5 Dynamics of the Banking Sector

In terms of overall financial performance, CY04 turned out to be yet another commendable year for the banking sector. Not only were banks able to expand their core business activities, but they also strengthened their capital base, and improved asset quality and profitability during the year. In more specific terms, the risk weighted capital adequacy ratio increased to 10.5 percent against the minimum requirement of 8.0 percent, and the actual level of 8.5 percent in CY03; the non-performing loans (NPLs) to total loans ratio edged down to 11.6 percent as compared to 17.0 percent for the previous year; and return on assets (ROA) after tax increased by 10 bps to reach 1.2 percent during CY04.[1] Importantly, this growth in profitability of the banking sector was accompanied with a narrowing average spread and net interest margin. These developments clearly reflect the increased competition among banks and improvement in the efficiency of the banking sector. Besides these developments, the liquidity position of the banking sector also changed substantially, as the liquid assets to total assets ratio dipped to 36.5 percent by end-CY04 compared to 45.1 percent at end-CY03.

Despite the remarkable achievements of the banking sector in CY04 in an enabling macroeconomic environment, the sustainability of the performance due to a sharp rise in interest rates can be questioned. In this regard, it is important to note three developments which may have increased the vulnerability of the banking system to various shocks. These are: (1) rise in inflation and interest rates which is likely to affect the repayment capacity of the borrowers and may impair the asset quality of the banking sector; (2) despite a decline of over Rs 140.0 billion in the investment holdings of the banking system during CY04, exposure of the banking sector in fixed income (medium to long term) securities can adversely affect its impressive performance in a rising interest rate environment; and (3) banks have ventured into new areas such as mortgage finance, auto finance and SME finance, which not only carry a higher risk, but may also create an asset-liability mismatch in the absence of suitable liability products.

In light of the above factors, this chapter is primarily focused on: (1) the analysis of the underlying changes in the structure of assets and liabilities, which is essential in order to understand the degree of exposure of the banking sector towards various types of risks; (2) major risk mitigating policy measures introduced by SBP to manage the overall risks of the banking sector at a reasonable level; this is intended to provide some useful information on the various policy options available to banks to manage these risks; and (3) quantifying the impact of macroeconomic variables on the asset quality of the banking sector with the help of regression analysis.

5.1 Banking Sector Assets and Liabilities

5.1.1 Deposits
Deposits of the banking sector have seen a remarkable double digit growth during the past three years, benefiting largely from booming business activities and the increased inflow of remittances and economic activities in the country. However, this impressive growth in deposits, despite declining rates of return offered by banks, came hand in hand with visible changes in the underlying structure of deposits. This section analyses the deposits of the banking sector from various dimensions.

Bifurcation of deposits into current and fixed categories indicates that the share of the latter in the overall deposits of the banking sector dropped to 16.6 percent by end-CY04 compared to 29.1 percent at end-CY01 (see **Figure 5.1**).

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[1] For a detailed discussion on banking soundness indicators, please see "Banking System Review 2004", State Bank of Pakistan.

Furthermore, fixed deposits are not only concentrated in short tenor maturities, but the share of these short term deposits[2] in total fixed deposits has also increased to 57.4 percent by end-CY04 (see **Figure 5.2**). These developments clearly indicate that the average maturity period of banking sector deposits has reduced considerably, particularly during the last two years. Notably, this situation is likely to sustain at least in the short run, as depositors will not be willing to lock-in their funds for longer tenors in a rising interest rate environment.

An assessment of the distribution of deposits by size also provides constructive information. The share of large sized deposits (Rs 10 million and higher) in total deposits of the banking sector has increased to 30.2 percent by end-CY04 compared to 26.5 percent at end-CY01 (see **Table 5.1**). Moreover, the share of small deposits (up to Rs 0.1 million) has declined during the same period. These changes in the distribution of banks' deposits suggest that the deposit base of the banking sector has become more interest rate sensitive and volatile. Although we cannot strengthen the argument of increased interest rate sensitivity of deposits from the share of remunerative deposits to total deposits over the same period, one must keep in mind the fact that large sized deposits are generally interest rate sensitive.

Figure 5.1: Share of Fixed Deposits in Total Deposits

Figure 5.2: Share of Short Term Fixed Deposits in Total Fixed Deposits

In sum, the analysis of banking sector deposits from these dimensions indicates that the volatility of deposits has increased over time. The movement of big sized deposits from one bank to another within the banking sector can also potentially create liquidity problem at an individual bank level.
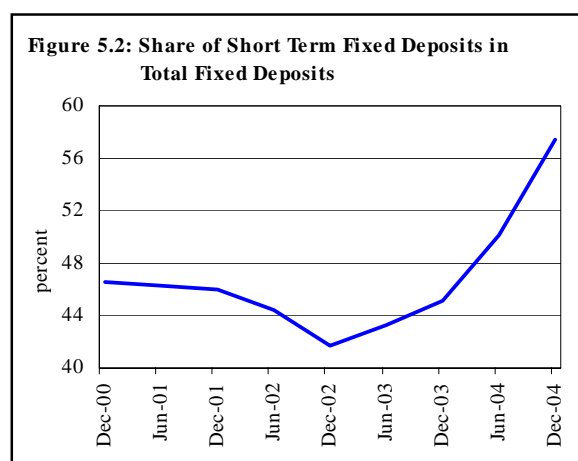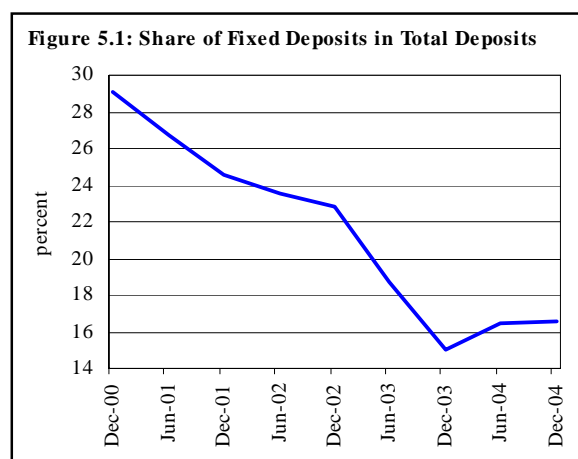
Table 5.1: Distribution of Deposits by Size

percent of total deposits

Deposit Size	Dec-01	Jun-02	Dec-02	Jun-03	Dec-03	Jun-04	Dec-04
Upto Rs 10,000	4.2	3.5	3.3	2.5	2.7	1.9	1.4
Upto Rs 50,000	27.3	27.3	25.9	24.4	19.0	17.7	15.7
Upto Rs 100,000	35.0	35.3	34.1	33.7	29.0	29.0	27.5
Upto Rs 500,000	54.6	56.1	54.5	55.5	49.4	49.6	49.2
Upto Rs 1,000,000	61.0	62.4	61.3	62.0	55.9	55.9	55.7
Upto Rs 10,000,000	73.5	75.5	75.2	76.2	72.1	71.0	69.8
Rs 10,000,000 and More	26.5	24.5	24.8	23.8	27.9	29.0	30.2

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[2] Fixed deposits of less than one year maturity are termed as short term deposits.

5.1.2 Loans and Advances[3]

Working in tandem with deposits, loans and advances of the banking sector also registered an impressive 19.9 percent compound annual average growth during the past three years. Although the distribution of loans and advances by size has not recorded substantial variation over time (see **Table 5.2**),[4] sectoral distribution of loans and advances has witnessed visible changes from CY01 to CY04. The share of the government sector in outstanding advances has edged down to a mere 3.8 percent by end-CY04 compared to 9.3 percent at end-CY01 (see **Figure 5.3**). This reflects both the improving position of the public sector and efforts made by the government to consolidate its economic activities by launching an aggressive privatization drive and encouraging the growth of the private sector. Specifically, the real impetus to this end came from the decision by the government to allow commodity operations activities to the private sector.
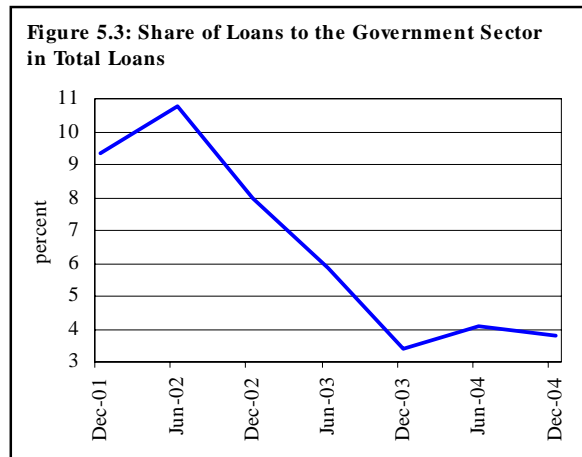
Figure 5.3: Share of Loans to the Government Sector in Total Loans

Table 5.2: Distribution of Loans by Size							
percent of total loans							
Loan Size	**Dec-01**	**Jun-02**	**Dec-02**	**Jun-03**	**Dec-03**	**Jun-04**	**Dec-04**
Upto Rs 10,000	0.04	0.06	0.04	0.03	0.02	0.04	0.11
Upto Rs 50,000	3.28	3.56	3.01	3.43	3.98	4.42	3.74
Upto Rs 100,000	9.55	9.64	9.45	9.11	9.30	8.66	7.90
Upto Rs 500,000	16.97	18.10	16.93	17.22	17.22	16.69	16.39
Upto Rs 1,000,000	19.50	21.16	18.92	19.35	19.98	19.52	19.69
Upto Rs 10,000,000	31.15	33.57	29.68	30.06	31.54	31.25	32.33
Rs 10,000,000 and More	68.85	66.43	70.32	69.94	68.46	68.75	67.67

The increased activities of the private sector are also evident from the extraordinary demand for credit by the private sector. Sectoral distribution of private sector loans and advances indicates that the manufacturing sector remained the biggest user of bank credit within the private sector,[5] as its share in outstanding loans and advances has not only been the highest, but has increased over time. A further break-up of loans and advances indicates that credit is largely concentrated in the textile sector, which accounts for over 20 percent of total loans and advances of the banking sector (see **Figure 5.4**). This implies

Figure 5.4: Share of Corporate Sector in Total Loans

— Manufacturing — Textile Sector

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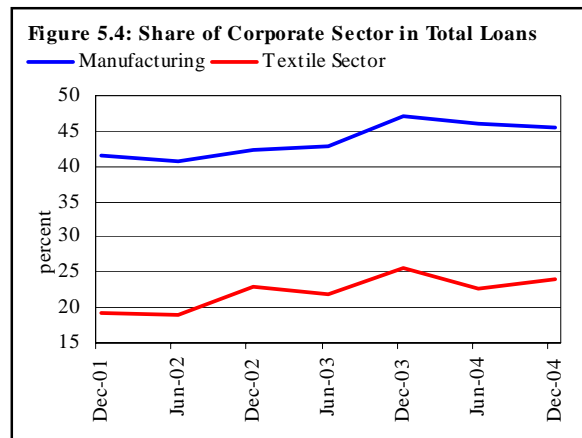
[3] Data for this section has been extracted from various issues of the Statistical Bulletin, State Bank of Pakistan.
[4] The share of small loans and advances (loans up to Rs 1.0 million) in total advances has remained in the vicinity of 19.5 percent during the last three years.
[5] For a detailed analysis of credit activities of the banking sector, please see Chapter 3: Bank Credit.

that a slow down in the manufacturing sector and the textile sector in particular, can impair the credit quality of the banking sector.

A notable development in the sectoral distribution of loans and advances is the increasing exposure of the banking sector towards the consumer sector (including both consumer finance and staff loans). Share of these loans in the outstanding amount stands at 13.3 percent at end-CY04, compared to only 8.6 percent at end-CY01 (see **Figure 5.5**). While on one hand an increasing exposure to consumer financing has helped banks in diversifying their loan portfolio, on the other hand it requires a massive investment in automated systems and a trained human resource base. Moreover, consumer finance, unlike working capital

Figure 5.5: Share of Consumer Sector in Outstanding Loans and Advances

finance, is medium to long term in nature. Specifically, while personal loans are generally for two to three years, auto loans are usually for three to five years and housing finance for ten years and more. Given these dynamics, the increasing share of consumer finance has increased the average maturity period of overall loans and advances. This point is reinforced by the fact that the manufacturing sector has also borrowed heavily from the commercial banks for fixed investment in a process of balancing, modernization and replacement (BMR) to meet increasing consumer demand generated by credit availability.
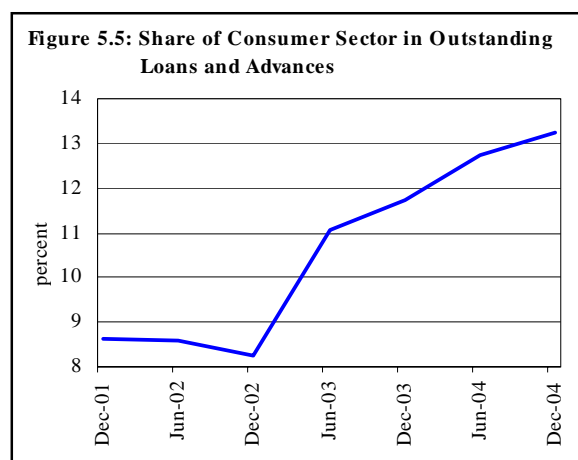
In sum, the analysis of loans and advances of the banking sector from various dimensions highlights four important developments: (1) although the diversification of banks' loan portfolio has increased during the period of analysis, exposure towards the textile sector remains high; (2) aggressive marketing and booking of loans to the consumer sector may impair the quality of the loan portfolio, given that a reversal of previously low interest rates and recent inflationary pressures may hurt the repayment capacity of the borrowers; (3) the recent boom in both real estate and stock markets together with increased banking sector (direct and indirect) exposure to these markets can undermine the credit quality of the banking sector; and (4) changes in the sectoral distribution of credit has increased the average maturity period of the loan portfolio of the banking sector.

5.1.3 Investments

Despite a notable decline of more than Rs 140.0 billion in the investment holdings of the banking sector during CY04, investment activities have recorded a compound annual average growth of over 20 percent during the last three years. In fact, investment holdings of the banking sector more than doubled from CY01 to CY03 due to: (1) SBP's sterilization efforts, which resulted in a shift of holdings of government debt from SBP to the scheduled banks; and (2) the efforts of the banking system to lock-in their funds in government securities in a declining interest rate environment which was prevalent during that period.

This situation reversed during CY04 largely due to changing market expectations about the pace of the rise in interest rates. Contrary to the gradual tightening of the monetary policy during CY04, banks continued to bid at higher rates in auctions, particularly during July to December CY04, which led to either the rejection of such auctions or acceptance of smaller amounts as compared to the announced target. As a result, the banking system was unable to invest in government securities.

This, along with maturing government securities in their previous investment portfolios, led to a considerable decline in the investment holdings of the banks. Moreover, the composition of investments shows that the decline in investment holdings almost entirely came from short term government securities (T-bills). Looking at **Figure 5.6**, a notable development is the increased share of long term investments[6] in the total investment holdings of the banking sector. This change in composition of banking sector investments in a rising interest rate environment has increased the exposure of the banking sector towards market risk.

Figure 5.6: Composition of Investments
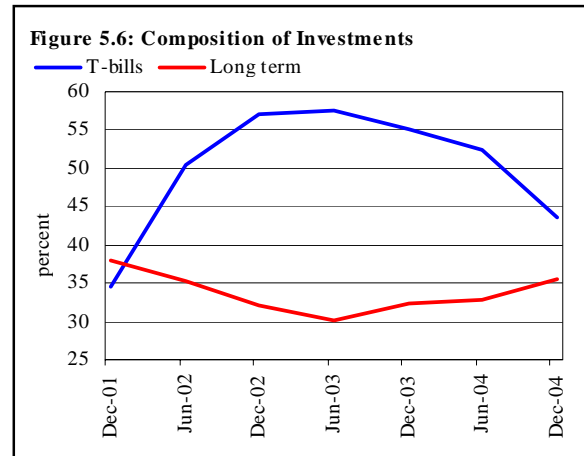
5.1.4 Banking Sector Dynamics and Associated Risks[7]

The aforementioned changes in the structure of banking sector deposits (liabilities), advances and investments (assets), as examined from various dimensions, suggest that the risk profile of the banking sector has substantially changed during the last three years. It then becomes important to assess the evolving risk profile specifically in terms of credit, liquidity and market risks.

In order to analyze the nature of credit risk, it is important to study the behavior of the loans to assets ratio, which is generally used as a measure of the credit risk of bank assets. The aggregate loans to assets ratio for commercial banks has undergone a visible change of 8.9 percentage points to reach 51.6 percent by end-CY04 (see **Table 5.3**).[8] The distribution of the loans to assets ratio among the various commercial banks indicates that 23 banks (out of 35) have a ratio of over 50 percent at end CY04, which is the highest level since CY97. While this confirms the earlier assertion that credit risk of banking sector assets has increased during CY04, it also indicates that the banking sector is now more focused on its core business activities.

Table 5.3: Distribution of Loans to Total Assets Ratio

	CY97	CY98	CY99	CY00	CY01	CY02	CY03	CY04
Industry Ratio (percent)	42.9	41.6	44.5	47.0	45.4	39.9	42.7	51.6
No of Banks								
Over 50 %	12	16	19	20	12	9	15	23
Over 60 %	4	6	5	9	3	2	6	9
Over 70 %	0	0	0	1	0	0	1	1

Note: For the sake of consistency, 35 commercial banks presently in operation have been considered for all the years.

Liquidity risk of the banking sector emanating from increased maturity mismatch between assets (advances and investments) and liabilities (deposits) is generally measured by the liquid assets to total assets ratio and the loans to deposit ratio. The liquid assets to total assets ratio for commercial banks has slipped to 36.9 percent by end-CY04; a level that was generally prevalent from CY97 to CY01 (see **Table 5.4**). A drastic reduction of around 9 percentage points since CY03 in the liquid assets to total assets ratio must be interpreted with caution, as the banking sector has had excess liquidity

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[6] Long term investments include Federal Investment Bonds, Pakistan Investment Bonds, Debentures and Participation Term Certificates.

[7] For a detailed discussion on banking sector risks, please see "Banking Sector Review 2004", State Bank of Pakistan.

[8] This is the net advances to total assets ratio. In case of gross advances, the ratio will be even higher.

during the past two years. The distribution of the liquid assets to total assets ratio among the commercial banks indicates that for a large number of banks this ratio ranges between 30 to 40 percent at end CY04.

Table 5.4: Distribution of Liquid Assets to Total Assets Ratio

	CY97	CY98	CY99	CY00	CY01	CY02	CY03	CY04
Industry Ratio (percent)	39.9	40.7	36.3	37.4	39.3	48.1	46.1	36.9
No of Banks								
Below 20 %	1	2	3	0	0	1	3	1
Below 30 %	5	6	12	5	3	2	3	7
Below 40 %	16	15	25	18	10	4	12	23
Below 50 %	24	28	32	26	26	20	22	27

Note: For the sake of consistency, 35 commercial banks presently in operation have been considered for all the years.

The loans to deposits ratio of commercial banks, another widely used indicator of liquidity, has increased to 63.7 percent by end CY04 – the highest level since CY97 (see **Table 5.5**). The distribution of the loans to deposits ratio among various banks shows that this ratio is over 75 percent for 13 banks. This high level of the ratio for a number of banks suggests that these banks may be resorting to borrowing to fund their assets, as banks have to maintain cash reserve requirement (CRR) of 5 percent and statuary liquidity requirement (SLR) of 15 percent of their demand and time liabilities (deposits) with SBP.

Table 5.5: Distribution of Loans and Advances to Deposits Ratio

	CY97	CY98	CY99	CY00	CY01	CY02	CY03	CY04
Loans to Deposits Ratio	51.1	50.5	55.3	59.7	56.8	50.8	53.5	63.7
No of Banks								
Over 50 %	25	23	26	26	25	24	23	28
Over 60 %	11	14	21	22	20	19	19	25
Over 70 %	6	8	14	17	9	12	11	17
Over 75 %	3	6	13	14	7	9	10	13

Note: For the sake of consistency, 35 commercial banks presently in operation have been considered for all the years.

However, the above ratio can be misleading in the presence of borrowing facilities like the export refinance scheme of the State Bank. To further explore this issue, the loans and advances of banks are adjusted for borrowings under export refinance and locally manufactured machinery facilities from SBP. The adjusted loans to deposit ratio for commercial banks is 59.4 percent for CY04 as compared to the unadjusted ratio of 63.7 percent. The distribution of the adjusted ratio also changes considerably as compared to the unadjusted distribution (see **Table 5.6**).

Table 5.6: Distribution of Adjusted Loans and Advances to Deposits Ratio
No. of banks

	CY97	CY98	CY99	CY00	CY01	CY02	CY03	CY04
Loans to Deposits Ratio	46.7	45.2	48.2	54.5	53.4	48.2	49.6	59.4
No of Banks								
Over 50 %	11	14	14	23	22	20	21	28
Over 60 %	3	3	6	13	11	16	13	24
Over 70 %	1	1	4	4	6	9	5	11
Over 75 %	0	0	2	3	2	4	4	5

Note: For the sake consistency, 35 commercial banks presently in operation have been considered for all the years.

It is interesting to note that there are only 5 banks which have an adjusted loans to deposit ratio of over 75 percent as compared to 13 banks in case of the unadjusted ratio. Furthermore, these five banks are small in size, as they jointly hold only 7.2 percent of banking sector assets. The above discussion clearly shows that one should interpret the loans to deposit ratio as an indicator of liquidity with caution, as it can lead to misinterpretations in the presence of refinance facilities.
Market risk associated with movements in interest rates, stock prices and the exchange rate is also of vital importance. Massive investments of the banking sector in medium to long term securities indicate that banks are exposed to interest rate risk.

To avoid the risk of revaluation arising from investments in fixed income government securities, a large number of banks have chosen to categorize their investments in medium to long term securities in the "Held to Maturity" (HTM) category.[9] Specifically, 61 percent of banking sector investments in Pakistan Investment Bonds (PIBs) are classified in this category. These changes in the underlying structure of banking sector investments have three important implications: (1) banks will not be able to re-price their investments/assets at higher returns; (2) massive holdings in the HTM category will undermine the secondary market trading of PIBs; and (3) banks may face liquidity problems, if the deposit growth slow downs.

5.2 Managing Risks of the Banking Sector
While the discussion in the preceding section demonstrates that the underlying risks to the banking sector have increased during CY04, the financial soundness indicators clearly reflect that their risk absorption capacity has also increased considerably during the same period. Furthermore, there have been a number of developments that not only provide useful insights for the prudent management of the overall risks of the banking sector, but also attest the sustainability of this impressive growth.

5.2.1 Capital: A Defense Line
The capital base of the banking sector acts as the first line of defense by absorbing shocks stemming from adverse movements in business conditions. The banking sector in Pakistan is operating under dual capital requirements: the minimum paid-up capital requirement (net of losses) laid out by SBP and the minimum capital to risk weighted asset (CRWA) ratio as prescribed in the Basel Capital Accord (Basel I). The minimum capital requirement for banks/DFIs has recently been increased to Rs 2 billion (from Rs 1.0 billion) to further strengthen the capital base of the banking sector.[10] Furthermore, while the CRWA ratio has been maintained at the minimum required level of 8.0 percent, banks/DFIs are required to allocate capital for market risk in addition to the capital requirements for credit risk. These changes are expected to establish a proper risk based capital adequacy framework, as market risk includes the exposure arising from changes in interest rates, equity prices and foreign exchange rates.

Recent financial data of the banking sector indicates that the aggregate CAR for banks has increased to 10.5 percent by end-CY04 as compared to 8.5 percent for the previous year and the required level of 8.0 percent. Distribution of banks' CAR indicates that : (1) all commercial banks have their CAR above the minimum required level of 8 percent; and (2) out of 35 commercial banks, 22 banks have their CAR over 10 percent.[11] This strengthening position of CAR despite substantial changes in the asset-mix of the banking sector clearly reflects that the risk taking capacity of the banking sector has increased considerably. In other words, banks are well placed to absorb credit and market risks.

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[9] For details, please see Prudential Regulations for Corporate / Commercial Banking, and BSD Circular No. 14 dated September 24, 2004.
[10] Banks can implement this requirement in two phases: Rs 1.5 billion by end-CY04 and Rs 2.0 billion by end-CY05. For further details, please see BSD Circular No. 12 dated August 25, 2004.
[11] For details, please see Chapter 5 of "Banking System Review 2004", State Bank of Pakistan.

5.2.2 Implementation of Basel II
In line with the dynamic risk profile of the banking industry, the Basel Committee on Banking Supervision has finalized a new Capital Accord (known as Basel II) in June 2004. Capital adequacy requirements in Basel II have been made more risk-oriented by: (1) linking capital to operational risk; and (2) changing the risk measurement approaches for credit and market risks.

In an effort to create a true risk-based banking environment and to keep the banking system aligned with international banking standards, SBP has issued detailed guidelines for the phase-wise implementation of Basel II in Pakistan.[12] While Basel II helps in managing risk more prudently, its successful implementation remains a major challenge for the banking sector.

5.2.3 Managing Risks of Consumer Finance
In a rising interest rate environment, exposure of the banking sector towards consumer finance is considered to be one of the high risk areas. The situation is further complicated by the recent inflationary pressures evidenced in the economy. Both these factors, rising interest rates and inflation, are likely to affect the repayment capacity of the borrowers, which may impair the credit quality of the banking sector. In order to address the perceived risks associated with consumer financing, SBP issued a separate set of Prudential Regulations for Consumer Finance[13] to ensure a minimum level of prudence in giving such loans. Under these regulations, an individual bank's maximum exposure towards consumer financing is capped by (1) the ratio of classified consumer loans to total consumer financing; and (2) the overall equity of the bank. Banks are also required to maintain a minimum general reserve of 1.5 percent of their respective consumer finance portfolio in case of secured facilities and 5.0 percent for unsecured facilities. Furthermore, in case of secured facilities, banks are also required to maintain minimum margin requirements. Besides these general requirements, product specific regulations provide further guidance in managing the overall risk associated with such lending. All these regulations serve to limit the exposure of the banking sector towards consumer finance.

5.2.4 Mark to Market Requirements and Market Risk
As mentioned earlier, banks are required to classify their investment portfolio into three categories : (1) Held to Maturity (HTM); (2) Available for Sale (AFS); and (3) Held for Trading (HFT). Guidelines have also been issued for the classification of the investment portfolio, re-classification of securities from one category to another and appropriate treatment of the surplus/deficit arising from the revaluation of the investment portfolio. Investments classified as HTM are not subject to mark to market requirements and banks are required to keep these securities on their books at amortized cost. Furthermore, securities held under this category are not eligible for subsequent reclassification**.**

In contrast to HTM, securities held in the AFS and HFT categories are required to be marked to market. While the impact of revaluation of AFS securities is taken into the "Surplus/Deficit on Revaluation of Securities" account, surplus/deficit arising from the revaluation of HFT securities is taken into the profit/loss account. Given this approach, the massive investments of the banking system in fixed income government securities do not pose any credible or direct threat to the recently observed impressive performance of the banking is sector. However, it is to be noted that the banking sector will continue to incur losses in terms of opportunity cost with respect to these investments.

5.2.5 Exposure towards Equity Markets
Exposure of the banking sector towards equity stocks is also an issue of concern due to the inherently

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[12] Please see "Banking System Review 2004", State Bank of Pakistan and BSD Circular No. 3 dated March 31, 2005.
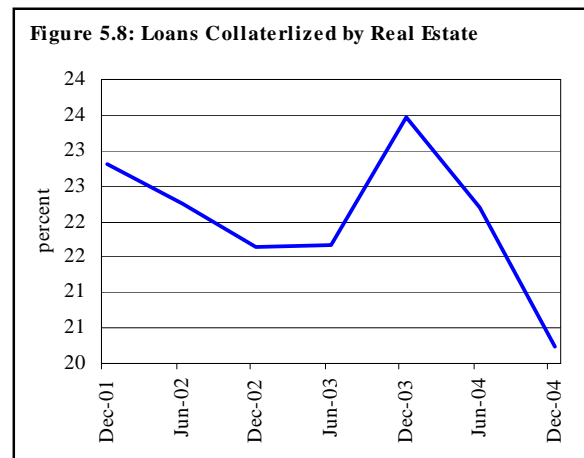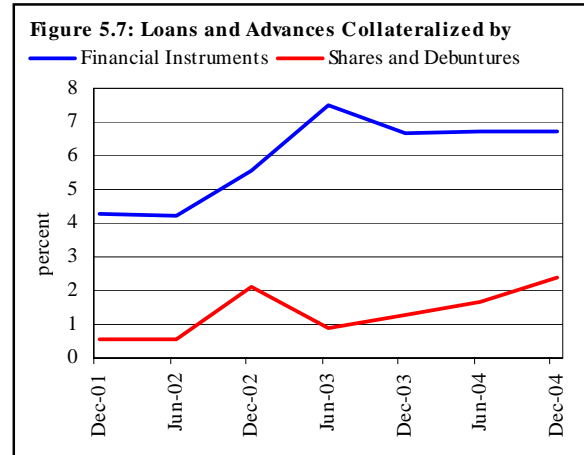[13] Please see BPD Circular No. 35 dated October 28, 2003.

volatile nature of stock markets. To maintain this risk at a manageable level, SBP[14] has already linked the equity investments of the banking sector with their capital base. Specifically, an individual bank's investment in the shares of a single company is restricted to 5 percent of its own equity and the overall investment in shares is restricted to 20 percent of its equity. In this way, banks' direct exposure towards the equity market is kept at a manageable level.

Indirect exposure on the equity market arises due to lending against shares, largely through the popular 'Badla' or Carry-over trade (COT) Financing. In this case banks are directly exposed to price movements in the stock exchange. The distribution of loans and advances categorized by pledged securities indicates that the share of loans and advances made against shares (quoted and unquoted) and debentures has increased to 2.4 percent of the total loan portfolio by end-CY04 compared to less than 1.0 percent at end-CY01 (see **Figure 5.7**). To manage this risk in a prudent manner, COT financing is planned to be phased out gradually in

Figure 5.7: Loans and Advances Collateralized by
Financial Instruments — Shares and Debuntures

consultation with SECP and banks are encouraged to switch over to margin financing[15] which requires banks to maintain and monitor minimum margins against financing to brokers, as prescribed by SBP. Furthermore, margin financing to brokers is subject to detailed regulations notified by the State Bank.[16] These regulations specify the per party limits for margin financing, and minimum margin requirements for banks.[17]   These policy decisions are aimed to help limit the indirect exposure of the banking sector to equity markets.

5.2.6 Real Estate and the Banking Sector

At the onset it is important to note that banks' direct exposure to the real estate market is quite limited, as the outstanding amount of housing finance in total loans and advances is around 1.3 percent,[18] whereas the overall exposure of banks towards housing finance is capped at 10 percent of net outstanding advances.[19] However an indirect exposure also exists due to loans collateralized by real estate. In this case the exposure of the banking sector towards real estate is substantial, as over 20 percent of banking sector loans and advances are collateralized by real estate, including land and buildings (see **Figure 5.8**). A further break up of real

Figure 5.8: Loans Collaterlized by Real Estate

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[14] Please see Prudential Regulations for Corporate/Commercial Banking.
[15] Please see BPD Circular No. 5 dated February 2005 and Circular No. 11 dated March 26, 2005.
[16] For details, please see BPD Circular No. 22 dated July 3, 2004.
[17] It is to be noted that COT financing has been replaced by the Continuous Funding System (CFS) as an interim measure, from August 22, 2005.
[18] As of end-March CY05.
[19] For details, please see Prudential Regulations for Consumer Financing.

estate indicates that the share of loans and advances collateralized by residential properties increased

to 7.2 percent by end June 2004, prior to declining to 6.8 percent by end-CY04 (see **Figure 5.9**). This rise is primarily attributable to (1) a sharp rise in consumer financing over the last three years; and (2) inflated prices of real estate which have enabled borrowers to avail secured credit facilities of substantial amounts in a low interest rate environment that was prevalent during the same period. The latter point is reinforced by the fact that the share of loans collateralized by non-residential buildings has also increased during this period.

To safeguards banks against adverse price movements in the real estate market, banks

Figure 5.9: Loans and Advances against Residential Property

are already required to maintain a maximum debt equity ratio of 85:15. Furthermore, they are encouraged to assess the forced sale value (FSV) of the property by taking into account market conditions when making lending decisions. Efforts have also been made to restrict the usage of housing finance facilities for speculative purposes, as the housing finance activities are restricted to the purchase of land and construction thereon, and not for the purchase of an open plot.
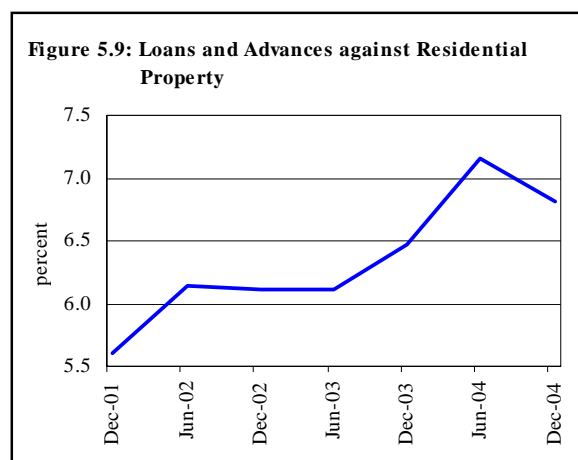
5.2.7 Asset Securitization: New Funding Products
To facilitate the concept of universal banking, banks are allowed to participate in asset securitization through the mode of a special purpose vehicle (SPV). However, banks' role in asset securitization transactions as a structuring agent/arranger, serving agent, investor, and underwriter is subject to clear guidelines issued by SBP.[20] As a supplier of assets to be securitized, banks are allowed to securitize asset portfolios related to mortgage finance, infrastructure development projects (toll financing) as well as lease finance. This enables banks to not only manage the asset-liability mismatch risk arising from financing such long term projects, but to also clean their balance sheets from other related risks. This issue can also be addressed if the banking sector mobilizes funds by designing innovative funding products. A few banks have already taken this initiative by launching attractive deposit schemes.

While all the above regulations and guidelines are designed to create an enabling business environment and to ensure a minimum level of prudence for sustainable banking operations, a sound risk management capability still largely depends on banks' internal controls and procedures, particularly with respect to designing and implementing prudent credit policies within the overall policy framework. The robustness of the credit appraisal capabilities of the banking sector will now be subjected to the litmus test due to the sharp reversal in interest rates observed in recent months, and rising inflationary pressures in the economy. Any lapse in the credit appraisal methodology can have an adverse impact on banks' NPLs.

5.2.8 Human Resource Risk
Besides the above-mentioned risks to the banking sector, the human resource risk is becoming increasingly important given that there is a need for skilled resources who have the relevant expertise with respect to financial products with complex features (like derivates, options), along with the

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[20] For details, please see BPD Circular No 31 dated November 14, 2002 for general guidelines for Asset Securitization.

necessary knowledge of credit risk assessment in the areas of SME and agriculture credit on which there has been an increased focus of the financial institutions. At present, institutions like the Institute of Bankers Pakistan (IBP) and training institutions of various banks help in bridging the gap between the knowledge provided by the educational institutions and the practical knowledge required by the financial sector. To deal with this issue, efforts are underway to increase collaboration between the educational institutions and prospective employers. Moreover, various task forces are working on recruitment and training, performance management, compensation and remuneration to address this risk.

5.3 Impact of Macroeconomic Environment on the Banking Sector

Despite all the above possible safeguards, support from the macroeconomic environment in which the banking sector operates is of vital importance to maintain a sustainable performance. Any shock experienced at the macro level can directly undermine the impressive performance, first and foremost by impairing the asset quality of the banking sector. The NPLs stemming from external shocks can be analyzed by estimating the observed historical relationship between NPLs and their determinants. These include GDP growth, inflation, interest rates, exchange rate, terms of trade etc. A regression analysis provides meaningful information in relating these macroeconomic variables to the asset quality of the banking sector. To specify a regression equation, the approaches taken by an IMF working paper[21] outlining the issues and methodologies for stress testing of the financial system and a BIS working paper,[22] studying the impact of commercial property prices on banks' performance, are followed.

$$NPLAR_{i,t} = f\,(Macro\ indicators,\ Bank\ Specific Indicators,\ Dummy) + \varepsilon_{i,t} \qquad (1)$$

Where $NPLAR_{i,t}$ is the non-performing loans to advances ratio and $\varepsilon_{i,t}$ is an error term.

Before discussing the estimation results of the regression, a brief review of stylized facts is of vital importance to understand the pattern of the non-performing loans to advances ratio (dependent variable) in recent years. A quick glance at **Figure 5.10** shows that the NPLs to advances and NPLs to assets ratios of the banking system have witnessed substantial improvements during the past two years. In addition to favorable macroeconomic conditions, a multi-pronged policy to ease the mounting burden of NPLs has also played a major role in bringing down the NPLs in proportion to total assets and advances.

Figure 5.10: NPLs of the Banking System

Guidelines issued by SBP for the write-off of irrecoverable loans and advances,[23] mark an important step to achieve this end.
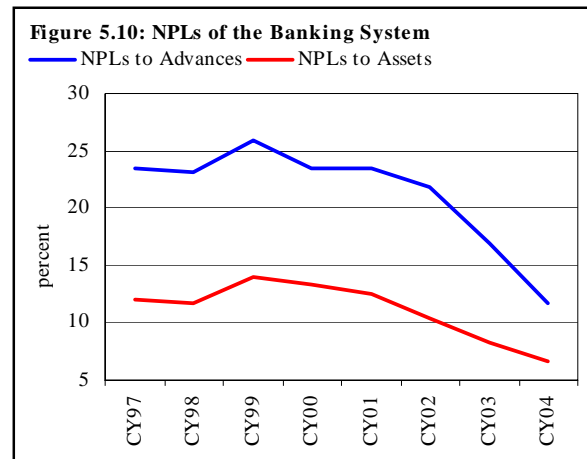
Within the banking sector, the NPL ratios of major groups of banks vary significantly. NPLs of the public sector commercial banks (PSCBs) remain the highest despite a declining trend since CY99 (see

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[21] IMF Working Paper No WP/01/88 titled "Stress Testing of Financial System: An Overview of Issues, Methodologies and FSAP Experiences", June 2001.
[22] BIS Working Paper No 175 titled "Commercial Property Prices and Bank Performance", April 2005.
[23] Vide BPD Circular No 29 dated October 15, 2002.

Figure 5.11). In case of foreign banks the ratio has not only been the lowest, but has declined to a mere 1.6 percent by end-CY04. This contrasting behavior of different banking groups indicates that besides the macroeconomic environment, internal credit policies of banks and the post-disbursement monitoring of loans play an important role in determining the size of NPLs.

To evaluate the statistical significance of the contrasting behavior of different banking groups, a simple regression with ownership dummy variables has been estimated through the standard Generalized Least Square (GLS) estimator by using balanced panel data of 31 banks from CY97 to CY04. Using cross-sections as weights, heteroskedasticity consistent estimates of the regression equation are reported in **Table 5.7**. The results clearly indicate that there are statistically significant differences among the banking groups. For example, the NPLs to assets ratio of public sector commercial banks (PSCBs) was 5.3 percentage points higher (on average) as compared to foreign banks over the period of estimation; this result is also statistically significant. Similarly, the NPLs to assets ratios of other banking groups also vary significantly.

The statistical significance of temporal changes in the NPLs to assets ratio is also analyzed by estimating a standard panel regression with time dummies. The coefficient estimates of the panel regression indicate that changes in the NPLs to assets ratio from the reference point were statistically significant for all the years (see **Table 5.8**). The most encouraging development has taken place during CY03 and CY04, as the NPLs to Advances ratio edged down significantly during these years as compared to the reference period, i.e. CY97.

As far as the macroeconomic variables in Equation 1 are concerned, the current and lagged values of a number of variables have been taken into account, including real GDP growth rate, growth of the large-scale manufacturing sector, weighted average lending rate, exchange rate, terms of trade and inflation, to capture the impact of the macroeconomic environment. Theoretically, an increase in real GDP growth is likely to improve the
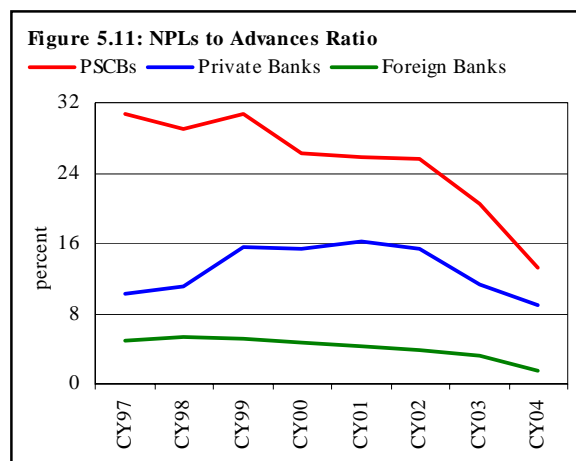

Figure 5.11: NPLs to Advances Ratio

Table 5.7: Panel Regression with Ownership Dummy

Dependent Variable: NPLs to Assets Ratio

	Coefficients	t-Statistics
Constant	1.267	316.085
Domestic Private Banks	-0.411	-43.316
Public Sector Commercial Banks	5.254	36.58
Public Sector Specialized Banks	37.866	45.232
Adjusted R-Square	0.90	
No of Observations	248	

Note: Reference group consists of foreign banks

Table 5.8: Panel Regression with Ownership & Time Dummies

Dependent Variable: NPLs to Assets Ratio

	Coefficients	t-Statistics
Constant	1.198	14.352
CY98	0.428	3.648
CY99	1.722	13.256
CY00	1.402	10.637
CY01	1.097	8.637
CY02	0.337	2.971
CY03	-0.265	-2.265
CY04	-0.786	-6.867
Domestic Private Banks	3.505	55.841
Public Sector Commercial Banks	5.415	28.757
Public Sector Specialized Banks	35.274	9.899
Adjusted R-Square	0.76	
No of Observations	248	

Note: Reference group consists of foreign banks, reference period is CY97

NPLs to assets ratio, as loan utilization in the economy is expected to increase in such an environment, with a lower probability of default. The impact of inflation on the NPLs to assets ratio may be negative due to lower repayment burden (in real terms) in an inflationary environment. The impact of increase in interest rate on NPLs remains unclear, as a tightening of monetary policy is generally accompanied with a high cost of funds for banks on one hand, and an increased cost of debt servicing on the other. In this way, it may add to the chances of default due to the increased burden of loans.

For bank-specific variables, the loans to assets ratio, average spread, administrative cost to assets ratio, and the capital to risk weighted assets ratio have been used. All bank-specific variables were lagged by one period to avoid simultaneity, as all banking variables including the dependent variables are computed on an end-period basis. The loans to assets ratio is generally used as a measure for credit risk due to the fact that loans are more risky as compared to investments in government securities. This also implies that a higher loans to assets ratio will be accompanied with higher average spreads, as banks will charge high interest rates to compensate for the credit risk. Another variable, the capital to risk weighted assets ratio, determines the risk taking capacity of banks. However, the impact of a high capital adequacy ratio on non-performing loans remains ambiguous as: (1) high CAR may induce banks to expand their loan portfolio which may increase the credit risk, and (2) it may help banks in reducing the cost of funds. Finally, ownership dummies are used as a control variable and foreign banks are specified as the reference group.

Various alternative specifications of Equation 1 were also estimated by using standard GLS techniques and panel data of 31 banks from CY97 to CY04.[24] Based on theoretical and empirical grounds the following equation was selected :

$$NPLAR_{i,t} = \alpha_0 + \alpha_1 * Y_{t-1/2} + \alpha_2 * r_t + \alpha_3 * Inf_t + \alpha_4 * LAR_{i,t-1} + \alpha_5 * AS_{i,t-1}$$
$$+ \alpha_6 * CAR_{i,t-1} + \alpha_7 * DPBs + \alpha_8 * PSCBs + \alpha_9 * PSSBs + \varepsilon_{i,t} \tag{2}$$

Where

$NPLAR_{i,t}$: NPLs to asset ratio of the ith bank in time t

$Y_{t-1/2}$: Real GDP growth in time t − 1/2

r_t : Weighted average lending rate in time t

Inf_t : Growth in CPI in time t

$LAR_{i,t-1}$: Loans to assets ratio of the ith bank in time t − 1

$AS_{i,t-1}$: Average spread of bank i in time t − 1

$CAR_{i,t-1}$: Capital to risk weighted assets ratio of bank i in time t − 1

$DPBs$: Domestic private banks

$PSCBs$: Public sector commercial banks

$PSSBs$: Public sector specialized banks

$\varepsilon_{i,t}$: error term

The GLS parameter estimates indicate that real GDP is negatively associated with the NPLs to assets ratio (see **Table 5.9**). Specifically, keeping other things constant, a one percentage point rise in real

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[24] Banks with erratic soundness indicators are excluded to avoid excessive variability in bank-specific indicators.

GDP growth (in time t-1/2)[25] is associated with an 8 bps decline in the NPLs to assets ratio in time period *t* over the period of estimation. Similarly, higher inflation is also negatively correlated with the NPLs to assets ratio over the estimation period. This implies that the effect of higher inflation in terms of reducing the real value of debt dominates the effect of changes in the repayment capacity of the borrower due to eroding purchasing power. In contrast to real GDP growth and inflation, nominal weighted average lending rates are positively correlated with the NPLs to assets ratio over the period of estimation. Besides the increased cost of borrowing which is negatively correlated with the repayment capacity of the borrowers, high interest rates may also involve the problem of adverse selection, as borrowers with risky projects will be willing to avail credit facilities at such interest rates.

While all three bank-specific variables with one period lag are positively correlated with the NPLs to assets ratio, the impact of average spread is the highest. The control variables continued to show that the NPLs to assets ratios differ significantly among the various banking groups.

5.4 Conclusion

The dynamics of banking sector deposits (liabilities), loans and advances and investments (assets), indicate that banking sector risks have increased during the past three years. Fortunately, due to prudent regulatory measures, the risk-taking capacity of the banking sector (as measured by the capital to risk weighted assets ratio) has also witnessed a visible rise, or rather has outpaced the increase in risks over the same period. Furthermore, a brief review of the various regulatory measures indicates that banks are equipped with various policy tools to prudently manage their risks. Finally, the regression analysis suggests that the banking sector has strong links with the state of the economy. As the economy is now at a high growth trajectory and its trickle down affects are likely to create more business activities in the future, the banking sector will continue to receive the requisite vital support from the macroeconomic environment. Given these dynamics, the strong banking sector performance is expected to uphold in the foreseeable future.

Table 5.9: Parameter Estimates of Panel Regression

Dependent Variable: NPLs to Assets Ratio

	Coefficients	t-Statistics
Constant	0.352	4.082
Macro variables		
GDP growth	-0.079	-23.030
Weighted average lending rates	0.051	15.083
Inflation	-0.072	-50.892
Bank specific variables		
Loans to assets ratio	0.015	12.130
Average spread	0.060	10.130
Capital to risk weighted ratio	0.009	23.162
Control variables		
Domestic private banks	-0.372	-32.791
Public sector commercial banks	3.022	25.247
Public sector specialized banks	36.745	43.204
Adjusted R-square	0.82	
No of observations	248	

Note: Reference group is the foreign banks

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[25] In the regression analysis, the NPLs to assets ratio of CY04 depends on the real GDP during FY04. This entails a lag of 6 months which is reflected in 't-1/2'. Furthermore, theoretically it seems logical that a slow down in economic activities will impact NPLs of the banking system with some lag. In the regression analysis a lag of one and half years was also tested, which turned out to be insignificant.