Chapter 2 Risk Analysis of the Banking Sector

Risk profile of the banking system offers a mixed picture. Credit risk remains intractable, despite banks' growing investments in government papers. NPLs continue to build up, with PSCBs and mid-sized LPBs appearing more vulnerable to credit risk. Recent floods followed by torrential rains are also likely to contribute to the existing pile of NPLs. Banks' liquidity profiles have been strengthened by their accumulation of government securities while growing share of long term deposits in the funding mix has kept the funding risk at bay. Market risk remained subdued amid stable exchange rate and interest rate, notwithstanding the flattening of yield curve and lackluster performance of the equity market.

Figure 2.1

Credit Risk Profile

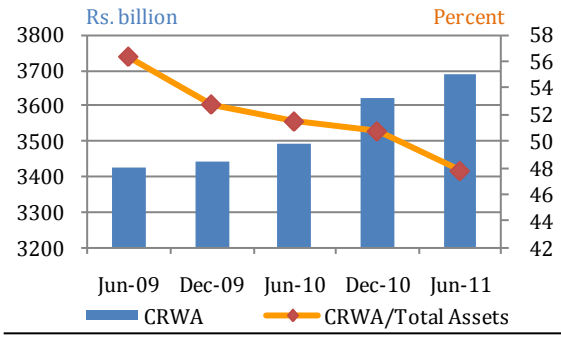
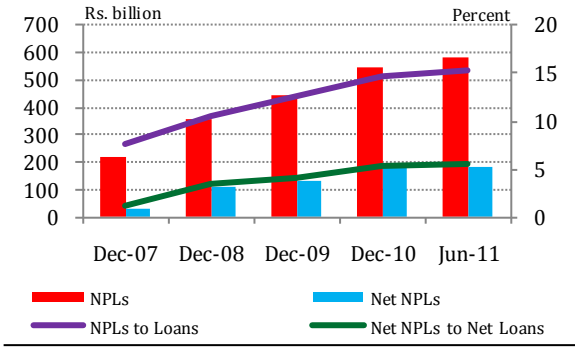


Figure 2.2

Trends in Non Performing Loans



Credit risk remains a key challenge amid subdued economic activity

Credit risk remains a key component in the risk profile of the banking sector, despite banks' recent preference to place bulk of their incremental funds in safer assets. During H1-CY11, the credit risk weighted assets (CRWA) grew by 2 percent (Rs. 65 billion) (*Figure 2.1*). However, a much robust growth in assets (8 percent) on the back of investments in government papers markedly outpaced the relatively slower growth in CRWA. As a result, ratio of CRWA to total assets further regressed by 295 basis points, dropping to 47.8 percent by the end of June-11. However, falling CRWA to total assets over the last few years is not an indicator of lower credit risk; rather it simply suggests a strong flight to quality amid high NPLs. Banks have tried to manage higher infections by tightening their credit standards, with significantly restricting their lending to riskier sectors (eg: SMEs & Consumer). At the same time, banks have liberally increased their investments in government debt.

…..as non-performing loans continue to buildup

The adverse economic outlook and structural deficiencies in the economy are taking their toll on the debt repayment capacity of the borrowers. The deterioration in economic indicators as measured by a faltering GDP growth rate has led to a surge in NPLs. During H1-CY11, NPLs of the banking sector further inched up from 14.7 to 15.3 percent, adding another Rs. 31.4 billion to infected assets *(Figure 2.2).* Compared to a rise of Rs. 27.8 billion in NPLs during H1-CY10, the accumulation in NPLs is marginally higher in the half year under review. Still, the fact that NPLs continue to build up underscores the intractable nature of heightened credit risk.

…with the bulk of NPLs posted in loss category

During H1-CY11, banks accumulated another Rs. 31.3 billion in the Loss category, compared to Rs. 39.8 billion during the same

Figure 2.3

Category-wise Breakup of NPLs

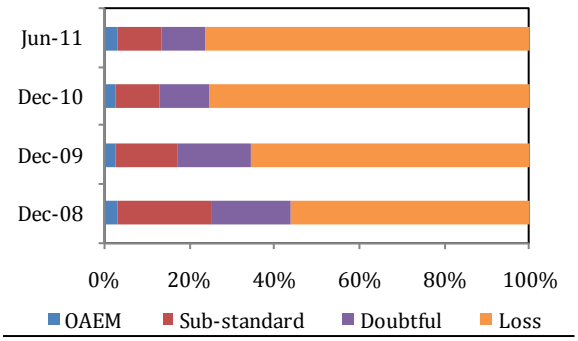


Figure 2.4

Provisions against NPLs

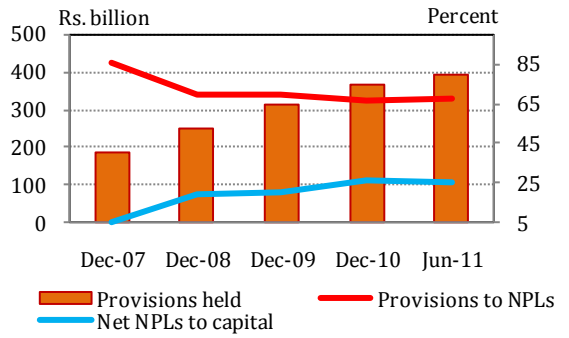


Table 2.1: Asset Quality by Bank Category

(In percent)

Jun-11	Infection Ratio	Net Infection Ratio	Provision Coverage	Net NPLs to Capital
PSCBs	21.5	11.2	53.8	49.0
LPBs	13.2	3.7	74.7	19.5
FBs	9.0	1.1	88.8	2.0
CBs	14.8	5.2	68.5	24.9
SBs	31.1	15.5	59.2	172.9
All banks	15.3	5.5	67.9	26.6

period last year. While this deceleration of NPLs in loss category is encouraging, a turnaround in NPLs growth is still out of sight. During H1-CY11, increase in loss category was the most significant compared to all other categories; in fact, NPLs in Doubtful category dropped by Rs. 7 billion. This is partially because of some delays on the part of few banks in timely recognition of infection in their portfolios, resulting in classification of such assets directly into the Loss category. Given that about 77 percent of the NPLs of the banking sector are still classified in the Loss category, bulk of these infected assets carry slim prospects of recovery[1] *(Figure 2.3).*

… yet provisioning keeps credit risk adequately covered

However, banks' credit portfolio appears to be adequately covered against anticipated losses. During H1-CY11, provisions held by the banking system increased by 7.6 percent (Rs. 28 billion). While this increase partly reflects growing infection that requires higher provisioning, growth in provisions have outpaced the rise in NPLs. Consequently, the NPL coverage ratio (provisions to NPLs) has inched up from 66.7 to 67.9 percent during the first half of 2011 *(Figure 2.4).* Further, owing to increase in coverage ratio, net NPLs to Loans have marginally improved during the same period. Besides, results of the macro stress tests conducted on banks' credit exposure of June-11 suggest the Pakistan's banking sector remains resilient against major foreseeable shocks.

PSCBs and mid-sized LPBs appear more vulnerable to credit risk

The increase in NPLs during the half year under review was quite widespread, with most of banks witnessing an upsurge in NPLs and only a handful of banks registering a marginal decline. In particular, the Local Private Banks[2] (LPBs) sustained the most damage, as their NPLs were up by 7.6 percent (Rs. 26 billion) during H1-CY11.

Breakup of NPLs in terms of various banking groups reveals that both Public Sector Commercial Banks (PSCBs) and mid-sized LPBs have significantly higher infection ratios than industry averages. Specifically, infection ratios of 21.5 percent and 25.6 percent of PSCBs & mid-sized LPBs respectively suggest increasing level of vulnerabilities of these banks against credit risk *(Table 2.1 & 2.2).* Going forward, if the

[1] Notwithstanding lower chances of recovery, these assets would not dent banks balance sheet any further, given that banks have made suitable provisions.
[2] Banks ranked 11-20 on the basis of asset size in Table 2.2

Table 2.2: Asset Quality by Bank Size (percent)

Jun-11	Infection Ratio	Net Infection Ratio	Provision Coverage	Net NPLs to Capital
Top 5 banks	12.9	3.3	77.3	14.2
6-10 banks	11.3	3.0	76.0	17.6
11-20 banks	25.6	14.2	52.0	86.7
21-29 banks	15.9	8.3	52.2	19.1
All banks	15.3	5.5	67.9	26.6

Table 2.3: Credit and Infection Ratios by Sector (percent)

	Share	Infection Ratio	
	in Loans	Dec-10	Jun-11
Textile	17.7	24.3	27.4
Individuals	11.3	16.1	17.3
Energy	10.1	3.8	4.6
Agribusiness	6.1	6.6	7.3
Chemical & Pharma	3.8	7.9	9.0
Sugar	3.2	19.4	11.5
Cement	2.2	18.5	23.0
Others	40.6	13.9	14.0
Total	**100.0**	**14.7**	**15.3**

Figure 2.5

Trends in Consumer Financing

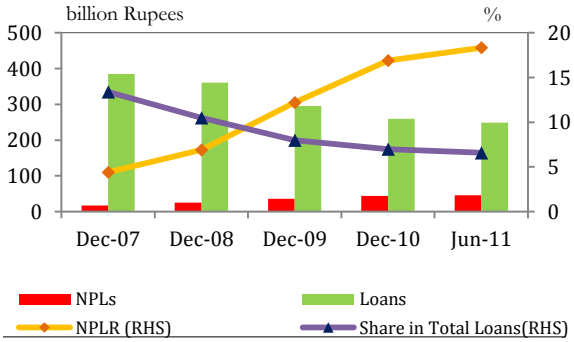


Table 2.4: NPLs to Loan Ratio of Consumer Financing

percent

	Share	Dec-10	Jun-11
Consumer	100.0	16.9	18.3
Credit Card	10.1	19.5	21.2
Auto Loans	20.4	10.2	10.1
Durables	0.3	10.8	15.7
Mortgage	24.4	23.7	27.2
Personal Loan	44.9	15.8	16.6

economic performance continues to be lackluster, the infected portfolio of PSCBs is likely to surge further.

The higher infection ratios of mid-sized LPBs are reflective of their limited choice in attracting quality borrowers. Primarily, it is the larger banks that have better outreach and access to low cost deposits, which allows them to attract more creditworthy though low return borrowers. On balance, large banks have demonstrated their resilience to the credit risk, whereas smaller banks have proven to be the most vulnerable group. As of 30-Jun-2011, the infection ratio of 5 biggest banks was 12.9 percent as compared to an infection ratio of 25.6 percent for the banks ranked from 11-20. Similarly, the infected portfolio of the former group was far better provided for resulting in net infection ratio of only 3 percent as of 30-Jun-2011 as compared to 14.2 percent for the latter group *(Table 2.2).*

Textile sector's growing infection aggravates concentration risk

With around 18 percent share in banks total loans, textile sector is the leading user of bank credit *(Table 2.3).* Though banks' significantly large exposure is understandable, given the share of textile sector in GDP and exports[3], yet concentration of credit to this sector may pose threat of systemic risk and thus calls for a close vigil. Owing to the large exposure, even small deterioration in the asset quality of textile sector can have serious implication for the solvency of some of the banks. This concentration becomes more critical given that textile sector already has a significantly higher infection ratio, which has further deteriorated to 27.4 percent during the half year under review. Energy sector, agribusiness and consumer financing are other sectors that are amongst the largest users of the bank credit and need to be monitored carefully for early warning signs of a major deterioration.

Consumer & SME finance further shrink amid growing NPLs

During H1-CY11, infection ratio for consumer finance inched up to 18 percent, prompting banks to further cut back their exposure. Consequently, the banks reduced their aggregate consumer financing by another Rs. 11 billion *(Figure 2.5).* Amongst various segments of consumer financing, the mortgage component that makes up 24.4 percent of the total consumer loans, has witnessed a significant rise in the infection ratio. The NPLs in financing against consumer

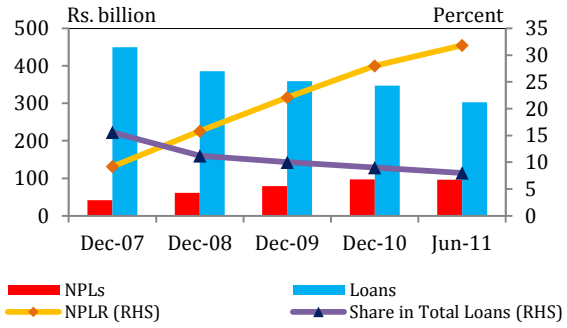
[3] The share of textiles in total exports accounted for over 50 percent during FY11.

durables also increased sharply during H1-CY11; however, with banks' miniscule exposure against this segment, the dent is limited *(Table 2.4).* Banks' growing reluctance for consumer finance, while understandable amid high infection ratios, is likely to affect the already lower level of access of the households to bank credit. However, unless macroeconomic conditions improve significantly, banks are unlikely to resume interest in this segment soon.

Similar to consumer fianance, credit to SMEs is persistently receding as the infection ratio is on the rise. During H1-CY11, the banks cut down credit to SMEs by another Rs. 44 billion (13 percent) *(Figure 2.6).* The declining availability of credit facilities may further impair the repayment capacity of SMEs. As SMEs employ a large proportion of labor force in developing economies, limiting credit to SMEs may trigger more defaults on consumer financing as well.

Figure 2.6

Trends in SME Financing

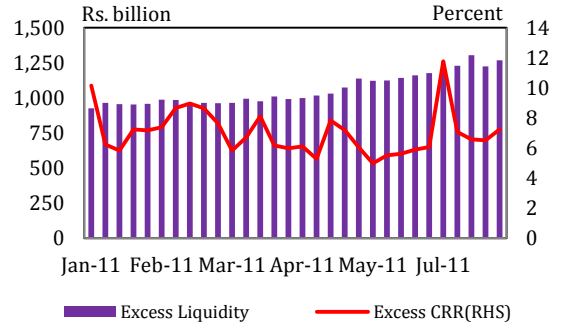


Recent floods warrant a serious appraisal

Recent floods and heavy rainfall in the provinces of Sindh and Baluchistan have caused massive damages in the affected areas. These damages are likely to cause a sharp upsurge in NPLs in the affected areas. Only in the province of Sindh, the floods are estimated to add Rs. 13 billion to the NPLs. The effects of these damages need to be closely monitored to contain the credit risk in the banking sector[4].

Figure 2.7

Surplus Liquidity of Banking Sector



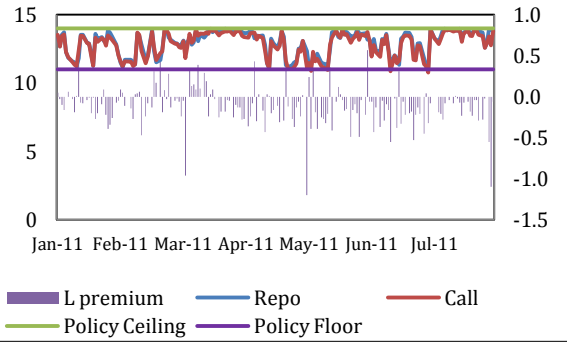
Short-term liquidity

Banks remained sufficiently liquid, despite bouts of mild strains

During the half year under review (H1-CY11), the overall liquidity position remained comfortable, with banks maintaining excess liquidity (over and above required Statutory Liquidity Requirement-SLR) of around a trillion rupees *(Figure 2.7).* Growing share of investments in banks' asset portfolio helped banks maintain an increasing level of excess SLR.

Figure 2.8

Trends in O/N rates and Liquidity Premium

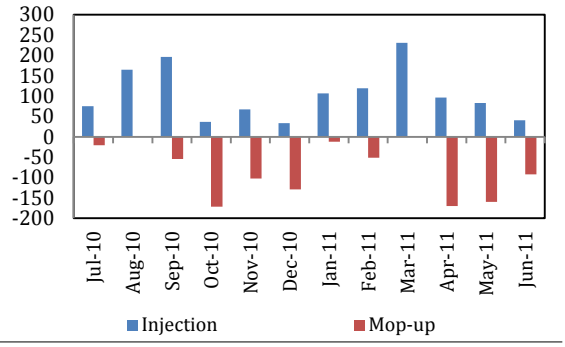


While overall liquidity position was comfortable, there were bouts of liquidity pressure with overnight rates not only higher but also volatile. Volatility in overnight rates remained higher

[4] *Box 2.2* at the end of this chapter provides more details.

Figure 2.9

Open Market Operations(Rs. billion)



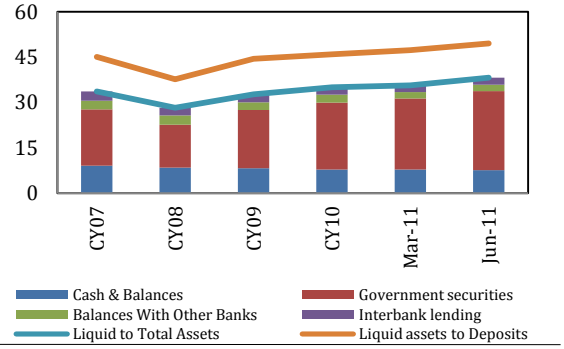
in May CY11, which was also the month when government borrowing from commercial banks[5] touched its peak during the period under analysis *(Figure 2.8)*. Monthly breakup of liquidity position reveals that liquidity stress was observed primarily in the first quarter of CY11. Overnight rates remained higher in March 2011 when they reached 13.5 percent, closer to the upper bound of the range[6], primarily due to liquidity strains that led SBP to net injection of Rs 230.9 billion. However, liquidity position improved significantly during the second quarter, with SBP resorting to net mop ups *(Figure 2.9)*.

Investments in government paper further bolster liquidity indicators

With banks' burgeoning exposure to government debt, share of liquid assets in total assets further increased from 35.0 percent in Dec-10, to 38.2 percent by June-11. Dissecting liquid assets to their components suggests that this rise in liquid assets mainly emanates from the rise in investments in government securities, with only a marginal growth in loans *(Figure 2.10)*. With growing share of investments in banks' asset portfolio, liquid assets to deposits ratio has also exhibited an increasing trend and reached 49.5 percent at June-11, indicating that almost 50 percent of the banks' deposits are covered by their liquid assets.

Figure 2.10

Liquid Assets in detail(Percent)



Distribution of banks on the basis of the liquid assets to total assets ratio reveals a similar improvement in the overall liquidity position of the banking industry. Specifically, the number of banks below the industry average declined to 13 from 19 in June CY11 relative to the previous year. Further, none of the banks (against 1 in June CY10) had this ratio below 10 percent while 1 bank (against 4 in June CY11) had the ratio ranging between 10 and 20 percent. This suggests that overall the liquidity position has increased across the banking industry.

Trend in advances to deposits ratio (ADR), another indicator of liquidity, also reveals further improvement in liquidity profile of banks during the period under review. From 61.4 percent in Dec-10, ADR has declined to 56.7 percent by June-CY11. An improvement in the ratio was seen across all groups of the banking industry. Both the relatively strong growth in deposits as well as the investments in government paper (with

[5] Specifically, government borrowing from commercial banks surged by Rs189 billion in May-11 in addition to Rs 94.4 billion of seasonal credit expansion for commodity operations.
[6] Range for overnight rates is 300 bps which as at March CY11 formed a band between 11-14 percent.

concomitant slowdown in credit to private sector) has contributed to the declining trend in ADR.

Figure 2.11

Funding structure (June 2011)

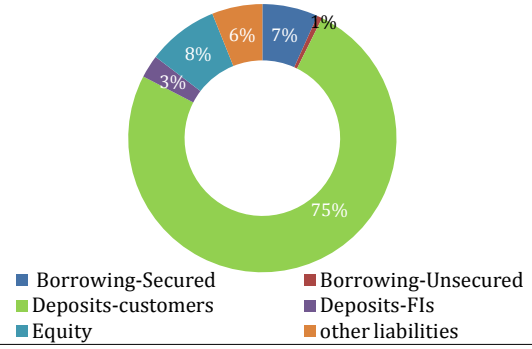


Figure 2.12

Maturity Profile of Deposits (Percent)

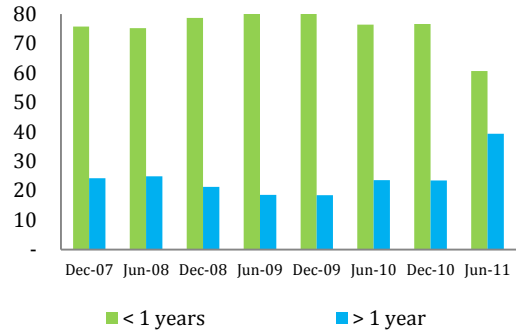
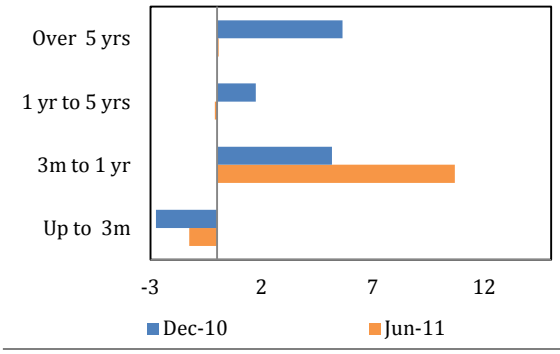


Figure 2.13

Maturity Gap (Assets-Liabilities) as percent of Assets



Funding Liquidity

Growing share of longer term deposits provides additional cushion against funding risk

Banks funding structure essentially remained the same over the half year under review, with a heavy reliance on customer deposits that accounted for 75 percent of the banks' total liabilities *(Figure 2.11).* Dominant role of deposits in the funding structure offers another indication of banks' strong liquidity profile, particularly when compared with banks in some advanced countries that have greater exposure to short-term funding raised from the market[7].

Segregation of deposits by tenor reveals that the share of deposits of one year and above sharply increased to 39.4 percent, from 23.4 percent at the end of CY10 *(Figure 2.12).* During the same time, the share of deposits of less than one year registered a concomitant drop, from 76 to 60 percent. This gain in share of longer term deposits has been on account of SBP's policy incentive in the form of exemption of time liabilities with tenors of one year and above from statutory reserve requirements. This exception partially explains banks' greater interest in mobilizing longer term deposits since 2009. Additionally, the declining share of less than one year of deposits has been due to SBP's revised instructions to report non-contractual deposits (previously reported in the lowest maturity bucket) on the basis of their expected maturity.

Increasingly positive maturity gap in the short tenor exposes banks to re-pricing risk

During H1-CY11, the gap between assets and liabilities maturing up to 3 months has reduced while it has increased to 10.7 percent for 3-months to 1-year time buckets *(Figure 2.13).* These shifts in short term gaps are partially explained by reporting alignment[8] and partially by increase of investments in MTBs maturing within 3 monhts to 1 year. While the change in gaps of less than one year is a positve development in terms of short term liquidity risk management, it also reveals an

[7] BIS Working Papers, No 345,"The bank lending channel: Lessons from the crisis" by Leonardo Gambacorta and David Marques-Ibanez, Monetary and Economics Department, May 2011

[8] This gap is mainly attributed to banks' adjustment to place demand deposits (the non-contractual liabilities which have a significant share in total liabilities) from 3-month bucket to longer time bucket based on their expected maturity after issuance of latest instruction in BSD circular letter no. 3 of 2011.

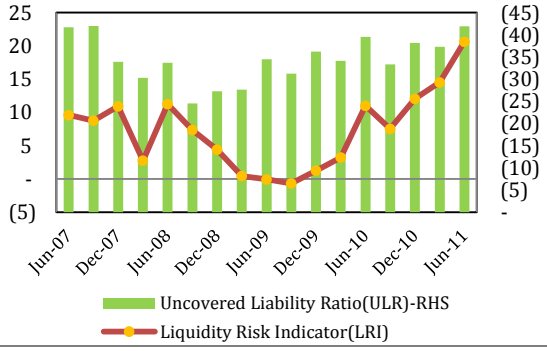
increasing share of investments in banks' total assets. This can expose banks to repricing risk in a declining interest rate scenario.

Uncovered Liability Ratio (ULR), which measures liquidity shortage at an institutional level, suggests low liquidity risk for banks and considerable improvement since 2008 on the back of growing investments in liquid assets (*Figure 2.14*). The methodology to calculate ULR and the intuition behind this measure is given in Box A.

Similarly, Liquidity Risk Indicator (LRI) which measures the short term liquidity gap calculated for 30 day horizon indicates lower funding risk and an improving trend for the banking industry (Figure 2.14). The methodology to compute LRI and the intuition behind this measure is given in **Box B.** Positive results of ULR and LRI are mainly because these ratios are driven by deposits and investments which are quite stable portion of banks' balance sheets in Pakistan.

Figure 2.14

Funding Liquidity Risk Indicators (percent)



Box A: Methodology of Uncovered Liability Ratio

$$\text{ULR} = \frac{(\text{LL} + \text{TL}) - \{(\text{LA} - \text{INS}) + \lambda * \text{INS})\}}{\text{TA} - \text{LA}}$$

LL=Liquid Liabilities
TL= Temporary component of all other liabilities
INS=Liquid Investments
TA=Total Assets
LA=Liquid Assets

In this equation, the liabilities susceptible to redemption are comprised of the sum of Liquid Liabilities and temporary component of all other liabilities. On the other hand, capacity of institution to fulfill these obligations is determined by: i) liquid assets other than Liquid investments (LA – INS), and ii) liquid investments (AFS, Held for trading) multiplied by a discount (λ).This discount means the value of liquid investments (INS) in terms of liquidity risk is slightly less than its market value (λ<1).ULR if positive shows high liquidity risk while negative ULR implies low liquidity risk.

ULR can be interpreted using the following table:

ULR	Reason	Liquidity Risk
Positive	(LL+TL)>(LA-INS+λ*INS)	High
Zero	LL+TL)=(LA-INS+λ*INS)	Medium
Negative	LL+TL)<(LA-INS+λ*INS)	Low

Box B: Methodology of Liquidity Risk Indicator

$$\text{LRI} = \frac{\text{Market liquidity adjusted liquid assets} + \text{Net liqudity requirement}}{\text{Total assets} - \text{Market Liquidity Adjusted liquid Assets}}$$

Market liquidity adjusted liquid assets= cash + balance with treasury banks+ balance with other banks+ (investment in govt. securities) (1-discount rate on repo) + (all other securities)*(1-1.2*haircut rate)-(total required daily average reserves)

Net Liquidity Requirement= net cash flow of assets, liabilities and off-balance sheet positions in the following 30-calendar days

Decision Rule: LRI<0 implies high risk as net liquidity requirement will exceed liquid assets

While LRI>0 implies better liquidity situation with liquid assets higher than required liquidity.

Figure 2.15

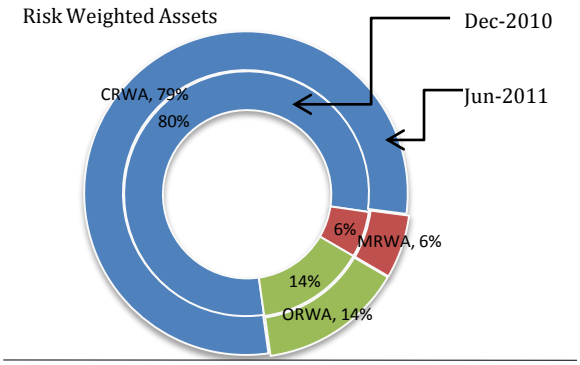


Figure 2.16

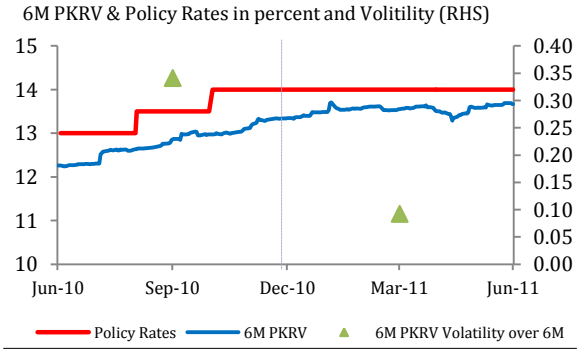


Figure 2.17

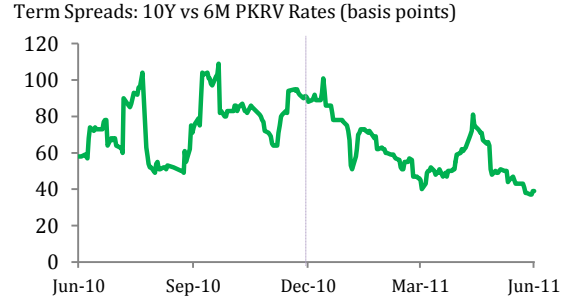
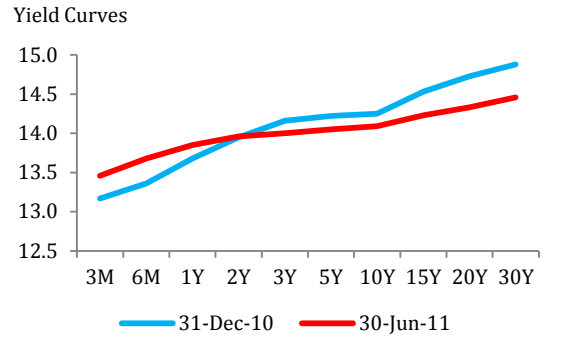


Figure 2.18



Market Risk

Market risk continues to remain marginal

Distinct from other risks, market risk is an important risk for banks. Its distinction, particularly from credit risk, often gets blurred as market and credit risks may interact to reinforce each other and result in substantial losses if not managed jointly[9]. Despite its significance, when measured in terms of current practices of calculating risk weighted assets[10], the contribution of market risk remains trivial in the overall risk profile of the banks *(Figure 2.15)*.

Though volitility drops in money market, yeild curves flattens

During the period under review (H1-CY11), the money market remained relatively less volatile compared to previous half year (H2-CY10). SBP continued with its tight monetary policy stance to contain inflationary pressures by keeping the policy rates unchanged at 14 percent throughout this period[11]. Consequently, the 6 month PKRV rates remained less volatile during H1-CY11 relative to H2-CY10 *(Figure 2.16)*.

The term spread between 10 year and 6 month PKRV rates that peaked at 101 basis points in January 2011 followed a general declining trend throughout H1-CY11, reducing to 36 basis points by the end June-11 *(Figure 2.17)*. Consequently, the yield curve flattened during the review period *(Figure 2.18)*. The flattening of yield curve signals short term tightening of liquidity along with low inflation expectation and overall concerns about long term economic outlook, growth and demand for long term funding.

.....exposing banks to yield risk

Banks face yield risk because of the differences in interest rates of different maturities. The shape of yield curve can change, leading to erratic changes in interest revenues & expenses. Flattening of yield curve can be particularly worrisome for the banking sector as banks generally borrow short and lend long. During H1-CY11, the gap in RSA and RSL varied substantially across different time buckets, with banks continuing to face yield risk. However, the flattening of yield curve during H1-CY11 has been less detrimental for the banks as the yield curve swiveled around 2 year maturity *(Figure 2.18)*, whereas banks

[9] BCBS(2009), " Findings on the interaction of market and credit risk", BIS WP. 16
[10] Throughout this section, risk weighted assets (RWA) are limited to RWA under Pillar-1 of Basel II capital accord, that is, interest rate risk in banking book is explicitly excluded from the analysis.
[11] During the post-review period, SBP slashed down policy rates by 200 basis points between Jul & Oct-2011.

Figure 2.19

Gap (RSA-RSL) to Asset Ratio (in percent)

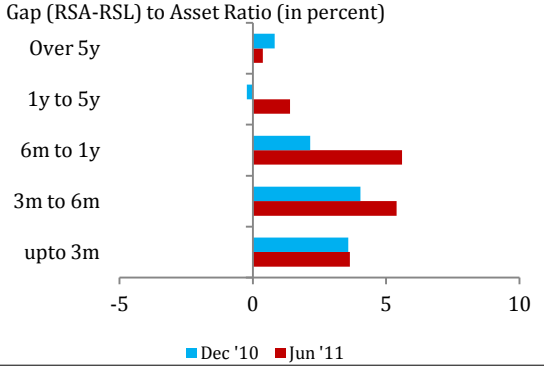


Figure 2.20

Classification of Investment

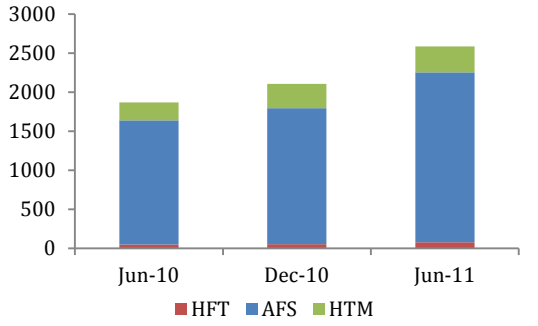


Figure 2.21

Break-up of Investments

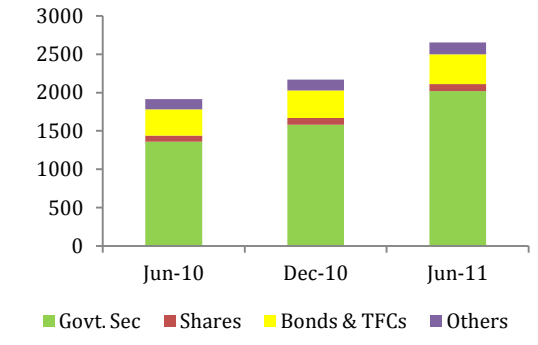
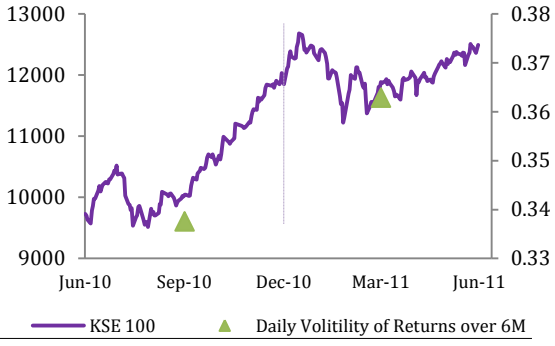


Figure 2.22

KSE 100 Index and Volitility(RHS)



have most of the positive gap in up to 1 year maturity *(Figure 2.19)*.

...though rate sensitive gap remains within accepbtale bounds

Maturity transformation is one of the vital functions of banking sector as during the normal course of their business, banks fund longer tenor loans with liabilities that mature and are re-priced at shorter tenors. Consequently, a certain degree of gap between rate sensitive assets (RSA) and rate sensitive liabilities (RSL) is inevitable. As banks, at aggregate level, have more RSAs than RSLs, ceteris paribus, a decrease in interest rate is likely to adversely affect the bottom line of banking sector[12]. Generally a gap to asset ratio of +/- 10 percent is considered within tolerable range. During the period under review, the banks were able to effectively manage re-pricing risk as gap to asset ratio of the banking sector remained well within the acceptable limits in all time buckets *(Figure 2.19).*

AFS classification sheilded bottom lines from revaluation

During H1-CY11, banks preserved the classification strategy of their investment portfolio by classifying most of the investments in the Available for Sale (AFS) category, with only small proportions in Held for Trading (HFT) and Held to Maturity (HTM) categories *(Figure 2.20).* As of 30th June 2011, only 3 percent of the investment portfolio was classified as HFT whereas 84 percent was held in AFS category. The revaluation gains / losses on AFS category are directly taken to the balance sheet without affecting the income statement. Despite sizable investment in government securities *(Figure 2.21)*, stable interest rate environment helped curtail the deficit on revaluation of government securities from Rs. 11.8 billion to Rs. 9.3 billion during the half year under review.

Returns on KSE 100 Index do not compensate for inflation

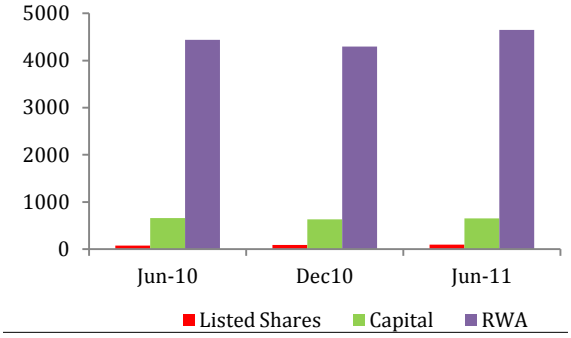
The KSE 100 index closed at 12,496 points as of 30-Jun-2011 posting a gain of 5.5 percent during H1-CY11 as compared to a healthy 24 percent return during H2-CY10 *(Figure 2.22).* Though investments in stocks are considered a natural hedge against inflation, KSE 100 index delivered negative inflation adjusted returns during the half year under review. The stock market volatility[13] slightly increased during H1-CY11, reflecting a marginal increase in uncertainty amongst investors; however, there were no exceptionally large swings

[12] Gap analysis assumes an across the board change in interest rates and ignore market value effects.
[13] Volatility is calculated as daily standard deviation of KSE 100 Index returns over six- month period.

in the index returns during the review period.

Figure 2.23

Stock Market Exposure of Banking Sector (Rs. billion)

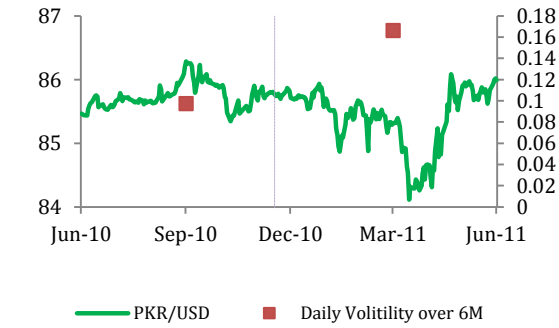


Modest equity market positions insulate banks from swings in stock prices

Banks have limited exposure of Rs. 93 billion in the stock market which constitutes a meager 3.5 percent of their total investment portfolio *(Figure 2.23)*. This marginal exposure means that even big swings in the equity prices are not going to affect banks' profitability or solvency. Sensitivity analysis shows that if the prices of all listed shares drop by 50%, the CAR of the banks will decrease by only 69 basis points (see *Chapter 3* for details). However, due to relatively poor equity returns, the surplus of banks on account of revaluation of their quoted equity investments decreased to Rs. 3.8 billion as of June-11 as compared to a surplus of Rs. 5.4 billion as of Dec-10.

Figure 2.24

Evolution of PKR/USD Exchange Rates

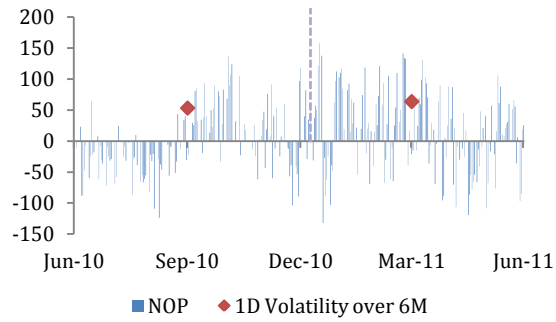


Healthy home remittances contain depreciation of PKR

Pakistan received a record USD 5.9 billion in home remittances during the period under review, registering an improvement of 12 percent over the second half of 2010. Despite this positive development, PKR depreciated against USD closing at Rs/$ 85.99[14] on 30th June 2011, thus shedding 0.30 rupee against USD since the beginning of the CY11 and 1.88 rupees since the recent high in April 2011. The exchange rates also remained more volatile during H1-CY11 compared to H2-CY10, reflecting concerns about growing economic challenges *(Figure 2.24)*.

Figure 2.25

NOP of All Banks



During the period under review, overall Net Open Position (NOP) of banks remained within the manageable bounds of +/- US$ 160. The volatility of NOP during the period was slightly more than that during H2-CY10; however, deviations from square position were mostly on the long side *(Figure 2.25)*. Given, the depreciation of PKR against USD and other major currencies, banks on average gained from their long open positions.

[14] Average of bid and offer exchange rates.

Box 2.1

Impact of Recent Floods on NPLs

The southern provinces of Pakistan have experienced heavy rainfall and floods during September 2011. The Sindh province is especially badly affected where rain and floods have caused massive disruption for the second year in a row. While final estimates of the scale of damage are not available yet, it is quite evident that floods have wreaked havoc with the infrastructure, property and standing crops, causing a serious blow to the inhabitants and farmers alike. An estimated 5.3 million people have been affected by flooding in Sindh and Baluchistan, nearly 1 million homes are reported to be destroyed, over 4.2 million acres of land has been flooded, almost 1.59 million acres of crops have been destroyed and in worst affected areas about 72 percent of crops have been wiped out[1]. The International Monetary Fund (IMF) has also warned of major economic impact. While information is still incomplete and there can be further weather-induced developments in the coming months, this box examines the potential effects of recent floods on NPLs of the banking sector.

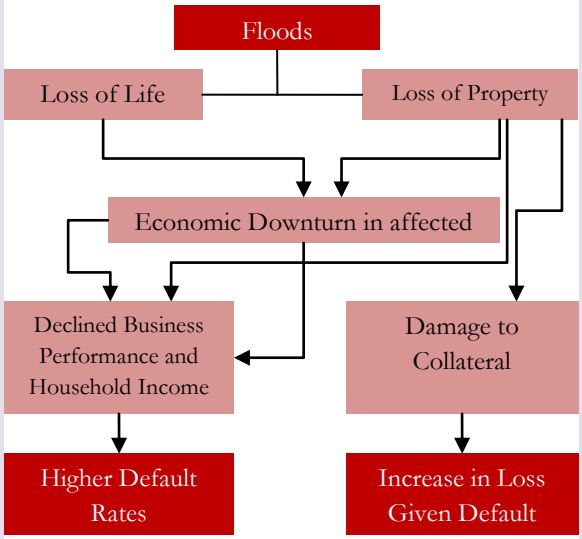
Natural disasters like floods are a negative supply shock as property - including household property, public infrastructure and business assets - is damaged and production is disrupted because of loss of life and property. In the affected areas, spending is also initially delayed but later bounces back when disruptions are decreased and individuals and businesses start to restore or replace damaged assets. Losses of crops, production facilities and disruptions to distribution channels also cause prices to shoot up in the short term. Later, these price effects diminish as transport disruptions are eased and supplies are restored with additional production or import.

Floods and other natural disasters also affect the credit risk of the banks through two channels. First, due to loss of life and property, the economic activities slow down with decline in business performance and household income. This in turn triggers more than normal defaults on loans in affected areas. Second, the collateral that banks have obtained to secure loans also suffers damage, thus losing all or part of the value. Consequently, the net losses that banks suffer in the events of default also surge. **Figure 1** exhibits how floods or other natural disasters affect credit risk.

Since recent floods have mainly affected rural areas, most of the affected loans are for agricultural purposes. The, agricultural credit constitutes about 71 percent of loans by volume and 26 percent by amount in the affected areas **(Figure 2).** The existing

Figure 1

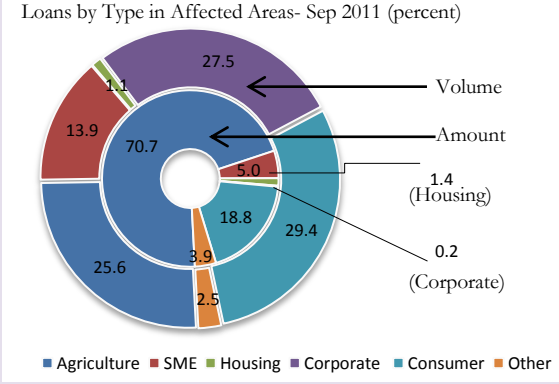
Floods and NPLs



Source: Adapted from The Shizuoka Bank, Ltd., Risk Management Deptt.

Figure 2

Loans by Type in Affected Areas- Sep 2011 (percent)



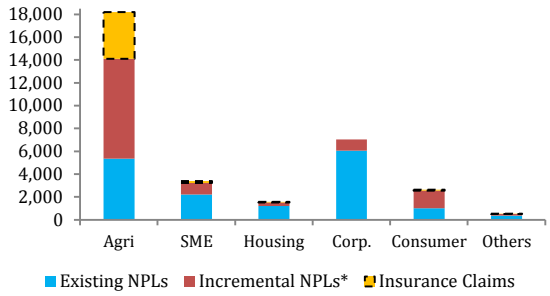
[1] Oxfam and IRIN estimates and UN News Center

NPLs in the flood affected areas were already high at about Rs 16.1 billion, corresponding to an overall infection ratio of 16 percent while that of agriculture credit was around 20 percent at the end of September 2011. With colossal damage to the crops, property and businesses in the flood affected areas of Sindh, a number of additional borrowers are expected to default on their commitments. Preliminary estimates suggest a potential increase of around Rs. 17 billion in NPLs, thus more than doubling the pre-flood NPLs. With extensive damage to crops, NPLs of the agricultural sector are expected to rise three folds of the pre-floods level, posting an increase about 12.9 billion in new NPLs. While banks are expected to recover around 4.7 billion from insurance companies against damage to collaterals, a major chunk of new NPLs would still damage banks' balance sheets. For agricultural credit, banks are estimated to recover almost half of the additional NPLs through insurance as they expected to rack up about 4.1 billion rupees in insurance proceeds **(Figure 3)**.

The projected amount of flood related incremental NPLs is substantial. Only for the province of Sindh it is almost one-third of the net profit generated by the entire banking sector during H1FY11 or about 9 percent of existing net NPLs. However, the strong capital base of the banking sector appears to help withstand the losses inflicted by these additional NPLs **(Figure 4)**.

Figure 3

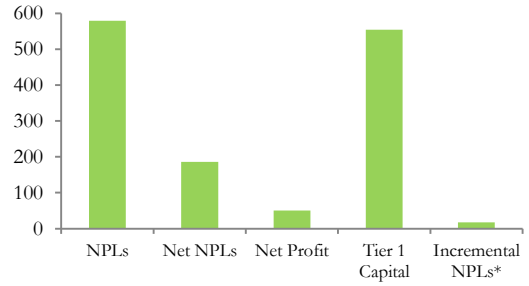
NPLs in Flood Affected Areas - Sep-2011(Rs million)



*SBP estimates of flood related NPLs, net of expected insurance claims

Figure 4

Flood Related Incremental NPLs in Perspective (Rs billion)



*SBP estimates, all other amounts are acrual figures for all banks as of 30-Jun-2011

Box 2.2 Basel-III Liquidity Standards

Liquidity risk was the core of global financial crisis-2007-8 as multiple institutions were unable to secure or rollover short term funding from the market participant, resulting in unprecedented government interventions to bail out the faltering banks. The liquidity risk management regime prevailing at the time failed to account for complete shutdown of secured funding market when market liquidity risk, funding liquidity risk and counterparty risk all became strongly correlated. Since there was no historical data available of such severity to model liquidity risk and thus help its effective management, exiting liquidity risk management practices considerably lagged behind the developments during the global crisis. To fill this gap of suitably measuring and monitoring liquidity risk, Basel committee on banking supervision introduced Basel-III liquidity standard in December 2010. They also came up with two enhanced liquidity ratios: 1) Liquidity Coverage Ratio (LCR) to assess banking sector liquidity requirements over short term (1 month) and; 2) Net Stable Funding Ratio (NSFR) to assess banking sector liquidity requirements over the medium term (upto 1 year). These ratios have been designed to ensure that banks are better prepared to survive under significant liquidity stress scenario lasting one month and one year.

Liquidity Coverage Ratio (LCR) is designed to require banks to have sufficient high-quality liquid assets to withstand a stressed 30-day funding scenario specified by supervisors.

$$\text{LCR} = \frac{\text{Stock of High Quality Liquid Assets}}{\text{Net cash outflows over 30 days}} \geq 100\%$$

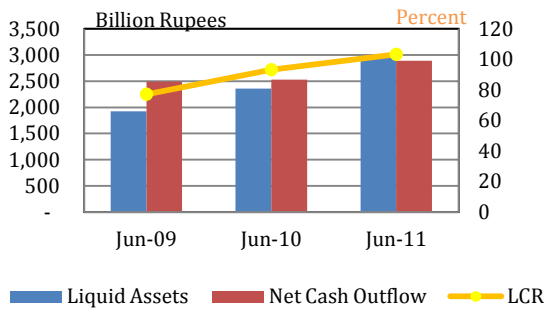
Here the stock of high quality liquid assets includes assets which can be easily and immediately converted into cash with little or no loss of value e.g. cash, central bank reserves, investment in government debt etc. Cash outflows are calculated by applying the draw down rate to outstanding balance of all liabilities and off-balance sheet commitments while cash inflows are estimated by multiplying expected inflow rate to the outstanding amount of contractual receivables. The resulting LCR must be at least 100 percent.

In calculation of LCR for Pakistan's banking industry, individual items have been set as close as possible with the Basel III requirement. In case of uncertainty about the treatment of some items, a conservative approach to assign liquidity factor has been adopted (**Table 1**). LCR calculated for Pakistan banking industry turns out 103 percent by June-2011, slightly above the required benchmark (**Figure 1**). While LCR of private banks have been 102 percent, public sector banks with 92 Percent LCR fails to meet the Basel

Table 1: Summary of assumption for Liquidity Coverage Ratio(LCR)	***Liquidity factor***
High quality liquid assets	
Cash	100%
Balances with treasury banks	100%
Balances with other banks	100%
Call and Repo landings	100%
Investments in Govt. securities such as PIBs, FIBs, T-bills and provincial govt. securities	100% 0%
All other investments such as TFCs, bonds, unlisted shares, private shares, debentures and foreign securities	
Cash outflow	
Government Deposits	25%
Wholesale deposits	75%
Retail deposits	15%
Commitment to extend credits	10%
Other contingent payments	5%
Borrowings maturing within 30 days	100%
Subordinated loans maturing within 30 days	
Bills Payable maturing within 30 days	
Liabilities against asset subject to finance lease maturing within 30 days	
Other liabilities maturing within 30 days	
Cash inflow maturing within 30-days	
Investments other than Govt. securities	100%
Advances other than PKR loans	100%
Other assets	100%

Figure 1

Liquidity Coverage Ratio(LCR)



standards. However, in overall terms, Pakistan's banking industry can comfortably finance the outflows expected over next 30 days under stressed conditions. This high level of liquidity is reflective of characteristic features of banks in Pakistan with large stable deposits on the one hand and increasing level of banks' investment in high quality liquid assets like government securities.

Net Stable Funding Ratio: A long-term ratio that measures how much stable funding a bank has to endure a year-long liquidity crisis. This standard has been designed to ensure that long term liabilities are funded by at least (100 %) stable sources of long term assets and is calculated as:

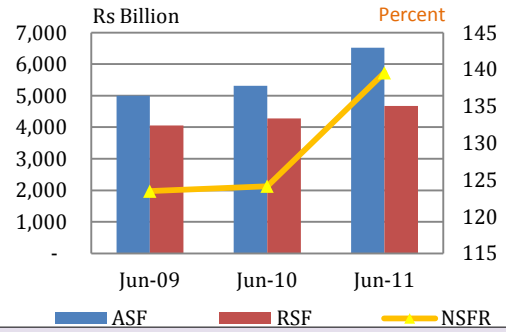
$$\text{NSFR} = \frac{\text{Available amount of stable funding(ASF)}}{\text{Required amount of stable funding(RSF)}} > 100\%$$

Here the available stable funding is defined as "those types and amounts of equity and liability financing expected to be reliable sources of funds over one-year time horizon under conditions of extended stress" while required funding is a function of liquidity characteristics of various types of assets and off-balance sheet exposures held by banks. ASF is calculated by applying a factor to each category of liabilities according to their liquidity while RSF is calculated by applying a liquidity factor to each category of assets. RSF factor indicates how much is expected to be supported by stable funding. On the whole, this ratio should exceed 100 percent. Individual items included in calculation with their respective liquidity factors are given in **Table 2**.

Table 2: Summary of assumption for Net Stable Funding Ratio(NSFR)	
Available Stable Funding(ASF)	***Available factor***
Tier 1 Tier 2 Liabilities with maturity over 1 year	100%
Deposits with maturity up to 1 year	75%
All other liabilities	0%
Required Stable Funding(RSF)	***Required factor***
Cash	0%
Investments in Govt. securities such as PIBs, FIBs, T-bills and provincial govt. securities	5%
Advance with maturity up to 1 year	50%
All other assets not given above	100%
Off-balance sheet items(Commitments to extend credit)	5%
Other guarantees	50%

Figure 2

Net Stable Funding Ratio(NSFR)



Based on NSFR, banking industry in Pakistan exhibits a strong liquidity position over longer time horizon (**Figure 2**). Since June-10, NFSR has sharply increased on the back of high growth in stable funding sources (23 percent) as compared to growth in required funding (9 percent). Further, the resilience against liquidity risk is quite broad based as only one bank and two DFIs were behind the required NSFR standard as of June-11. A comfortable NSFR of the banking industry is mainly characterized by high volume of deposits constituting more than 70 percent of total liabilities. Further, the deposit base itself predominately (65%) comprises of less volatile current and saving accounts.