, the overall quality of credit card lending remained better than the average quality of consumer loans (see Figure 3.7). Loan products related to credit card use and housing loans to households are still among the strategic products most frequently mentioned by banks (see Table 3.6).[38] The rising popularity of credit cards among less wealthy customers may raise concerns as to the future impact of this trend on loan portfolio quality.

Among loans to households, housing loans have traditionally stood out as loans of high quality. The increase in their share in the total household loan portfolio, which has been observed for a long time now, has contributed to the improved quality of the portfolio as a whole. However, the rate at which banks extend such loans as well as the proper management of credit risk (see Subsection "Credit risk arising from property market financing") must be monitored.

The quality of loans for the purchase of securities was not high, but improved markedly in 2005, which may be attributed to the bull market on the WSE. As at the end of the year, the proportion of irregular loans amounted to 16.4% (a decrease from 27.8% in December 2004). Despite the low quality of loans for the purchase of securities, they do not significantly affect the credit risk level of the banking system due to their small share in the loan portfolio (below 1%). The amount of loans for the purchase of shares is correlated with the amounts of issues on the stock exchange, thus at the end of 2005 it was slightly lower than in June due to the lack of major public offerings in the second half of the year.[39]

[38] Concerns regarding the adverse impact of the act stipulating maximum loan interest rates (Act amending the Civil Code and other Acts of July 7, 2005 (*Dziennik Ustaw* [Journal of Laws] No. 157/2005, item 1316)) on credit card popularity voiced in the latest edition of "Financial Stability Review" have not been confirmed as yet.

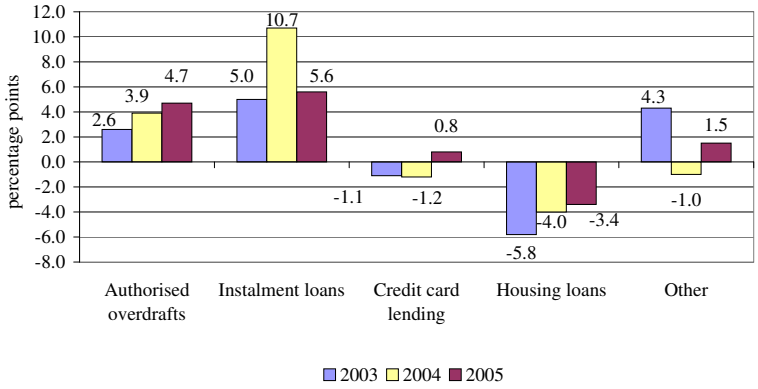
[39] The amount of initial public offerings remained high at PLN 1.6 billion, but was much lower than in the previous year, largely due to the absence of such major transactions as the floating of PKO BP shares in

Table 3.6. Banks' plans for 2006

Bank	Plans for sales of basic products in 2006
PKO BP SA	- increase in sales of mortgage loans (form 7.5 to 9.6 billion zloty) - increase in number of credit cards issued (from 530,000 to 700,000) - increase in number of debit cards issued to 100% of number of personal accounts - increase in market share of consumer loans (from 22.4% to 25%) - maintaining its current share in retail deposit market
Bank Pekao SA	- increase in zloty mortgage loans granted - increase in consumer loans granted, i.e. the so-called "express" loans - increase in loans to SMEs - maintaining its strong position in large corporate loans' market - increase in sales of investment funds, cards with delayed payment, corporate and security products
BPH SA	- increase in sales of mortgage loans (by 20%) - increase in number of credit cards issued (from 377,000 to 500,000) - increase in its share in the wealthy and comfortably wealthy individuals' market (from present 13–14% to 20%) - increase in credit activity in SME market (by 15%) - growth in online banking (increase of user number from 480,000 to 650,000)
BZ WBK SA	- increase in sales of mortgage loans (from 702 million to 1 billion zloty) - increase in loans to SMEs - increase in loans to individuals - increase in investment fund sales
ING Bank Śląski SA	- increase in sales of mortgage loans - increase in number of credit cards issued - increase in number of new savings accounts - increase in investment fund sales - growth in services for enterprises such as factoring, leasing and commercial real estate financing
BRE Bank SA	- growth of overall loan portfolio by 63% (from 4.4 to 6.5 billion zloty), including growth of mortgage loan portfolio by 55% (from 3.3 to 5.1 billion zloty) - increase in number of retail customers (by 23%) - increase in deposit value (by 31%) - increase in number of SME customers - growth in project financing and loans to financial customers segments - increase of loans and deposits in private banking
BGŻ SA	- increase in sales of mortgage loans (from 370 million to 1 billion zloty) - increase in sales of cash loans - increase in number of credit cards issued
Kredyt Bank SA	- sales of mortgage loans at the level of 1 billion zloty - increase in number of credit cards issued (from 66,300 to over 100,000) - increase in number of customers to 1 million
Getin Bank	- increase in sales of mortgage loans (from 1.23 to 1.8 billion zloty)

Source: PAP.

Figure 3.7. Irregular loan ratio (difference in percentage points compared to the average quality of loans to individuals)



Source: NBP.

Loans to corporates

The amount of irregular loans in the *corporate* loan portfolio decreased during the year. Despite a slow increase in corporate debt, this led to a significant drop in the irregular loan ratio (by around 25%). The data reported by banks suggest that the most important factors that improved loan quality for this borrower group were the falling number of uncreditworthy enterprises and a decrease in their debt. The introduction of a new impairment estimation method at the banks that apply IFRS has also contributed to enhancing the ratio; this is indicated by comparisons of portfolio quality for banks belonging to both groups.

Loan quality by section of national economy

The quality of loans extended to undertakings from all sections of the national economy except for fishing improved[40] (see Table 3.7). However, the degree of improvement varied for individual portfolios and significant differences between sections persisted.

Overall loan portfolio quality was most affected by lending to undertakings in three sections of the economy, namely manufacturing (D section), distribution and repairs (G), and real estate, research and services for enterprises (K); in all, these represented three-fourths of claims on corporates. In all aforementioned sections of activity, loan quality improved significantly. Particularly notable was the decrease in the volume and ratio of irregular loans in the distribution and repairs section, which were more than halved. Improvement also occurred in the K section, encompassing undertakings which implement investment projects in the property market (i.a. developers), and also in the largest subsection of manufacturing, i.e. the manufacture of food products (about 27% of total loan amount within the section and 10% of claims on corporates).

2004. Therefore, despite the fact that the value of IPOs was the highest in the history of the Warsaw Stock Exchange, the total number of public offerings was lower than a year earlier.

[40] The present analysis of claim quality by section of the economy refers to the banks' "large exposures," i.e. those above PLN 500,000, which account for a substantial portion of claims on non-financial customers.

Loans extended to the electricity, gas and water production and supply section undertakings were of the highest quality. These loans constitute a significant proportion of claims on corporates (8.5%) and consist largely of loans extended to power stations and combined heat and power stations. Their repayment is secured by long-term contracts, which ensure that energy is sold at a predetermined price. The termination of these contracts, which has been planned for a long time now,[41] has been raising concerns among banks, which fear that the approaching liberalisation of the energy market may have a negative impact on the debt servicing capabilities of energy producers.[42] On the other hand, loans extended to undertakings from the fishing, agriculture and hotels and restaurants sections were of the lowest quality. The quality of those portfolios deviated significantly from the average for the entire portfolio. However, the banks' exposure to these sections was modest (around 3% of claims on corporates in total).

Foreign currency loans

Foreign currency loans (including the so-called exchange-rate indexed loans) constitute a significant part (around 27%) of the banking sector loan portfolio (see Table 3.8). They are very popular, chiefly due to their interest rates which are lower compared to zloty loans. The amount of foreign currency housing loans to households has been rising particularly rapidly. In recent years, such loans have been granted mainly in Swiss francs. On the other hand, enterprises took advantage of zloty appreciation in 2004 and 2005 to repay part of their foreign currency loans (the decrease in the amount of foreign currency loans to corporates was more pronounced than the appreciation of the zloty).

Apart from the fundamental factors affecting the credit risk of the portfolio, an additional factor is present for foreign currency loans, i.e. the exchange rate of the zloty against the currency stipulated in the loan agreement. The borrower's FX risk particularly affects retail customers who usually do not hedge against it due to the limited availability and high cost of hedging instruments. Loans taken out by corporates are largely secured by export revenues or – to a smaller extent – by derivatives.

Past trends concerning the quality of zloty and foreign currency loan portfolios indicate that the quality of foreign currency loans was higher than that of zloty loans, both for loans to corporates and loans to households (see Table 3.9). Moreover, the difference between the zloty and foreign currency irregular loan ratios increased compared to the end of the previous year, which is to some extent connected with the more rapid growth of the calculation base for the irregular foreign currency loan ratio. At the same time, the moderate appreciation of the zloty against the Swiss franc and the euro, which reduced the zloty equivalent of principal and interest instalments, favoured the timely repayment of loans.

[41] According to the European Commission, those contracts are a prohibited form of public aid.
[42] More on the potential impact of contract termination in: "Financial Stability Report 2004," NBP, 2005.

Table 3.7. Quality of large exposures by sections of activity (NACE); data as of end 2005 and (in brackets) 2004, %

Section	Total loans, by section	Irregular loans, by section	Irregular loans in section	
			percentage of section portfolio	of which classified as loss
A – Agriculture	1.7 (1.9)	3.8 (3.0)	24.3 (30.0)	20.2 (25.4)
B – Fishing	0.02 (0.02)	0.06 (0.04)	39.5 (39.3)	35.0 (34.3)
C – Mining	0.5 (0.8)	0.2 (0.5)	4.5 (11.4)	2.9 (2.0)
D – Manufacturing	36.1 (35.6)	32.3 (33.7)	9.5 (17.4)	6.7 (1.3)
- of which food processing	9.9 (10.2)	10.0 (9.7)	10.8 (17.6)	7.6 (9.7)
E – Electricity, natural gas and water supply	8.5 (8.0)	1.5 (0.9)	1.9 (2.2)	0.8 (0.2)
F – Construction	7.4 (6.9)	11.5 (8.7)	16.5 (23.3)	10.1 (14.0)
G – Retail and repairs	22.0 (23.9)	22.8 (31.1)	11.0 (24.0)	7.5 (16.5)
H – Hotels and restaurants	1.4 (1.1)	3.2 (2.4)	23.4 (41.0)	9.3 (17.2)
I – Transport and communication	4.8 (5.5)	2.0 (2.4)	4.4 (8.0)	2.0 (3.1)
J – Financial intermediation	9.4 (10.0)	3.3 (4.3)	3.7 (7.9)	3.0 (5.4)
K – Real estate, research and services for enterprises	15.9 (14.7)	19.8 (14.3)	13.2 (18.1)	7.1 (11.6)
L – Public administration, military and compulsory social security	12.3 (12.4)	0.5 (0.3)	0.4 (0.5)	0.1 (0.1)
M – Education	0.4 (0.4)	0.3 (0.3)	9.2 (13.3)	2.9 (3.4)
N – Health care	0.6 (0.5)	0.7 (0.9)	12.1 (32.1)	7.3 (19.9)
Other	0.8 (0.9)	1.9 (1.6)	24.1 (32.1)	15.6 (20.1)
Total (excluding sections J and L)	100	100	10.6 (18.4)	6.8 (11.4)
Total value (in billion zloty), (excluding sections J and L)	196.3 (183.9)	-	20.8 (33.7)	13.3 (21.0)

Source: NBP.

Table 3.8. Share of foreign currency and exchange-rate indexed loans in the portfolio of loans to non-financial customers, %

	2003	2004	2005
Foreign currency and indexed loans, of which	31.8	25.2	26.8
- corporates	18.7 (33.4)	13.1 (25.3)	11.4 (24.0)
- households	13.0 (29.8)	12.0 (25.1)	15.4 (29.4)
- of which individuals	11.4 (35.7)	11.1 (30.6)	14.6 (35.4)

Note: The share of foreign currency loans to corporates/households/individuals in total loans to a given group of borrowers has been stated in brackets.
Source: NBP.

Table 3.9. Irregular loan ratios by borrower group and loan currency, %

	2003	2004	2005
Zloty loans, of which:	22.1	15.6	12.5
- corporates	27.6	19.3	15.1
- households	15.4	11.5	10.0
- of which individuals	13.6	9.1	8.4
Foreign currency loans, of which	19.2	12.2	7.2
- corporates	27.1	20.2	13.5
- households	8.3	4.2	2.6
- of which individuals	6.4	2.8	2.0

Note: Data in the table refer to residents (99% of debt).
Source: NBP.

Credit risk arising from property market financing

Property loans should be treated as a distinct category when analysing the loan portfolio of the banking sector due to the close relationship between the risk associated with them and movements in property prices. Owing to specific characteristics of the property market – its low short-term supply flexibility and local character (properties in different locations are usually poor substitutes for one another) – considerable price fluctuations occur in this market. As a result of the increasing role of bank loans in the financing of property purchases in Poland, the connections between property market trends and mortgage loan market ones are strengthening. Adverse movements in property market prices might affect the banks' earnings if the value of the security accepted by banks slides, increasing losses where borrowers have problems repaying their debts[43] (by reducing the amounts collected when enforcing claims). A slump in property prices may also directly contribute to an increase in the amount of irregular loans (since construction companies that are borrowers may lose their creditworthiness).

Property loans, and particularly housing loans, have an increasing impact on the banks' financial standing, owing to the persistently rapid growth in property loans (around 86% of the portfolio) and therefore the gradual rise in their importance in the banks' balance sheets. The amount of housing loans extended to households doubled between August 2003 and December 2005. In 2005, the annual growth in housing loans to non-financial customers amounted to 37% (43% for households and 8.4% for businesses), while the amount of other property loans (further: non-residential loans) grew by 21% (see Figure 3.8). In the coming years, a further rise in demand for property (see Chapter 2.4) and thus also a further rise in housing loans is expected. Statements by representatives of most banks which serve retail customers suggest that they perceive this product group to be one of their business development priorities in the next years.

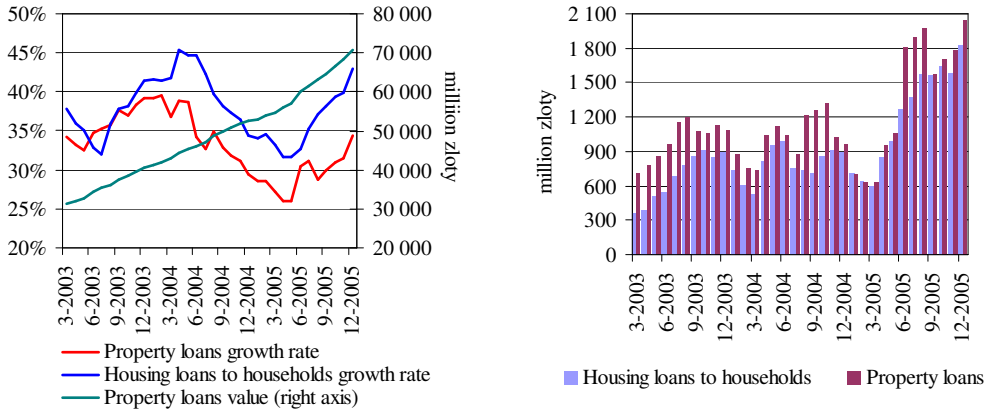
The rapid growth in property loans was accompanied by an improvement in portfolio quality indicators, particularly for housing loans to households. This was the result of a dynamic increase in new loans, while the amount of irregular loans remained stable. The appreciation of the zloty in the last two years caused a decrease in the zloty equivalent of principal and interest instalments of foreign currency housing loans, which constitute around 63% of the housing loan portfolio. Thus the appreciation contributed to the timely repayment of loans by easing the service burden on borrowers. Quality indicators for housing loans are much better than average indicators for non-financial customers (see Table 3.11).

Despite the currently good quality of the housing loan portfolio, the rapid growth in housing loans, which are extended by banks operating in a very competitive environment, may raise concerns regarding future trends in this respect. The quality of the banks' risk management (including the adequacy of their assessment of customers' creditworthiness) as well as the quality and reliability of security valuation are important factors determining the impact of the present situation in the housing loan market on the future stability of the financial system.

The easing of lending policies declared by banks, which covers both loan terms and conditions

[43] For loans extended to households, this may additionally limit the mobility of employees. Where the house price falls below the amount of loan outstanding, it becomes difficult to move in order to change jobs or find another job. In such cases, a drop in property prices may exacerbate the negative impact of rising unemployment.

Figure 3.8. Property loans: value and annual nominal growth rate (left panel) and increases (m/m) as three-month moving averages (right panel)



Source: NBP.

and credit standards,[44] as well as the observed evolution in bank offers indicate that banks are willing to extend loans to increasingly less wealthy customers. Therefore it may be supposed that loans extended to customers whose ability to absorb significant movements in interest rates or exchange rates is limited have a slowly growing share in the banks' balance sheets.

The rapidly increasing value and number of housing loans extended by banks pose new challenges for them in terms of monitoring the financial standing of borrowers and maintaining their data up to date. Intense competition for market share and giving priority to achieving loan sales targets may lead banks to neglect risk management procedures, including the prudent selection of customers. In this context, statements by representatives of certain banks which are strongly involved in the housing loan market that present optimistic forecasts regarding the increase in the amount of such loans while at the same time setting targets for the bank consisting in increasing its market share are potentially worrying.

The findings of on-site examinations conducted by supervisory authorities in 2005 demonstrated that some banks did not fully observe their internal lending procedures, focusing on winning new business instead. In the case of foreign currency housing loans, these irregularities also involved the failure to adequately assess the impact of the FX risk assumed by borrowers on their creditworthiness. Examination findings also included shortcomings concerning the running of stress tests in respect of movements in interest rates or exchange rates and a slump in property prices as well as insufficient contingency plans in case adverse scenarios materialise.

The analysis of bank offers also indicates that in the case of foreign currency loans, some banks are willing to lend higher amounts to customers than for zloty loans (see Table 3.10). It should be noted that extending foreign currency loans in amounts significantly exceeding the

[44] In the "Senior Loan Officer Opinion Survey" conducted by the NBP, *credit standards* are defined as "bank's internal guidelines related to approving loan applications (e.g. the minimal income per person in a household after adjustment for loan repayment costs)," while *loan terms and conditions* include, among other things, the lending margin, lending period or acceptable LTV level (the ratio of loan amount to the value of the property which serves as collateral).

Table 3.10. Comparison of maximum amounts of zloty and Swiss franc housing loans that can be obtained at selected banks

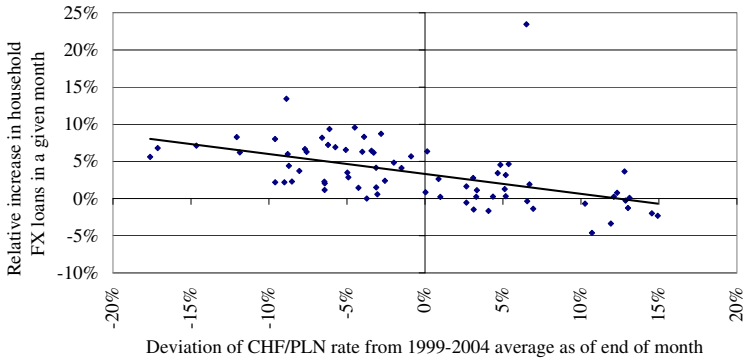
Bank	Loans in PLN	Loans in CHF
BGŻ	90 000	100 000
BOŚ	103 797	99 144 (76 693)
BPH	144 000	136 000
Dom (Getin Bank branch)	75 000	125 000
Fortis Bank	142 707	165 463 (106 400)
GE Money Bank	135 000	163 000
ING Bank Śląski	73 469	CHF loans not offered
Invest-Bank	146 400	CHF loans not offered
Kredyt Bank	125 000	125 000 (115 000)
Lukas Bank	122 000	CHF loans not offered
Mbank	87 500	87 500
Millennium	137 500	156 000
MultiBank	84 189	84 189 (67 351)
Nordea Bank Polska	103 200	103 200
PKO BP	202 371	202 371
Santander Consumer Bank	158 713	158 713
Raiffeisen Bank Polska	114 000	128 000

Notes:
1. Calculations based on the following assumptions: loan term – 20 years, the minimum own contribution accepted by the bank (at most banks – no own contribution), borrower's characteristics: a family with two children, post–tax monthly income 2,500 zloty, living in a city with 100,000 inhabitants, a car, no other loans.
2. Swiss franc loans – zloty equivalent.
3. In brackets, the amount of loan after July 1, 2006, i.e. after *Recommendation S* comes into force.
Source: Maciej Kossowski, "Kto się załapie na kredyt we frankach?", April 2006, Expander

customer's creditworthiness for a zloty loan may indicate that while assessing the customer's creditworthiness, the bank has not accounted for the FX risk borne by the borrower to a sufficient extent.

Another threat to the quality of the banks' assets may be posed by foreign currency loans taken out by households that expect the trend towards zloty appreciation observed currently to continue. A depreciation of the zloty may increase the debt service burden on borrowers, to such an extent that they become unable to service their loans. Taking out foreign currency loans during periods when the exchange rate of the zloty is much stronger than the long-term equilibrium level may lead to a similar risk. In this context, the increase in the growth rate of foreign currency housing loans together with the zloty appreciation observed in 2005 may raise concerns whether the borrowers' assessment of their ability to repay the loans contracted was not based on expectations of a further permanent appreciation of the zloty. This is confirmed by the comparison between the growth of foreign currency loans (adjusted for exchange rate fluctuations) and the zloty exchange rate (see Figure 3.9), which demonstrates that between 1999 and 2005, the amount of foreign currency loans to households grew during periods when the zloty was strong and fell when it was weak. The borrowers' behaviour may indicate that they account for the FX risk assumed only to a limited extent. In such circumstances, the

Figure 3.9. Monthly increases in foreign currency loans to households vs. the exchange rate of the zloty against the Swiss franc, 1999-2004



Notes:
1. Increases in foreign currency loans adjusted for exchange rate fluctuations.
2. An upward deviation of the exchange rate relative to the average signifies zloty depreciation.
Source: NBP.

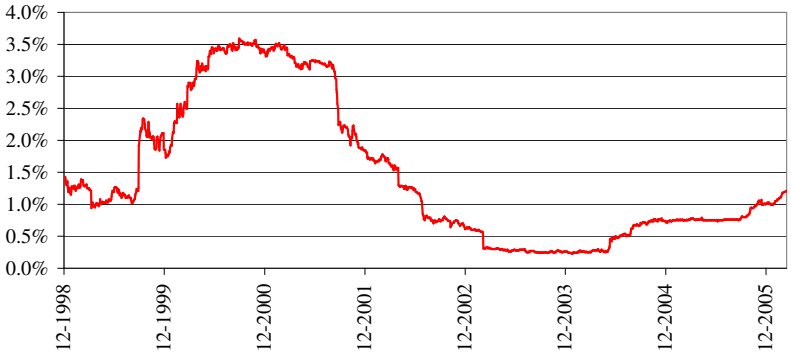
manner in which banks inform customers about the risk undertaken becomes particularly important.

Apart from FX risk, borrowers who have taken out foreign currency loans have also assumed the foreign interest rate risk. In December 2005, over 78% of granted foreign currency housing loans were denominated in Swiss francs, which was a result of the historically low level of Swiss interest rates. Interest rates on most foreign currency loans are floating ones, making the economic situation of Switzerland of high importance for many borrowers in Poland. As a result of the Swiss National Bank having tightened its monetary policy, the 3M LIBOR rate for the Swiss franc went up from 0.2% in mid-2004 to 1.21% in March 2006 (see Figure 3.10). Market expectations indicate that interest rates on the Swiss currency will rise by 50 basis points by the end of 2006 and a further 100–125 basis points by the end of 2007. These changes will increase the instalments paid by borrowers in Poland. Simulations concerning the repayment of long-term loans indicate that a movement in the LIBOR CHF interest rate by 200 basis points may cause a change in principal and interest loan instalments similar to an exchange rate depreciation of 20–25%.[45]

Another factor that contributes to credit risk is the fact that banks reduce requirements concerning the borrower's own contribution (as a result, some banks offer loans with LTV ratios of over 100%, allowing the part of the loan that exceeds property value to be used e.g. for finishing work); therefore, even a relatively minor price decrease in the property market may drive the security value below the loan amount. Should problems with loan repayment emerge, the market value of the property will not be sufficient to recover the loan amount outstanding[46].

[45] An estimate for a loan amounting to PLN 120,000 granted for 20 years.
[46] The amount obtained from the sale of property taken over as collateral may be additionally reduced due to legal regulations that make eviction difficult. More on legal obstacles and other difficulties in liquidating

Figure 3.10. 3M LIBOR rate for the Swiss franc



Source: Thomson Datastream.

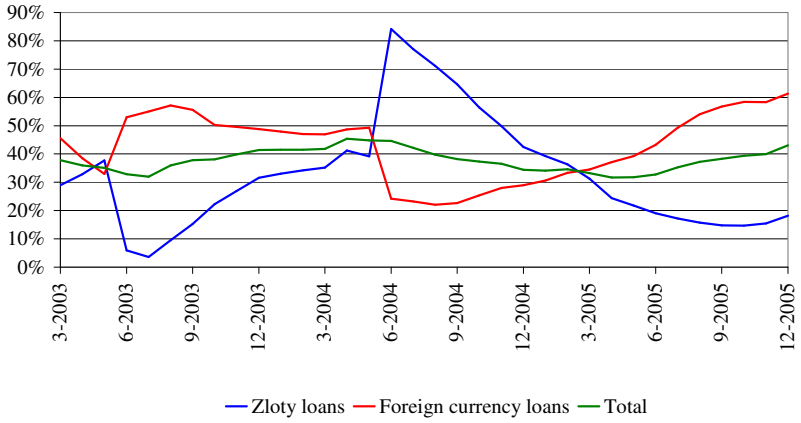
Growing uncertainty concerning the impact of the rapidly growing foreign currency lending on financial system soundness prompted the supervisory authorities to take steps aimed at strengthening credit risk management procedures at banks and the promotion of adequate information for customers concerning the FX risk associated with foreign currency debt. In March 2006, the Commission for Banking Supervision issued the *Recommendation S* aiming to enhance the banks' procedures and actual process of managing the risk associated with foreign currency mortgage loans.[47] The recommendation covers, *inter alia*, the following areas:

- managing the risk of the mortgage-secured credit exposure portfolio;
- controlling the risk assumed (appropriate tools for the proper measurement of risk associated with mortgage-secured credit exposures);
- the borrower's FX risk and interest rate risk (a systematic analysis of the FX risk and interest rate risk borne by the borrower);
- security (the analysis of risk associated with the property securing the credit exposure and the proper verification of its value; in this area, the operation of databases may prove very useful for drawing up and verifying property appraisals, and therefore contribute to improving the quality of mortgage security);
- lending limits (internal limits concerning the entire portfolio, individual types of mortgage-secured credit exposures as well as borrowers and borrower groups);
- customer relations (the type and quality of information presented to customers).

mortgage collateral in: "Financial Stability Report 2004", Box 4: "Mortgage lending risk – legal obstacles and other difficulties in liquidating mortgage collateral", p. 56.

[47] Recommendation S on good practice in the area of mortgage-secured credit exposures, (in Polish), http://www.nbp.pl.

Figure 3.11. Housing loans to households (growth rate year-on-year)



Source: NBP.

Table 3.11. Irregular loan ratios for property loans, %

	2003	2004	2005
Property loans. of which:	7.4	6.3	5.8
by currency			
- zloty loans	9.0	7.2	8.0
- foreign currency loans	6.0	5.2	4.1
by type			
- housing loans for households	5.4	3.3	2.4
- housing loans for corporates	10.5	9.7	8.9
- other property loans	14.0	16.2	20.9

Source: NBP.

A quantitative regulation that introduces higher capital requirements depending on the amount of foreign currency loans extended, particularly for high LTV ratios, is currently being consulted with the banking sector.

In the future, the "Act on Financial Assistance for Families Purchasing Own Flats",[48] whose draft was adopted by the government at the beginning of 2006, may have some impact on the housing loan market. The provisions included in the draft act limit central government assistance to borrowers who contract zloty loans, which may boost the popularity of such loans.

The Treasury is to reimburse part of the interest paid by the borrower, reducing the difference between interest rates on zloty and foreign currency loans.[49] It appears, however, that no surge in zloty housing loans should be expected, since there are many restrictions limiting access

[48] See the government's draft of the Act on Financial Assistance for Families Purchasing Own Flats, parliament document No. 393.

[49] A simulation conducted for a loan used to purchase a 50 square metre flat, where the price for 1 square metre is PLN 3,885 (30% own contribution), with a maturity of 20 years, demonstrates that for eight years, monthly interest instalments will be PLN 200–350 lower than instalments for a zloty loan without subsidies;

to Treasury subsidies. Such a loan may only be used to purchase a new flat and the price of 1 square metre in the subsidised flat may not exceed the arithmetic mean of the two latest replacement cost figures per 1 square metre of flat in a given area. This maximum price level will considerably limit access to preferential loans.[50] Moreover, only families and single parents who have no flat would qualify for the loan subsidy. The subsidy will be paid for eight years and cover the equivalent of 50 square metres in a flat that is not larger than 75 square metres and in a house that is not larger than 100 square metres. If the borrower sells the flat or house purchased within five years, he or she will have to return the subsidies received. As a result of those restrictions, the impact of the proposed solution on the housing loan market will probably be limited.

3.1.3. Outlook for loan quality

Financial system stability analyses consist not only in considering the most probable scenarios, but also those economic paths that, although less probable, may have a significant adverse impact on the safe operation of financial institutions. Therefore the potential impact of two different possible economic scenarios on the operation of financial institutions has been presented below. The most probable path has been adopted as the base scenario. The analysis also includes an alternative scenario; the probability of its occurrence is estimated to be low, but it may have a significant impact on the conditions under which financial institutions operate.

Base scenario

The base (most probable) scenario, which is in line with inflation and GDP projections included in the Inflation Report, does not indicate any significant threats to the proper operation of the financial system. Over the next two years, year-on-year GDP growth of 4–4.5% and year-on-year investment growth of 7–10% are assumed as well as a recovery in domestic consumption and stabilisation of export growth at a high level.

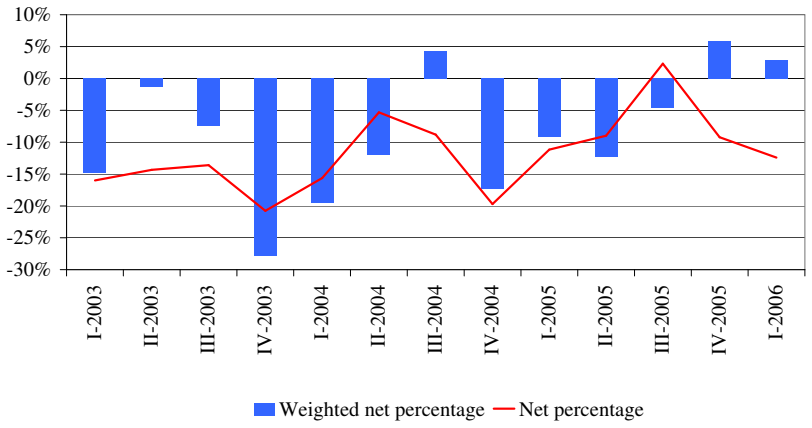
If the situation develops according to the base scenario, it may be expected that enterprises will expand the scope of their activities, also utilising loans for this purpose. Both high production capacity utilisation and the expected improvement in the efficiency of using EU funds suggest that the enterprises' operations will expand. There are, however, also barriers to further acceleration in investment growth; those have been pointed out in Chapter 1.

Survey studies indicate that there are reasons to expect an increase in effective demand for loans to enterprises. Currently, debt is primarily accumulated by large enterprises, which is evidenced by the positive values of the weighted loan debt index (see Figure 3.12). At the same time, a trend emerged (and was sustained) in 2005 towards the easing of the banks' lending policies towards SMEs. In the first quarter of 2006, banks expect a further gradual easing of lending policies in the enterprise sector (see Figure 3.13).

where there is no own contribution, instalments will be PLN 300–500 lower.

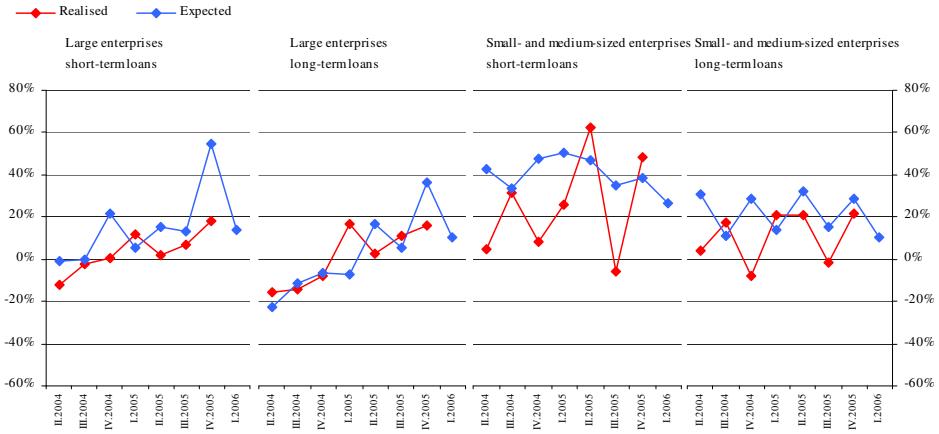
[50] In the first quarter of 2006, in order to qualify for a subsidy for the loan taken out in order to purchase a flat in Warsaw, the price of 1 square metre of the flat could not exceed PLN 3,885, while the data collected by the PONT INFO company indicate that the average price for 1 square metre in Warsaw in December 2005 was PLN 4,919.

Figure 3.12. Loan debt index



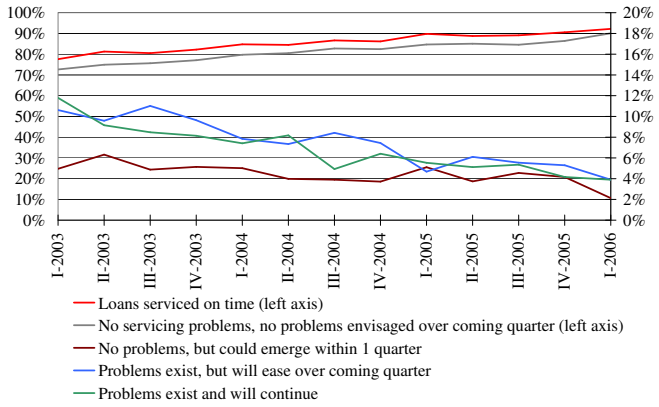
Note: Net percentage = percentage of enterprises intending to increase their loan debt in the next quarter – percentage of enterprises intending to decrease their loan debt in the next quarter.
Source: NBP quick monitoring survey data.

Figure 3.13. Bank enterprise sector lending policies – Q1 2006 expectations



Note: The net percentage is the difference between the asset-weighted percentages of banks intending to ease and tighten their lending policies
Source: "Senior Loan Officer Opinion Survey on Bank Lending Practices and Credit Conditions", NBP, Q1 2006

Figure 3.14. Problems with loan servicing and prospects of problems in the next quarter



Note: Percentages of enterprises which are borrowers; serviced on time = do not have and do not expect problems with loan servicing in the next quarter + do not have problems, but they may appear in the next quarter.
Source: NBP.

The easing of lending policies towards small and medium-sized enterprises, which exhibit a low (and often negative) profitability as a group, will require constant, careful observation on the part of banks. On the one hand, this phenomenon may be considered an increase in the risk assumed by banks as a result of an increase in competitive pressure; such a development would be unfavourable from the point of view of financial system stability. On the other hand, however, if banks are right in expecting a further improvement in the economic situation and an increase in the profitability of companies, smaller ones as well, the strategy adopted may prove an efficient way of enhancing their interest income. Enterprise expectations concerning their future ability to service debt also suggest that this might be the right interpretation. The percentages of enterprises which pay their debts on time as well as of those that pay them on time and do not expect any short-term problems with loan servicing grew throughout 2005; in the first quarter of 2006, they reached the highest values (over 90%) from the time the survey was first conducted (see Figure 3.14). As a result, the percentage of enterprises that have problems servicing their loans decreased to 7.8%, i.e. the lowest in the history of the survey.

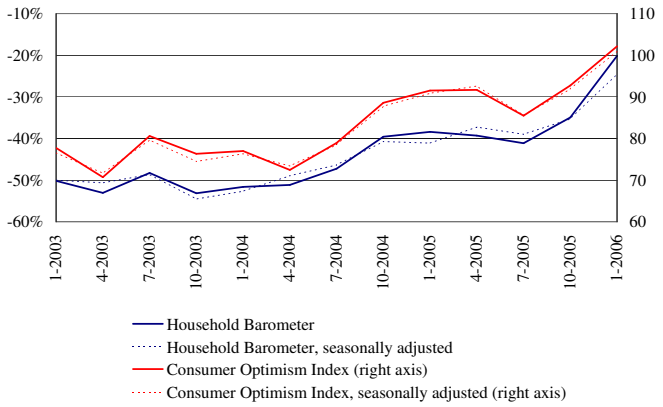
Differences within the enterprise sector may still play a significant role. Enterprises from individual sections express different expectations concerning their future ability to settle liabilities. Enterprises from the education (M) section where a significant improvement has been recorded compared to the same period a year ago are the most optimistic with regard to their future financial standing. A considerable improvement has also been recorded in the construction industry. For the first time in several years, the percentage of enterprises that expect their financial standing to improve prevails there (see Table 3.12). Enterprises from the retail trade (G) and hotels and restaurants (H) sections are the most pessimistic with regard to their financial standing within the next year. In February 2006, expectations in both sections were less optimistic compared to February 2005. In those sections, loan quality may deteriorate within the next year.

Table 3.12. Ability to settle financial liabilities – forecast

Section	Balance		Change y/y	
	1.2006	2.2006	1.2006	2.2006
A – Agriculture				
B – Fishing				
C – Mining				
D – Manufacturing	1.7	1.9	-1.1	-1.3
E – Production and supply of energy, gas and water				
F – Construction	0.7	6.3	7.6	10.7
G – Retail trade (excluding repairs)	-15.3	-13.3	0.1	-1.5
H – Hotels and restaurants	-14.0	-7.3	1.1	-12.3
I – Transport and communication	2.3	12.8	-8.7	0.9
J – Financial intermediation	41.4	36.9	15.5	4.9
K – Real estate, research and business activities	-0.7	-0.5	1.6	0,7
L – Public administration	0	0	0	0
M – Education	16.5	29.9	11.8	23.1
N – Health	2.8	4.7	4.8	8.6
O – Other	1.1	8.3	-29.8	-26.4

Note: D and G sections: forecast of the ability to settle financial liabilities on a current basis;
F section: forecast of the enterprises' financial standing;
other sections: expected financial standing.
Balance = percentage of enterprises expecting their financial standing or the ability to settle liabilities on a current basis to improve – percentage of enterprises expecting their financial standing or the ability to settle liabilities on a current basis to deteriorate.
Source: Central Statistical Office.

Figure 3.15. Household standing within the next year



Source: Instytut Rozwoju Gospodarczego SGH, Ipsos.

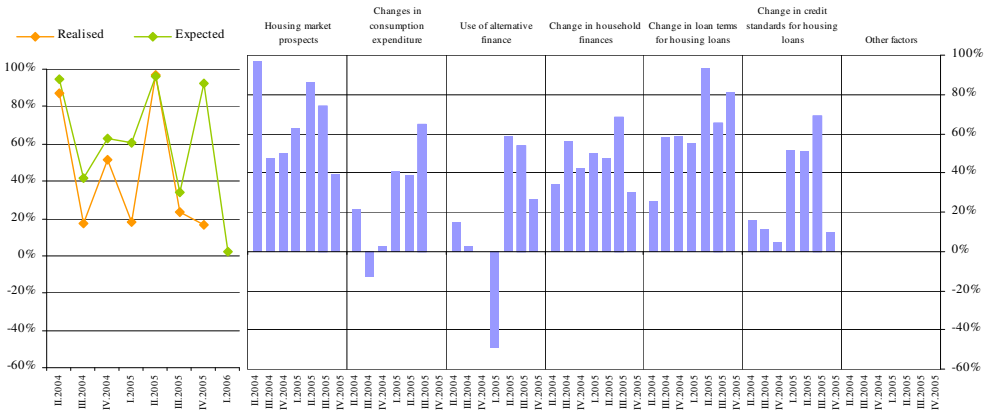
The improvement in labour market conditions as well as household financial standing (including income), together with an improvement in the general domestic economic situation, have contributed to an increase in the consumers' optimism. This is evidenced by record values of consumer confidence indices: the Household Condition Barometer (compiled by Research Institute of Economic Development at Warsaw School of Economics) has risen to the highest level since the fourth quarter of 1997, while the Consumer Optimism Index (Ipsos-Demoskop) has reached the highest level since the third quarter of 1998 (see Figure 3.15). All components of both indices have improved, primarily due to a decrease in the number of pessimists. Households exhibit fewer concerns concerning the general domestic economic environment, their own financial standing and unemployment.

If the base scenario becomes reality, it may be expected that the growth of household consumption (including that financed by loans) will accelerate in 2006. The increase in consumer demand will be strengthened by further improvement in the labour market (an increase in real wages at the turn of 2006 and the growing number of employees will cause a rise in aggregate wages) and consumer optimism. At the same time, strong competition between banks in the household loan segment and the increasing number of households that meet the minimum loan standards will contribute to wider access to loans.

This is confirmed by the results of surveys on the loan market condition. In 2005, household demand for loans grew, particularly in the consumer loan segment (see Figures 3.16 and 3.17). Banks expected that in the first quarter of 2006, the demand for consumer loans would rise further and the demand for housing loans would stabilise at a high level. Along with the increase in demand, banks eased their lending policies with regard to both housing and consumer loans in 2005 (the fourth quarter, when policies in the housing loan segment were not eased, was an exception). In the first quarter of 2006, banks expect a further easing of lending policies regarding consumer loans (see Figure 3.18). However, they do not expect any changes in lending policies with regard to housing loans, which is probably the result of the proposal for, and later the introduction of a CBS recommendation concerning this market segment (see Figure 3.19).

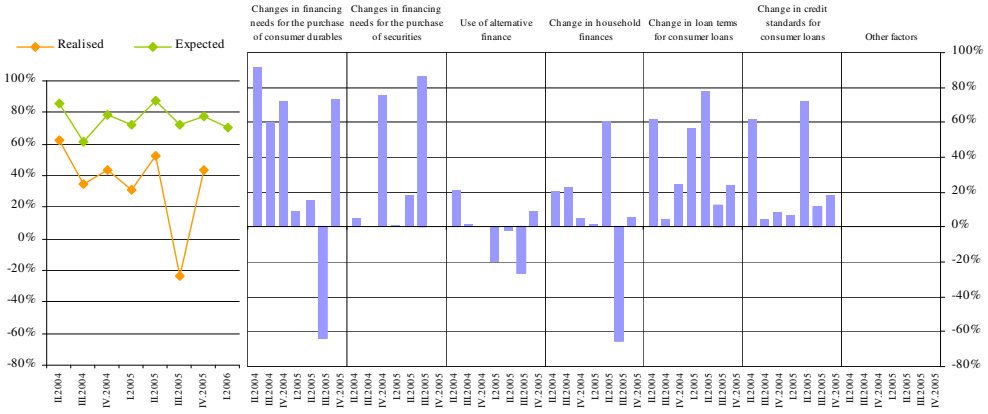
If the situation develops according to the most probable scenario, an improvement in the

Figure 3.16. Household demand for housing loans



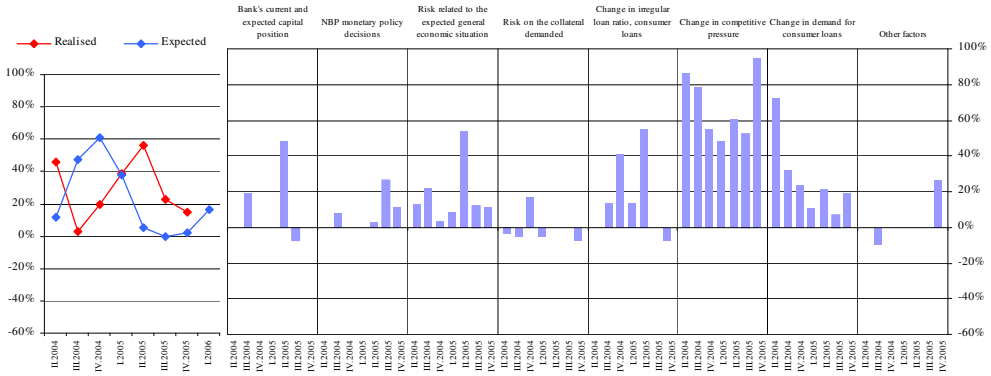
Note: The net percentage is the difference between the asset-weighted percentages of banks declaring/expecting an increase and decrease in demand
Source: "Senior Loan Officer Opinion Survey on Bank Lending Practices and Credit Conditions", NBP, Q1 2006

Figure 3.17. Household demand for consumer loans



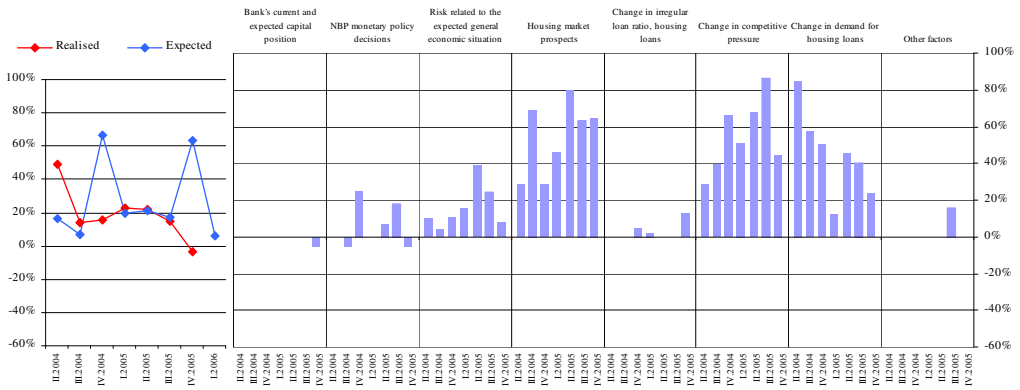
Note: The net percentage is the difference between the asset-weighted percentages of banks declaring/expecting an increase and decrease in demand
Source: "Senior Loan Officer Opinion Survey on Bank Lending Practices and Credit Conditions", NBP, Q1 2006

Figure 3.18. Bank lending policies and reasons for their changes – consumer loans to households



Note: The net percentage is the difference between the asset-weighted percentages of banks declaring/expecting an easing and tightening of lending policies
Source: "Senior Loan Officer Opinion Survey on Bank Lending Practices and Credit Conditions", NBP, Q1 2006

Figure 3.19. Bank lending policies and reasons for their changes – housing loans to households



Note: The net percentage is the difference between the asset-weighted percentages of banks declaring/expecting an easing and tightening of lending policies
Source: "Senior Loan Officer Opinion Survey on Bank Lending Practices and Credit Conditions", NBP, Q1 2006

quality of the loan portfolio may be expected. Households will find it easier to service the loans already contracted, primarily due to economic growth and the constantly improving labour market conditions. The expected further growth in lending will contribute to an improvement in loan quality indicators by producing a statistical effect – newly extended loans are classified satisfactory and thus decrease the proportion of irregular loans in the overall portfolio.

Alternative scenario

The assessment of the possible impact of events whose probability is not considered to be high, but which, should they occur, may have a significant adverse effect on the response of financial markets and the safe operation of financial institutions (the so-called alternative scenario) also constitutes an important part of financial sector stability examination. This analysis is considered a necessary complement to the assessment conducted based on the most probable situation (base scenario).

From the point of view of stability analyses, the banking sector is the most important segment of the financial system. For banks, in turn, credit risk is the most significant one. Therefore the assumption that GDP growth will slow down significantly is the starting point for alternative scenario considerations, since this is the factor that may have the largest impact on the credit risk to which financial institutions are exposed.

There are several risk factors (which, although not very probable, may emerge) that might contribute to reducing the economic growth rate. These constitute a correction of the global imbalances currently present (e.g. sudden changes in the EUR/USD exchange rate, an increase in uncertainty in global financial markets), a reduction in the foreign economic growth rate and, as a result, a decrease in demand for Polish exports and a drop in the inflow of foreign direct investment or a slump in domestic investment caused by an increase in business uncertainty. In the alternative scenario, slower GDP growth is accompanied by deteriorating conditions in the labour market. Smaller incomes of enterprises and households alike would make the repayment of loans contracted earlier more difficult and would also cause a decrease in creditworthiness, making it harder to obtain new funds. As a result, the banks' expenses would grow, fuelled by an increase in net charges to specific provisions as well as allowances against the impairment of credit exposures. The possibilities of generating revenue would also drop due to the reduced volume of new loans.

Should the situation develop according to the alternative scenario, it may be expected that enterprises will limit their investment activities and their financial condition may deteriorate. This would be indirectly related to the possible increase in debt servicing cost and the slump in domestic demand. The deterioration in the standing of households assumed in the alternative scenario also means a possible decrease in demand for the products and services offered by enterprises. Slower loan growth and deterioration in the enterprises' standing would translate to a deterioration in the quality of loans extended to them. The percentage of enterprises that settle their liabilities in a timely manner would fall. The deterioration in loan quality indices would also be a result of the fact that the statistical effect stemming from the growth in new loan volume would no longer be present.

The deterioration in the domestic economic situation assumed under the alternative scenario, particularly where accompanied by adjustments in world markets, might also lead to an

outflow of portfolio capital from the Polish financial market. Bond yields could rise in the medium term and the zloty could depreciate against the euro. This could lead to an increase in inflation (due to the rising cost of imports) and an increase in interest rates along the entire domestic yield curve. In such circumstances, the household burden of servicing housing loans with WIBOR-indexed rates would grow. For foreign currency loans, the simultaneous depreciation of the zloty against the euro and the Swiss franc might additionally be felt, also leading to an increase in the cost of servicing FX-rate indexed housing loans. This would mean a further deterioration in the financial standing of households, and as a result an increase in the credit risk to which banks are exposed. The slow-down in GDP growth would adversely affect labour market conditions, limiting the income available to households to meet the liabilities contracted earlier. At the same time, the possible increase in foreign and domestic interest rates coupled with zloty depreciation would drive up the cost of servicing most loans extended to households. Higher inflation would, on the other hand, hamper the growth of savings and real wages, additionally limiting the possibilities of servicing existing debts and reducing the households' ability to obtain new loans. At the same time, deteriorating consumer sentiment would limit domestic demand and therefore additionally curb economic growth.

3.2. Foreign exchange risk

Foreign exchange instruments constitute a significant part of bank assets and liabilities. Despite the appreciation of the zloty in 2005, the share of foreign currency assets in total assets grew, which was caused by an increase in foreign currency claims on domestic non-financial customers (particularly in the housing loan category) and foreign financial corporations (see Tables 3.13 and 3.14).

The rise in claims on non-residents was particularly visible in the first half of the year, when foreign capital continued to flow into Polish Treasury bond and stock markets (see Chapter 2). Foreign investors bought Polish currency at Polish banks or obtained it through swaps. Zloty purchases led to an inflow of foreign exchange to banks, which was then placed with foreign financial institutions. This process, however, did not increase the banks' exposure to FX risk, since they compensated for the increase in their open balance sheet positions using off-balance sheet transactions.

Table 3.13. Banks' foreign currency assets and liabilities – amount (billion zloty)

	2004		2005	
	Total	of which: non-residents	Total	of which: non-residents
Foreign currency assets	128.3	57.5	152.9	64.5
- non-financial customers	59.5	1.5	71.2	1.8
- financial corporations	56.9	49.3	64.4	53.3
Foreign curency liabilities	85.8	30.9	97.7	31.9
- non-financial customers	48.9	2.4	56.9	2.1
- financial corporations	29.9	23.9	31.1	22.1

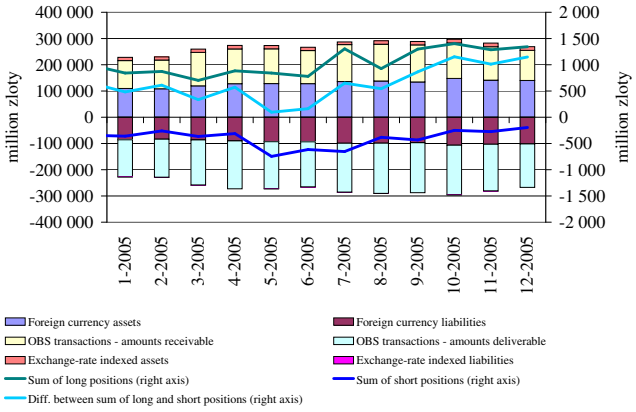
Source: NBP.

Table 3.14. Banks' foreign currency assets and liabilities – share of assets[1] and liabilities, %

	2004		2005	
	Total	of which: non-residents	Total	of which: non-residents
Foreign currency assets	22.3	10.0	24.3	10.3
- non-financial customers	10.4	0.3	11.3	0.3
- financial corporations	9.9	8.6	10.2	8.5
Foreign curency liabilities	15.9	5.7	16.3	5.3
- non-financial customers	9.1	0.5	9.4	0.5
- financial corporations	5.6	4.4	5.1	3.8

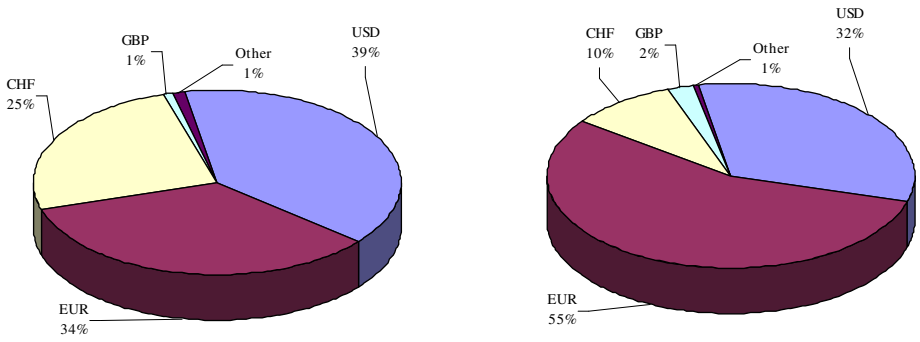
[1]Share of assets calculated as share of assets before specific and impairment provisions.
Source: NBP.

Figure 3.20. Components of commercial banks' FX position



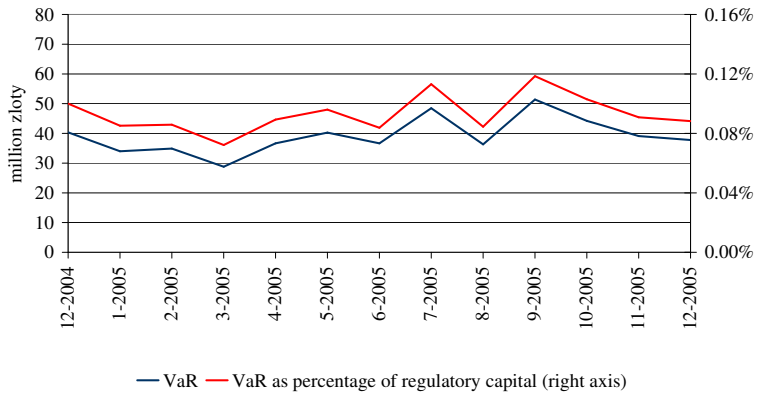
Source: NBP.

Figure 3.21. Currency composition of banking system foreign currency assets (left panel) and liabilities (right panel) as at end 2005



Source: NBP.

Figure 3.22. FX value at risk (banking sector total)



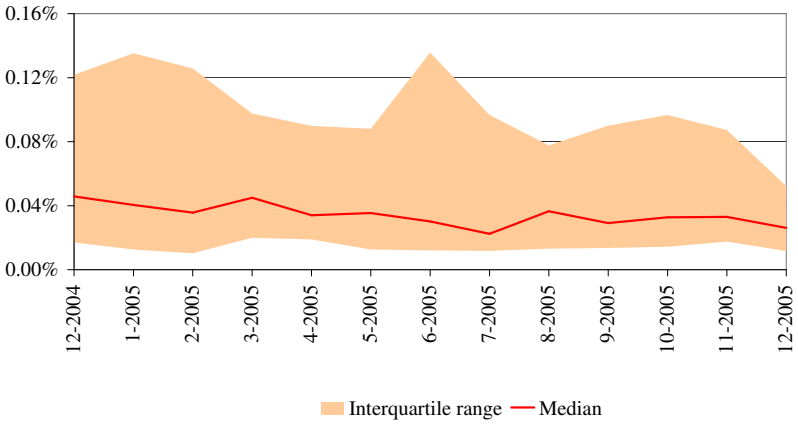
Source: NBP.

With regard to the currency composition of FX assets and liabilities, instruments denominated in euro and US dollars prevailed. In 2005, however, the share of instruments denominated in Swiss francs grew steadily; at the end of the year, they constituted a quarter of foreign currency assets. This was a result of the rapid growth in the amount of housing loans to households, which were most often taken out in the Swiss currency.

In the first half of the year, the share of assets denominated in US dollars was also growing. This change resulted from dollar appreciation against the euro (by 11% in the first half of 2005) and the continued upward trend in dollar claims on banks outside the euro area. This trend could have reflected the increased interest of U.S. investors and London-based ones operating on behalf of U.S. undertakings in the Polish securities market. In the second half of the year, as the involvement of foreign investors in the Polish market decreased, the amount of this asset item dropped.

In 2005, despite a large scale of their FX operations, the banks' exposure to *direct* FX risk

Figure 3.23. Distribution of FX value at risk expressed as a percentage of commercial banks' regulatory capital



Source: NBP.

was limited, since, just as in previous years, banks maintained their open FX positions at low levels. For that reason, the FX value at risk was also low – the total 10-day VaR figure did not exceed 0.2% of the banks' capital base (see Figure 3.22). The variation between banks in terms of the FX risk assumed was also small (see Figure 3.23). Thus, direct FX risk did not constitute a threat to the stability of the banking sector.

The significant share of FX items in the banks' loan portfolio also carries a risk of credit losses as a result of zloty depreciation, since a weaker zloty would impact the borrowers' ability to repay loans denominated in foreign currencies. In 2005, the high growth rate of housing loans to households, which are usually unable to hedge against FX risk, increased the sensitivity of the banks' asset quality to exchange rate fluctuations (see Section "Credit risk arising from property market financing").

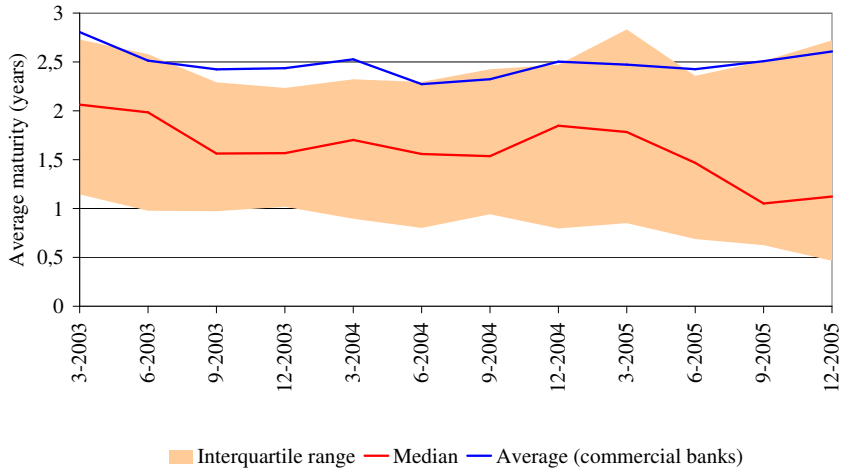
3.3. Interest rate risk

The data concerning the banks' holdings of Treasury securities indicate that resident banks remain the most conservative investors in this market (their portfolio exhibits the lowest duration among all institutional sectors). However, a trend towards an increase in the duration of the Treasury bond portfolio held by domestic banks could be observed throughout 2005 (banks increased the duration of their portfolio faster than the overall duration of Ministry of Finance issues grew).

Although data concerning duration for individual banks are not available, an analysis of changes in the distribution of the average maturity of debt securities held shows that large banks opted for much higher exposures to market interest rate risk than banks with smaller assets.[51] This may mean that non-residents who left the Treasury bond market due to an

[51] This is indicated by the growing divergence between the median and the weighted average of the distribution for the entire sector. Moreover, the weighted average remains very high relative to the entire distribution –

Figure 3.24. Average maturity of debt securities held by commercial banks



Source: NBP.

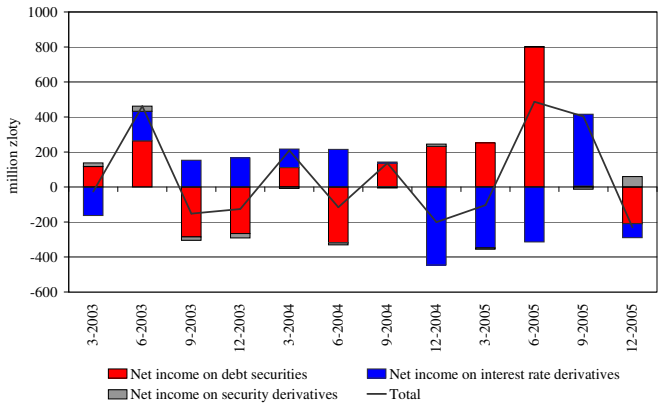
increase in political risk conducted transactions mainly with larger banks. This is indicated by an analysis of detailed data concerning the distribution of the average maturity of debt securities held by banks – high average maturities and an increase in average maturity are typical of the largest banks. At the same time, the trend towards an increase in the share of money market bills in the portfolios held by smaller banks was very pronounced – securities with longer maturities were replaced by those with shorter ones. This caused a significant reduction in those banks' exposures to market interest rate risk related to the debt securities portfolio held. Those trends led to an increase in the diversification of exposure to interest rate risk within the banking sector.[52]

In 2005, two periods when disturbances in the Treasury bond market occurred could be observed: first in March, and then in autumn. Although the causes were different (see Section 2.1 for more details), the consequences were similar – the increase in risk perceived by foreign investors prompted them to limit their zloty positions, which led to sales of Treasury bonds and an upward shift of the yield curve, particularly for longer maturities. As it became apparent, as a result of those events domestic banks incurred losses related to interest rate instruments both in the first and fourth quarters. However, the favourable development of market conditions over the rest of the year allowed banks to achieve positive gains on interest rate-related instrument operations for the entire 2005.

around the third quartile.

[52] This is evidenced by the growing difference between the third and first quartiles of the distribution.

Figure 3.25. Selected profit and loss items related to interest-rate sensitive instruments



Source: NBP.

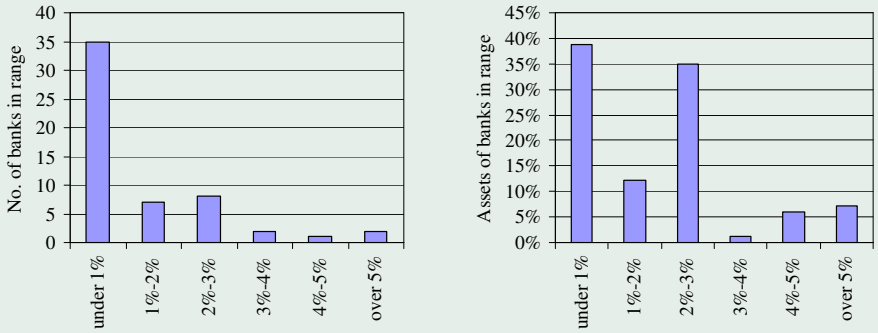
Box 3. Combined assessment of FX and interest rate risks

Market risk is the second most important type of risk (after credit risk) to which banks are exposed. In traditional banking business, which focuses on lending and deposit–taking business, the interest rate risk plays a major role. This risk usually emerges where interest rates on bank's claims and liabilities change at different dates.

The assessment of the scale of the interest rate risk assumed by the Polish banking sector presented in this box is based on repricing gap data (broken down by the length of the period until the rate change) collected by the NBP from banks since mid-2005. The repricing gap for a given range of periods until the rate change (repricing date) is defined as the difference between the amount of claims and liabilities classified to this range. Those data include balance sheet items (interest assets and liabilities) as well as off-balance sheet transactions whose value depends on interest rates and are reported by banks in breakdown by instruments denominated in zloty, euro, US dollar and other currencies. The data used for the simulation included both instruments classified to the trading book and those belonging to the banking book.

The value at risk (VaR) method was used to assess the scale of interest rate risk. For every repricing date range, the duration determined on the basis of data reported by some banks was assumed. This made it possible to estimate the duration gap. Based on those data, the impact of interest rate movements on the banks' earnings was estimated as the change in the current value of the instruments (discounted future cash flows) in the banks' portfolios. This does not equal the change in financial result in accounting terms, since for instruments valued at amortised cost (i.e. most of those in the banking book), changes in market interest rates do not cause changes in the instrument value in the balance sheet. However, the approach adopted here allows to estimate the change in the theoretical market value of the bank's portfolio.

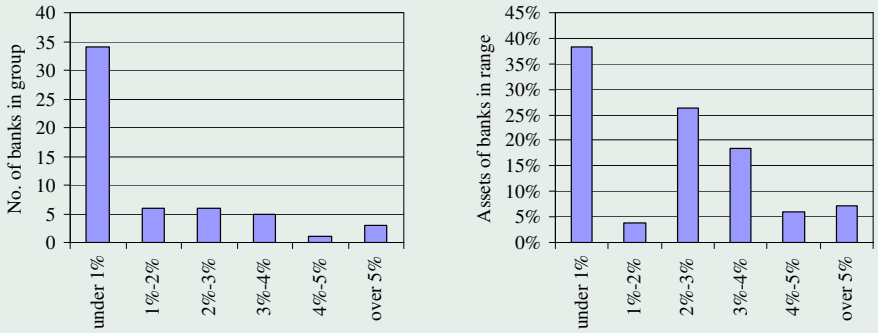
Figure 1. Distribution of number (left panel) and assets (right panel) of commercial banks by value at risk expressed as percentage of regulatory capital – Monte Carlo method



Note: Value at risk at 99%.
Source: NBP.

The VaR simulation presented below was conducted for both FX risk and interest rate risk. Two sets of calculations were performed – using the Monte Carlo method and historical simulation method. Market data from 2005 were used for both simulations.

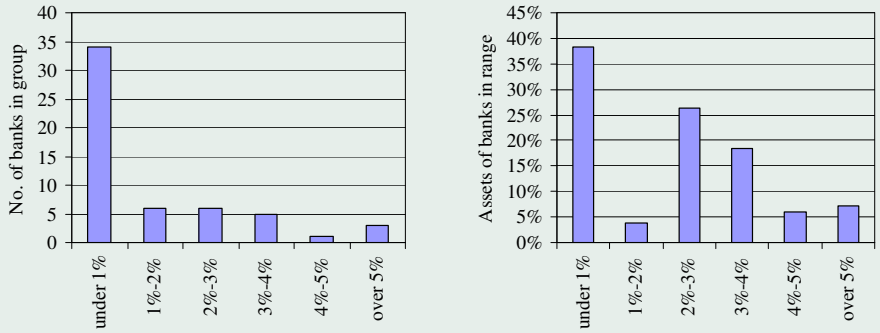
Figure 2. Distribution of number (left panel) and assets (right panel) of commercial banks by value at risk expressed as percentage of regulatory capital – historical simulation



Note: Value at risk at 99%.
Source: NBP.

The results of simulations conducted for December 2005 data indicate that for most commercial banks, the value at risk calculated for a ten-day horizon does not exceed 5% of their regulatory capital (see Figures 1 and 2). The analysis of variation in value at risk depending on bank size indicates that for most large banks, the value at risk does not exceed 3% of the bank's regulatory capital.

Figure 3. Distribution of number (left panel) and assets (right panel) of commercial banks by value at risk expressed as percentage of regulatory capital – 2001 market quotations



Note: Value at risk at 99%.
Source: NBP.

In 2005, the volatility of market quotations in the Polish as well as global markets was limited, which translated to a relatively low value at risk level. In order to estimate the scale of possible losses under higher market quotation volatility, a third simulation was run, using 2001 market data. During this period, significant price movements occurred, both in the Polish market (after reports of a high budget deficit in July) and in global markets (as a result of terrorist attacks). The results of simulations conducted using the historical simulation method for 2001 data indicate that despite an increase in value at risk, it does not exceed 10% of regulatory capital for most large banks (see Figure 3).

3.4. Equity price risk

In 2005, the risk arising from the banks' involvement in equity (hereinafter referred to as shares) was very low and will probably remain so in the short-term, since the proportion of shares in both the banking sector's assets and its securities portfolio is very low (see Table 3.15).

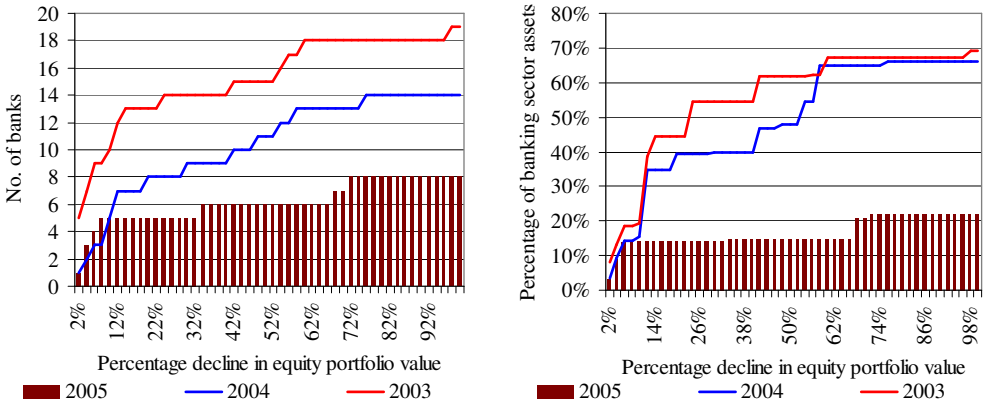
Individual banks' exposure to equity price risk was also small. At the end of 2005, only at four banks did the proportion of shares in securities exceed 2% (but it was lower than 5%); at other banks, it was below 1%. The fact that the banks' involvement in shares at year-end was lower than in previous periods may have been the result of banks cashing in on their stock

Table 3.15. Ratio of equity portfolio to assets and to the entire securities portfolio, %

	2003	2004	2005
Proportion of equities and assets	0.36	0.20	0.12
Proportion of equities and sum of securities	1.56	0.95	0.55

Source: NBP.

Figure 3.26. Number of commercial banks exhibiting a 2.5% decrease in net profit (or increase in loss) under the assumed scenario of portfolio value slump (left panel) and the share of those banks' assets in sector assets (right panel)



Note: It has been assumed that a drop in the value of equity securities leads to a decrease in profit or increase in loss by exactly the amount by which the value has decreased.
Source: NBP.

Table 3.16. Financial performance of brokerage houses and offices

	2003	2004	First half of 2005
Pre-tax earnings (in million zloty)	238.0	519.0	328.9
Pre-tax profit margin (%)	24.6	39.7	42.0

Note: Pre-tax profit margin is the ratio of pre-tax earnings to turnover.
Source: GUS.

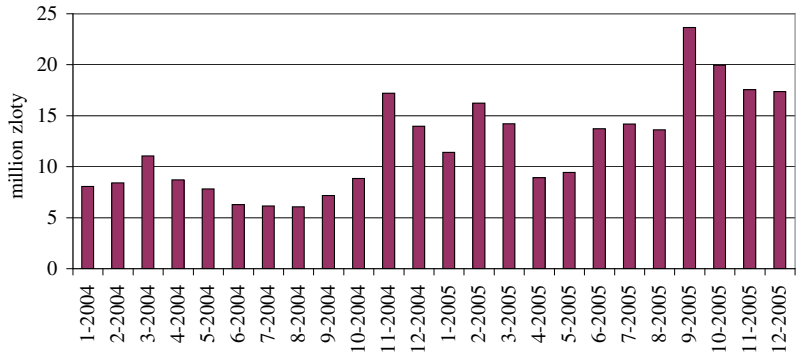
gains after a very good year on the WSE (at the end of the first half, the proportion of equity in the securities portfolio was slightly higher).

A simulation of the effect of a drop in stock prices on the banks' earnings confirms the limited impact of the equity price risk on the banks' profitability. In order for the assumed 2.5% decrease in profit (or increase in loss) for a bank investing for its own account on the WSE, a 65% slump in the stock portfolio value would be required. Banks whose earnings would be affected by the drop account for at most 20% of the sector's assets (see Figure 3.26).

It should be mentioned that the favourable climate on the WSE in 2005 improved the banks' earnings due to profits achieved by brokerage offices and houses[53] (see Table 3.16). The contributing factors were an increase in stock exchange turnover compared to 2004 and the increased interest in the services offered by intermediaries in the stock and stock exchange derivative trade (see Figure 3.27). According to Central Statistical Office data, pre-tax earnings of brokerage offices and houses in the first half of 2005 were almost 50% higher than in the first half of 2004. Whether such performance can be sustained in 2006 will depend primarily on the continued upward trend at the WSE.

[53] The effect can be observed in the groups' consolidated financial statements.

Figure 3.27. Monthly turnover of brokerage houses in the WSE stock market



Source: WSE.

3.5. Liquidity risk

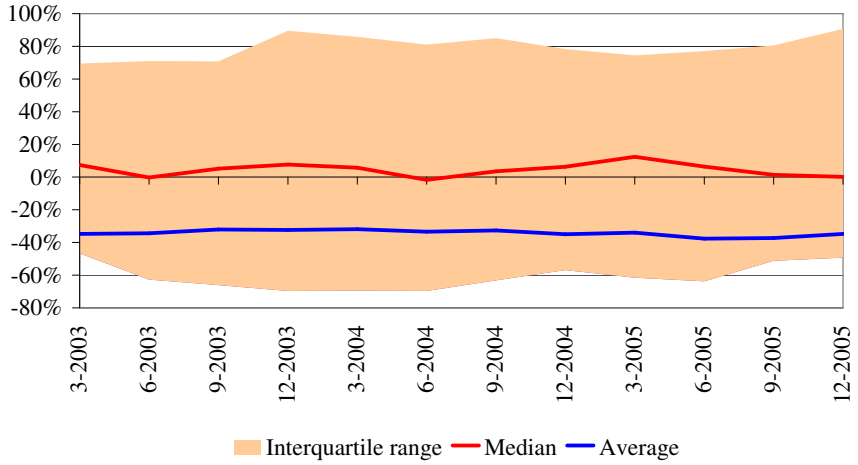
In the medium term, the liquidity of banks depends on stable sources of funding their lending activity, such as customer deposits. Financing through market instruments (e.g. interbank deposits) is usually of a short-term nature, and may prove more expensive for banks. Utilisation of market financing is measured by the funding gap[54] (see Figure 3.28).

The analysis of funding gap distribution demonstrates that for around half of banks, the loans granted to customers exceed the deposits taken from them. Still, the average value of the funding gap is negative. This means that banks that raise funds from sources other than customer deposits are the small ones. They obtain funds from other financial institutions, in particular through the interbank market and from strategic investors , through term deposits and loans. However, those smaller banks that are largely dependent on sources of financing other than deposits, and at the same time cannot rely on a strategic investor's support, must manage their liquidity risk with greater care. Interbank deposits are usually short-term ones; in the event of disturbances in this market, obtaining new loans (the rolling over of earlier liabilities) may prove impossible. The potential increase in funding costs as a result of a sudden rise in interest rates in the interbank market (e.g. as a result of a systemic liquidity disruption) is an additional risk for this group of banks.

The negative weighted average funding gap demonstrates that in terms of the entire system, the banks' strategic liquidity management situation is still quite comfortable, since the entire domestic lending can still be financed, with a substantial surplus, with domestic deposits. In the long term, however, banks may face a challenge arising from the rapid growth in lending and the outflow of deposits, e.g. towards investment funds.

[54] The funding gap is defined as the difference between the total amount of loans granted to the non-financial and general government sectors and the total amount of deposits taken from those sectors, expressed as a percentage of the amount of loans. A positive value of the funding gap indicates the proportion of loans extended that are financed by the bank with funds (other than customer deposits) obtained in the market. A negative value of the funding gap indicates that the amount of deposits taken from customers exceeds the amount of loans granted.

Figure 3.28. Funding gap distribution (commercial banks)



Source: NBP.

The situation with regard to short-term liquidity risk is different than that for the medium-term one. A short-term measure of liquidity risk is the liquidity gap, which shows the difference between the value of liabilities and the value of assets sorted into corresponding maturity buckets. Within the Polish banking system, there has been a steady surplus of short-term liabilities over short-term assets (see Figure 3.29).[55]

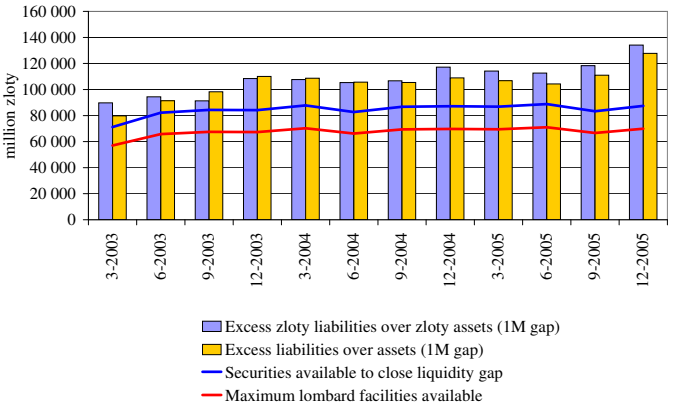
The persistent liquidity gap, combined with lack of symptoms suggesting liquidity problems in the Polish banking sector, reflects the considerable share of rolled-over deposits among deposits taken from non-financial customers. This means, however, that banks are exposed to liquidity risk should a bank run occur and a massive, sudden withdrawal of deposits begin. The data concerning the distribution of the extent to which the liquidity gap could be covered by the lombard loan indicate that the position of larger banks is more comfortable. However, this is not a favourable outcome from the point of view of stability of the entire banking sector, since small banks would probably be more exposed to a rapid outflow of deposits in case of a bank run.

3.6. Earnings

In terms of pre-tax and net earnings achieved, 2005 was the best year for the banking sector since the beginning of the 1990s and a much better year than 2002 and 2003, when the banks' lower earnings reflected the economic slowdown. Pre-tax earnings amounted to 11.1 billion zloty, whereas net earnings came to 9.2 billion zloty, which means an increase on 2004 figures by 40% and 29%, respectively (see Table 3.17). As earnings increased, sector profitability and efficiency indicators also improved (see Table 3.18).

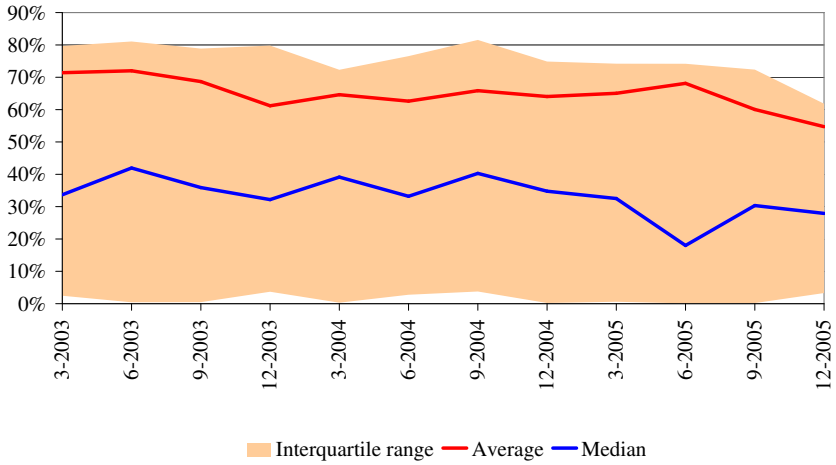
[55] Where problems with short-term funding emerge, a bank may obtain a lombard loan collateralised with the securities held; this, however, is an exceptional solution and may not be treated as a steady source of financing.

Figure 3.29. Liquidity gap at one month vs. securities held and maximum lombard loan amount



Note: Due to the changes introduced to reporting principles in June 2005, the size of the liquidity gap is comparable to previous data only to a limited extent. The most important change is the fact that claims and liabilities that are paid in instalments are recognised according to individual instalment payment dates.
Source: NBP.

Figure 3.30. Distribution of the extent to which the liquidity gap at one month could be covered by the lombard loan



Source: NBP.

Table 3.17. Selected banking sector profit and loss account figures, billion zloty

	2003	2004	2005
Interest income	27.8	30.3	33.8
Interest expense	12.8	13.8	15.5
Net interest income	15.0	16.6	18.3
Net fee income	7.6	8.3	7.9
Net gains/losses on financial operations	0.8	1.2	0.8
Net FX gains/losses	3.1	2.9	3.8
Net income from banking activity	27.0	29.3	31.6
General expense	16.1	16.5	17.5
Depreciation	2.4	2.7	2.3
Net movements in provisions and valuation allowances	4.1	2.4	1.3
Pre-tax earnings	4.5	7.9	11.1
Net earnings	2.4	7.1	9.2

Source: NBP.

Table 3.18. Selected operating ratios (as % of assets)

	2003	2004	2005
Net interest margin (NIM)	3.08	3.10	3.11
Net non-interest income	2.44	2.39	2.28
Net income from banking activity	5.52	5.49	5.38
Operating expense[1]	3.79	3.59	3.38
Net provisioning charges	0.84	0.44	0.23
Tax	0.38	0.30	0.32
ROA (pre-tax earnings)	0.92	1.48	1.89
ROA (net earnings)	0.48	1.34	1.57
ROE (pre-tax earnings)[2]	10.60	18.40	25.10
ROE (net earnings)[2]	5.50	16.60	20.80

[1] Operating expense = general expense + depreciation charges
[2] As % of core capital
Source: NBP.

Table 3.19. Increase in selected profit and loss account figures for the entire sector and for groups of banks using IFRS and PAS, %

	Sector	IFRS	PAS
Interest income	11.4	9.9	14.2
Interest expense	12.9	13.0	12.6
Net interest income	10.2	7.4	15.6
Net fee income	-4.6	-10.4	11.8
Net gains/losses on financial operations	-31.9	25.0	-119.4
Net FX gains/losses	31.0	26.6	58.0
Net income from banking activity	7.8	5.4	13.4
General expense	6.1	2.0	15.0
Depreciation	-13.0	-10.4	-18.8
Net movements in provisions and valuation allowances	-43.8	-51.1	-34.1
Pre-tax earnings	40.0	37.2	47.5
Net earnings	28.9	27.9	31.4

Note: Bank classification to IFRS and PAS groups as at December 2005.
Source: NBP.

Among other things, the rise in earnings on traditional banking business (interest income) and net gains on foreign exchange transactions as well as equity income contributed to the improvement of the banks' earnings in 2005. On the other hand, expense items, i.e. depreciation charges for tangible and intangible assets as well as net provisions for irregular and impaired loans decreased significantly. However, it has to be emphasised that the proper analysis of changes in the capacity of the banking sector to generate profits as well as of factors which may influence their level and composition has been made difficult by the introduction of IFRS. Banks which prepare their financial statements in accordance with IFRS have a considerable share in banking sector assets and so they exert a significant influence on the profit and loss accounts of the entire banking sector (see Table 3.19). A comprehensive assessment of the impact of IFRS introduction on changes in the levels and composition of the banks' earnings is difficult due to the unavailability of supervisory *pro forma* financial statements for 2004. However, the results of a survey conducted among banks indicate that the introduction of IFRS contributed to a decrease in net impairment provisions. Estimates concerning the scale of impact of IFRS on the banks' earnings indicate that changes caused by new accounting standards did not exceed 5–10% of their earnings.

Net income from banking activity

Net interest income

The net interest income achieved by the banking sector in 2005 was higher by around 10.2% compared to the previous year. However, the ratio of net interest income to assets remained almost unchanged (at 3.11%).

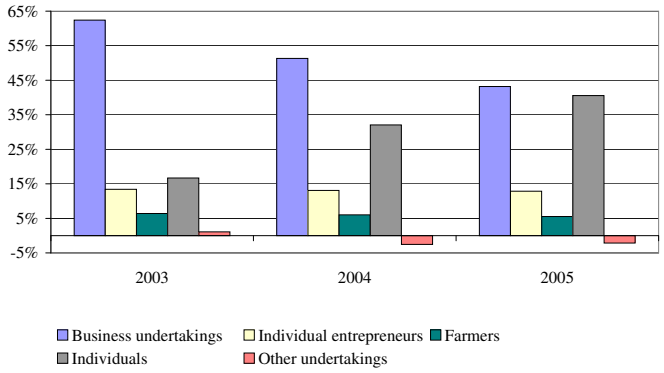
Net interest income on transactions with non-financial customers, which is a fundamental component of the banks' net interest income, rose significantly (by around 10%). This was, *inter alia*, the result of a considerable rise in the amount of certain types of loans – especially

Table 3.20. Rate of change in loans and deposits to/from non-financial customers, %

Growth (y/y)	2003	2004	2005
Corporate loans	-1.4	0.7	3.7
Household loans	11.1	17.0	25.3
Corporate deposits	24.1	26.6	16.6
Household deposits	-2.2	1.6	5.0

Source: NBP.

Figure 3.31. Structure of net interest income from non-financial customers



Source: NBP.

in the second half of the year – in particular housing and consumer loans. From May 2005, volume of loans to corporates also began to increase in a more pronounced manner, but their growth rate was low compared to that of loans to households (see Table 3.20). This was reflected by the lower share of income from loans to corporates in the increase of overall interest income. Compared to 2004, interest income on housing loans and credit card lending recorded the highest growth (by around 19% and 37%, respectively).

Significant differences in the growth rates of loans extended to individual borrower groups were reflected by accelerated changes in the composition of interest income, namely the rising demand for loans on the part of individuals was accompanied by a rise in the significance of income earned through granting those loans in overall interest income (see Table 3.21).

On the other hand, the decreasing share of interest expense paid to households in the overall composition of interest expense (see Table 3.22) should be attributed to the limited inflow of household deposits as customers were looking for alternative opportunities to invest their savings as well as the continued strong growth in corporate deposits. The gradual increase in the importance of corporate deposits as a source of short-term financing that has persisted for over three years now is bringing financial profits to banks, since interest rates on demand deposits, which account for over a half of corporate deposits, are relatively low. In the long term, however, this trend may prove unfavourable, since if corporate investment rises in a more pronounced manner, the funds accumulated will be the first resource used to finance it. This may lead to an outflow of a part of deposits from the banking sector (e.g. where

Table 3.21. Structure of interest income from non-financial customers, %

	2003	2004	2005
Interest income from households, of which:	54.0	58.0	61.7
-interest income from individuals, of which:	43.1	47.1	51.4
-authorised overdrafts	8.3	8.4	7.4
-housing loans	9.1	11.6	12.2
-credit cards	2.4	2.5	3.1
-loans for purchase of securities	0	0.3	0.4
-loans for installment purchases	9.8	8.7	8.2
-liabilities repurchased	0	0.5	0.2
Interest income from corporates	46.0	42.0	38.3

Source: NBP.

Table 3.22. Composition of interest expense, non-financial sector, %

	2003	2004	2005
Household deposits	76.4	69.1	67.6
-demand deposits	5.3	5.3	5.3
-time deposits	71.1	63.8	62.3
Corporate deposits	23.6	30.8	32.4
-demand deposits	5.7	8.4	8.4
-time deposits	17.9	22.5	24.0

Source: NBP.

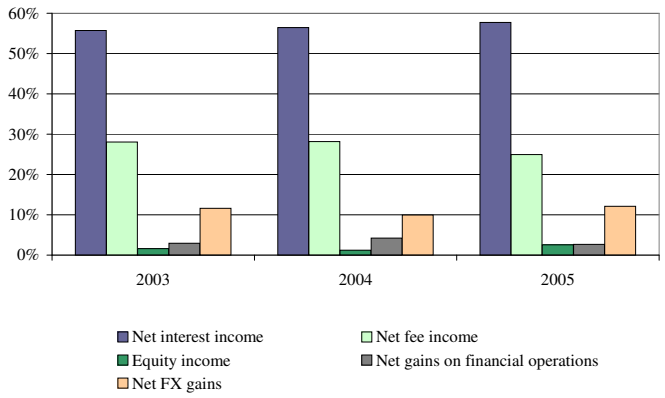
imported goods are purchased) and the need to replace them with other sources of financing.

As a result of movements in the growth rate of loans and deposits from individual groups of non-financial customers in 2005, the composition of net interest income also changed, i.e. net interest income on transactions with individuals almost reached the level of net interest income on transactions with corporates (see Figure 3.31).

Apart from the improvement in net interest income on transactions with non-financial customers, the enhanced profitability of operations conducted with financial corporations also contributed to the overall 2005 net interest income. In 2004 losses had been recorded on such operations, while in 2005 the gains amounted to zloty 975 million, i.e. around 5% of the entire net interest income. This improvement was a consequence of an increase in net interest income that occurred chiefly in transactions between banks, primarily with non-residents (around three-fourths of net interest income). This may have resulted from the inflow of foreign capital to the Treasury securities market – observed until September 2005 – and to the stock exchange.

In 2005, banks also achieved a slightly higher interest income on debt securities (by around 2%), primarily on NBP money market bills (an increase of around 50%). The increased income from money market bills was a consequence of the fact that their portfolio in the banking sector balance sheet more than tripled due to a decrease in funds deposited at the central bank by the Ministry of Finance, which increased commercial banks' liquidity that had to be

Figure 3.32. Structure of net income from banking activity



Source: NBP.

absorbed by the central bank, and expanded scale of foreign exchange purchase attributed to the inflow of EU funds. The increase in income was much lower than could be expected from the increase in the carrying value of bills, however, due to a drop in the NBP reference rate.

Both the application in 2005 of the valuation of financial instruments at amortised cost, accounting for the effective interest rate, and the fact that the recoverable value of claims started to be assessed according to IFRS constituted potentially important sources of modifications in the income and expense structure of banks.[56]

Net non-interest income

In 2005, the banks' non-interest sources of net income brought about 42% of net income from banking activity, which is a decrease of 2 percentage points compared to the previous year (see Figure 3.32). The ratio of net non-interest income to banking sector assets also decreased (to 2.28%). These changes happened despite the banks' attempts to diversify income sources and develop services allowing them to obtain fee income. However, net non-interest income, and particularly its largest component – *fees and commissions* – were strongly affected by the new accounting standards, i.e. the classification of part of fees related to the loans granted as interest income. The coming quarters, during which subsequent banks will complete the transition to financial instrument valuation at amortised cost, will enhance the comparability of data. They should also answer doubts concerning the real impact of the inclusion of new products, which do not generate interest income, in the banks' product range.

Fee growth rates were different for the groups of banks using IFRS and PAS, despite the fact that all banks should value financial instruments at amortised cost using the effective interest rate method.[57] The fact that the amount of fees at the banks that used IFRS was

[56] More on changes related to the introduction of IFRS in: "Financial Stability Review – First Half of 2005," NBP, October 2005, p. 37.

[57] Financial instrument valuation at amortised cost using the effective interest rate method consists in adjusting the instrument's initial face value by the accumulated amount of discount determined using the effective interest rate (EIR). For a loan, the EIR includes the interest rate stipulated in the agreement as well as any fees and commissions received, but also the expense borne by the bank (e.g. the cost of the salary paid to the

lower than in 2004, while it was higher at those banks that used Polish accounting standards, resulted from the different paces at which the aforementioned instrument valuation principles were implemented by both groups of banks. Those differences were probably caused by the fact that at the banks that decided to implement international accounting standards, the introduction of the amortised cost principle was part of comprehensive changes to the accounting principles applied at a given bank.

The joint consideration of net interest and net fee incomes makes it possible to avoid, to a certain degree, the problem of incomparability of data resulting from the change in the financial instrument valuation method. The combined net interest income and net fee income in proportion to the sector's assets amounted to 5.39% in 2005 (as against 5.49% the year before). This means that banks were unable to compensate for the narrowing spread between the average interest rates on loans and deposits[58] and the strengthening of the zloty by increasing lending and the remaining components of performing assets (performing assets grew by around 11.9%). The decrease in the aforementioned ratio occurred despite the rising significance of performing assets in banking sector assets. This seems to confirm the banks' view that growing competition in certain markets, which leads to falling interest rates on loans, poses a considerable challenge for them (see Box: "Competition in the retail market"). On the other hand, the strengthening zloty caused a decrease in the zloty equivalent of interest income on foreign currency loans, which was significant for the banks' net interest income due to the high proportion of foreign currency denominated and exchange-rate indexed loans in the loan portfolio (see Table 3.8).

Box 4. Competition in the retail market

An analysis of available qualitative and quantitative information indicates intensifying competition in the banking services market between 2003 and 2005. In order to increase their market shares, banks reduced the prices of their services as well as used non-price incentives. The competition between banks was particularly fierce in the market for housing loans to households, but symptoms pointing to the banks' increasing efforts to win business were also evident in the consumer loan market.

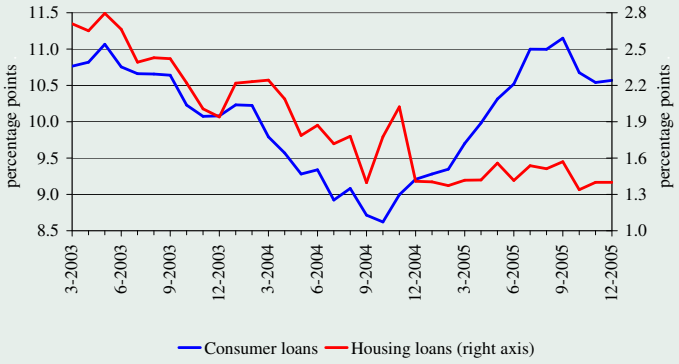
The price competition has been particularly pronounced in the housing loan market. Zloty housing loan margins[1] are around 1 percentage point, i.e. are similar to those in euro area markets. This indicates that competition in this segment is already strong and banks do not have much room to reduce loan interest rates further in order to stimulate demand for their products. They are trying to achieve this objective using methods other than reducing prices – they reduce the borrower's own contribution, limit non-interest costs and use methods for calculating creditworthiness that are more favourable for the borrower. Another way of making the offer more attractive is to extend the loan term and raise the acceptable loan-to-

employee extending the loan). As a result of the application of the EIR, part of the fee paid by the customer is recognised as interest income in the profit and loss account.

[58] The difference between the average weighted interest on zloty loans and zloty time deposits dropped from 6.6% to 6.1% in 2005.

value (LTV) ratio[2]. The information presented by banks in their offers indicates a worrying phenomenon – some banks raise the LTV ratio to 100% or, in several cases, above 100%. The introduction of increased capital requirements for housing loans with LTV ratios above 50–60% (depending on the manner in which the house is appraised) in January 2005 did not change the banks' behaviour significantly. This may be explained, on the one hand, by the pressure to expand revenue-generating portfolios, and on the other hand, by the banks' capital cushion (high capital adequacy ratios).

Figure 1. Zloty housing and consumer loan margins



Source: NBP.

In their competition in the consumer loan market, banks use mainly methods other than reducing prices. The competition in this market is becoming more intense, but the relatively high margins on consumer loans (around 10 percentage points) indicate that the pressure is not strong enough to force banks to reduce loan costs. For consumer loans, standard margins are higher than for housing loans due to the higher associated loss probability (lower quality of security). However, the discrepancy between margins in Poland and the euro area (around 5 percentage points) points out to less intense competition in this loan market segment as the reason why margins remain high.

The most frequently used methods (other than reducing prices) for attracting customers in the consumer loan market in 2005 were:

- reducing minimum credit standards, which in practice means accepting customers with higher credit risk;
- simplifying lending procedures and reducing the period necessary to obtain a loan;
- reducing or (in some cases) waiving security requirements;
- offering more favourable loan repayment conditions (e.g. suspending loan repayments when the borrower is experiencing temporary financial difficulties);
- increasing expenditure on advertising the products offered;

- using alternative (compared to traditional bank branches) product distribution methods, e.g. cooperation with loan intermediaries and retail chains.

Strengthening competition in the loan market and the resulting increase in the amount of loans granted have contributed to an increase in the banks' interest income. The banks' competition for market share has not affected the quality of their loan portfolios and the amount of banks' credit losses so far, but it may lead to loosened customer selection standards at some banks. Therefore adequate credit risk management will be particularly important in the forthcoming years.

[1]Spread between average loan rates and the 3M WIBOR rate.
[2]More on the subject in: "Financial Stability Report 2004", Box 5: "Housing loan products on offer from the banks – proactive methods of winning business", p. 57.

Certain components of net non-interest income grew significantly in 2005, i.e. *net FX gains* and *income from equities* (by 31% and 131%, respectively). The considerable increase in net FX gains was conditioned by the rapid growth of foreign currency lending (chiefly housing loans) and foreign investors' demand for Polish currency. Foreign exchange spreads, i.e. differences between foreign exchange buying and selling rates applied to transactions with customers from the real economy sector, in particular retail customers, were relatively high and ensured additional gains for banks related to the granting of foreign currency loans (foreign currency loans to households are usually disbursed according to the bid rate as per the bank's exchange rate table and repaid by customers in zloty, where the conversion is effected according to the ask rate). In December 2005, average FX spreads amounted to around 4% of the bid rate.[59] It may be estimated that banks earned around 240 to 270 million zloty on FX spreads,[60] i.e. around 6 to 7% of *net FX gains*.

The increase in the *income from equities* item resulted, *i*nter alia, from higher dividends received by banks from their subsidiaries, affiliates and joint subsidiaries. In December 2005, the dividend paid out to banks constituted around 91% of the aforementioned item (against around 36% in June 2005).

In 2005, the banks' gains on *financial operations* were lower than in the previous year (a decrease of 32%). There were differences in this regard between the banks that used IFRS and PAS: the banks that complied with international standards improved their results compared to 2004, while other banks recorded net losses on financial operations. The entire banking sector achieved higher net gains on financial operations involving *debt securities*, *inter alia* due to increasing bond prices and the recognition of fair value method valuation results in the profit and loss account (for securities in the *available for sale* and *held for trading* portfolios).

[59] The average spread has been calculated for December 2005 data based on exchange rate tables used by 10 commercial banks whose total share in the sector's assets was 68%.
[60] The profit has been estimated based on the amount of foreign currency housing loans repaid and the conversion of this amount at the selling rate, assuming that the loans repaid were disbursed at a bid rate similar to that of December 2005. Polish Bank Association data on the amount of newly granted housing loans have been used in calculations.

However, financial operations involving off-balance sheet instruments caused losses for the entire sector that drew the overall net gains/losses on financial operations down.

The weighted average maturity of the debt securities portfolio at the banks that used IFRS was longer than for other banks. Moreover, as opposed to the banks that applied domestic regulations (and increased the amounts of money market bill portfolios), the maturity of the debt securities portfolio increased at the banks that applied IFRS. As a result, the IFRS banks' portfolio was more sensitive to interest rate movements, which led to higher income from its repricing than in the case of the banks that used PAS.

The banks that adopted IFRS made significant shifts in their securities portfolio, moving securities from the *held to maturity* and *available for sale* categories to the category of instruments valued at fair value, i.e. *held for trading*. The change in the classification of securities was motivated by intention to achieve more freedom in portfolio management, since a premature sale of held-to-maturity securities is heavily restricted and may cause unfavourable financial effects for banks (in particular when interest rates rise). The banks that started applying IFRS from 2005 were obliged to draw up opening balance sheets in which they were allowed to reclassify financial instruments. Such a classification did not have to reflect their earlier classification as per PAS. From the point of view of financial results, the shift between portfolios positively affected the banks' earnings as the value of securities valued at the adjusted purchase price was lower than that determined at fair value. It is also possible that in spite of the restrictions resulting from PAS, there was a change in the classification of securities at some banks applying these standards as a result of the earlier sale of some held-to-maturity securities in order to cash in on the rise in the market value of fixed-rate Treasury securities. The mandatory shift of the remaining portion of the portfolio to the fair value category had a positive impact on the banks' earnings.

Allocation of net income from banking activity

The expansion in the scale of banking sector activities led to a rise in operating expense (general expense and depreciation) both at banks applying PAS and IFRS (an increase of 3.4% on average). A downward trend in the *operating expense to assets* and *operating expense to net income from banking activity* ratios was, however, maintained (decreases to 3.38% and 62.8%, respectively). The efficiency of individual banks varied widely, but improved at most large ones (see Figure 3.33 (right panel)).

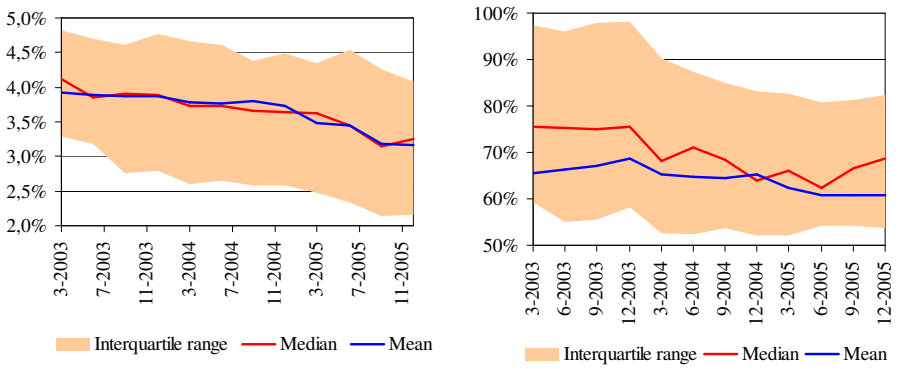
The fact that average indicators both for the entire sector and for large banks were better in 2005 suggests that the sector's efficiency improved in the last year. Those indicators, however, remain strongly influenced by one-off changes resulting from the application of new accounting standards, concerning depreciation charges for example.

The increase in general expense was largely caused by rising wages and other non-wage benefits (e.g. insurance) due to the growing number of bank employees. As some banks are planning to expand their branch networks and increase employment, a further rise in average general expense in the entire sector may be expected.

In 2005, the banks' advertising expenditure also grew (by around 30%).[61] In response to the need to secure stable sources of financing, banks launched intensive advertising campaigns

[61] Estimates based on expenditure by banks and cooperating institutions. Source: *Rzeczpospolita* daily, March 24, 2006.

Figure 3.33. Ratio of general expense and depreciation charges to assets (left panel) and to net income from banking activity (right panel) at commercial banks



Note: Annualised data (left panel).
Source: NBP.

aiming to attract deposits from individual customers and acquaint them with new deposit products (personal transaction and savings accounts, among others). Promotional campaigns of loan products, including housing loans and credit cards, also accounted for a significant part of expenses.

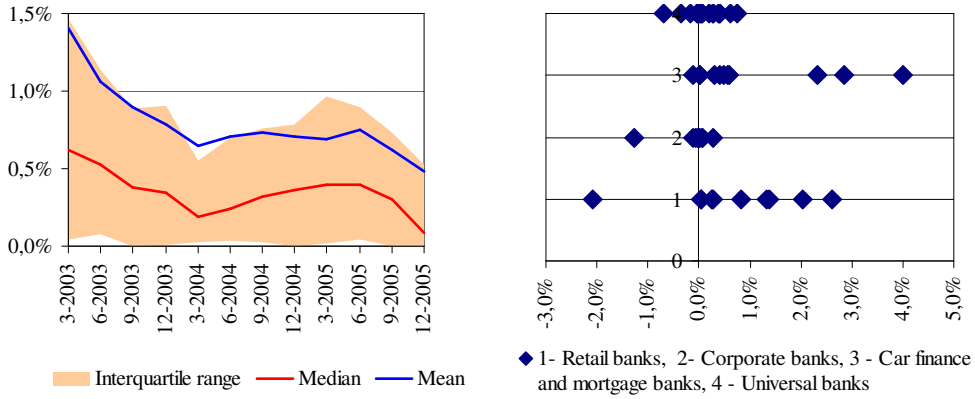
In the last year, the average burden on the banking sector related to depreciation charges decreased (by 13% on average), which was, however, the result of one-off changes.[62]

In 2005, the banking sector recorded smaller net charges to specific and impairment provisions (a drop of approximately 44%). A downward trend in the provisions established was notable both at the banks that used PAS (34.1%) and IFRS (51.1%). Differences between the two bank groups can be explained by changes in portfolio quality, which were affected both by the new manner of assessing the recoverable amount of loans and the composition of their customers (see Section 3.1.2). At banks using IFRS, the irregular loan ratio decreased to a larger degree, which led to higher income from the release of provisions and smaller charges than at banks using PAS.

At *corporate* and *universal* banks, where shares of loans to corporates are above sector averages, the ratios of net movements in provisions to assets were the lowest (0.02% and 0.16%, respectively). Net charges to provision ratios at *retail* banks were slightly higher at 0.23%, since security for retail loans is not always considered eligible when reducing the provisioning base. The relatively low charges to provision figures were caused by the significant share of housing loans in the loan portfolio (43% in the group under review and 29% in the entire sector on average); such loans are largely secured by mortgages. The highest net movements in provisions were recorded by *car finance and mortgage* banks (1.97%), which was chiefly the result of high charges to provisions at car finance banks (see right panel in Chart 3.34).

[62] Two banks, one using IFRS and the other – PAS, were responsible for the drop in depreciation charges. In 2004, those banks made additional considerable depreciation charges, reducing 2005 charges significantly (by around 54% and 93%). Apart from those banks, depreciation charges at other banks were lower by only 0.8%.

Figure 3.34. Ratio of net charges to specific provisions to commercial bank assets (left panel); and broken down by bank groups (right panel)



Note: Annualised data. Groups defined according to the methodology specified in Chapter 6.
Source: NBP.

Dispersion of profitability indicators at commercial banks

The profitability indicators of individual commercial banks varied widely. In general, however, favourable changes occurred in 2005, i.e. shares of those banks which achieved higher returns on assets and equity in banking sector assets grew.

In 2005, the number of banks with the lowest return on assets (ROA of less than 0.5%) grew compared to 2004, which was the result of several branches and banks commencing activity in 2005 that did not manage to generate profits yet. Despite this change, the share of banks from this group in banking sector assets diminished considerably (see Figure 3.35).

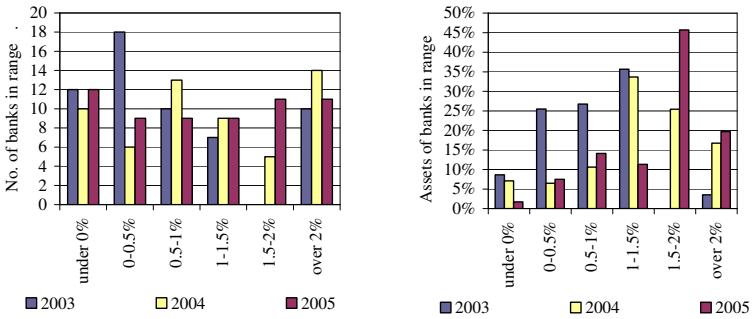
Performance indicators were the most diverse in the small bank group – they fell into both extremes (the lowest and highest ROA). Large banks, on the other hand, were in the middle of the range. Small banks with ROA indicators in the highest range are largely retail banks (compared to 2004, the number of car finance banks in this range was smaller, which resulted from the more difficult conditions in the automobile market and the slump in new car sales). Banks with ROA indicators in the lowest range are those that have operated for a short time, are implementing rehabilitation programmes or are withdrawing from Poland.

The improvement in bank profitability was also apparent in the distribution of bank assets by returns on equity (see Figure 3.36). In 2005, the share of banks with ROE figures lower than 5% in sector assets dropped considerably, while the share of banks with ROE higher than 15% grew. Largest banks, which use more financial leverage than small institutions, exhibited the highest ROE.

Summary – is the improvement in performance sustainable?

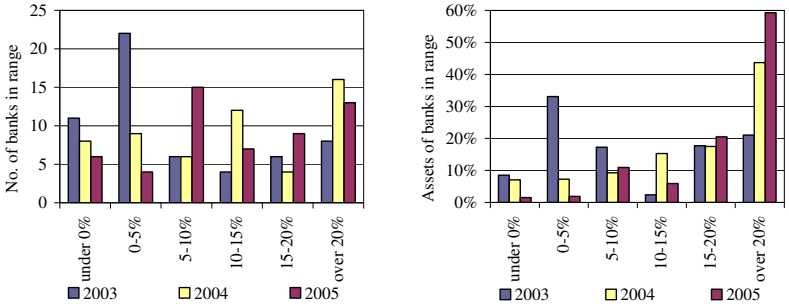
- It is quite probable that the banks' earnings will continue to grow, while loan margins, i.e. interest rates charged to customers over and above interbank market rates, might drop slightly.

Figure 3.35. Distribution of number of commercial banks (left panel) and bank assets (right panel) by ROA



Source: NBP.

Figure 3.36. Distribution of commercial bank number (left panel) and assets (right panel) by ROE



Source: NBP.

- Therefore the increase in earnings would be primarily driven by the rising volume of loans. Loan growth is expected mainly in the housing and consumer loan segments. On the other hand, the impact of the regulation that is supposed to limit foreign currency lending (mostly foreign currency housing loans), coming into force in the second half of 2006, cannot be fully predicted. The easing of loan terms and conditions for the SME sector, which has been declared for several quarters, combined with the economic growth expected during the coming two years, should be reflected in the growing volume of business in this segment.

- Shifts in the composition of the banks' earnings are possible as a result of the introduction of the "anti-usury law". A small decrease in net interest income and an increase in net fee income may be expected.

- The NBP expects that general expense will grow at a slower pace than the banks' scale of operations. The increase in expenses will be curbed by the banks' trend towards further improvement in efficiency of their operations.

- In 2006 and 2007, banks must be prepared for the expenditure related to the implementation of the New Capital Accord. The use of credit risk models to assess capital requirements will necessitate expenses connected with the development or purchasing access to relevant databases.

3.7. Banks' capital positions and loss absorption capacity

The regulatory capital of the banking sector[63] grew by around 6.7% in 2005. The payments of dividends from reserve capital were small in terms of the entire sector. Made at several large banks in the first half of the year in order to increase returns on equity, these payments were offset by an increase in regulatory capital caused by other factors. Those were, *inter alia*, appropriation of part of the 2004 profit to reserve capital and raising of new equity by certain banks.

The increase in capital was also caused by several amendments to legal acts coming into force. It should be noted that several banks took advantage of the possibility of including part of current period net profit and profit pending approval in regulatory capital that was introduced in January 2005 by the amended Banking Act[64] (at three smaller banks, a fraction of profit ranging from 35% up to 100% was included in regulatory capital, while at one large bank it was less than 5%). An increase in regulatory capital was also recorded as a result of the rise in the value of securities classified as *available for sale* and the recognition of this change in the revaluation reserve.

To sum up, the increase in the regulatory capital of the banking sector was primarily the result of profit retention and of new share issues.

[63] The analysis covers domestic banks, i.e. Polish banks and subsidiaries of foreign banks, excluding credit institution branches operating in Poland. As at end 2005, domestic bank assets accounted for around 99% of banking sector assets.
[64] See *Dziennik Ustaw* [Journal of Laws] No. 91/2004, item 870.

Table 3.23. Regulatory capital and capital adequacy ratio

	2003	2004	2005
Regulatory capital (in billion zloty)	40.6	43.1	45.9
- of which core capital	40.9	42.8	45.5
Capital adequacy ratio (%)	13.8	15.4	14.5
Capital adequacy ratio, taking core capital into account (%)	13.9	15.4	14.4

Note: Regulatory capital – core and supplementary capital, less any shortfall in specific provisions and other so-called regulatory deductions, plus trading book ancillary capital.
Source: NBP.

Table 3.24. Movements in the amount of risk-weighted assets and selected balance sheet assets of the banking sector

	2003	2004	2005	2003	2004	2005
	(billion zloty)			(%)		
Total assets, of which	22.7	49.5	48.6	4.9	10.1	9.0
- non-financial customers	15.5	9.1	22.3	7.7	4.2	9.9
- financial institutions	-0.9	29.6	15.7	-1.1	38.5	14.7
- securities	8.3	2.0	18.4	7.9	1.7	15.9
Risk-weighted asstes	3.1	2.1	34.2	1.4	0.9	14.5

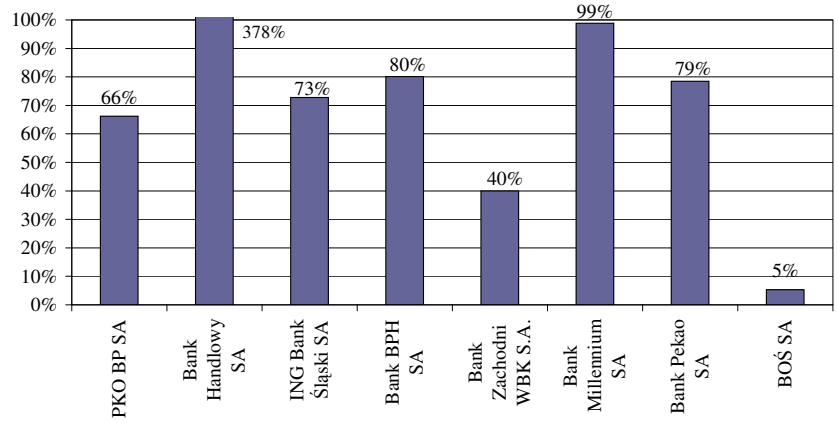
Source: NBP.

Changes in the amounts of individual regulatory capital items did not significantly affect the structure of the banking sector's capital base. Core capital continued to prevail (about 92% of regulatory capital), which is favourable regarding loss absorption potential. As a result, the capital adequacy ratio calculated on the basis of core capital was only slightly lower than the ratio calculated on the basis of regulatory capital (see Table 3.23). Both values exceeded the regulatory minimum.

Despite the increase in the regulatory capital of the banking sector, the average capital adequacy ratio at year-end 2005 decreased slightly (by 0.8 percentage points) due to a surge in the risk-weighted value of assets caused by intensification of lending activity of the banks, particularly within the loans to households segment (see Figure 1.15 and Table 3.24). The value of capital requirement against credit risk was also affected by the change in the manner of its calculation, i.e. assigning a 100% risk weight to claims secured by a mortgage on residential property in the part that exceeds 50% or 60% of its value (depending on the appraisal method applied). Owing to the fact that the value of mortgage loans extended by banks amounts to 100% of the property price (LTV=100%) in some cases, banks had to transfer a significant part of the portfolio of mortgage loans extended before the end of 2004 (about 30%) from the 50% risk weight pool to the 100% one, i.e. allocate additional capital to cover them.

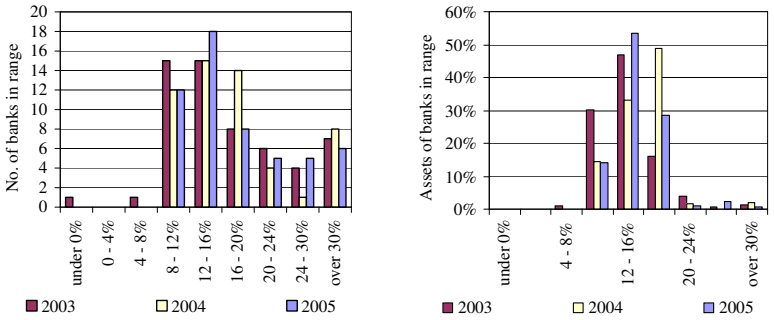
A major part of profits earned by the largest banks in 2004 was paid out to shareholders as dividends (see Figure 3.37). The simultaneous increase in capital requirement led to a drop in the banks' capital adequacy ratios, which, however, remained high (usually not less than 12%). As at end 2005, most banking sector assets were held by banks whose capital

Figure 3.37. Ratio of paid-out dividend to net earnings at largest listed banks in 2004



Note: Bank Handlowy SA paid a dividend both out of profit and out of capital.
Source: NBP calculations based on PAP data.

Figure 3.38. Distribution of number (left panel) and assets (right panel) of commercial banks by capital adequacy ratio



Source: NBP.

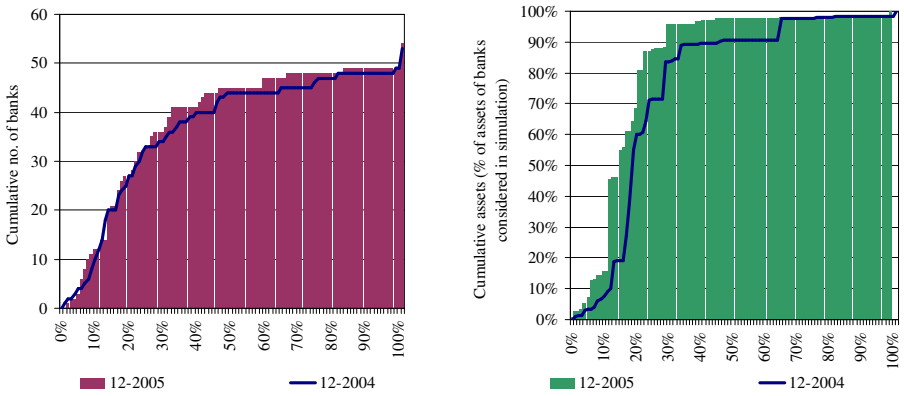
adequacy ratios ranged from 12% to 20% (see Figure 3.38). Lower capital adequacy ratios were typical of smaller banks, but in all cases they exceeded the 8% regulatory minimum.[65] The concentration of banking sector assets in well-capitalised institutions attests to the fact that the stability of the system was not jeopardised. The assessment of future loss absorption capacity presented below is also optimistic.

Simulations of credit loss absorption capacity

Three simulations were carried out in order to establish whether the banks' capital was sufficient to absorb potential losses arising from credit risk. The results of the first simulation give an answer to the question about the proportion of loans classified *satisfactory* and *special mention* that would have to be downgraded to *doubtful* (or to loans whose assessed impairment is 50%) for the capital adequacy ratios of particular banks to drop to 8%. Simulations based on data available at the end of 2005 show that the banks' loss absorption capacity

[65] Cooperative banks were not included in the analysis.

Figure 3.39. Number (left panel) and assets (right panel) of commercial banks with a capital adequacy ratio of 8% under adopted scenario of migration of satisfactory and special mention loans to doubtful ones



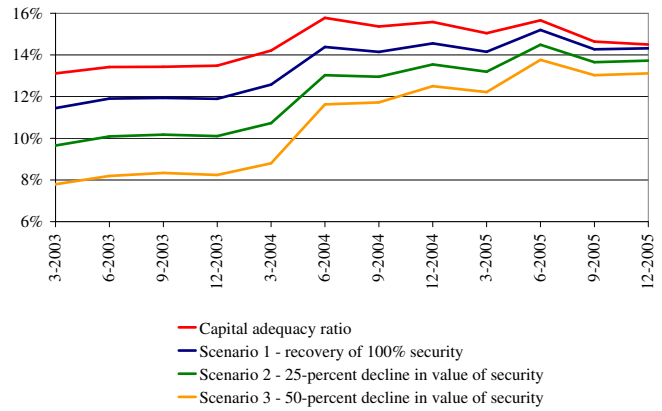
Simulation assumptions:
1. Calculations refer to the portfolio of loans to non-financial customers classified satisfactory and special mention as at end December 2005 (bars) and December 2004 (line).
2. Numerator and denominator of the capital adequacy ratio adjusted by the full amount of specific provisions against doubtful loans (it is assumed that the loans are unsecured and that downgraded classifications attract a 100% risk weight). The adjustment to the denominator has been divided by 12.5, in accordance with the methodology for calculating the capital adequacy ratio.
3. No releases of specific provisions envisaged (it is thereby assumed that there is no improvement in the quality of loans classified irregular at the end of 2005 and 2004).
4. Banks with capital adequacy ratios lower than 8% or higher than 100% have not been considered.
Source: NBP.

decreased slightly compared to 2004. For example, the capital adequacy ratio would drop to 8% at banks whose assets represent one-fifth of total banking sector assets if approximately 14.5% of their satisfactory and special mention loans were downgraded to doubtful status. By comparison, in December 2004, such a situation would have occurred if the quality of 15% of satisfactory and special mention loans had deteriorated. The decrease in the loss absorption capacity concerned primarily large banks (more pronounced shifts in the distribution of banks can be seen in Figure 3.39). At the same time, the share of banks with the lowest capitalisation (where a deterioration of 5% of claims would be sufficient for the capital adequacy ratio to drop to 8%) has been stable and amounted approximately to 3%. The decrease in the size of the large banks' capital cushions has been chiefly the result of a rapid increase in their lending which was faster than the rise in the amount of their regulatory capital.

The purpose of the second simulation was to determine the level of the capital adequacy ratio following a slump in the quality of irregular claims and a slide in the value of loan security. The first scenario adopted assumed that all claims on non-financial customers classified *substandard* and *doubtful* were downgraded to *loss*. In the second and third scenarios, it was further assumed that the value of loan security fell by 25% and 50%, respectively. Ten largest banks were taken into account in this exercise.

The results of the simulation show that in 2005, the loss absorption capacity of banks did not change significantly compared to the end of 2004 (see Figure 3.40). Under the first and second

Figure 3.40. Average capital adequacy ratio at ten largest commercial banks assuming all irregular claims on non-financial customers are reclassified as *loss*



Simulation assumptions:
1. All irregular claims on non-financial customers are reclassified as loss.
2. The satisfactory and special mention loan portfolio remains unchanged.
3. Numerator and denominator of the capital adequacy ratio are reduced by the shortfall in specific provisions, and – under Scenarios 2 and 3 – also by the decline in the value of security (25% of eligible security under Scenario 2 and 50% under Scenario 3).
4. Analysis conducted for ten largest banks as at the end of 2005. Where banks were involved in mergers and acquisitions in the period analysed, analysis includes all merging banks prior to transaction.
Source: NBP.

scenarios, the capital adequacy ratios of all banks remain above the regulatory minimum of 8%. Only in the third scenario, which is the least probable, the capital adequacy ratio of one bank falls slightly below 8%. The increase in the capital cushion in the first half of 2005, which can be seen in the Figure, resulted from a rise in the banks' regulatory capital. In the second half, it was neutralised by an increase in capital requirement resulting from a rise in the amount of loans extended.

The decrease in the average capital adequacy ratio for 10 banks is in line with the results of the first simulation. What is notable, however, is the convergence of the lines demonstrating the impact of individual scenarios. This phenomenon can be explained by a shift in the composition of irregular loans, i.e. the relative increase in the weight of lower-quality loans (see Figure 3.4). This change causes an increase in the average coverage of irregular loans by specific provisions, which, under the scenario considered, means that lower specific provisions have to be established against the loans that would be downgraded to *loss* category. The general decrease in the amount of irregular loans in 2004 and 2005 also means that any downgrading of loans from the *substandard* and *doubtful* categories to the *loss* status would have a smaller impact on capital levels (the shortfall in provisions would be lower).

The third simulation was designed to assess the effect on the banking sector of the simultaneous bankruptcy of the sector's three largest non-financial borrowers (using data for year-end 2005).

These borrowers belong to the energy industry. It has been assumed that all loans extended to those firms are reclassified as *loss* and that the expenses related to establishment of specific provisions for these loans are deducted from the banks' regulatory capital, which results in a decrease of their capital adequacy ratios.

The bankruptcy of the three largest borrowers would affect 20 banks and would cause the expense related to establishing specific provisions to rise by around PLN 3.9 billion. This group of banks held a total of 76% of banking sector assets. The drop in the capital adequacy ratio would range from 0.1 to 2.8 percentage points for particular banks, but only at one bank would the capital adequacy ratio fall below 8%. Capital adequacy ratios at most of the 20 banks analysed would exceed 11.5%. Thus the bankruptcy of major borrowers, in spite of a considerable reduction of the banks' capitals, would not pose a systemic threat. The comparison of the results with those of an analogous simulation performed using December 2004 data demonstrates that the banks' sensitivity to exposure to major borrowers has grown slightly (in the simulation performed using 2004 data, no bank recorded a drop in the capital adequacy ratio below 8%). Apart from the factors that affected all three conducted simulations, a switch in financing policy of an analysed major borrower, which decided to rely heavier on bank financing, has also adversely affected the results of the simulation assuming the bankruptcy of the three largest borrowers.

Simulations performed using end 2005 data show that the banks' potential loss absorption capacity is still considerable. However, it should be remembered that several regulatory changes concerning the identification of irregular claims (a modification of the definition of irregular claims in 2004, IFRS implementation in 2005) have limited the historical comparability of simulation results.

Prospects for bank capital in 2006

Despite a drop in the average capital adequacy ratio, the banks' ability to absorb losses remains high. In such circumstances, the banks' high earnings may persuade their shareholders to pay out a significant part of profits as dividends. Based on the declarations made by the management boards of the banks listed on the WSE, planned dividend payouts by those banks may be estimated at around 60% of 2005 profits. The largest banks are the majority among those that plan to pay out dividends.

The growth of lending business, particularly in the household sector, has increased the banks' capital requirements, however. Expectations regarding the future increase in lending reflected in statements made by industry representatives may prompt some banks to raise their regulatory capital. In particular, this may pertain to smaller banks, which intend to increase their shares in the retail market.

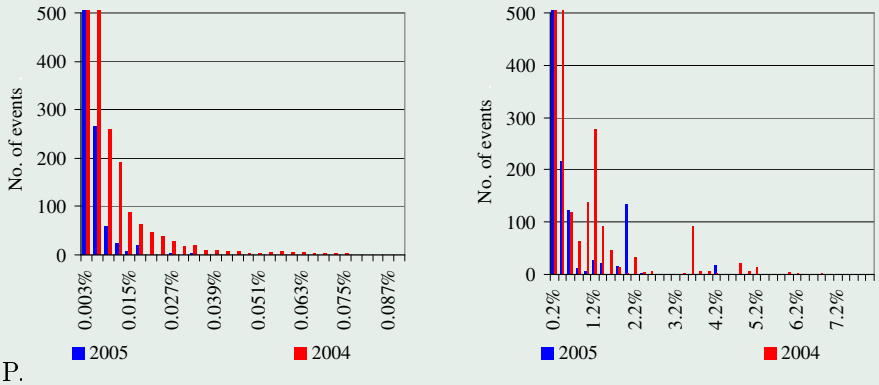
The amendments to regulatory capital requirements related to loans to households denominated in foreign currency that are currently discussed may also affect the banks' plans concerning increases in capital.

Box 5. Investigation of the domino effect

In 2005, the threat of the domino effect occurring in the Polish banking system remained very low and even decreased compared to 2004. Two factors contributed to that development. First, the banks' very good performance enhanced their ability to absorb losses. Second, claims arising from interbank loans decreased at those banks that used to cause concerns regarding the possibility of the domino effect occurring in the case of failure to repay deposits.

The threat of the domino effect caused by failures to repay deposits in the interbank market due to losses arising from credit and market risk was reduced. This was indicated by the results of a simulation analogous to that described in the "Financial Stability Review – First Half of 2005." It consisted in random reductions in the banks' capital and analysing the potential effects of their insolvency, assuming that all deposits in the interbank market have to be repaid immediately. For random capital decreases with an exponential distribution such that the probability of a loss larger than the bank's capital requirement was 1%, the probable amount of unrepaid deposits would be much lower than at the end of 2004. In 99 cases out of 100, the amount of losses resulting from bankruptcies caused by the insolvency of another bank would not exceed 0.009% of sector assets (in 2004, the figure was 0.03%). In 99 out of 100 capital decrease scenarios, the share of banks that would go bankrupt as a result of another bank's insolvency in banking sector assets would not exceed 1.9%.

Figure 1. Degree of threat distribution (losses in relation to financial system assets, right panel) and the ratio of assets of banks suffering contagious failure to total banking sector assets (left panel) based on 10,000 exponential distribution loss scenarios with exponential distribution



Source: NBP.

The ability to absorb losses resulting from the domino effect caused by failure to repay any deposits received by primarily defaultedthe bank that goes bankrupt in the first place did not change fundamentally compared to 2004. At most banks, the ratio of capital requirement to capital increased, but those banks that had the highest amounts of deposits to repay reduced their debt in the interbank market. Therefore failure to repay a deposit would not usually cause the creditors' bankruptcy, i.e. a fall of negative value of their capitals below 0. The results of the simulation conducted for individual banks confirm this observation. It was assumed that a given bank goes bankrupt and does not repay

any deposit from the interbank market. Then it was checked whether other banks fail as well because they cannot recover their deposits. For commercial banks, the maximum loss indicated by the simulation would not exceed 0.028% of their assets (0.08% of assets for affiliating banks) and would be comparable to the maximum loss at the end of 2004. The number of banks whose bankruptcy would cause the domino effect in the simulation did not change compared to 2004 either, which means a decrease on the first half of 2005.

Table 1. Total losses of banks suffering contagious bankruptcy and degree of threat of bankruptcy caused by failure of individual commercial and affiliating banks

	2005				2004			
	Commercial banks		Affiliating banks		Commercial banks		Affiliating banks	
	Thous. zloty	% assets	Thous. zloty	% assets	Thous. zloty	% assets	Thous. zloty	% assets
1)	51 060	0.0086	5 407	0.0152	6520	0.0012	2690	0.0096
2)	7 177	0.0012	13 608	0.0830	16261	0.0030	6586	0.0235
3)	165 892	0.0278			77504	0.0142	33241	0.1187
4)	50 019	0.0084			100763	0.0185		

Note: Cases refer to original bankruptcies that triggered the domino effect. Asset percentage refers to entire banking sector assets.
Source: NBP.

3.8. Market assessment of banks

The banks' sound financial standing is reflected in the ratings assigned by rating agencies. In 2005, the ratings of five large banks were upgraded; for all other banks ratings remained stable. The reasons for upgrades usually included the banks' good earnings and a decrease in general expense resulting from the restructuring measures implemented. For BZ WBK, BPH and Bank Millennium, the strengthening of their positions in the retail market further contributed to the rating agencies' favourable assessment.

The *deposit ratings* of all the banks rated by Moody's indicate a low level of credit risk to which the banks' counterparties are exposed. This reflects both their current financial standing and the rating agencies' views of the likelihood of their owners providing support.

However, only four banks among the ten largest have a *financial strength rating* of C, indicating a sustained capacity to operate without external support. A comparison of financial strength ratings of Polish banks with the ratings of banks from the Czech Republic, Slovakia, Slovenia and Hungary indicates that the assessment of the standing of Polish banks is similar to that of banks in those countries. The median of the distribution of financial strength ratings of 21 banks from those countries corresponds to the D+ rating, as in Poland, and the ratings range from B- to D.

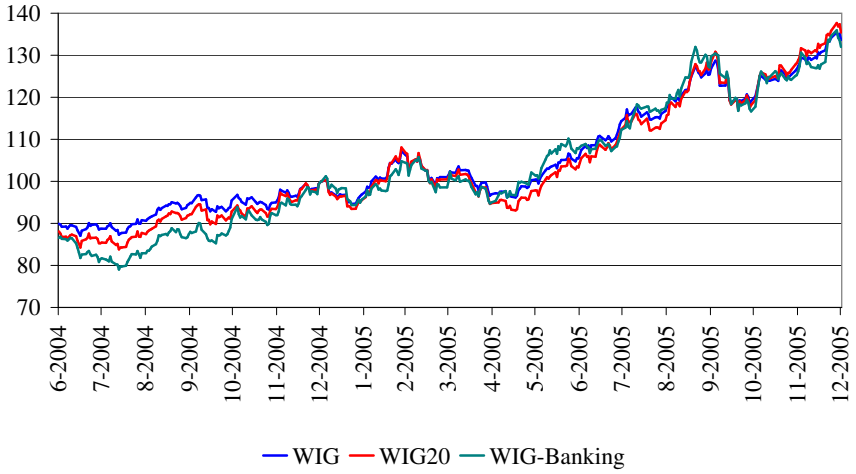
In 2005, the banks' sound financial standing contributed to an increase in the prices of shares for the majority of listed banks (see Figure 3.41). The increase in the WIG-Banking industry index amounted to 31% and was comparable to that of the entire stock market.

Table 3.25. Moody's ratings for Polish banks

Bank	Long-term deposit rating		Long-term rating out-look	Short-term deposit rating		Financial strength rating	
	1.2005	3.2006	3.2006	1.2005	3.2006	1.2005	3.2006
PKO BP SA	A2	A2	Stable	P-1	P-1	C-	C
Bank Handlowy w Warszawie SA	A2	A2	Positive	P-1	P-1	D+	D+
ING Bank Śląski SA	A2	A2	Stable	P-1	P-1	D	D+
BPH SA	A3	A3	Possibility of upgrade	P-2	P-2	D+	C-
BZ WBK SA	A2	A2	Stable	P-1	P-1	D+	C-
BRE SA	A3	A3	Stable	P-2	P-2	D-	D-
BRE Bank Hipoteczny SA	A3	A3	Stable	P-2	P-2	D-	D-
Millenium SA	A3	A2	Stable	P-1	P-1	D-	D-
Bank Pekao SA	A2	A2	Stable	P-1	P-1	C	C
Kredyt Bank SA	A2	A2	Stable	P-1	P-1	E+	D-
BGŻ SA	A2	A2	Stable	P-1	P-1	E+	E+
Lukas Bank SA	–	A2	Stable	–	P-1	–	C-
Getin Bank SA	–	Ba2	Stable	–	NP	–	D

Note:
1. Deposit ratings refer to the likelihood that the bank will repay its liabilities, taking into account the probability and extent of possible support for the bank from third parties such as owners or government institutions.
2. The financial strength rating describes the soundness of the bank as an independent undertaking. The better the financial strength rating, the lesser the likelihood that the bank will require assistance from third parties.
3. Short-term ratings for Lukas Bank and Getin Bank only refer to foreign currency liabilities.
Source: www.moodyseurope.com

Figure 3.41. Movements in the WIG-Banking index (index of banks listed on WSE) against major WSE indices



Note: Index values as at December 30, 2004 standardised to 100.
Source: NBP calculations based on www.bossa.pl

Chapter 4.

Non-bank financial institutions

4.1. Relations between banks and non-bank financial institutions

Assets of non-bank financial institutions

Over the past three years, assets of open pension funds, investment funds, and insurance companies grew at a much higher rate than banks' assets, leading to a significant growth in their share in the financial system assets (see Table 4.1). The highest rate of growth was demonstrated by investment funds and open pension funds. The growth was notably high in 2005.

In the case of the open pension funds, the key reasons behind the high growth in assets were the inflow of fund members' contributions and price hikes on financial markets, especially on the stock market. The inflow of current contributions and the forecasted insignificant value of benefit payments in the initial period (first payments are due in 2009) are bound to support the growth of open pension funds' assets for at least the next decade or so.

Increase in assets of investment funds and insurance investment funds over the past three years ensued from high cash inflow to the funds and price increases on the financial markets. The reason for such high cash inflow to the funds were high historic rates of return of the funds investing part of their assets in shares and the simultaneous drop in the yields of alternative investments, such as bank deposits and Treasury bonds. The funds invested part of newly acquired assets in shares, which added to the upward trend on the market. It has to be taken into account, however, that the developments may reverse, and a decreased growth in stock exchange indices or a downward trend on the stock market may trigger a drop in funds' asset growth. A deterioration in performance of investment funds which invest most of their assets in shares could prompt investors to withdraw their savings invested in such funds, which would contribute to an increase in the shares supply and further price slides. An impact of such scenario on the change in the value of assets of the entire investment funds sector would rest with the decision of investors withdrawing their savings from shares funds. In the case of transfer of these savings to another category of funds (e.g. bond funds), the impact of price drops on the assets of the entire investment funds sector would be limited. If, however, the

Table 4.1. Assets of open pension funds, insurance companies, investment funds, and banks (zloty million)

	Open pension funds[1]	Insurance companies	Investment funds[1]	Banks	Share of open pension funds, insurance companies and investment funds in the financial system[2] (%)
2003	44 833	65 662	33 231	488 961	22.5
2004	62 627	77 897	37 727	538 472	24.6
2005	86 079	89 563	61 284	587 023	28.4[3]

[1] Net assets.
[2] The financial system assets are a sum total of assets of banks , insurance companies, open pension funds, investment funds, cooperative savings and credit unions, and brokerage firms.
[3] To calculate the financial system assets at the end of 2005, insurance companies' and cooperative savings and credit unions' assets were used, based on the preliminary data as at the end of 2005, and brokerage firms' assets as at the end of June 2005.
Source: NBP, Insurance and Pension Funds Supervisory Commission, Fund and Asset Management Chamber.

savings withdrawn by investors were invested on other markets (such as the property market), the deterioration of the investment funds' asset growth rate could be more pronounced. The growth of assets of investment funds and insurance investment funds may vary more than in the case of open pension funds, where, due to regular inflows of contributions, the asset growth in the years to come should be much more stable.

Channels of impact of non-bank financial institutions on banks

Capital links between banks and non-bank financial institutions

One of the channels of impact of non-bank financial institutions on banks is banks' capital exposure to those institutions. This is because losses of subsidiaries have an impact on the consolidated earnings of a parent entity.

Information provided in Table 4.2 demonstrates that at the end of 2005 the proportion of the value of banks' share in the core capital of their subsidiaries to the core capital of banks parent entities did not exceed a few percent. The only exception to the rule was a small bank, whose share in assets of the banking sector stands at 0.08% [66]. This means that any possible losses sustained by subordinate companies will have a limited impact on the banks.

Lending to non-bank financial institutions

Banks' risk related to credit exposure towards the insurance and pension funds sector is marginal (see Table 4.3). One of the reasons for a very low value of lending to insurance com-

[66] The proportion of the value of BRE Bank's share in PTE Skarbiec Emerytura SA to the core capital of this bank also exceeds the average. Nevertheless, under the agreement concluded at the end of 2005 between PZU Życie and BRE Bank on merger of pension companies controlled by these institutions, BRE Bank intends to sell its shares in the merged pension company to PZU Życie.

Table 4.2. Share of banks in share capital of insurance companies and pension companies

Insurance company / Pension company	Banks holding stakes in insurance companies or pension companies	Bank's share in share capital (%)	Ratio of the bank's share in core capital of insurance companies or pension companies to core capital of the bank (%)
Commercial Union Polska - TUnŻ SA	Bank Zachodni WBK SA	10.0	0.4
WTUŻiR Concordia Capital SA	Gospodarczy Bank Wielkopolski SA	5.1	0.5
TUnŻ WARTA SA	Powszechna Kasa Oszczędności Bank Polski SA	4.6	0.1
Commercial Union Polska - TU Ogólnych SA	Bank Zachodni WBK SA	10.0	0.1
Concordia Polska TUW	Gospodarczy Bank Wielkopolski SA	1.1	0.3
	Inne banki spółdzielcze	0.1	not avail.
TUW CUPRUM	Dominet Bank SA	2.9	0.5
Polskie Towarzystwo Reasekuracyjne SA	BWE SA	11.9	36.1
	Bank Handlowy w Warszawie SA	11.9	0.4
	DZ Bank Polska SA	4.4	2.4
Towarzystwo Ubezpieczeń Wzajemnych TUW	BISE SA	6.7	1.1
	Gospodarczy Bank Wielkopolski SA	0.3	0.03
	Banki spółdzielcze	0.2	not avail.
Commercial Union PTE BPH CU WBK SA	BPH SA	10.0	0.3
	Bank Zachodni WBK SA	10.0	0.6
ING Nationale-Nederlanden Polska PTE SA	ING Bank Śląski SA	20.0	0.3
Pekao Pioneer PTE SA	Bank Pekao SA	65.0	0.2
PTE Bankowy SA	Powszechna Kasa Oszczędności Bank Polski SA	100.0	3.9
PTE Polsat SA	Invest-Bank SA	14.0	1.5
PTE Skarbiec-Emerytura SA	BRE Bank SA	100.0	6.2

Source: NBP, Insurance and Pension Funds Supervisory Commission, insurance companies' websites and pension companies.

Table 4.3. Bank's receivables due from insurance companies and open pension funds

	Receivables from insurance companies and open pension funds (zloty million)	Assets of the banking sector (zloty million)	Ratio of receivables from insurance companies and open pension funds to assets of the banking sector (%)
2003	168	488 961	0.034
2004	8	538 472	0.001
2005	6	587 023	0.001

Source: NBP.

Table 4.4. Bank deposits of open pension funds and insurance companies

	Deposits from insurance companies and open pension funds (zloty million)	Total assets of the banking sector (zloty million)	Deposits to assets ratio of the banking sector (%)
2003	3 876	488 961	0.79
2004	4 781	538 472	0.89
2005	5 689	587 023	0.97

Source: NBP.

panies and open pension funds as compared to their assets may include statutory restrictions (in the case of open pension funds, the total value of loans and advances contracted by a fund must not exceed 1.5% of assets), and – in the case of insurers – a lack of demand ensuing from the high value of own funds.

Liquidity risk related to bank deposits of open pension funds and insurance companies

In view of rapid growth of assets of insurance companies and open pension funds, the value of their bank deposits continues to grow; however, their share in assets of the banking sector does not exceed 1% (see Table 4.4). Therefore the threat to liquidity of the banking sector is low in the case deposits are withdrawn by insurance companies and open pension funds.

The main reason for such low share of bank deposits of open pension funds and insurance companies in their assets is a lower expected long-term rate as compared to other financial instruments, such as shares or debt securities. In the case of short-term investment of financial surpluses, short-term debt securities and BSB (buy-sell-back) transactions offer competitive interest rates.

Indirect market channel – impact through asset price changes

The increase in assets of non-bank financial institutions over the past three years significantly raised their impact on financial markets, in particular on the stock market and the Treasury bond market. These securities are the largest constituents building up investment portfolios of non-bank financial institutions. Sale of large holdings of financial instruments by these institutions could cause slides in their prices, which would adversely affect the value of banks'

portfolios and their earnings. Banks, open pension funds and insurance companies are the largest domestic investors on the Treasury securities market (their share accounts for, respectively, 21.4%, 18.4% and 17.9% of issues of Treasury bonds issued on the domestic market).

Non-bank financial institutions exert a particularly large influence on the domestic stock market. It ensues from the high value of their assets compared to free float of Warsaw Stock Exchange. This impact is bound to grow as a result of, *i*nter alia, the forecasted further rapid growth of pension funds' assets. However, due to a relatively insignificant participation of shares in the banking sector assets, slides on this market do not pose a threat to the sector stability. Selling off large volumes of Treasury bonds held by non-bank financial institutions would have a significantly stronger impact on banks, as these securities account for nearly 13.5% of assets in the banking sector. Over the past two years, the *duration* of wholesale treasury bond portfolios held by banks increased, which added to banks' sensitivity to market interest rates hikes, which typically result from selling off large volumes of Treasury bonds.

Investment funds and insurance investment funds may periodically prove to be a source of instability on share and Treasury bond markets, due to, among other things, more pronounced fluctuations of their assets than in the case of open pension funds, and possible occurrence of the aforesaid feedback. The lack of possibility to use derivatives for market risk hedging by some institutions may additionally contribute to price fluctuations and losses sustained by financial institutions. The source of supply threats from the insurance sector could also be the selling of securities (mostly Treasury bills and bonds) aimed to raise funds to cover claims paid in the case of huge damages, e.g. resulting from catastrophic events. Such supply may adversely affect the Treasury securities market only to a limited extent, as claims paid would have been distributed over time, following from the necessity of prior reporting of damages, their appraisal, and gathering of necessary documentation.

4.2. Pension companies and open pension funds

Earnings of pension companies

In 2005, the earnings of pension companies saw a significant improvement (see Table 4.5). The sector reported an increase in the technical profit from management of open pension funds and in the total net profit (by 22% and 19%, respectively). This was brought about by an improvement in cost efficiency of pension companies (the open pension funds management costs to revenues ratio). The growth of revenues from the management of open pension funds (12.1%) significantly exceeded the growth of management costs (6.8%), as compared to 2004.

The following factors contributed to the improved earnings of pension companies:

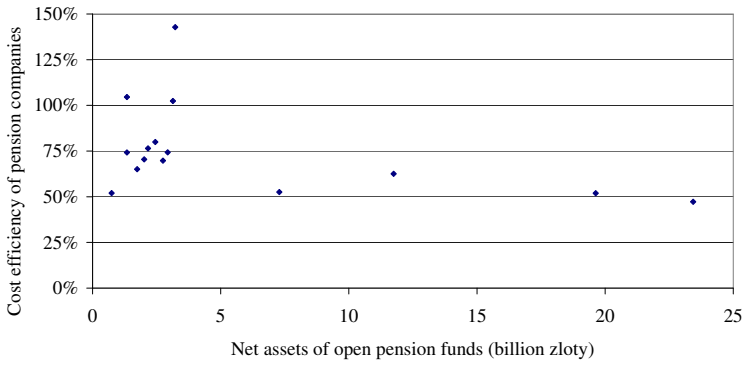
- increased assets of open pension funds, resulting from a growth in the contributions paid and an increase in the prices of financial instruments in portfolios of open pension funds, both with regard to shares and bonds,
- a stable level of operational costs of pension companies, despite an increase in the value of the managed portfolio; in 2005, pension companies benefited from the results of previously borne expenditure on direct sales and marketing as well as investment in IT and telecommunication systems.

Table 4.5. Earnings and operational efficiency of pension companies (zloty million)

	2003	2004	2005
Income from open pension fund management	1 010	1 112	1 247
Open pension fund management expenses	783	734	784
Technical profit on open pension fund management	228	379	464
Net profit of pension companies	449	384	459
Cost efficiency (%)	78	66	63

Note: Operational efficiency – the investment portfolio management costs to revenues ratio
Source: Insurance and Pension Funds Supervisory Commission.

Figure 4.1. Cost efficiency of pension companies vs. value of managed assets of open pension funds



Source: NBP calculations based on Insurance and Pension Funds Supervisory Commission data.

Improvement of the average cost efficiency of the pension companies sector ensued mostly from the performance of pension companies managing the largest funds. Out of five pension companies that have demonstrated the highest efficiency, four manage a total of 73% of assets of the open pension funds sector. These companies reported the greatest reduction of the management cost to revenue ratio (see Figure 4.1). This indicates the occurrence of positive economies of scale in the activity of pension companies. However, despite the emergence of such tendencies, no major changes took place in the concentration of the open pension funds sector in 2005, and the share of assets of the five major open pension funds as percentage of the sector's total assets, the so-called C_5 index, remained at 76%.

Minimum required rate of return

Achievement of positive earnings by pension companies is of great importance to banks and insurance companies being their shareholders. The level of rates of return obtained by the pension funds managed by pension companies is equally significant to the shareholders. In the case the obtained rate of return on investment stands below the minimum required rate of return (MRRR), the given pension company has to effect compensatory payments. In 2005, no such necessity occurred, as the earnings of all pension funds significantly exceeded

the minimum required rate of return that stood at 26.2% at the end of September 2005 (see Figure 4.2). However, the present lack of threat of compensatory payments does not diminish the necessity to monitor future developments. The importance of the compensatory payments risk is increasing in line with the consistent growth in open pension funds' assets (see Box 6).

Box 6. Risks for banks – shareholders of pension companies, related to the risk of failure to obtain the minimum required rate of return by open pension funds managed by pension companies

An inherent risk for pension companies is the risk of failure to attain the minimum required rate of return (MRRR). The MRRR is calculated as a half of the three-year weighted average rate of return (WARR) of the fund, or such average decreased by 4 percentage points (whichever value is lower). In the calculation of the weighted average rate of return, rates of return of individual funds are weighted against their net assets (the weight of a single open pension fund is limited to 15%, irrespective of its actual market share).

In the case of a failure to attain the minimum rate of return, according to the respective legal regulations,[1] pension companies are required to cover the so-called shortfall amount, i.e. the amount resulting from multiplying the difference between the value of the accounting unit at which the MRRR would have been obtained and the actual value of the accounting unit by the number of accounting units as at period-end. The shortfall amount is first covered by redemption of accounting units accumulated on the open pension fund's reserve account (which translates to a loss of the premium for the fund's investment results). If this is not sufficient to cover the shortfall, the accounting units accumulated on the account of the additional part of the Guarantee Fund are redeemed. A pension company is then required to cover the refund to the Guarantee Fund. If the shortfall still remains uncovered, a pension company must cover it using its own resources. In the case of a failure of a pension company to cover the shortfall, the supervision authority shall file a motion for declaration of its bankruptcy.

The significance of the risk of failure to attain the MRRR will increase in line with the growth in open pension funds' assets. In the case of some pension companies, the shortfall amount will exceed the pension company's equity if the rate of return obtained is lower than the MRRR by 1–1.5 percentage points. Thus, the consequences a failure to obtain the MRRR may be grave. In the hitherto reported cases of failure to attain the MRRR, the differences between pension funds' rates of return and the MRRR stood at 1.0 to 7.7 percentage points.

The algorithm of determining the MRRR causes a situation where, in periods of increased rates of return of open pension funds, the difference between the average and the minimum rate also increases, thus the threat of compensatory payments is diminished. In the previous accounting period, when the WARR reached its record level (52.58%), the difference between the average rate of return and the MRRR stood at 26.3 percentage points. However, in the case of a drop in the rates of return obtained by open pension funds, e.g. as a result of a downward trend in prices on the financial markets, the difference between the MRRR and the WARR may fall even to 4 percentage points – if the WARR falls to 8% or lower. Therefore, the threat of compensatory payments, which is not big at present due to high

rates of return attained by open pension funds, may increase significantly in the case of deteriorated economic climate on financial markets.

A change in the method of calculation of the minimum required rate of return in 2004, consisting in, *inter alia*, prolongation of the period for which the rate of return is calculated from 2 to 3 years, has mitigated the risk of compensatory payments. This is because the prolongation of the period decreases the expected WARR and, at the same time, the difference between the WARR and the MRRR. The risk of compensatory payments is slightly smaller in the case of pension companies that manage the largest open pension funds, due to their larger share in the total sector assets and a larger impact of their rates of return on the WARR. Nevertheless, they are in a less favourable position than back in 2004, when the weight of their assets in the calculation of the weighted rate corresponded to their actual market share.

Table 1. Shortfall (in the part corresponding to the bank's share in the pension company) ensuing from a failure to attain the minimum required rate of return, expressed in % of the bank's core capital as at the end of 2005

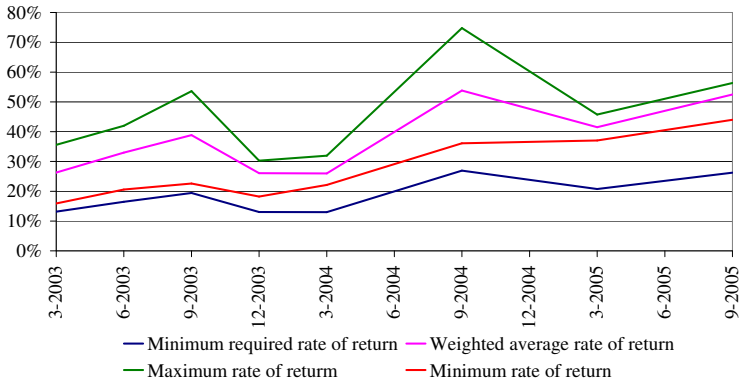
Bank	Pension company	Deficit in part corresponding to share of the bank in % of the core capital, as of December 31, 2005 assuming MRRR=10% and the rate of return lower than MRRR by:		
		2%	4%	10%
PKO BP SA	PTE Bankowy SA	0.8	1.6	4.2
BRE Bank SA	PTE Skarbiec Emerytura SA	3.3	6.7	17.8
Invest Bank SA	PTE Polsat SA	0.8	1.6	4.1
ING Bank Śląski SA	ING NN Polska PTE SA	2.9	5.9	15.5
BPH SA	PTE BPH CU WBK SA	0.9	1.9	4.9
Bank Zachodni WBK SA	PTE BPH CU WBK SA	1.9	3.9	10.3
Bank Pekao SA	Pekao Pioneer PTE SA	0.3	0.5	1.5

Source: NBP, KNUiFE, websites of pension companies.

The Table shows data concerning the scale of losses sustained by banks – shareholders of pension companies (in the part corresponding to the bank's share in a given pension company), which may result from a failure to attain the MRRR by the managed open pension funds, as a ratio of the banks' core capital. Banks are not required to participate in covering the losses resulting from shortfalls, if such losses are covered by other shareholders. This applies especially to the pension companies in which banks are minority shareholders.

[1] Act on the Organisation and Operation of Pension Funds (Dziennik Ustaw [the Journal of Laws] No. 159/1997, item 1667).

Figure 4.2. Rates of return of open pension funds



Notes:
1. As of March 2004, the MRRR has been calculated every half-a-year for a period of three years.
2. WARR/MXRR/MNRR – weighted average /maximum/minimum rate of return of open pension funds
Source: Insurance and Pension Funds Supervisory Commission.

In terms of stability of operation of the pension companies sector, the increase in the difference between *the lowest* rate of return obtained by a single open pension fund and the minimum required rate of return is also of great importance. Moreover, the lowest rate of return obtained by open pension funds at the end of September 2005 was higher by nearly 8 percentage points than in the previous year. The lower probability of the necessity to make compensatory payments is also reflected by the convergence of the rates of return obtained by individual open pension funds. The difference between the highest and the lowest rate of return reported by the funds decreased almost threefold, i.e. from 38.7 percentage points in 2004 to 12.3 percentage points in 2005.

The visible narrowing of the profitability band of all open pension funds may carry a certain amount of risk. It appears that in order to avoid sanctions and compensatory payments, pension companies are trying to take up a uniform investment direction, thus following investment strategies of the sector leaders in terms of size. Such behaviour results in a more conservative investment policy, which is aimed at maintaining the rate of return on the portfolio at the level attained by the majority of market participants. The priority may not be maximisation of the fund's profit, but rather maintenance of an investment portfolio structure similar to that in the entire open pension funds sector. In addition, such acting of pension funds may in some instances lead to repeating of possible investment errors made by sector leaders, and thus lower the investment returns of all funds.

Safety of open pension funds' assets

In 2005, open pension funds continued their strategy based mostly on investment in Treasury securities. The average share of Treasury securities in the investment portfolio stood at 62%, whereas the investment share of the stock market fell slightly to reach 31% of the portfolio

(see Figure 4.3). On the other hand, the significance of bank deposits and foreign investment remained low (the asset share of these categories was 1.9% and 1.7%, respectively). The key foreign investment included shares of companies listed on foreign stock exchanges, and floating interest bonds and securities issued by foreign banks.

Box 6: Investment in derivatives by pension funds in OECD countries

Derivatives are new financial instruments which were to be introduced into the investment practice of open pension funds as of January 1, 2006. Pursuant to the regulation drawn up, derivative instruments were to be used exclusively for the purpose of investment risk hedging, with the value of such transactions not exceeding 5% of open pension funds' assets[1]. However, the decision to allow for their use has been revoked indefinitely [2]. Below please note the solutions concerning investment in derivatives by pension funds from OECD countries.

The use of derivatives in the investment strategy of pension funds was commenced in the USA in the early 1990s. Despite the fact that the practice of using derivatives was quickly adopted in most OECD countries, the USA retains its leadership position both in terms of the scale and scope of use of such instruments. At present, nearly all European countries and those affiliated within the OECD permit to use derivatives for risk hedging and for the purpose of improving investment efficiency of pension funds' portfolios.

In most cases, pension funds may invest in derivatives exclusively for the purpose of hedging against the risk of volatility of interest rates, value of shares, and FX rates. Financial supervision authorities require that pension funds carry out a thorough analysis related to the use of derivatives, including the transaction value, parties thereto, risk hedged by a derivative instrument, expected results of the use of such instrument, and the term of hedge.

Countries that apply quantitative limits on using derivative instruments typically set them at 5% of the value of pension funds' investment portfolios. Some supervisory institutions also set limits on the exposure of pension funds towards a single institution (the counterparty of a derivative transaction) arising from derivative instruments. In some countries which apply quantitative limits to investment in derivatives, pension funds are required to trade in these instruments on domestic stock exchanges.

In countries with well-developed financial markets, financial supervision authorities do not usually impose uniform percentage limits on the use of derivatives in investment, leaving the decision to the discretion of pension funds. However, even there, despite the fact that supervisory institutions do not impose any restrictions on the funds whatsoever, pension funds are usually required to establish appropriate limits on the use of derivatives in their articles of association. In many of the said countries, financial supervision authorities publish guidelines aimed to indicate good investment practice to be followed by pension funds (e.g. the USA, Canada, and Australia).

Table 1. Principles concerning the use of derivatives by pension funds

Country	Limit	Purpose allowed	Type of secured investment
Australia	No limits	Risk hedging and better portfolio management	No limits
Austria	10%	Risk hedging	Equities, bonds, FX transactions; purchase of derivatives exclusively via deritatives investment fund
Belgium	No limits	Risk hedging and better portfolio management	Equities, bonds, FX transactions
Czech Republic	5%	Risk hedging	Equities, bonds, FX transactions
Denmark	No limits	Risk hedging	Equities, bonds, FX transactions
Estonia	35%	Risk hedging	Equities, bonds, FX transactions, investment funds units, deposits; at most 20% for one counterparty
Finland	5%	Risk hedging	Equities, bonds, FX transactions
Greece	23%	Risk hedging and better portfolio management	Equities, bonds, investment funds units, real estate
Spain	No limits	Risk hedging and better portfolio management	No limits
The Netherlands	No limits	Risk hedging	No limits
Ireland	10%	Risk hedging	Equities, bonds, FX transasctions; at most 5% for one counterparty
Canada	No limits	Risk hedging and better portfolio management	No limits
Latvia	No limits	Risk hedging and better portfolio management	No limits; at most 5% for one counterparty
Germany	5%	Risk hedging	Equities, bonds, FX transactions, loans
New Zealand	No limits	Risk hedging and better portfolio management	No limits
Slovakia	5%	Risk hedging	FX transactions
United States	No limits	Risk hedging and better portfolio management	No limits
Turkey	No limits	Risk hedging	Equities, bonds, FX transactions
Hungary	5%	Risk hedging	Equities, bonds, FX transactions; purchase of derivatives exclusively via deritatives investment fund

Source: NBP study, based on information from the OECD and central banks and financial supervision authorities from OECD countries.

The use of derivatives in the investment practice of pension funds in European countries remains low or very low [3]. The key reason behind the little interest in derivatives is the

high cost related to the performance of derivative transactions that has to be incurred by pension funds. The funds are required to provide detailed and costly risk and transaction profitability analyses, whereas the amounts of derivative transactions, restricted by limits, are relatively low. Additional costs for the funds ensue from the requirement to draw up extensive reports and the extended period of archiving documents related to transactions in derivatives. Another barrier is the low liquidity of hedging derivatives on relatively small domestic stock exchanges. Moreover, in some countries (e.g. Hungary and Austria) pension funds may invest in derivatives exclusively with the intermediation of funds specialising in investment in derivatives, which adds to the transaction costs.

Supervisory institutions in countries with liberal supervisory policy towards pension funds demonstrate that a vital argument for using derivatives by pension funds is the improved investment portfolio diversification and increased flexibility of portfolio management.

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[1]Regulation of the Council of Ministers of 13 September, 2005 concerning pension fund investment (Dziennik Ustaw [the Journal of Laws] No. 186/2005, item 1549).

[2]Regulation of the Council of Ministers of 20 December, repealing Regulation concerning pension fund investment (Dziennik Ustaw [the Journal of Laws] No. 260, item 2180).

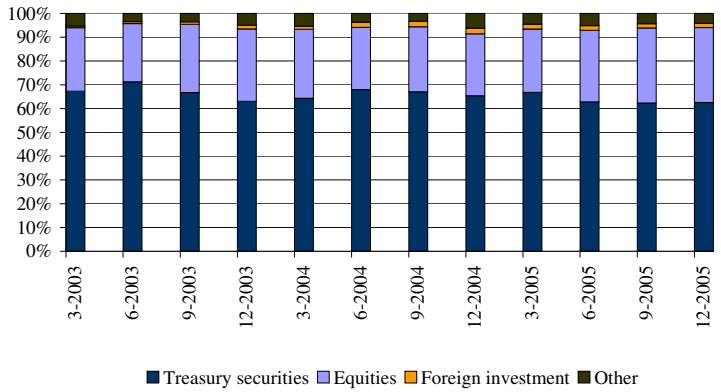
[3]On the basis of the opinion of representatives of central banks and financial supervision authorities of Hungary, Slovakia, the Czech Republic, the Netherlands, Greece, Latvia and Estonia.

The above investment portfolio structure of the open pension funds sector keeps the risk diversification low. Pension funds focused mainly on Treasury securities, despite the fact that their investment in shares and foreign financial instruments was much below the prudential limits (by ca. 8.5% and 3.2%, respectively). However, pension companies' representatives point out legal constraints to investment on foreign stock exchanges: the fee costs may be covered from the resources of open pension funds only up to the equivalent of fees charged in Poland, any possible surplus must be charged to the costs of pension companies. Another reason for the lack of interest in foreign investment on the part of pension funds may be the unprofitability of employing experts to monitor foreign markets, due to the statutory cost limits and the concurrent low investment limits.

Despite a relatively stable share of the key categories of financial instruments in the investment portfolio, diversification in individual deposit categories improved. Open pension funds maintained exceptionally high diversification of their share portfolios in the manufacturing and services sectors, whereas in the financial sector they were compelled to invest almost solely in banks' shares (see Table 4.6). The fact that, despite a decline in the participation of shares in pension funds' assets, the share of revenues from dividends in investment revenues increased almost twofold, from 11.3% to 20.0%, is also of key importance to the funds' profitability.

The constantly increasing compulsory pension contributions paid to open pension funds raise the potential impact of the funds on the valuation of shares listed on the WSE (see Table 4.7) (contrary to the developments in 2004, in 2005 open pension funds' assets grew at a slightly higher rate than the capitalisation of domestic listed companies). In the context of a rapid inflow of contributions to open pension funds, increasing the supply of instruments in

Figure 4.3. Investment portfolio structure of open pension funds



Source: NBP calculations based on Insurance and Pension Funds Supervisory Commission data.

Table 4.6. Investment portfolio structure of open pension funds, %

	2003	2004	2005
Treasury securities	61.62	59.47	61.97
Equities	32.20	32.85	31.44
Financial sector	8.08	10.38	9.00
- Banks	8.08	10.38	9.00
Industry	13.91	13.25	13.28
- Construction	1.02	1.80	2.27
- Chemical industry	6.78	6.22	6.20
- Metallurgy	2.69	1.91	2.08
Services	10.10	9.13	9.14
- Trade	1.05	1.45	1.48
- IT	2.31	1.82	1.82
- Telecommunications	5.46	4.67	3.43
Deposits and bank securities	3.84	4.54	1.88
Foreign investment	1.51	2.17	1.74

Source: Insurance and Pension Funds Supervisory Commission.

Table 4.7. Assets of open pension funds against the background of primary financial markets and the GDP (in billion zloty)

	2003	2004	2005
GDP	815	923	981
T-bill and T-bond market	233	287	303
Capitalisation of Warsaw Stock Exchange	140	214	308
Free float of Warsaw Stock Exchange	61	89	133
Open pension fund net assets	45	63	85
Open pension fund assets in GDP (%)	5.50	6.82	8.67
Share of open pension fund in T-bill and T-bond market (%)	11.72	13.87	17.38
Share of open pension fund in free-float of Warsaw Stock Exchange (%)	23.22	23.25	20.68

Source: GUS, Insurance and Pension Funds Supervisory Commission, MF, WSE.

which open pension funds may invest, such as corporate shares on the WSE, gains particular significance. It can be achieved by accomplishing the process of privatisation of the economy.

4.3. Insurance companies

The Polish insurance sector is highly concentrated. The share of the largest insurance company in the gross premiums written (hereinafter: the premiums) of the non-life insurance sector and life insurance sector in 2005 stood at 49% and 40%, respectively. Comparable indices for three major insurance companies were 67% and 60%. The high concentration brings about a situation where, in order to get a full picture of the developments in the insurance sector, apart from the aggregated data, one has to take account of the results of the major insurance companies and the remaining part of the sector.

Earnings and profitability

In 2005, both the technical and the net earnings of both life and non-life sector went up significantly as compared to the previous year (see Table 4.8).

In the non-life sector, the increase in profit was brought about mainly by smaller loss ratio and exceptionally high investment earnings. The Polish largest non-life insurance company, PZU SA, had a very high share in the increase in profit of the entire sector. Its share in net earnings of the total non-life sector in 2005 was 91%.[67] The diversity of the developments in the sector is confirmed by only a slight fall in the number of insurance companies that generate technical loss (from 24 to 21) and net loss (from 13 to 11). At the same time, the share of companies reporting negative balance on technical account in the total premiums of the sector increased (from 21.8% to 23.7%). On the other hand, the share of insurance companies that generated net loss in the premiums earned by the total sector fell in 2005 (from 6.9% to 4.7%), mainly due to high investment earnings.

[67] Data on individual major insurers come from insurance companies.

Table 4.8. Investment[1], technical and net earnings of insurance companies (in million zloty)

	2003	2004	2005	Change in (%)
Non-life sector:				
- Technical result	38	403	905	124.6
- Net Investment income	1 515	1 464	2 849	94.6
- Net profit	795	1 405	2 962	110.8
Life sector:				
- Net Investment income	2 853	3 558	4 594	29.1
- Technical result	1158	1 454	2 433	67.3
- Net profit	1238	1 401	2 282	62.9

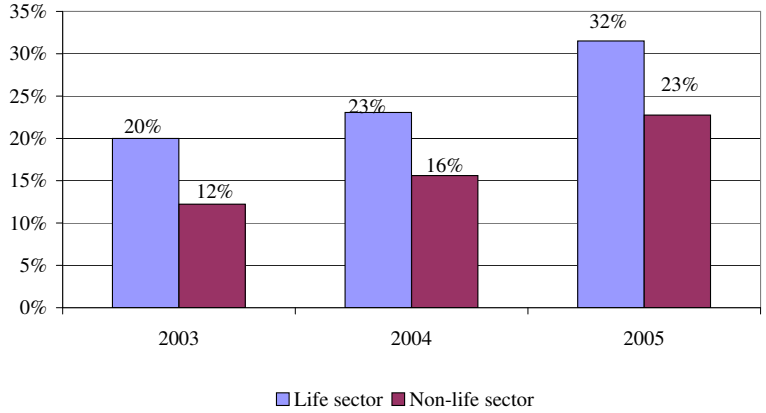
[1] Total profit on investment reported in the technical account and the profit and loss account. In the case of non-life sector, the core part of the investment earnings is reported in the general account, and in the case of life sector – in the technical account, hence the sequence shown in the Table.
[2] The change in 2005 compared to the previous year.
Source: Insurance and Pension Funds Supervisory Commission.

The increase in profit of the life sector was generated mostly by high investment earnings[68], high premiums growth, a moderate increase in the cost of insurance activity, and a decrease in the growth of technical provisions. The improvement of earnings in the life sector was also uneven, although to a lesser extent than in the case of non-life sector. The number of companies that generated technical loss fell significantly (from 19 to 12), and so did the number of companies that generated net loss (from 17 to 13). As in the previous year, the share of insurance companies that recorded negative balance on technical account in the premiums earned by the whole sector also fell. The share of companies that generated net loss in the premiums earned by the life sector in 2005 was 12.7%, i.e. by 8.0 percentage points higher than in the case of non-life sector. This appears however to be the result of losses of smaller, rapidly developing insurance companies, whose priority was to increase their market share. These companies had the greatest contribution to the significant decrease in the market share of major players. The share of the largest insurer in the net earnings of the entire sector was 62%, thus being significantly lower than in the non-life sector. Contrary to the non-life sector, other large insurance companies also attained high profitability (the share of three major insurance companies in the net earnings of the entire sector stood at 89%).

A high increase in investment earnings was facilitated by favourable price developments on the financial markets. Decreased interest rates contributed to a rise in the prices of Treasury bonds, which comprise the key item of investments of insurance companies. The performance

[68] It has to be noted that in the life sector, an increase in investment earnings does not automatically translate to an increase in gross profit. In the case of insurance where investment risk is carried by the policy holder, investment earnings are payable to the insured. On the other hand, in the case of standard life insurance policies, the expected minimum revenue on future investment (in the amount of the so-called technical rate of return) is taken into account as early as at the stage of calculation of the price of insurance policy. Hence, profit on premiums investments, in the part corresponding to the technical rate of return, should be earmarked for increasing technical provisions. To put it simply, profit on premiums investment in the standard life insurance policies will lead to an increase in the gross profit of the insurer, if the rate of return on such investments exceeds the technical rate of return. A similar principle is applied to investment earnings earmarked for covering technical provisions for the capitalised value of pensions in non-life sector.

Figure 4.4. ROE



Source: Insurance and Pension Funds Supervisory Commission.

attained by insurance companies was also supported by the continuing upward trend of share prices. The growth of investment earnings in the non-life sector was additionally boosted by a very high dividend received by PZU SA from PZU Życie.

Owing to the high growth in net earnings, the return on equity (ROE) rose both in the life and non-life sector (see Figure 4.4).

Key factors shaping the results of insurance companies

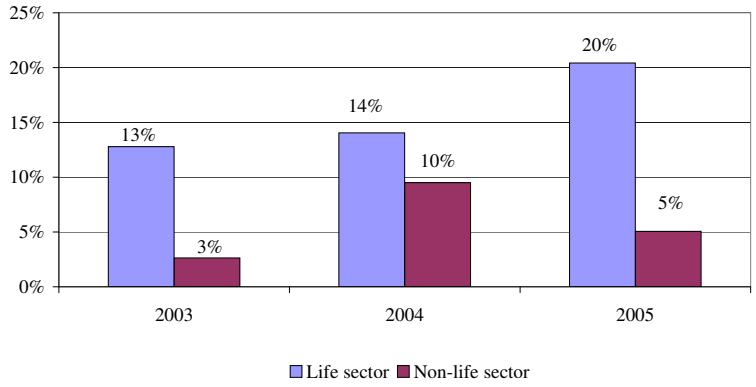
Premiums growth

As in the previous years, the increase in premiums in the life sector was much higher than in the non-life sector (see Figure 4.5). The high premiums growth and the simultaneous increase of profitability in almost all life insurance sub-sectors favourably impacted the earnings of the life sector. The increase in the premiums ensued from, *i*nter alia, an improvement in the financial standing of households. A rapid growth of *bancassurance* also had a favourable impact on the premiums growth and profitability of the life sector. Insurances sold via banks are usually highly profitable.

A high increase in the premiums was also noted in the unit linked insurance sub-sector. This was brought about by high historic rates of return of insurance investment funds (a result of the bull stock market for the past three years), which stimulated the inflow of new resources to the funds. These products, however, yield low profit for the insurers, and thus contributed only slightly to the improvement of the financial result of the life sector.

The rate of premiums growth in the non-life sector fell as compared to the corresponding period of the previous year. The main reason behind the downward trend was mainly a decrease of the premiums in *comprehensive car insurance*, brought about, *i*nter alia, by lower sales of new cars, a decrease in the level of the average premiums (a result of lower second-hand car prices, induced by imports of a large number of cars in the years 2004–2005), and a smaller tendency of households to buy the optional comprehensive car insurance.

Figure 4.5. Increase in gross premiums written compared to the corresponding period in the previous year



Source: Insurance and Pension Funds Supervisory Commission.

In the largest non-life sub-sectors, high premiums growth was noted only in the mandatory third-party car insurance. It ensued from a record-breaking number of cars imported in the years 2004–2005 (an increase in the number of insured cars) and increased insurance policy prices.

Costs

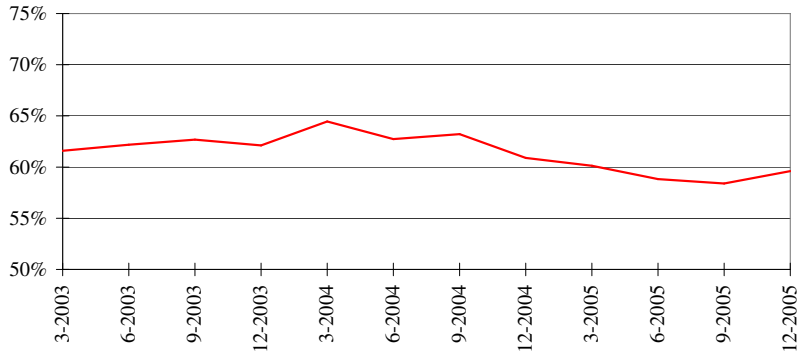
The increase in the profit of the entire insurance sector was supported by favourable tendencies in the claims incurred in the non-life sector and a moderate growth of operating costs (see Figure 4.6 and Figure 4.7).

In the non-life sector, the proportion of claims incurred to premiums, i.e. the loss ratio, is one of the key factors determining the profitability of an insurance company. Therefore, the further drop in the average loss ratio in 2005 had a positive impact on the financial result of the non-life sector. A decline (from 4.8% to 1.2%) in the share of insurance companies with high loss ratios (over 80%) in the premiums of the entire sector should also be noted.

The decrease of the loss ratio was reported in major non-life sub-sectors, among others in the fully comprehensive and third-party car insurance. It was facilitated by limiting the costs of car repairs and a lower number of car accidents and thefts.[69] Increase in insurance policy prices also had a positive impact on the loss ratio in the third-party car insurance. Increase in prices of third-party car insurance policies could be related to the risk of a rise in the claims incurred under third-party car insurance, noted increasingly by insurance companies. Such risk is caused by changes in insurance awareness of the public and by judicial decisions, resulting in higher claims incurred paid on the account of loss of health and costs of medical treatment. The increase in claims incurred paid under expired third-party car insurance policies may be well delayed, since this type of damages may be reported even several years after the insurance policy expiration.

[69] Source: Report of the National Police Headquarters (http://www.kgp.gov.pl/aktual/2006/060120_stat2005.html).

Figure 4.6. Loss ratio, gross[1] – non-life sector



[1]The gross loss ratio is calculated based on figures accumulated since the beginning of the year.
Source: Insurance and Pension Funds Supervisory Commission.

Both life insurance and non-life insurance companies noted a moderate growth of administrative expenses and underwriting costs. This was particularly favourable for the financial result of the life sector, due to a fast increase in the revenue from premiums (operating leverage effect) (see Figure 4.7).

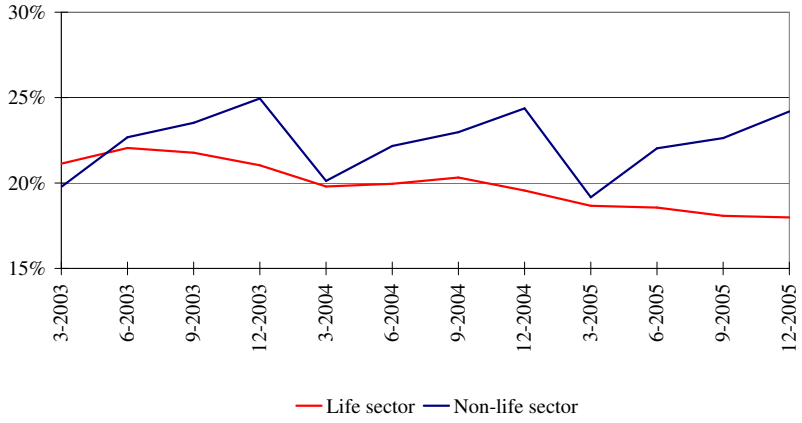
Capital position and financial strength of insurance companies

Due to a high increase in the own funds of insurance companies, their basic safety ratio, i.e. the activity monitoring ratio, improved significantly over the past few years.[70] (see Figure 4.8). Only one insurance company, with a marginal share in the premiums earned by the entire sector (below 0.1%), failed to meet the capital requirements. A favourable factor, in view of the sector stability, was the small share of companies with a relatively low activity monitoring ratio (below 150%, but above the required minimum of 100%) in the premiums earned by both sectors. In 2005, this share fell to 5.1% in the case of the life sector and to 3.7% in the case of the non-life sector.

A particularly high level and high rate of growth of the activity monitoring ratio is reported in the non-life sector. At present, own funds in this sector exceed more than fivefold the statutory

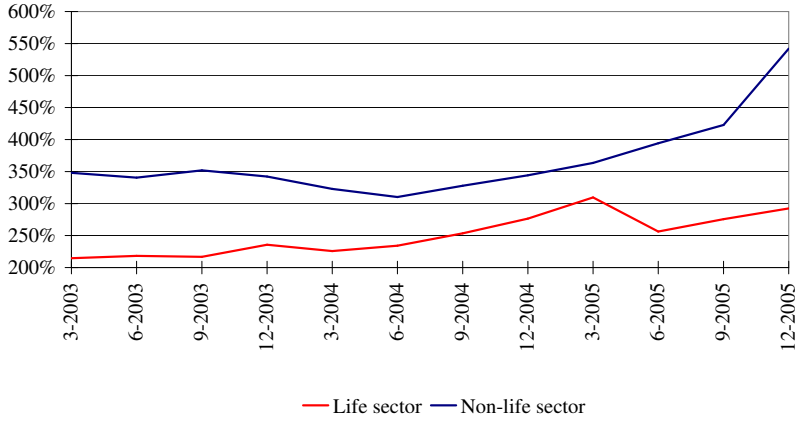
[70] The activity monitoring ratio is calculated as the relation of an insurer's own funds to the statutory capital requirements, i.e. the value of the solvency margin or the guarantee capital (whichever is higher). The minimum required value of the activity monitoring ratio is 100%.
The manner of determining the solvency margin varies, depending on the sector and insurance sub-sectors in which an insurer operates. In the calculation of the solvency margin, the levels of, *inter alia*, premiums, claims incurred, technical provisions, and the degree of reinsurance, are taken into account. In the case of non-life insurance company, the amount of solvency margin is determined mainly based on the amount of premiums collected and claims incurred, whereas in the life insurance company – on the basis of the level of technical provisions and the size of insurance company risk (the value of benefits paid in the case of death of the insured). The algorithm for setting the solvency margin has been specified in Regulation of the Minister of Finance of 28 November, 2003, concerning the manner of calculating the amount of solvency margin and the minimum amount of guarantee capital for insurance sectors and sub-sectors (Dziennik Ustaw [the Journal of Laws] No. 211/2003, item 2060).

Figure 4.7. Expense ratio [1]



[1] The expense ratio is calculated as the proportion of underwriting costs and administrative expenses (less reinsurance commissions and profit participation) to the premiums.
Source: Insurance and Pension Funds Supervisory Commission.

Figure 4.8. Activity monitoring ratio



Source: Insurance and Pension Funds Supervisory Commission.

capital requirements. This high value of this ratio partly results from a large amount of own funds held by the largest insurance company. Excluding the share of PZU SA, the level of own funds of the remaining insurance companies in the sector is still high and exceeds the capital requirements ca. threefold.[71].

A high value of the activity monitoring ratio is favourable from the point of view of financial safety and solvency of the non-life sector, due to a higher risk of occurrence of high value damages (e.g. disaster damages). The high surplus of own funds may serve as a buffer to amortise possible losses, in whole or in part.

One of the methods used in the non-life insurance companies to mitigate the risk related to the occurrence of high value damages are appropriately constructed reinsurance agreements. They also facilitate curbing the volatility of insurers' profits in individual years. In 2005 the share of reinsurers in the premiums fell from 17.5% to 15.2%. The fall was possible thanks to, inter alia, a significant growth in own funds and an improved capital position of insurers. This facilitated the take-over of part of the risk resulting from insurance policies from reinsurers, without posing any threat to solvency of insurance companies.

The increase in the average activity monitoring ratio in the life sector was much higher than that in the non-life sector. This was caused by a lower net earnings in the previous years and high dividend payment from PZU Życie SA. Another reason behind the lower value gain of this ratio was the high growth in the life sector, which brought about a more rapid increase of capital requirements than in the case of non-life sector.

Investment of insurance companies

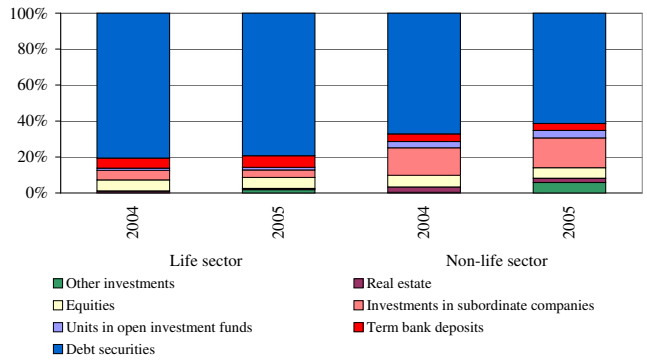
The investment activity of insurance companies mainly focuses on debt securities, mostly Treasury bonds (see Figure 4.9). Since a part of them is valued at fair value (portfolio securities *held for trading* and *available for sale*), bond price changes resulting from market interest rate changes influence the insurers' earnings. A fall in bond prices may have a greater impact on the earnings of non-life insurance companies and smaller life insurance companies, as these groups of insurers appear to have a higher percentage of Treasury bonds classified as *held for trading* and *available for sale*. The sensitivity of the insurance sector to the increase of market interest rates rose in the previous two years due to an increased *duration* of portfolios of wholesale bonds maintained by insurers.

The risk associated with stock exposure is still insignificant, due to a small proportion of stocks in investment (6.0%, excluding stocks and shares in subsidiaries). The share of real property is even lower (1.5%). The FX risk of investment is also low – at the end of 2005, the share of foreign investment in the total investment of the insurance sector stood at 2.1%.

Changes in the investment structure of insurance companies in 2005 were insignificant. Despite a strong upward trend on the stock market, the proportion of shares in the investment of insurance companies fell slightly, thus mitigating further the risk related to exposure to stock market. The decrease in the exposure to stock market was reported mainly in the first quarter of 2005, caused by the expected downward correction on the market, following the previous high increase in stock exchange indices in 2004. The year 2005 also saw a decline in shares

[71] Data as at the end of September 2005

Figure 4.9. Investment structure of insurance companies



[1] This item covers mostly stocks and participations in subsidiaries.
Source: the NBP calculations based on data collected by Insurance and Pension Funds Supervisory Commission.

of foreign investment and debt securities in investment of insurance companies, whereas the share of loans was on the rise.

Chapter 5.

Payment system operations and risk

The payment system in Poland includes both systems that allow the settlement of transactions carried out using payment instruments and the systems for clearing and settling securities transactions.

The most important payment systems in Poland are the following:

- RTGS systems: the SORBNET and SORBNET-EURO systems operated by the National Bank of Poland,
- retail clearing systems: the ELIXIR and EuroELIXIR systems operated by the National Clearing House (KIR SA).

There are two securities clearing and settlement systems in Poland, the National Securities Depository (KDPW) operated by the National Securities Depository SA (KDPW SA) and the Securities Register operated by the National Bank of Poland.

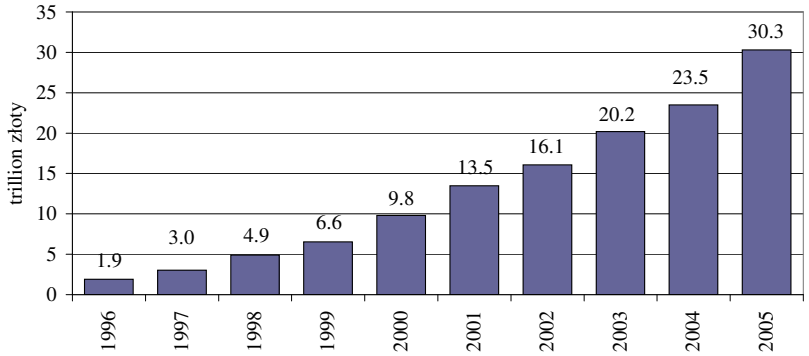
5.1. Payment systems

SORBNET is a real-time gross settlement (RTGS) system that constitutes the key "artery" for banking sector financial flows, which makes it strategically important for the functioning of the financial system. In SORBNET, zloty current accounts of the banks are maintained. It allows the immediate and irrevocable settlement of transactions on interbank markets. The system is also used to perform the settlement of payment instructions handled by clearing intermediaries such as the National Clearing House and the National Securities Depository.

The importance of SORBNET is also illustrated by statistics on the value of transactions cleared through the system. In 2005, the value of transactions executed via the SORBNET system totalled PLN 30.3 trillion, representing an increase of 29% on 2004. (see Figure 5.1). The number of payment instructions processed under SORBNET was up 20.1% to 1.1 million. The average transaction value stood at PLN 27.7 million.

NBP continued its analysis in 2005 of the extent to which SORBNET fulfils the security requirements specified in the methodology *TARGET risk management framework* adopted

Figure 5.1. SORBNET – annual turnover



Source: NBP.

for the RTGS systems by the European Central Bank. Taking into consideration the findings of the analyses and seeking to mitigate the risk under SORBNET, the system was modified and expanded to upgrade its security and reliability, in line with the ECB's requirements specified in the above-mentioned guidelines.

One of the criteria for assessing whether a system is operating properly is the availability afforded to participants. Under bank account maintenance agreements, SORBNET should be available to participants between 7:30 a.m. and 6:00 p.m., i.e. for 10 hours and 30 minutes per day. In 2005, the system was unavailable for 4 hours and 15 minutes meaning that the proportion of downtime came to 0.16% [72]. This stands for a significant improvement as compared to the previous year, when the system downtime was 0.23%.

On March 7, 2005, the National Bank of Poland launched the SORBNET-EURO system, i.e. a system of real-time gross settlements for domestic and cross-border euro payments. The SORBNET-EURO system was linked, via the central bank of Italy and the Italian RTGS system (BIREL), to the pan-European TARGET (*Trans-European Automated Real-Time Gross Settlement Express Transfer System*), thus becoming (as the first among new EU Member States) one of the elements of the European infrastructure of euro clearing.

On the same day, the SORBNET-EURO system enabled carrying out settlements of payment instructions from the EuroELIXIR system developed by the National Clearing House, which serves to clear retail euro-denominated transactions. From March to December, 2005, the SORBNET-EURO enabled clearing of 55.4 thousand instructions with the total value of EUR 159.6 billion.

While making a decision on the development of the system, the National Bank of Poland took into consideration, to a large extent, the expectations of the banking sector as to the creation in Poland of the comprehensive infrastructure for euro clearing. Striving for creating the most

[72] Simultaneously, more stringent conditions were introduced where those interruptions were registered which impacted the availability of the system to participants and lasted at least 15 minutes (in 2004, 30-minute downtime was taken into consideration). The above-mentioned recorded downtime duration results from the NBP's internal regulations and are not linked to any external requirements.

effective model of cross-border clearing in euro, the NBP also decided to participate in STEP2 and EURO1 systems[73] as well as to perform the function of the so-called *entry point*[74] for payments directed from the STEP2 system to Poland. This made it possible for Polish banks to join, via EuroELIXIR, the pan-European structure of retail euro-denominated clearing. The NBP joined both above-mentioned systems on May 30, 2005.

The main advantage of launching SORBNET-EURO and linking it with the TARGET system, as compared with correspondent banking so far, which was the only possible way of effecting euro-denominated payments, is:

- a possibility to radically shorten settlement cycle (from 2 days in correspondent banking to a current settlement on the day the instruction is placed), which should also shorten the time of clearing for Polish bank customers,
- relatively lower transaction costs (for banks, a few to a few dozen times lower), which decreased fees in correspondent banking and might also have an impact on decreasing fees that banks charge to customers,
- high security level of making payments thanks to the fulfilment of the SORBNET-EURO system of security conditions in force in all RTGS systems constituting the TARGET system,
- making intraday euro-denominated credit facility available to commercial banks, which increases banks' liquidity used for clearing and limits their need for their own euro liquidity within one day.

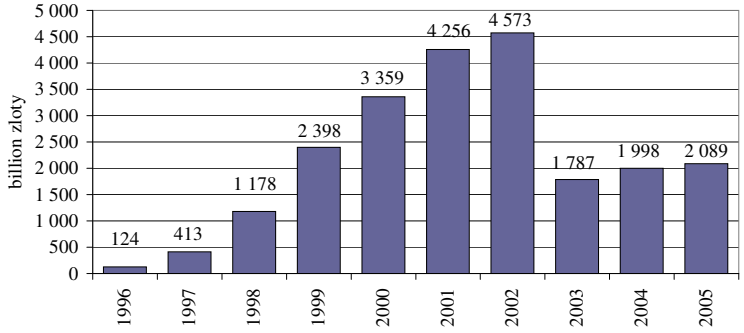
In the TARGET system, one of the elements of which is the SORBNET-EURO system, the most important issues are safety and reliability. The National Bank of Poland, making a decision to participate in the TARGET system, had to adjust the SORBNET-EURO system to the safety requirements defined in the methodology *TARGET risk management framework*, adopted by the ECB for domestic RTGS systems which are the TARGET system constituents.

Within the framework of works to adjust SORBNET-EURO to the security requirements of the TARGET system, a number of actions were undertaken which were aimed at limiting the operational risk in the entire information-technological infrastructure of the NBP. This contributed to increased safety of the IT system of the NBP and, consequently, of the entire payment system as, due to a very similar infrastructure and functionality of the SORBNET-EURO and SORBNET systems, a number of solutions related to the security of SORBNET-EURO are gradually implemented also in SORBNET in order to mitigate the operational risk. As part of these works, the business continuity plan (BCP) was developed for SORBNET-EURO, ensuring, in case of system failure or a local disaster, re-launching of the system's operations within the required time (2 hours).

[73] The STEP2 and EURO1 systems are net systems maintained by EBA (Euro Banking Association) and serve to clear euro-denominated payments between EU Member States. The STEP2 system settles retail euro-denominated cross-border payments, while the EURO1 system is designed to clear large-volume euro-denominated payments.

[74] *Entry point* stands for a bank which receives all funds from all payment instructions directed to Poland via the STEP2 system and which ensures their distribution to individual banks maintaining accounts of beneficiaries.

Figure 5.2. ELIXIR – the annual traffic



Source: The National Clearing House and NBP.

Under the *TARGET Agreement*, SORBNET-EURO should be available for external users between 7:00 a.m. to 6:00 p.m., i.e. for 11 hours per day. Since its launching in March, 2005, until the end of the year, the system was unavailable for 7 hours and 35 minutes, i.e. by 0.325% of the total nominal working time.[75]

Operation of the ELIXIR system

In the ELIXIR system maintained by the National Clearing House, in 2005, as many as 815.7 million transactions (representing an increase of 16.6% on 2004) were cleared. The value of these transactions totalled PLN 2,089 billion (representing an increase of 4.6%), while the average transaction value stood at – PLN 2,623 (see Figure 5.2).

In 2004, the ELIXIR system introduced a settlement guarantee mechanisms, through which the system risk was limited in the situation where insolvency of one participant of the system could cause inability to fulfil obligations by other participants (the so-called domino effect). Thanks to banks' discipline in maintaining liquidity at a level sufficient for clearing, in 2005 there was no necessity to apply the settlement guarantee mechanism in the ELIXIR system.

Launched on March 7, 2005, the EuroELIXIR system, designed for retail euro-denominated transactions, till May 30, 2005 supported domestic euro clearing only. Since that day, i.e. since the NBP's joining the pan-European STEP2 and EURO1 systems, EuroELIXIR began to allow also for cross-border retail euro transactions. In 2005, under EuroELIXIR (from March till the end of December, 2005) as many as 544.2 thousand payment instructions were cleared with the total value of EUR 2,103 million. The average transaction value stood at EUR 3.9 thousand.

Since the start of its operations, the EuroELIXIR system has been equipped with security

[75] In its "Annual Report 2005", the ECB reported the 100-percent uptime of SORBNET-EURO. The noted disruptions, due to their internal and short-term character, did not require reporting to the ECB as "incidents". The ECB should receive reports on incidents which cause disruptions in banks' servicing for more than 10 minutes. A few interruptions in SORBNET-EURO operations lasted longer than that, but due to the lack of payment instructions sent within this time by banks, did not have any impact on the level of services offered.

features similar to those implemented in the ELIXIR system, which involve, among others, the settlement guarantee mechanism. In November 2005, the settlement guarantee mechanism was used in EuroELIXIR for the first time. In the event of insufficient funds on the account of the bank-participant of the system, an instruction revoking algorithm was initiated. This example confirmed the efficiency of the adopted solution. With this solution, 47 transactions were removed. In the absence of the settlement guarantee mechanism, this bank would be excluded from the system.

The launch of the SORBNET-EURO and EuroELIXIR systems allowed for an in-depth upgrading of euro clearing. Thanks to this, Polish banks and their customers, in respect of euro-denominated payments, are subject to competition rules which are in place in the other EU Member States. The NBP's joining the TARGET system when participation in this system is not obligatory yet is a part of the NBP's preparations for the euro adoption in Poland, as well as a part of the necessary actions to be undertaken in the next few years by the NBP in order to participate in the future pan-European TARGET2 system. An additional benefit of the adopted solution is the entry into standard settlement structures of the European Union. This will allow for limiting the range of changes which need to be implemented in the Polish payment system at Poland's entry to the Economic and Monetary Union and will thereby mitigate such risk.

5.2. Oversight on the payment systems and systems of authorization and clearing

The NBP exercises oversight on payment systems in order to ensure their efficiency and safety. Moreover, pursuant to the Act on electronic payment instruments [76], the NBP exercises oversight on authorization and clearing systems operated by non-bank clearing agents. In particular:

- the NBP collected and analysed the statistical data and information concerning the operations of the payment system. Since the beginning of 2005, the obligation to report to the NBP was expanded to cover: the cooperative savings and credit unions (SKOK), Poczta Polska, entrepreneurs running their business in the area of making money transfers in the domestic and cross-border transactions as well as in the agency services in this respect and also entrepreneurs acting as intermediaries by accepting payments to bank accounts[77]. The collected data allowed for, among others, the assessment of the scale of operations of entities acting as intermediaries in accepting payments to bank accounts.

- The NBP analysed the market in terms of conformity of the operations of some economic

[76] Act of 12 September, 2002, on electronic payment instruments (Dziennik Ustaw [the Journal of Laws] No. 169/2002, item 1385).

[77] The obligation to provide data bestowed on these entities results from the Ordinance of the Minister of Finance of April 23, 2004, on the mode, scope and deadlines for the entities participating in money clearing and interbank settlements to provide data necessary for the NBP to assess the operation of money clearing and interbank settlements (Dziennik Ustaw [the Journal of Laws] No. 107/2004, item 1139).

entities with the provisions of the Act on electronic payment instruments.[78]

- In December, 2005, the President of the NBP issued a permission for the introduction of changes to the rules of EuroELIXIR operations. These changes were proposed by the National Clearing House. They consisted in prolonging the deadline for banks' placing their orders and in postponing the deadline for KIR's transfer of the orders to the NBP.
- In December, 2005, the President of the NBP issued a permission for CardPoint SA to maintain an authorization and settlement system taken over from its previous operator, Bank Handlowy w Warszawie SA.

5.3. Securities clearing and settlement systems

The volume of trading on the secondary market (net turnover, at nominal value) in the Securities Register (RPW) in 2005 was PLN 1,549.9 billion (with T-bills accounting for 1,235.7 billion and NBP money market bills for 314.2 billion), which stands for a decline of around 15.9% compared to 2004. The volume of trading on the secondary market which has been settled by the National Securities Depository in 2005 amounted to PLN 7,911.9 billion, which stands for a rise of around 112% compared to 2004.

In addition to the assessment of the securities settlement systems used to settle the Eurosystem monetary policy operations, the European Central Bank (ECB) also assesses annually the compliance of the links between these systems with the *Standards for the use of EU securities settlement systems in ESCB credit operations, ECB, Frankfurt, November 1997.* After the National Securities Depository declared its interest in the above-mentioned assessment, a decision was made at the initiative of the NBP, to expand the ECB assessment to cover the link between the KDPW and the Oesterreichische Kontrollbank AG (OeKB). In January, 2005, the NBP, as the central bank of a country where the investor securities settlement system operates, presented the first assessment report. In February, 2005, another assessment report was presented by the Oesterreichische Nationalbank as the central bank of a country where the issuer securities settlement system operates. On the basis of these reports, in June, 2005, the ECB drew up the final report under which the link between the KDPW SA and the OeKB was declared to be compliant with the ECB standards and did not receive any recommendations. The above assessment was informal and its results were preliminary. Before the link between the KDPW and the OeKB could be used in credit operations of the Eurosystem, it will be necessary to carry out formal assessment, which is planned just before Poland's entry to the euro area.

[78] The Act of September 12, 2002, on electronic payment instruments (Dziennik Ustaw [the Journal of Laws], No. 169/2002, item 1385).

Chapter 6.

Strategic groups in the Polish banking sector

Grzegorz Hałaj, Dawid Żochowski

6.1. Introduction

One of the objectives of the National Bank of Poland is ensuring financial system stability. Within this task, the NBP conducts analyses of the current developments in the banking sector and performs projections of their future course. Generation of projections for the entire banking sector may be hampered by the fact that individual banks may respond differently to changes of external factors. Different reactions produced by banks may stem from various grounds: the activity profile, the asset size, the market segment that is the major area of bank's operations, the level of links to foreign entities, etc. Therefore, generating projections for bank groups within which the reactions of these institutions are similar rather than estimating a single equation for the whole banking sector may allow for avoiding the bias caused by excessive aggregation. In this way, the projections may be made more precise and may take into account various responses of banks to external factors.

The paper provides results of research concerning identification of strategic groups in the Polish banking sector. The theory of strategic groups provides for the existence of groups of companies stable over time. Membership in a given group stems from the strategy adopted by individual banks. The theory also provides for differences in profitability among groups. The empirical research, preceded by a review of relevant literature, has been carried out on the basis of a *cluster analysis*) with the use of Ward's algorithm that optimises allocation of banks into groups. Strategic groups stable over time after the year 2000 have been identified, and statistically significant differences in profitability among banks in different groups have been observed. Subsequently, we have demonstrated that modelling of profitability within the groups with the use of regression yields more precise estimates of parameters than in the case of estimation of a model for the whole sector. Thus, breaking down the whole banking sector into strategic groups creates a possibility for a more precise forecast of the banking

sector performance, which is of particular importance in view of analysis of financial system stability.

This paper contains a review of the theory (Chapter 6.2.) and the empirical research of the banking sector (Chapter 6.3.) regarding identification of strategic groups. In Chapter 6.4. data used in the research is described, whereas in Chapter 6.5. – focus is made on the methods and tools for identification of groups. Chapter 6.6. includes results of the empirical research and a description of the strategic groups identified in the Polish banking sector in the years 1997-2004.

6.2. Strategic groups in theory

The theory of strategic groups was introduced by Hunt (1972) and further developed by Newman (1978). The strategic group is usually defined as a group of companies operating within the same industry, and adopting a similar strategy as regards products offered and resources used (Porter, 1979).

Thus, within a strategic group, companies make similar decisions in key areas (Koller, 2001), whereas their similar strategies are characterised by similar values of certain variables, called strategic variables or strategic dimensions. Within a group, company strategies are to a large extent homogeneous, whilst they differ substantially among particular groups.

The idea of strategic groups has been popularized by Caves and Porter (1977), who, apart from *barriers to entry* introduced the term of *barriers to mobility*. The concept of barriers to mobility was supposed to explain the rationale behind the creation of homogeneous groups of companies. Groups are formed as a result of discontinuity in available strategies, which are unevenly distributed over the space spanned by strategic variables. Porter (1980) states that available strategies prevent a company from taking a *stuck-in-the middle* position between two strategies.

Barriers to mobility may be perceived as a wall separating a given group from its external competition, and discouraging a given company from moving to another group. It is believed that barriers to mobility may result from undertaking similar investments by companies within a group, which increase their competitiveness and profitability. At the same time, those investments – for financial reasons – prevent or impede access to a given technology or patents to third parties. Such investments may include research on a new technology or invention as well as advertising. In the latter case, the barrier to mobility will comprise a sound market position, a recognized brand, or reputation (Ferguson, 2000). In such a case, barriers to mobility occur as a result of similar activities undertaken by enterprises. However, they may also result from offering similar products. Empirical research confirms the existence of barriers to mobility (Mascarenhas and Aaker, 1989); however, the mechanism of their occurrence has not yet been ultimately identified.

In the case of the banking sector it seems that investments in technology undertaken by banks should not have any significant meaning.[79] Technology, such as the level of IT infrastructure, is a precondition of existence of an institution in the banking sector. The profitability of a

[79] This remark does not have to apply to investment banks, which are not numerous in Poland and do not conduct large-scale activities.

financial institution depends to a greater extent on its ability to maintain the existing and win new customers as well as on the quality of risk management. Therefore, investments that might prove to be significant barriers to mobility should to a larger extent involve expenses related to the development of a branch network or to development of risk management models. Expenses related to advertising which, on the one hand, builds the bank's brand and, on the other hand, supports sales of the products offered that also serve as an indication of the strategy adopted by the bank, may also turn out to be material for the formation of strategic groups.

Under the assumption that barriers to mobility do exist, three conclusions may be drawn (Leask, 2004), which may be deemed predictions of the strategic groups theory. Firstly, the theory allows the possibility of existence of a hierarchy of strategic groups. Groups comprising more effective companies are separated by higher barriers to mobility than groups of companies with lower profitability. Secondly, changes in the environment have different influence on particular groups, what is caused by differences in the impact of external factors, related to various levels of protection regarding barriers to mobility. However, companies within a single group respond in a similar way to changes in external factors. Thirdly, the theory suggests that the lack of mobility among groups results to a larger extent from a company's history and its assets accumulated rather than from the nature of investments currently undertaken.

Porter (1979), on the other hand, argues that the existence of strategic groups reduces the level of competition within an industry. It results from co-ordination and co-operation among group members, which takes the competition within particular groups to a level lower than that of competition among groups. The scope of this dependency is conditioned on three factors: the number of groups and the distribution of their market shares, the diversity among the groups (the so-called strategic distance), and the level of diversity in the profiles of buyers of services and products (Heene and Houthoofd, 2002).

Co-ordination of activities rather than co-operation should be of greater importance for the formation of groups in the banking sector. Smaller banks often follow the behaviour of banks with a stronger market position. It is particularly visible in the case of changes in interest rates on loans and deposits. On the other hand, a lasting co-operation between banks, related to a particular project, is rather difficult to imagine, although exceptions occur. An example of banks' co-operation is the initiative that has led to the creation of a common database of borrowers and their debts. Payment systems are another example of co-operation among banks.

The development of the strategic groups theory has been based on the explanation of differences in earnings attained by different companies operating within the same industry. The existence of barriers to mobility does not explain, however, the differences in profits; it only implies a possibility that these differences may be sustained over time. In order to explain the origin of differences in profitability of particular groups, authors of the strategic groups theory (Porter, 1980) used the *structure-conduct-performance – SCP – paradigm*. This hypothesis is based on the assumption that market structure, understood through the prism of size and number of particular players, determines their position on a given market and specifies their strategy, thus influencing their profitability. Hence, initially, the existence of strategic groups was linked to relative sizes of companies operating on a given market (Caves and Porter, 1978; Caves and Pugel, 1980). However, subsequent studies expand the analysis to a larger number of strategic dimensions, which generally concern the structure of balance sheets of particular

companies (Passmore 1985, Amel and Rhoades, 1988).

Thus, the theory provides for considerable and sustained over time differences in profitability of companies in different groups. Movement of a company to a more efficient group is made difficult due to barriers to mobility (Caves and Porter 1977). The theory also provides for similar responses of group members to changes in the environment.

6.3. Strategic groups in the banking sector

The concept of strategic groups was created in order to explain the sustained differences in earnings of particular companies in an industry. This is why most of empirical research is also focused on the significance of differences in profitability between particular groups. The majority of researchers identified significant differences in earnings between isolated groups (see Dess and Davis, 1984; Reger and Huff, 1993; Heene and Houthoofd, 2002). Some of them, however, did not detect significant differences in profitability that could be explained by membership in a group (see Frazier and Howell, 1983; Cool and Schendel, 1987; Martens, 1988). In research on the banking sector, measures of profitability generally exhibited significant differences among groups (Mehra, 1996; Koller, 2001). Additionally, the research by Hackethal (2001) showed that only membership in groups isolated on the basis of market variables explained differences in profitability. On the other hand, there were no significant differences in ROA and ROE detected among groups isolated on the basis of resource-based variables.[80]

None of the research related to identifying strategic groups in the banking sector was aimed to explain the financial result taking into consideration the profit-risk interdependence. The financial result of a company operating in the financial sector is significantly influenced by – apart from the quality of management – the risk profile adopted. However, under the assumption that the risk profile is reflected in the bank's balance sheet structure, the breakdown into strategic groups performed on the basis of variables that represent ratios of particular asset items to total assets should also take the bank's risk profile into account. Major differences, not only in the financial result but also in the adopted risk profile, should be observed between the isolated groups.

Amel and Rhoades (1988) set a kind of standard of research on strategic groups in the banking sector. Most of research concerning this sector takes into account their remark that balance sheet-based variables should be used in identification of groups (see Koller, 2001; Hackethal, 2001). Similarly to Amel and Rhoades (1988), Koller (2001), in relation to Austrian banks, and Hackethal (2001), in relation to European banks, use non-hierarchical clusters as a tool for the breakdown of banks into groups. The concept lying behind breaking down banks into clusters is merging banks into groups on the basis of a criterion that typically minimises differences between standardised values of strategic variables.

[80] Hackethal (2001) introduced two kinds of breakdowns of 624 European commercial banks: one was based on *resource based values*, e.g. share of deposits in total assets or the ratio of deposits placed to deposits accepted on the interbank market, whereas the other – on *market based values*, e.g. average asset growth or share of loans in total assets. Each bank was thus classified into two groups.

6.4. Data – strategy dimensions

The data analysed in this paper come from all the operating Polish commercial banks, including 3 banks affiliating cooperative banks, for the period between the first quarter of 1997 and the third quarter of 2004. The banks that went bankrupt or were under administration in this period have also been included. The data come from banks' reports and relate to balance sheet items as at the end of particular quarters[81] or quarterly data for the profit and loss account items. The ratios that constitute strategy dimensions have been derived from yearly data. In the case of balance sheet data, the arithmetic mean has been calculated for particular items as at the end of each quarter. In the case of the profit and loss account category, the ratios have been calculated based on values of particular items as at year-end. Banks that terminated their operation or were taken over by another bank during the year have been included in the analysis for the period up to the year preceding their liquidation or take-over.

The measure of homogeneity (similarity) in the cluster analysis is the degree of diversity among particular strategic variables in consecutive periods. The variables have been divided into three categories (see Table 6.1):

- Category I: variables defining the strategy of raised funds utilisation. They are taken into account to define the market segment or the product group on which a given bank focuses its activity. Some of the ratios also describe major customer groups – on the assets side.
- Category II: variables defining the fund raising strategy. The ratios below describe the method of acquisition of asset financing sources by the bank and its competitiveness in this area. Some of the ratios also describe customer groups – on the liabilities side.
- Category III: variables defining the strategy in the bank's structure of costs and revenues. They are taken into account in order to differentiate between retail and wholesale banks.

All the above variables have been taken into account in the calculations jointly, as well as separate clusters have been constructed for different categories of variables. Thus, the earnings obtained are based on a multidimensional analysis, i.e. an analysis of clusters in three different dimensions defined by variables from particular categories, and on a one-dimensional analysis of clusters that takes into account all the variables jointly. Such approach aims at defining, among other things, which of the categories (which of the dimensions) best explains banks' earnings. Theoretical deliberations indicate that potential variables constituting strategy dimensions should include risk management quality, the ability to maintain the existing and win new customers, expenses related to development of a branch network, risk management models, or advertising expenditure. However, these values are difficult to measure or they are not available in the banking statistics, which is why taking into account the measures of, e.g., management quality might raise concerns as to their definitions. Moreover, in our opinion, expenses related to e.g. development of a branch network or advertising expenditure should be reflected in the variables that have been taken into account, such as *total assets per employed person* or *deposits from households / total assets*.

[81] Except for data related to Treasury bills, whose balances as at the end of every of the 12 months have been taken into account, due to high volatility of this asset category.

Table 6.1. Strategic variables taken into account in the research

Category I	Category II	Category III
$\frac{\text{Total loans}}{\text{Total assets}}$	$\frac{\text{Net debt on interbank}}{\text{Total assets}}$	$\frac{\text{Total assets}}{\text{Number of employees}}$
$\frac{\text{Loans for individuals}}{\text{Total loans}}$	$\frac{\text{Deposits from individuals}}{\text{Total assets}}$	$\frac{\text{Wages}}{\text{Total assets}}$
$\frac{\text{Housing loans}}{\text{Loans for individuals}}$	$\frac{\text{Income from fees}}{\text{Total assets}}$	$\frac{\text{Income from fees}}{\text{Income from bank. activ.}}$
$\frac{\text{Loans for corporates}}{\text{Total loans}}$	$\frac{\text{Deposits from corporates}}{\text{Total assets}}$	$\frac{\text{Wage cost}}{\text{Number of employees}}$
$\frac{\text{Securities}}{\text{Total assets}}$	$\frac{\text{FX dep. from non-fin. cust.}}{\text{Total assets}}$	
$\frac{\text{FX loans}}{\text{FX liabilities}}$		

Note: other ratios, taken into account in the initial analysis, have been gradually excluded from the set of variables that constitute strategy dimensions, due to their high (over 0.6) coefficients of correlation with other variables.
Source: own study, NBP data.

6.5. Research method

In order to isolate homogenous bank groups, we have used a method of *hierarchical clustering*. By this method, groups are obtained recursively, as a result of joining smaller groups into larger ones, where at the starting point each bank belongs to a separate group. The advantage to this method is the possibility to illustrate interdependencies between groups. The so-called dendrograms that visualise results of the algorithm enable to determine the distances between clusters and isolation of components that are most alike within a given group as well as those that fit less to the cluster in terms of the used grouping criterion.

Ward's algorithm, which minimizes distances between variables within a group (i.e. maximises the group's homogeneity) has been used to break down the banks into groups. As Ward (1963) pointed out, the purpose of his research was to find a breakdown of population that would minimise the loss of information about the population, resulting from the grouping process. In his search for optimal grouping, Ward confined himself to procedures that, in their each step, decrease the number of groups by 1 and minimise the loss of information. Ward's approach was a compromise between the simplicity of the scheme and optimality in the broadest sense.

The algorithm itself does not have any principle that would allow for termination of its operation before one group consisting of all the (components) banks is created. At the initial stage of the research the principle of cut-off has been adopted to isolate more than 1 group. The principles is based on the so-called *inconsistency ratios*, which measure the weight of links created among components comprising particular groups – the "closer" to each other two components are in terms of their isolated features (the more alike they are), the lower the inconsistency ratios are. The number of groups proved to be sensitive to the criterion level adopted. Slight changes in the cut-off level caused even a two-fold increase in the number of groups. Defining the distance level above which building of subsequent groups was

stopped turned out to be a better criterion for terminating the procedure. With regard to comparability of the results for different clustering criteria, the stopping level was defined as a percentage of the maximum distance between groups whose merging in the next step would result in a single group for the whole studied population. In other words, it is a percentage of the distance between groups in the case where there is no stopping criterion and, as a result of using the algorithm, there are only 2 groups left. The percentage of the distance was determined arbitrarily at 70%. The stopping level therefore defines the depth, down to which the merging of the population components into groups takes place. As the cut-off level has been selected arbitrarily, we have calculated Celinski-Harabasz's index (see Halkidi *et al.*, 2001) in order to verify the degree of group cohesion. The use of cohesion indices does not, however, eliminate the arbitrary character of certain grouping parameters. The choice of an index usually becomes an issue of controversy.

As the research aims at a breakdown of banks into groups, which would be further used in the construction of an analytical scheme for the purpose of, inter alia, modelling the financial result of the banking sector, two hypotheses have been verified:

- (H1) The groups created differ significantly in terms of ROA.
- (H2) In the equations of profitability regression from selected micro- and macroeconomic variables, the estimated model parameters are more significant for the estimation of equations for bank groups than for the total sector.

Since the breakdown into groups should help to define different profitability levels, return on assets – being one of the profitability measures – has been used to test the diversity of groups.[82] If there were two groups with identical distributions, differentiation between them would be of no use. The Kolmogorov-Smirnov statistics has been used (see Gajek and Kałuszka, 2000) to verify consistence of distributions of the result from banking activity to assets ratio and the gross profit to assets ratio among groups. The null hypothesis is the equality of distributions of particular profitability ratios among groups. The hypothesis has been tested for three significance levels – 0.01, 0.05 and 0.10.

Another test has been carried out on the basis of linear regression models of the average ROA and ROE of banks, depending on the average values for a particular strategic group of the following variables, which may influence banks' earnings (similar variables and a series of other variables used in panel estimation of banks' earnings can be found in e.g. DeYoung and Rice, 2004): rate of change in GDP, spread between the interest rate on household deposits and loans, spread between the interest rate on corporate loans and the three-month WIBOR rate, spread between the interest rate on corporate deposits and loans, percentage of irregular loans, producer price index (PPI), the Warsaw Stock Exchange Index, and the difference between banks' receivables and deposits in banks to assets ratio. Data from the period between the first quarter of 1998 and the fourth quarter of 2004 have been used. The research has been confined to comparing the linear regression estimates with two regressors selected from the above-mentioned variables. For each pair of variables, three models of ROA dependence on the average values of variables in the whole population of analysed banks and on means in the

[82] In studies concerning testing the significance of breakdown into groups in explanation of differences in profitability, return on equity ratios are also used.

group of banks which in 2004 were classified into 2 selected groups have been estimated. To make things simpler, an assumption has been made that the breakdown of banks into groups has not changed over time and remained the same as in 2004. This is a strong assumption, although a sufficient one for the purpose of comparison. Better estimates of models for series of mean values of variables in the obtained groups than for the mean calculated for all the banks would suggest that earnings of the banking sector should be modelled with the use of a breakdown into groups of similar banks.

As the main purpose of the research has been to explain the differences in profitability among groups of banks, the significance of clusters has been verified only using the two tests described. Therefore it was not necessary to verify the significance of breakdown into groups based on indices used for isolation of clusters.

Since strategic groups were analysed for multiple periods, a question about the sustainability of performance over time arises. In the verification of sustainability, the percentage of banks migrating among groups has been used.

6.6. Results

For the purpose of identification of strategic groups, calculations have been made for all the variables jointly (a one-dimensional analysis), and taking into account only variables from particular categories described in Chapter 6.4. (a multidimensional analysis). An analysis of dendrograms (for an exemplary dendrogram, see 6.1) and of sustainability of clusters over time[83] (see 6.2) allows for a statement that groups that are sustainable over time start to isolate from 2000, which may be related to significant ownership changes in the years 1998-1999.[84] The one-dimensional analysis allowed for isolating of the following bank groups, named on the basis of the dominant profiles in particular clusters[85]: *universal banks, corporate banks, car finance and mortgage banks, retail banks, regional banks.* The group of *car finance* and *mortgage banks* was stable throughout the period, whereas in 2003 it was divided into two groups: (1) *mortgage banks* and (2) *car finance banks.* In the years 1997-2001 there was a stable group of regional banks. There were migrations of some banks among groups, particularly before 2000, but there are also banks that did not change their group membership over the whole period. In the years 2000-2004 the percentage of banks in particular groups that did not migrate amounted to: 64% in the group of *car finance* and *mortgage banks*[86], 58% in the group of *retail banks*, 58% in the group of *universal banks*, and 33% in the group of *corporate banks*. *Corporate banks* make up the least stable group over time. Banks that migrated in those years among groups were most often members of two various groups. Only two banks belonged to three various groups within that period.

[83] Particular cluster numbers have been replaced with names originating from profiles of the most numerous banks in the cluster. Clusters where no dominating profile could have been distinguished have not been named. In general, it refers to clusters of no more than 4 banks classified.
[84] More detailed conclusions and findings will be soon published in NBP publishing series *Materials and studies.*
[85] Due to a considerably different breakdown of banks in 1997, and the inability of determination of profiles dominant in particular clusters, the largest cluster of this period has been called *retail-universal-car finance.*
[86] The breakdown of this group into two subgroups in 2003 has been ignored in the calculation of this percentage

Weights of groups in terms of the asset share of banks in particular clusters in total assets of commercial banks varied a lot. In 2004, universal banks dominated with a 61.4% share in assets. Retail banks and corporate banks also had major shares (20.1% and 13.3%, respectively). Clusters of car finance and mortgage banks and housing banks were small in terms of asset size (3.6% and 1.0%, respectively).

Membership of banks in groups identified in 2000-2004 overlaps to a large extent with the classification of the General Inspectorate of Banking Supervision (GINB).[87] Of 10 banks classified as mortgage banks or car finance banks, 8 were included in the group of car finance-mortgage banks. Of 11 banks classified by GINB as retail banks, 8 were included in the group of retail banks. The least convergence was obtained for corporate banks – 10 out of 16 banks. Of 10 banks classified by GINB as universal banks, 9 were assigned to the group of universal banks.

It stems from Table 6.4 contained in the annex that significantly higher percentages of rejected null hypotheses of the Kolmogorov-Smirnov test exist only for variables of Category I (from the multidimensional analysis) and for all the variables jointly (one-dimensional analysis). These results are consistent with Hackethal's research (Hackethal, 2001), who identified differences in profitability between groups of European banks, but only on the basis of a breakdown into groups with the use of market based variables (see Chapter 6.3.). The percentages are higher only for the years 2000-2004, in particular for the earnings from banking activity. No major differences have been observed in the distributions of profitability ratios: *profit / total assets* and *earnings from banking activity / total assets* for other dimensions (for variables of Categories II and III). It means that membership of a bank in a given group may be meaningful for explanation of differences in profitability after the year 2000, but only for groups identified on the basis of all variables jointly or on the basis of variables of Category I. In terms of earnings from banking activity, the percentage of rejected test hypotheses is higher also for the years 1997-1999; however, the existence of strategic groups that would be meaningful for explanation of differences in profitability in those years does not find confirmation in the case of distribution of *profit / total assets* ratio. Therefore, we have obtained a confirmation of the hypothesis that strategy adopted by a bank leads to differences in earnings, but only for the second half of the analysed period. The results of this analysis show that strategic groups in the Polish banking sector can be identified after the year 2000.

Estimation of profitability regression equations has been carried out for mean values of ratios in the *the universal* and *retail* groups. These two are the most numerous groups identified on the basis of the 2004 data. The group of universal banks includes 23 banks, the retail group – 12 banks. Among 28 models with ROA as the explanatory variable that have been estimated for the two above groups, there are models with good basic statistical properties. In the case of the group of universal banks (see Table 6.4), coefficients statistically significant and different from 0 for at least one variable of the model have been obtained for seven equations, and in the case of the retail group – for 4 equations. Whereas, for means from the whole examined population of banks, no equation proved to be significant at the level of 5%. Estimation statistics support the concept that description and forecasting of profitability should be analysed with banks broken down into groups of similar banks that make up e.g. strategic groups proposed by the authors. A ROE analysis does not confirm as clearly as

[87] "Składy grup rówieśniczych banków komercyjnych na 2005 rok", GINB, April 2005, *mimeo*

ROA regression estimators that examination of profitability within strategic groups leads to smaller estimation errors. Out of 28 equations (see Table 6.2) for the group of universal banks, 9 equations have significant coefficients, but none of the models estimated on the basis of corporate banks data proved to be statistically correct. Some regressions of ROE on parameters calculated on the basis of data for all the banks jointly have better properties, although no equation with all significant parameters has been obtained.

It stems from the analysis carried out with the use of the Kolmogorov-Smirnov test and the regression equations that a breakdown of banks into strategic groups allows for a more precise modelling of profitability of the banking sector. It creates a possibility for better forecasting of the banking sector performance, which is of vital importance for analyses of financial system stability.

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6.8. Annex

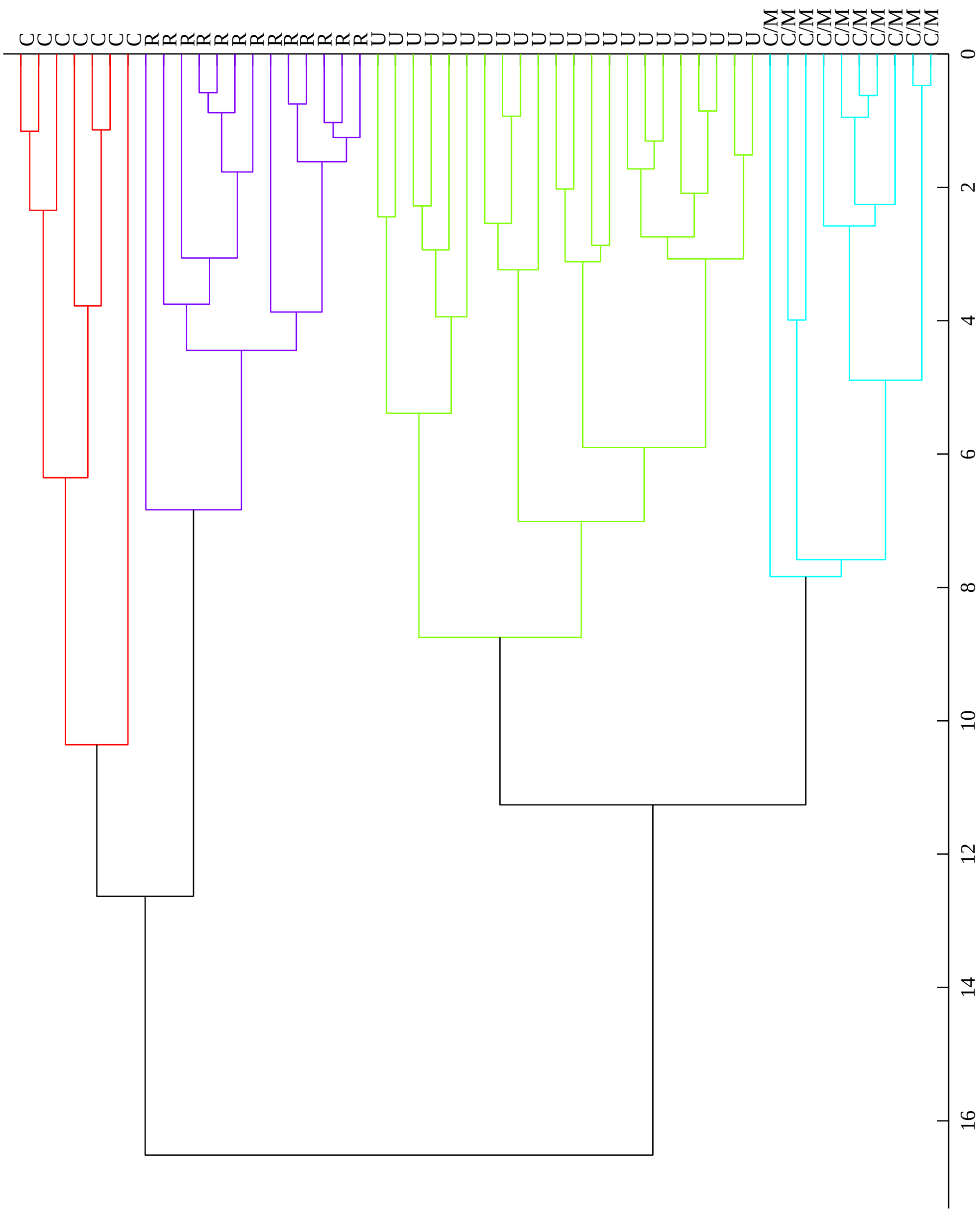


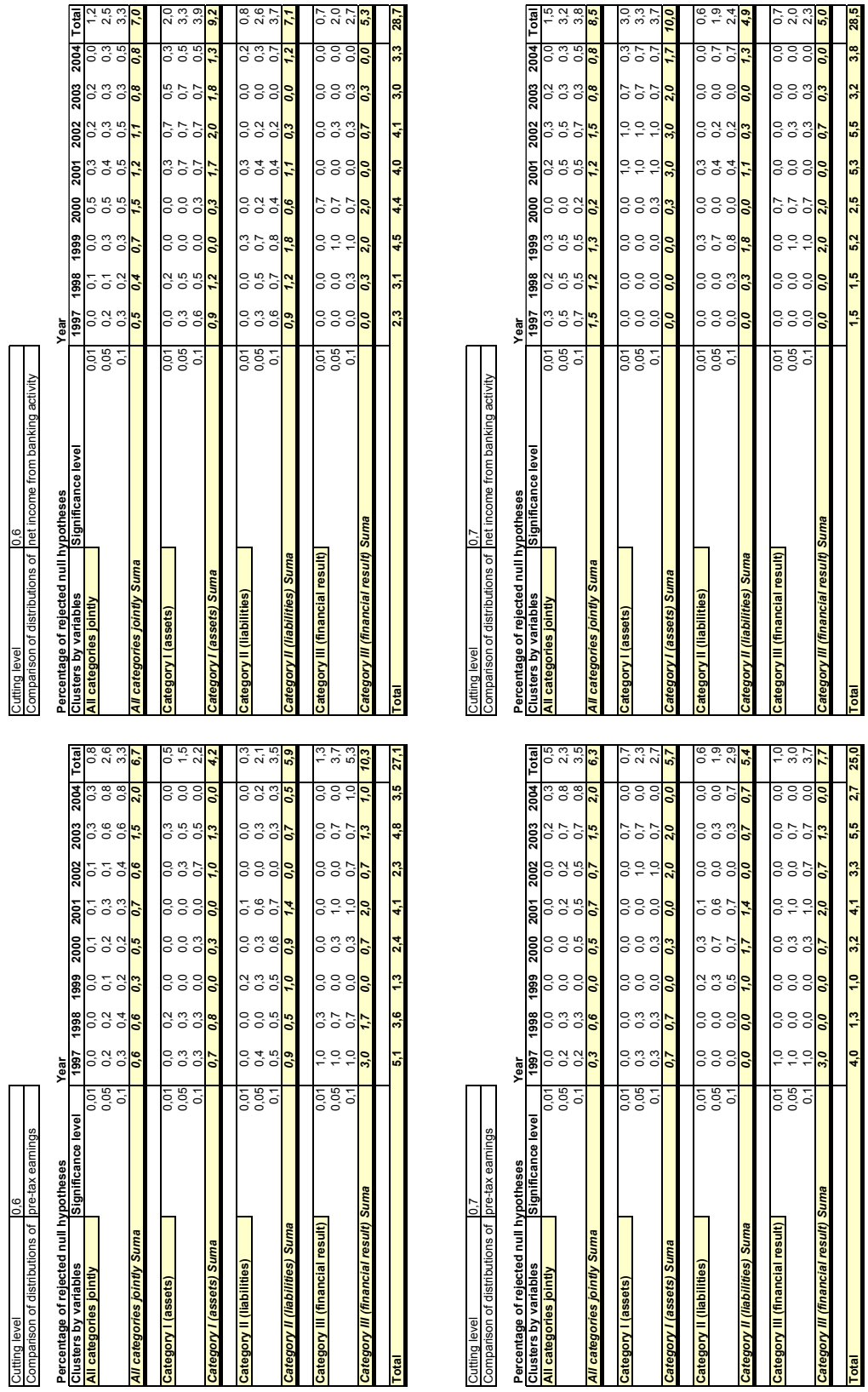
Figure 6.1. Bank clusters as at the end of 2004
Note: Symbols of bank groups on the Figure: C – corporate banks, R – retail banks, U –universal banks, C/M – car finance and mortgage banks.

Bank no.	1997	1998	1999	2000	2001	2002	2003	2004, Qs 1-3
1	retail-universal-car finance /mortgage	universal	*	retail	retail	retail	retail	*
2					*	*	*	*
3	retail-universal-car finance /mortgage	universal	retail	retail	retail	universal	*	*
4							*	*
5	retail-universal-car finance /mortgage	universal	regional	universal	retail	*	retail	retail
6	retail-universal-car finance /mortgage	universal	retail	retail	retail	retail	retail	retail
7	retail-universal-car finance /mortgage	universal	retail	retail	retail	retail	retail	retail
8	retail-universal-car finance /mortgage	universal	retail	retail	retail	retail	retail	retail
9	retail-universal-car finance /mortgage	universal	car finance /mortgage	retail	retail	retail	retail	retail
10	retail-universal-car finance /mortgage	universal	car finance /mortgage	retail	retail	retail	retail	retail
11		universal	universal	retail	retail	retail	retail	retail
12		universal	regional	universal	retail	retail	retail	retail
13		universal	universal	universal	retail	retail	retail	retail
14		universal	universal	universal	universal	car finance /mortgage	retail	retail
15	retail-universal-car finance /mortgage	universal	universal	universal	retail	universal	retail	retail
16					*	corporate	corporate	corporate
17	corporate	corporate	corporate	corporate	corporate	corporate	corporate	corporate
18	corporate	corporate	universal	corporate	corporate	corporate	corporate	corporate
19	corporate	*	corporate	corporate	universal	corporate	corporate	corporate
20	universal	corporate	universal	universal	universal	corporate	corporate	corporate
21	universal	corporate	universal	universal	universal	corporate	corporate	corporate
22	universal	corporate	universal	universal	universal	corporate	corporate	corporate
23	universal	corporate	universal	universal	universal	corporate	corporate	corporate
24						corporate	corporate	corporate
25						*	universal	corporate
26	corporate	corporate	corporate	*	corporate	*	universal	corporate
27	corporate	corporate	corporate	corporate	universal	corporate	universal	corporate
28	universal	corporate	universal	universal	universal	corporate	universal	corporate
29					*	*	mortgage	car finance /mortgage
30	retail-universal-car finance /mortgage	universal	retail	*	regional	car finance /mortgage	mortgage	car finance /mortgage
31	*	*	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	mortgage	car finance /mortgage
32	universal	retail	retail	*	universal	car finance /mortgage	mortgage	car finance /mortgage
33		regional	regional	regional	regional	*	car finance	car finance /mortgage
34	*	car finance /mortgage	car finance /mortgage	car finance /mortgage	regional	car finance /mortgage	car finance	car finance /mortgage
35	retail-universal-car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	regional	car finance /mortgage	car finance	car finance /mortgage
36				*	car finance /mortgage	car finance /mortgage	car finance	car finance /mortgage
37	retail-universal-car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance	car finance /mortgage
38	retail-universal-car finance /mortgage	universal	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance	car finance /mortgage
39		car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance	car finance /mortgage
40		car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance /mortgage	car finance	car finance /mortgage
41			*	*	corporate	*	mortgage	universal
42	universal	corporate	universal	universal	universal	*	universal	universal
43	*	retail	retail	universal	universal	corporate	universal	universal
44	retail-universal-car finance /mortgage	universal	regional	universal	retail	universal	universal	universal
45	retail-universal-car finance /mortgage	universal	regional	universal	retail	universal	universal	universal

Figure 6.2. Bank clusters — cumulative table

	1997	1998	1999	2000	2001	2002	2003	2004, Qs 1-3
46		regional	regional	regional	regional	universal	universal	universal
47		regional	regional	regional	regional	universal	universal	universal
48		regional	universal	regional	regional	universal	universal	universal
49		universal	universal	regional	universal	universal	universal	universal
50		*	retail	universal	universal	universal	universal	universal
51		universal	regional	universal	universal	universal	universal	universal
52		*	universal	universal	universal	universal	universal	universal
53		*	universal	universal	universal	universal	universal	universal
54		universal	universal	universal	universal	universal	universal	universal
55		universal	universal	universal	universal	universal	universal	universal
56		universal	corporate	universal	universal	universal	universal	universal
57		universal	universal	universal	universal	universal	universal	universal
58		universal	universal	universal	universal	universal	universal	universal
59		universal	universal	universal	universal	universal	universal	universal
60		*	universal	universal	universal	universal	universal	universal
61	retail-universal-car finance /mortgage	universal	regional	universal	retail	*		
62	retail-universal-car finance /mortgage	universal	regional	universal	retail	universal		
63	retail-universal-car finance /mortgage	universal	universal	universal	*	universal		
64	retail-universal-car finance /mortgage	universal	retail	retail				
65	retail-universal-car finance /mortgage	universal	regional	universal	retail			
66		regional	regional	regional	regional			
67		regional	regional	regional	regional			
68		regional	regional	regional	regional			
69		regional	regional	regional	regional			
70		regional	regional	regional	regional			
71		regional	regional	regional	regional			
72		regional	regional	regional	regional			
73	retail-universal-car finance /mortgage	universal	retail	retail				
74	corporate	*	corporate	corporate				
75	regional	regional	regional	regional				
76	retail-universal-car finance /mortgage	universal	regional	universal				
77	retail-universal-car finance /mortgage	universal	regional	universal				
78	universal	corporate	universal	universal				
79	universal	universal	universal	universal				
80	universal	universal	universal	universal				
81	*	*	*					
82	*	retail	*					
83	retail-universal-car finance /mortgage	universal	retail					
84	corporate	corporate	corporate					
85	retail-universal-car finance /mortgage	universal						
86	retail-universal-car finance /mortgage							
87	regional	corporate						
88	universal	universal						
89	universal	universal						
90	universal	universal						
91	universal	universal						
92	universal	universal						

Figure 6.3. Bank clusters — cumulative table
Source: own calculations.



Cutting level	0.6
Comparison of distributions of	pre-tax earnings

Percentage of rejected null hypotheses

Clusters by variables	Significance level	Year 1997	1998	1999	2000	2001	2002	2003	2004	Total
All categories jointly	0,01	0,0	0,0	0,0	0,1	0,1	0,1	0,3	0,3	0,8
	0,05	0,2	0,2	0,1	0,2	0,3	0,1	0,6	0,8	2,6
	0,1	0,3	0,4	0,2	0,2	0,3	0,4	0,6	0,8	3,3
All categories jointly Suma		*0,6*	*0,6*	*0,3*	*0,5*	*0,7*	*0,6*	*1,5*	*2,0*	*6,7*
Category I (assets)	0,01	0,0	0,2	0,0	0,0	0,0	0,0	0,3	0,0	0,5
	0,05	0,3	0,3	0,0	0,0	0,0	0,3	0,5	0,0	1,5
	0,1	0,3	0,3	0,0	0,3	0,0	0,7	0,5	0,0	2,2
Category I (assets) Suma		*0,7*	*0,8*	*0,0*	*0,3*	*0,0*	*1,0*	*1,3*	*0,0*	*4,2*
Category II (liabilities)	0,01	0,0	0,0	0,2	0,0	0,1	0,0	0,0	0,0	0,3
	0,05	0,4	0,0	0,3	0,3	0,6	0,0	0,3	0,2	2,1
	0,1	0,5	0,5	0,5	0,6	0,7	0,0	0,3	0,3	3,5
Category II (liabilities) Suma		*0,9*	*0,5*	*1,0*	*0,9*	*1,4*	*0,0*	*0,7*	*0,5*	*5,9*
Category III (financial result)	0,01	1,0	0,3	0,0	0,0	0,0	0,0	0,0	0,0	1,3
	0,05	1,0	0,7	0,0	0,3	1,0	0,0	0,7	0,0	3,7
	0,1	1,0	0,7	0,0	0,3	1,0	0,7	0,7	1,0	5,3
Category III (financial result) Suma		*3,0*	*1,7*	*0,0*	*0,7*	*2,0*	*0,7*	*1,3*	*1,0*	*10,3*
Total		5,1	3,6	1,3	2,4	4,1	2,3	4,8	3,5	27,1

Cutting level	0.6
Comparison of distributions of	net income from banking activity

Percentage of rejected null hypotheses

Clusters by variables	Significance level	Year 1997	1998	1999	2000	2001	2002	2003	2004	Total
All categories jointly	0,01	0,0	0,1	0,0	0,5	0,3	0,2	0,2	0,0	1,2
	0,05	0,2	0,1	0,3	0,5	0,4	0,3	0,3	0,3	2,5
	0,1	0,3	0,2	0,3	0,5	0,5	0,5	0,3	0,5	3,3
All categories jointly Suma		*0,5*	*0,4*	*0,7*	*1,5*	*1,2*	*1,1*	*0,8*	*0,8*	*7,0*
Category I (assets)	0,01	0,0	0,2	0,0	0,0	0,3	0,7	0,5	0,3	2,0
	0,05	0,3	0,5	0,0	0,0	0,7	0,7	0,7	0,5	3,3
	0,1	0,6	0,5	0,0	0,3	0,7	0,7	0,7	0,5	3,9
Category I (assets) Suma		*0,9*	*1,2*	*0,0*	*0,3*	*1,7*	*2,0*	*1,8*	*1,3*	*9,2*
Category II (liabilities)	0,01	0,0	0,0	0,3	0,0	0,3	0,0	0,0	0,2	0,8
	0,05	0,3	0,5	0,7	0,2	0,4	0,2	0,0	0,3	2,6
	0,1	0,0	0,3	1,0	0,7	0,0	0,2	0,0	0,7	3,7
Category II (liabilities) Suma		*0,9*	*1,2*	*1,8*	*0,6*	*1,1*	*0,3*	*0,0*	*1,2*	*7,1*
Category III (financial result)	0,01	0,0	0,0	0,0	0,7	0,0	0,0	0,0	0,0	0,7
	0,05	0,0	0,0	1,0	0,7	0,0	0,3	0,0	0,0	2,0
	0,1	0,0	0,3	1,0	0,7	0,0	0,3	0,0	0,0	2,7
Category III (financial result) Suma		*0,0*	*0,3*	*2,0*	*2,0*	*0,0*	*0,7*	*0,3*	*0,0*	*5,3*
Total		2,3	3,1	4,5	4,4	4,0	4,1	3,0	3,3	28,7

Cutting level	0.7
Comparison of distributions of	pre-tax earnings

Percentage of rejected null hypotheses

Clusters by variables	Significance level	Year 1997	1998	1999	2000	2001	2002	2003	2004	Total
All categories jointly	0,01	0,0	0,0	0,0	0,0	0,0	0,0	0,2	0,3	0,5
	0,05	0,2	0,3	0,0	0,0	0,2	0,2	0,7	0,8	2,3
	0,1	0,2	0,3	0,0	0,5	0,5	0,5	0,7	0,8	3,5
All categories jointly Suma		*0,3*	*0,6*	*0,0*	*0,5*	*0,7*	*0,7*	*1,5*	*2,0*	*6,3*
Category I (assets)	0,01	0,0	0,0	0,0	0,0	0,0	0,0	0,7	0,0	0,7
	0,05	0,3	0,3	0,0	0,0	0,0	1,0	0,7	0,0	2,3
	0,1	0,3	0,3	0,0	0,3	0,0	1,0	0,7	0,0	2,7
Category I (assets) Suma		*0,7*	*0,7*	*0,0*	*0,3*	*0,0*	*2,0*	*2,0*	*0,0*	*5,7*
Category II (liabilities)	0,01	0,0	0,0	0,2	0,3	0,1	0,0	0,0	0,0	0,6
	0,05	0,0	0,0	0,3	0,7	0,6	0,0	0,3	0,0	1,9
	0,1	0,0	0,0	0,5	0,7	0,7	0,0	0,3	0,7	2,9
Category II (liabilities) Suma		*0,0*	*0,0*	*1,0*	*1,7*	*1,4*	*0,0*	*0,7*	*0,7*	*5,4*
Category III (financial result)	0,01	1,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	1,0
	0,05	1,0	0,0	0,0	0,3	1,0	0,0	0,7	0,0	3,0
	0,1	1,0	0,0	0,0	0,3	1,0	0,7	0,7	0,0	3,7
Category III (financial result) Suma		*3,0*	*0,0*	*0,0*	*0,7*	*2,0*	*0,7*	*1,3*	*0,0*	*7,7*
Total		4,0	1,3	1,0	3,2	4,1	3,3	5,5	2,7	25,0

Cutting level	0.7
Comparison of distributions of	net income from banking activity

Percentage of rejected null hypotheses

Clusters by variables	Significance level	Year 1997	1998	1999	2000	2001	2002	2003	2004	Total
All categories jointly	0,01	0,3	0,2	0,3	0,0	0,2	0,3	0,2	0,0	1,5
	0,05	0,5	0,5	0,5	0,0	0,5	0,5	0,3	0,3	3,2
	0,1	0,7	0,5	0,5	0,2	0,5	0,7	0,3	0,5	3,8
All categories jointly Suma		*1,5*	*1,2*	*1,3*	*0,2*	*1,2*	*1,5*	*0,8*	*0,8*	*8,5*
Category I (assets)	0,01	0,0	0,0	0,0	0,0	1,0	1,0	0,7	0,3	3,0
	0,05	0,0	0,0	0,0	0,0	1,0	1,0	0,7	0,7	3,3
	0,1	0,0	0,0	0,0	0,3	1,0	1,0	0,7	0,7	3,7
Category I (assets) Suma		*0,0*	*0,0*	*0,0*	*0,3*	*3,0*	*3,0*	*2,0*	*1,7*	*10,0*
Category II (liabilities)	0,01	0,0	0,0	0,3	0,0	0,3	0,0	0,0	0,0	0,6
	0,05	0,0	0,0	0,7	0,0	0,4	0,2	0,0	0,7	1,9
	0,1	0,0	0,3	0,8	0,0	0,4	0,2	0,0	0,7	2,4
Category II (liabilities) Suma		*0,0*	*0,3*	*1,8*	*0,0*	*1,1*	*0,3*	*0,0*	*1,3*	*4,9*
Category III (financial result)	0,01	0,0	0,0	0,0	0,7	0,0	0,0	0,0	0,0	0,7
	0,05	0,0	0,0	1,0	0,7	0,0	0,3	0,0	0,0	2,0
	0,1	0,0	0,0	1,0	0,7	0,0	0,3	0,3	0,0	2,3
Category III (financial result) Suma		*0,0*	*0,0*	*2,0*	*2,0*	*0,0*	*0,7*	*0,3*	*0,0*	*5,0*
Total		1,5	1,5	5,2	2,5	5,3	5,5	3,2	3,8	28,5

Figure 6.4. The Kolmogorov-Smirnov test for distributions of ROA measures in bank groups.
Source: own calculations.

NR	a0	dPKB	sprGOSP	sprKWIB	sprPRZ	IrLOAN	PPI	WIG	D-N/AKT	R^2	F	p (JB)
1)	0 (*0.73*)	0.16 (*0.11*)	0 (*0.97*)	–	–	–	–	–	–	0.17	2.55	(**0.37**)
2)	-0.01 (*0.7*)	0.24 (**0**)	–	0 (**0.03**)	–	–	–	–	–	0.31	5.41	(**0.34**)
3)	-0.03 (**0**)	0.24 (**0**)	–	–	0 (**0**)	–	–	–	–	0.63	20.5	(**0.79**)
4)	0.03 (**0**)	0.03 (*0.41*)	–	–	–	-0.11 (**0**)	–	–	–	0.75	37.31	(**0.54**)
5)	-0.21 (**0**)	-0.08 (*0.46*)	–	–	–	– (**0**)	0	–	–	0.39	7.78	(**0.5**)
6)	0.02 (**0**)	0.34 (**0**)	–	–	–	–	–	-0.01 (**0**)	–	0.46	10.23	(**0.41**)
7)	-0.03 (**0.04**)	0.26 (**0**)	–	–	–	–	–	–	0.1 (**0**)	0.39	7.72	(**0.63**)
8)	0.04 (**0**)	–	-0.01 (**0.01**)	0 (**0.04**)	–	–	–	–	–	0.22	3.43	(**0.36**)
9)	0.01 (*0.05*)	–	-0.01 (**0**)	–	0 (**0**)	–	–	–	–	0.52	13.33	(**0.3**)
10)	0.02 (**0**)	–	0 (*0.6*)	–	–	-0.11 (**0**)	–	–	–	0.75	36.48	(**0.32**)
11)	-0.29 (**0**)	–	0 (*0.07*)	–	–	– (**0**)	0	–	–	0.46	10.23	(**0.08**)
12)	0.07 (**0**)	–	-0.01 (**0.01**)	–	–	–	–	-0.01 (**0.02**)	–	0.25	4.13	(**0.65**)
13)	0.02 (*0.05*)	–	-0.01 (**0.03**)	–	–	–	–	–	0.07 (*0.06*)	0.2	3.16	(**0.3**)
14)	-0.01 (*0.24*)	–	–	-0.01 (*0.54*)	0 (**0**)	–	–	–	–	0.28	4.8	(**0.56**)
15)	0.03 (**0**)	–	–	0 (*0.21*)	–	-0.11 (**0**)	–	–	–	0.76	39.22	(**0.15**)
16)	-0.22 (**0**)	–	–	0 (**0**)	–	–	0 (**0**)	–	–	0.54	14.27	(**0.26**)
17)	0.01 (*0.26*)	–	–	0 (*0.76*)	–	–	–	-0.01 (*0.77*)	–	0.02	0.24	(**0.32**)
18)	0 (*0.65*)	–	–	0 (*0.93*)	–	–	–	–	0.03 (*0.45*)	0.03	0.49	(**0.22**)
19)	0.02 (**0**)	–	–	–	0 (*0.11*)	-0.1 (**0**)	–	–	–	0.77	41.34	(**0.69**)
20)	-0.19 (**0**)	–	–	–	0 (**0**)	–	0 (**0**)	–	–	0.65	22.62	(**0.53**)
21)	-0.02 (*0.22*)	–	–	–	0 (**0**)	–	–	0 (*0.46*)	–	0.29	4.92	(**0.56**)
22)	-0.01 (*0.83*)	–	–	–	0 (**0**)	–	–	–	-0.1 (*0.07*)	0.36	7	(**0.95**)
23)	0.01 (*0.65*)	–	–	–	–	-0.11 (**0**)	0 (*0.74*)	–	–	0.75	36.14	(**0.46**)
24)	0.03 (**0**)	–	–	–	–	-0.11 (**0**)	–	-0.01 (*0.07*)	–	0.78	42.68	(*0.03*)
25)	0.02 (**0**)	–	–	–	–	-0.11 (**0**)	–	–	0.02 (*0.22*)	0.76	38.98	(**0.68**)
26)	-0.23 (**0**)	–	–	–	–	–	0 (**0**)	-0.01 (**0**)	–	0.64	21.53	(**0.32**)
27)	-0.22 (**0**)	–	–	–	–	–	0 (**0**)	–	0.08 (**0**)	0.54	14.16	(**0.39**)
28)	0 (*0.75*)	–	–	–	–	–	–	-0.01 (*0.92*)	0.03 (*0.45*)	0.03	0.49	(**0.23**)

Table 6.2. Estimation for the group of universal banks (2004).
Source: own calculations.