3 Profitability, Soundness and Resilience

The momentum in banking sector's earnings continues as the sector has posted healthy profits in CY15 on the back of both markup and non-markup income. The solvency of the system improved further due to increase in capital base fuelled by retention of earnings. Both risk based and non-risk based solvency indicators have improved; Capital Adequacy Ratio (CAR) stood well above the minimum regulatory benchmark and Leaverage ratio is also higher than the level suggested under Basel-III. In the coming year, profitablity of the banking sector might come under pressue due to low yield on maturing government debt. Slower internal capital geneartion through profits and incerasing riskiness of the balance sheet might also effect solvency profile. Banking sector, at the moment, has enough cushion avilable to withstand a range of stress shocks.

Profitability

Banks' profitability represents first line of defense against unexpected losses. Retention of earnings is an important source to build capital buffers which improves shock absorption capacity of banks.

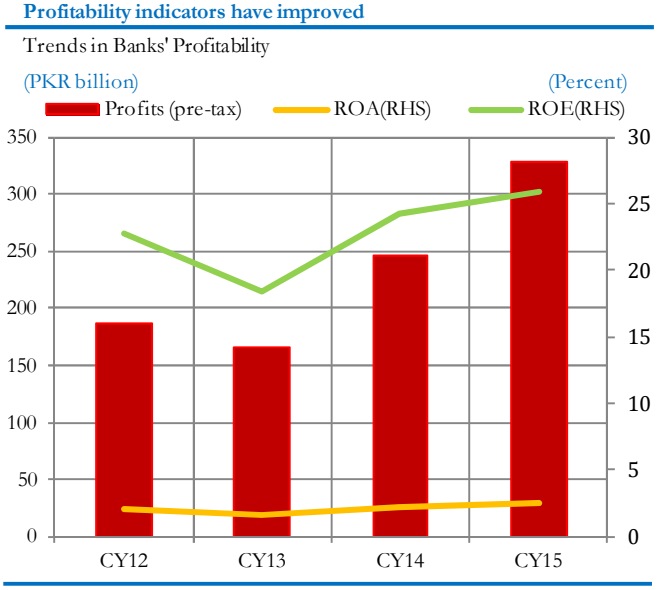
All the profitablity indicators show improvement…

Earnings, being an important barometer of the financial health of a banking sector, have improved significantly over the last three years in Pakistan. Profit before tax has doubled during this time from PKR 165 billion in CY13 to PKR 329 billion in CY15. Accordingly, all the profitability indicators saw improvement; ROA to 2.5 percent (up from 1.7 percent in CY13) and ROE to 25.8 percent (up from 18.4 percent in CY13) (**Figure 3.1**).

The recent income surge in CY15 came at the back of high net mark-up income contributed not only by 21 percent (YoY) growth in interest earned on government securities but also by 13 percent (YoY) saving on interest expense on deposits[100]. The 25 percent growth in non-interest income, primarily due to high gains on the sale of PIBs, further improved the profitability of the banking sector.

Figure 3.1

Profitability indicators have improved



Source: FSD, SBP

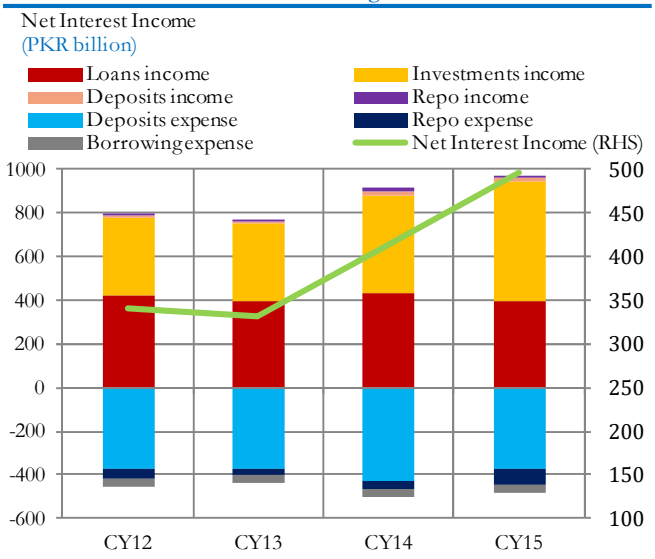
Increasing markup on investments and declining cost of deposits increased Net Interest Income (NII)…

During the last three years, NII of the banking sector has witnessed a surge of 14 percent (YoY), on average, due to improvements in markup income on investments that registered average growth of 15.9 percent (**Figure 3.2**). Markup income on loans, at the same time, has declined by an average of 1.8 percent (YoY).

[100] Subsequent to decline in policy rate by 350 bps, WADR during this period dropped by 160 bps.

Figure 3.2

Net interest income continued its rising trend



Source: FSD, SBP

The divergence in interest income from two main sources of earning assets comes as a no surprise. A cumulative 400 bps decline in policy rate over the period CY14 to CY15 has impacted the returns on KIBOR linked earning assets. On the contrary, investments, largely in government securities, have continued to accumulate, resulting in growing interest income. Interest from investments have helped off-set the reduction in the markup/interest earnings from advances.

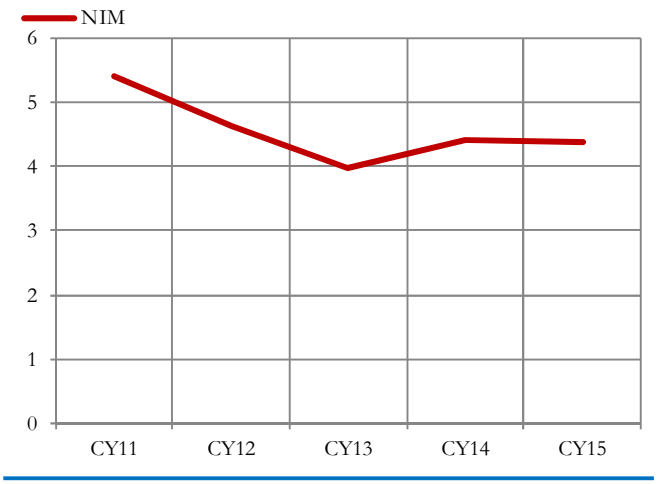
The cost leg of net markup income, predominantly comprising of deposit and borrowing costs, has increased by only 2.1 percent, on average, during the last three years. In fact, in CY15 markup expense declined by 3.8 percent mainly due to 13.2 percent savings on interest paid on deposits. As a whole, the markup cost on deposits grew by only 0.5 percent, on average, during CY14 to CY15. As for the borrowings, the cost (mainly on repos) surged by 34.7 percent, on average, during the same period. Rising cost of Repo borrowings observed a phenomenal growth of 137 percent in CY15, incurred mainly to address the liquidity stress faced by the market.

..but Net Interest Margin (NIM[101]) observerd nominal decline.

Despite the rise in NII, NIM remains anchored at 4.4 percent in CY15 **(Figure 3.3**). Declining interest rates along with increase in cost of Repo borrowings have decelerated the growth in the net interest income. Also, the portion of higher income generating asset (i.e. advances) in earning assets has been slower. Consequently, NIM has registered a negligible fall of 4 bps in CY15. Given the falling yields on maturing government securities, NIM could come under pressure in the coming months.

Figure 3.3

NIM remained stable



Source: FSD, SBP

Provision charge surges due to shift in NPLs portfolio…

Despite decelerated growth in NPLs of the system in CY15, the provision expense increased by 53.5 percent (YoY) during CY15. This rise largely resulted from shifting of existing NPLs to 'loss" category where provision charge is 100 percent of

[101] NII over average earning assets equals NIM.

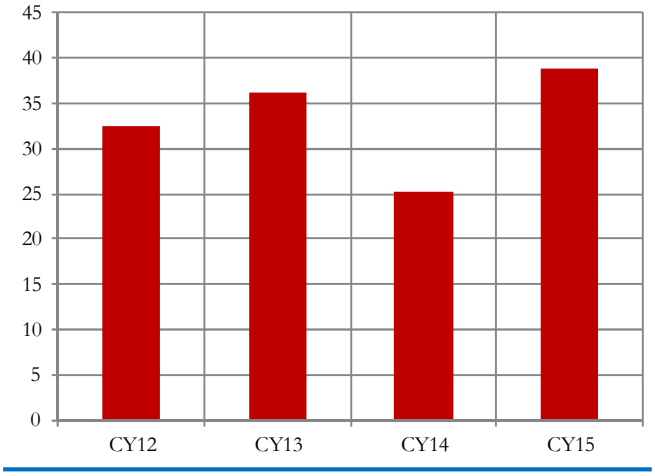
the outstanding amount and phasing out of FSV (Forced Sale Value) benefit[102] (**Figure 3.4).**

Figure 3.4

High provision expense due to shifting of NPL categories

Provision charge during the year

(PKR billion)



Source: FSD, SBP

Non-mark up income contributed significantly towards profitability…

Non markup income is generally driven by fee based business of banks and dynamic treasury management which pays off in the form of capital gains in stocks, FX and bond markets. Along with growth in the core income[103] in CY15, the non-mark up income of banks has grown at an accelerated pace of 24.7 percent on YoY basis. The growth is largely supported by improved fee based income from trade and insurance related services offered by banks and other income where substantial gains are booked on sale of PIBs (**Figure 3.5 and 3.6**).

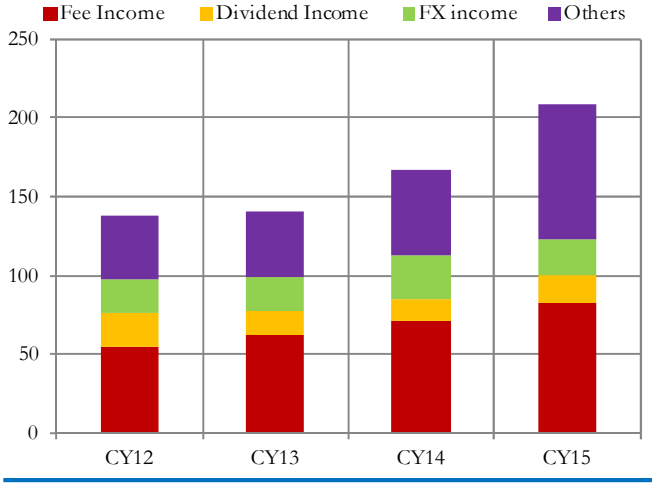
In CY15, the fee income, which contributed 40 percent towards non-markup earnings, improved by 17.4 percent. The dividend income, though a smaller component of non-mark up income has grown by 20 percent indicating that banks have maintained their interest in healthy corporates.

Figure 3.5

Non mark-up income largely driven by fee income and other income

Composition of Non Markup Income

(PKR billion)



Source: FSD,SBP

Gain on sale of PIBs are an important source of other non-markup income…

Gain on sale of securities is a significant contributor towards non-markup income in CY15. Previously, capital gains on quoted shares used to be the major component of this type of income as the banks benefited from positive movement of capital markets (**Figure 3.6**).

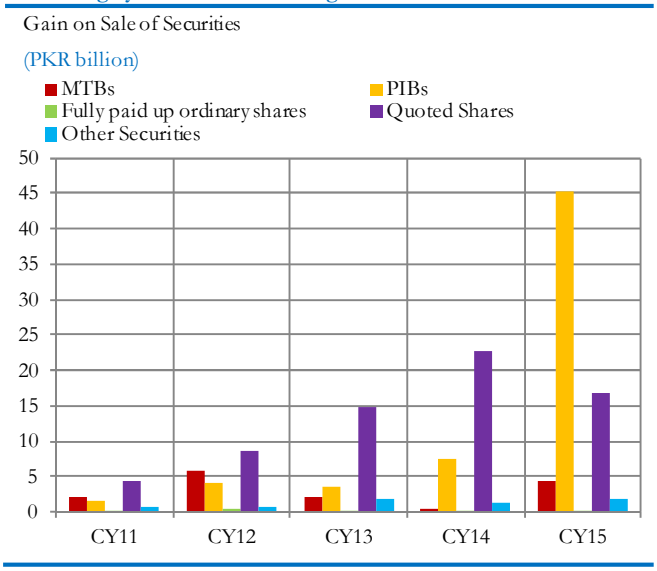
However, in recent years, the accumulation of longer tenor government bonds with higher rates, in anticipation of declining interest rates and subsequent movement of interest rates as per expectations, have largely contributed towards this component. As the interest rates declined, banks realized huge capital gains in CY15 by selling longer tenor government bonds of higher yields.

[102] BSD Circular No 1 of 2011

[103] Please see Box 3.1 on income composition.

Figure 3.6

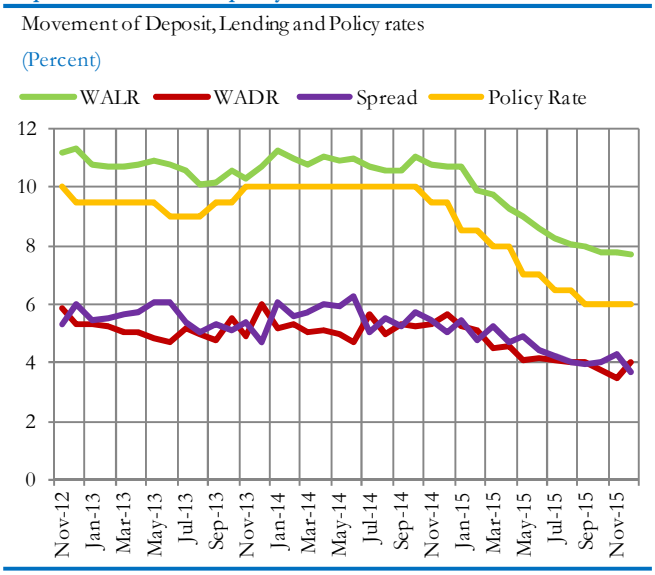
PIBs largely contributed towards gain



Source: FSD, SBP

Figure 3.7

Spread in tandem with policy rate



Source: SBP

Banking spread has considerably reduced in the last three years…

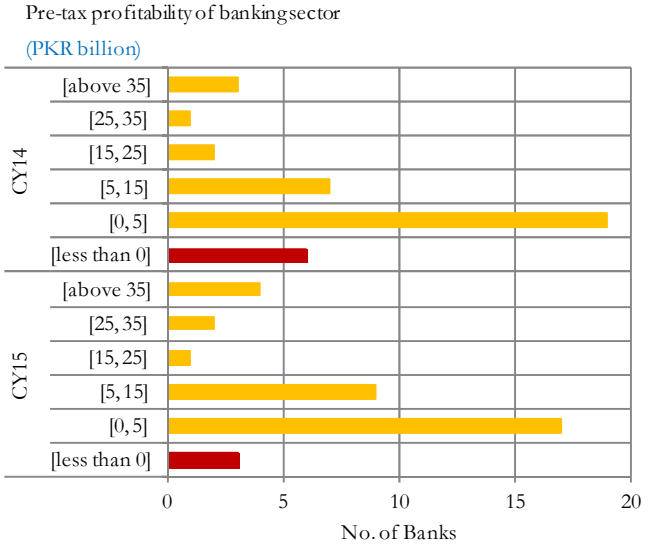
Interest rate movement has also impacted retail rates, such as Weighted Average Lending Rate (WALR) on fresh loans and Weighted Average Deposit Rate (WADR) on fresh deposits. Both these retail rates are, to a large extent, synchronized with the SBP policy rate (**Figure 3.7**).

Against the policy rate decline of 4 percentage points over CY13 to CY15, WALR declined by 3 percentage points and WADR by 1.96 percentage points to stand at 7.74 percent and 4.04 percent, respectively, in CY15. Relatively lower decline in WADR is understandable as SBP, to protect the depositors' interest, has put in place MSR since 2008.

Consequently, the spread charged by banks has reduced by 100bps to 3.69 percent in CY15 from 4.72 percent in CY13. Despite this decline in spread, yield on rising volume of investment portfolio is supporting profitability of the banking system which should have otherwise declined.

Figure 3.8

Number of loss making banks has reduced



Source: FSD, SBP

Concentration in earnings has also reduced…

Bank-wise statistics reveal a broad based contribution in banking profits as 32 banks posted profits, while the count of loss making banks has come down to 3 in CY15 from 6 in CY14 (**Figure 3.8**).

Concentration of earnings has further reduced as the share of large banks in total profits declined to 72 percent in CY15 from 78 percent in CY14. While share of medium banks increased from 18 percent in CY14 to 19 percent in CY15; whereas small banks' share in profitability doubled to 8 percent in CY15 from 4 percent in CY14. Very small banks have also been successful in sharing 1 percent of earnings in CY15 from their negligible share in CY14 **(Table 3.1)**.

Table 3.1

Concentration of Earnings by Bank Size

Bank Category	CY14	CY15	Change (percentage points)
	Share in earnings(before tax)		
Quartile 4 (Large)	78	72	-6
Quartile 3 (Medium)	18	19	1
Quartile 2 (Small)	4	8	4
Quartile 1 (Very Small)	0	1	1

Source: FSD, SBP

Solvency

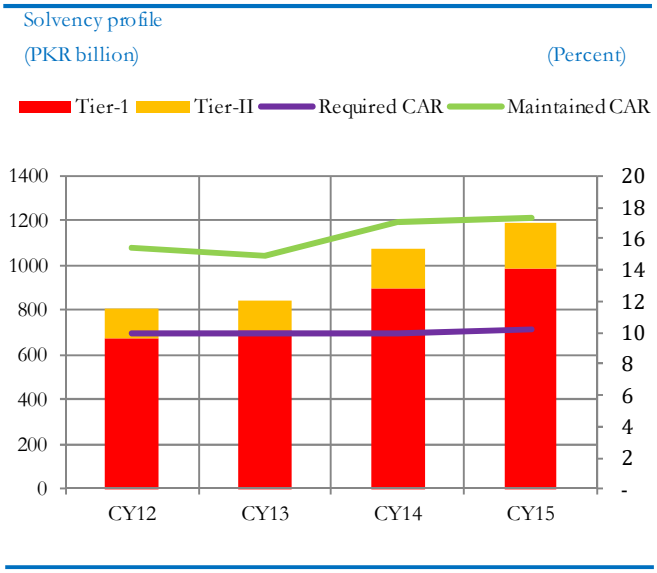
Both risk based and non-risk based indicators of solvency show improvement…

Despite the implementation of a comparatively strict Basel III Capital Accord, the overall capital adequacy of the banking sector remains well above the local benchmark of 10.25 percent. Over the years, guided by proactive and effective policies of SBP, banking sector has been successful in maintaining a healthy capital adequacy profile.

Capital Adequacy Ratio (CAR) exhibited a healthy jump of 249bps in the last three years to reach 17.3 percent in CY15, at the back of relatively higher growth in capital than Risk Weighted Assets (RWAs) (**Figure 3.9).** During the same period, RWAs also grew at an average rate of 9 percent; largely contributed by Market Risk Weighted Assets (MRWAs). The leverage ratio[104] after a slight decline stood at a comfortable level of 5.8 percent in CY15– well above the Basel-III standard requirement of 3 percent. Most of the banks are also compliant with the prescribed Minimum Capital Requirement (MCR) of SBP.

Figure 3.9

Solvency of the banks gets stronger



Source: BPRD, SBP

Improvement in CAR is seen across all the categories of banks

In terms of size, CAR has improved among all categories of banks (**Table 3.2**). Large banks, which are holding 70 percent of the industry's risky assets, have maintained their CAR above the local benchmark. On the other hand, CAR of medium sized banks has improved over the years due to capital build up in these banks, which will pay off in expanding their balances sheets in future. Small banks followed this trend as they build their capital base in CY15 and expanded their balance sheets in tandem.

[104] Leverage ratio is defined as Tier-I capital as proportion of total assets (adjusted both sides for intangible assets). The inverse of leverage ratio is called leverage multiples.

Table 3.2

Capital Adequacy Ration(CAR) by Bank Size

Bank Category	CY13	CY14	CY15
	percent		
Large	15.2	15.8	15.9
Medium	12.1	13.8	14.8
Small	13.6	15.2	16.3
Very Small	17.5	15.0	18.2

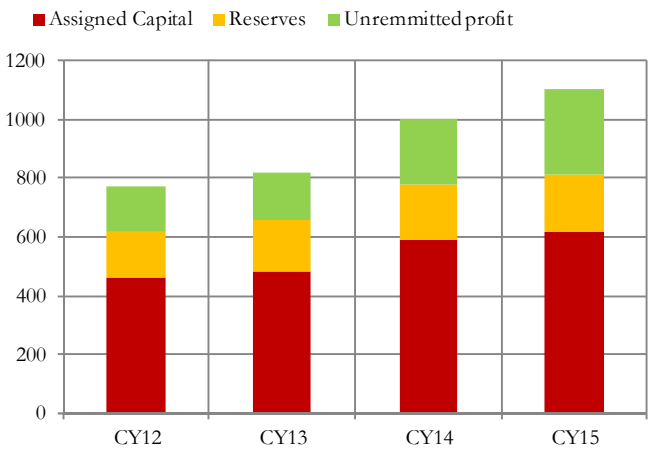
Source: FSD, SBP

Figure 3.10

Profit retention remained the main source of capital buildup

Share in growht of equity

(Percentage Points)



Source: BPRD, SBP

Improved profitability augmented Tier-I capital…

Pecking order theory[105] strongly holds in case of local financial sector as most banks widely utilized profits generated internally to increase capital positions **(Figure 3.10).** In CY15, the increase in Tier-1 capital has been supported by 28 percent growth in the retained earnings and some enhancement in the paid-up capital of the banks. Hence, Tier-I capital increased by 10.5 percent; bringing its share in the regulatory capital to 83 percent in CY15.

Credit Risk Weighted Assets(CRWAs) share decreased slightly…

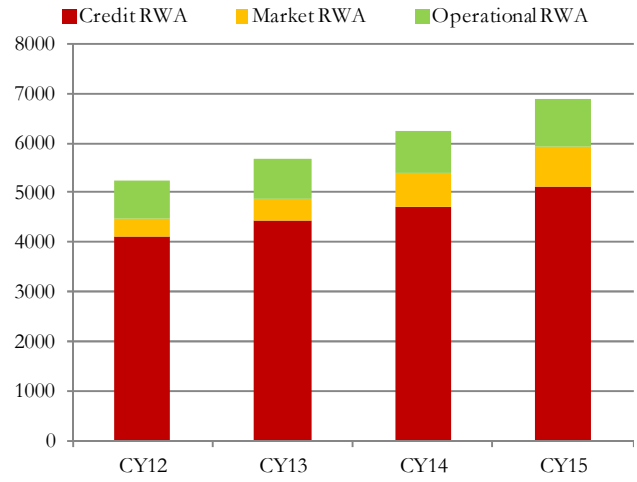
In line with private sector's credit uptake, CRWAs witnessed a growth of 9 percent during CY15 (**Figure 3.11)**. This rise was largely for unrated borrowers carrying a risk weight of 125 percent and retail exposure including residential mortgage with risk weights of 75 and 35 percent, respectively. However, the contribution of CRWAs in total riskiness of the banking system has declined marginally (74.7 percent in CY15 compared to 75.2 percent in CY14) due to accelerated rise in MRWAs.

Figure 3.11

Credit risk remains dominant

Riskiness of the banking sector

(PKR billion)



Source: BPRD, SBP

…while MRWAs continue to grow at a faster pace

MRWAs have witnessed a sizeable growth of 16 percent (YoY) that has enhanced its share in total RWAs by 60 bps in CY15 to reach 11.7 percent. Among the MRWAs, Interest rate risk (IRR) provided most of the increase in capital charge due to significant increase in stock of investments in

[105] In corporate finance, pecking order theory postulates that companies prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a "last resort".

long term PIBs. With 10.5 percent growth in equity investments by the banks, the associated capital charge also grew in tandem.

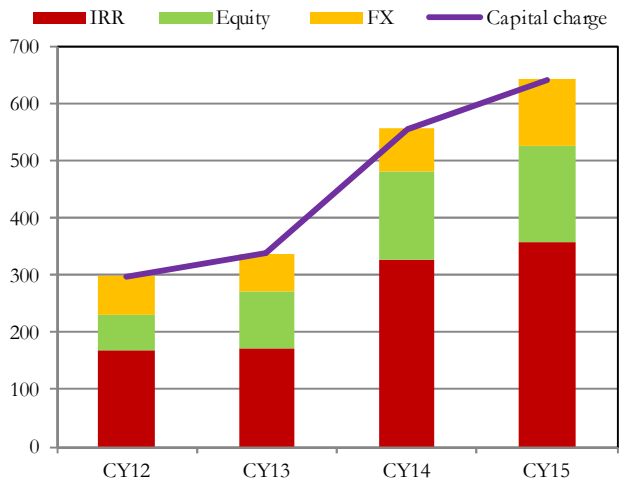
The foreign currency position related capital charge showed a significant growth of 57.5 percent probably due to revaluation of FX positions in CY15. FX related charge's share in total market related capital charge has increased to 18 percent in CY15 from 13 percent in CY14 (**Figure 3.12**).

Figure 3.12

Interest Rate Risk (IRR) remained major component of market risk

Market Risk Components

(PKR billion)



Source: BPRD, SBP

Share of Operational Risk Weighted Assets (ORWAs) observed marginal decline…

The ORWAs have increased by 9 percent during CY15 mainly due to stable profitability of the banking system. Most of the banks in Pakistan use Basic Indicator Approach (BIA) to measure operational risk charge. Under the BIA, operational risk charge is 15 percent of the average of last three years' positive annual gross income. As the methodology of calculating ORWAs is dependent on gross income of the banks, so ORWAs naturally increases with increase in gross income. Despite growth in ORWAs in CY15, their share in total RWAs has marginally declined to 13.6 percent (a nominal dip of 13bps) due to accelerated rise in MRWAs.

The riskiness of the banking sector remains low…

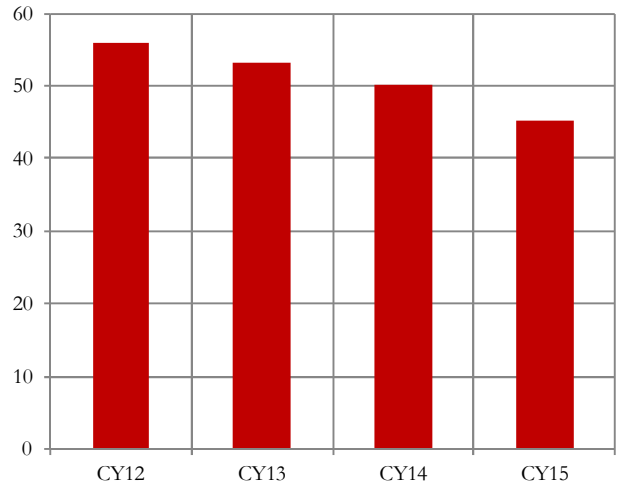
Despite growth in RWAs, the overall riskiness of the banking sector (CRWA assets to average earning assets) continues to subside (**Figure 3.13**). This is reasonable as major part of the 21 percent expansion in earning assets during CY15 carries low or zero risk weights. In line with the large share of public sector investments, share of zero risk weighted asset reached its highest level of 45 percent during CY15 from 39 percent in CY14.

Figure 3.13

Declining banking sector riskiness

CRWAs to Average Earning Assets

(Percent)



Source: BPRD, SBP

Share of assets in rest of the risk weighted categories (usually assigned to the advances extended to private sector) continued to decline, an outcome of slow growth in private sector credit (**Figure 3.14**). Since CRWAs observed relatively low growth of 9 percent, share of CRWAs as a percentage of average earning assets declined by 1.9 percentage points in CY15. This trend though favorable in short run,

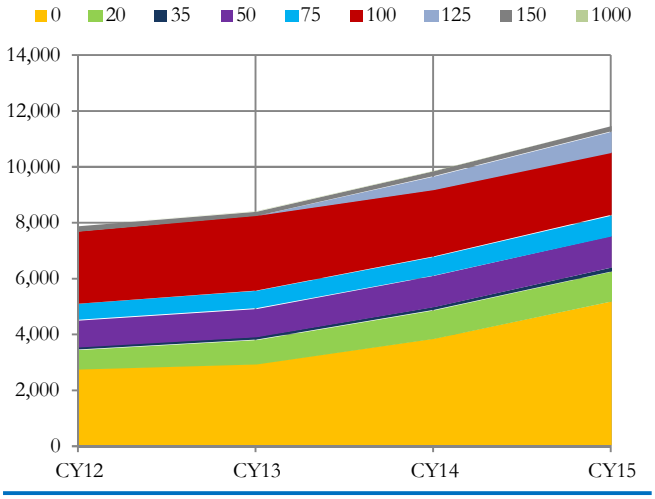
may compromise risk management capacity of the banking sector in the future.

Figure 3.14

Expanding balance sheet fuelling little to CRWAs

Distribution of CRWAs as per weights assigned

(PKR billion)



Source: BPRD, SBP

MCR policy guiding CAR…

A higher capital base above the regulatory requirements provides banks with sufficient cushion against unexpected idiosyncratic shocks and severe macroeconomic conditions. As part of its policy to strengthen common equity base of banks, the SBP over the period has enhanced the MCR requirements in gradual manner. The outcome of this approach is obvious in comfortable CAR of most banks (**Table 3.3**). Banks falling short of minimum CAR represent merely 1.4 percent of total asset of the industry and as such do not pose any serious concern to the solvency of the banking sector.

Table 3.3

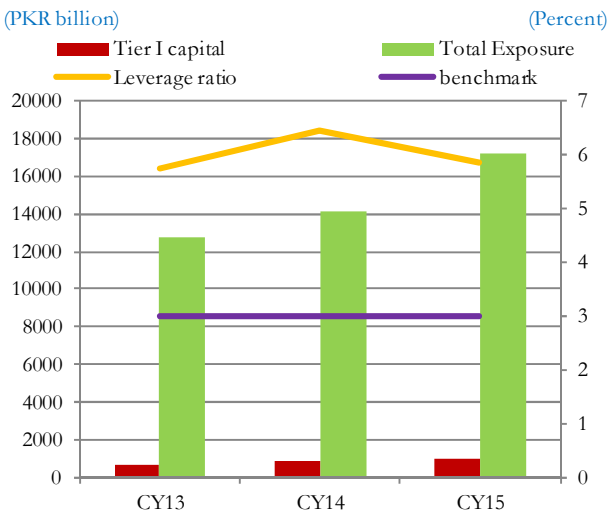
Distribution of Banks by CAR

	CY12	CY13	CY14	CY15
CAR<Required	5	5	3	3
Required<CAR<15percent	9	12	12	13
> 15 percent	24	21	22	19
Total	38	38	37	35

Source: BPRD, SBP

Figure 3.15

Banks have margin to increase leverage



Source: BPRD, SBP

Banking system's leverage remains well within the prescribed limit…

The leverage ratio, a non risk based indicator of solvency, despite slight decline remained at a comfortable level; thanks to growing Tier-I capital which kept on supporting the increased asset base. However, during CY15, leverage ratio declined by 61 bps due to higher expansion in the asset base relative to Tier-I capital. In CY15, the leverage ratio stood at 5.8 percent, much higher than the minimum 3 percent set by the Basel Committee on Banking Supervision[106] (**Figure 3.15**). However,

[106] The parallel run period of leverage ratio in Pakistan is from December 31, 2013 to December 31, 2017.

industry has still the gap of 285 bps between actual leverage and benchmark leverage which can be exploited to increase its asset base with existing level of equity.

Risk based measure of CAR is also reinforcing the room for further risk taking in banks' balance sheets. With current level of regulatory capital, benchmark CAR will remain within prescribed limit even if banks expand their risk weighted assets by 69 percent (**Table 3.4**).

With a comfortable level of both CAR and Leverage indicators and potential of growth in the economy, banking industry enjoys enough buffer to further increase its exposure to the private sector in the future.

Table 3.4

Capital Cushion CY15(PKR billion)

	Existing	Simulated	Cushion
Capital	1,190.4	1,190.4	-
RWAs	6,865.3	11,614.1	4,748.9
CAR	17.3%	10.3%	

Source: BPRD, SBP

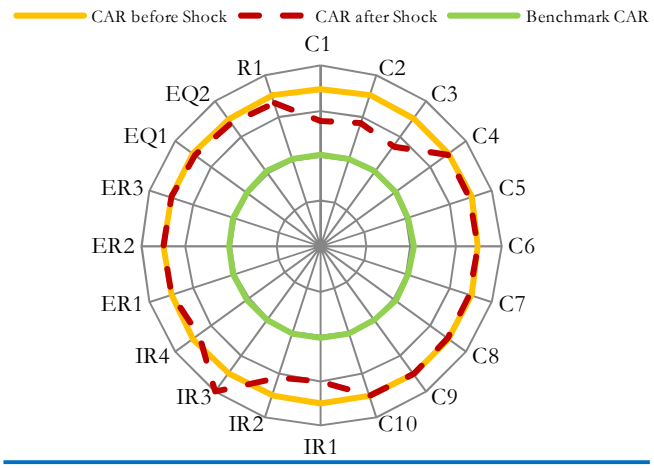
Resilience

The banking system exhibited resilience under stress due to strong CAR of 17.3 percent as of CY15. Results of adverse scenarios for the credit, market, liquidity and contagion risk on the banking sector reaffirms that the system has sufficient cushion to withstand the stressed shocks[107]. Importantly, all banks with before-shock CAR of above 12.2 percent, including top 5 banks of the industry, would comfortably bear the solvency shocks.

Under sensitivity analysis, the after-shock CAR of the system would stay strong, though certain shocks to the credit risk portfolio would have significant impact on the solvency profile of the banking system. In case of the credit shocks; including, shock (C-1) assuming an increase in NPLs equivalent to 10 percent of performing loans, (C-2) default of top 3 private sector individual borrowers (fund based exposures only), and (C-3) a shock of default of top three borrowers (both fund and non-fund based) the highest decline in CAR of the banking system would be up to 380 bps (**Figure 3.16**). Keeping in view their systemic implication of high concentration of top corporate and group exposure, banks need close monitoring of such exposures.

Figure: 3.16

Banking system found resilient under multiple stress shocks



Source: FSD, SBP

Despite considerable rise in MRWAs, overall 12.0 percent share in total risk weighted assets continued to present a subdued market risk profile. However, market risk related sensitivity shock which, assume a parallel shift of yield curve by 300bps results in significant impact on banks CAR (industry CAR would experience a decline of 240bps). Similarly, analysis of liquidity stress tests, which envisaged

[107] For details of the shocks, please see Table 1.13 of the Quarterly Compendium: Statistics of the Banking System, December 31, 2015 http://www.sbp.org.pk/ecodata/fsi.asp

significant withdrawals of deposits and volatile funds, and dip in value of liquid securities, showed that the ample fund based liquidity in the system, would provide enough cushion to meet significant withdrawals of deposits and volatile funds. Also, industry's liquidity coverage ratio (LCR) - a measure of 30-days stressed liquidity position of banks under Basel III framework- would remain well above the required minimum level of 100 percent in a scenario assuming the value of government securities would marginally decline.

Macro Stress Testing

In addition to sensitivity analysis, SBP performs macro stress tests on aggregate data, using a top down approach, on quarterly basis. The objective is to assess the loss absorption capacity of the banking sector in terms of 'capital adequacy ratio' or CAR in the event of adverse macroeconomic shock(s). By employing a suit of models, the scope of macro stress testing exercise currently focuses on both the credit risk posed by the lending portfolio and market risk posed by investment portfolio of the banking industry.

Macro stress testing was first introduced in 2008 by SBP as a tool for macro-prudential surveillance[108]. While, the preliminary work essentially proposed processes and components of the framework, over time it has kept evolving and changing with the expansion of the banking sector. Various bank's publications had quantitatively evaluated and discussed the impact of macroeconomic developments on industry's performance in a macro-financial modeling setup.[109]

To stress test the banking portfolio, for this FSR, we have designed a *baseline* (or business as usual) scenario and a separate *stressed* scenario. The reference period for this hypothetical analysis is from Q2CY16 to Q2CY18 i.e. 9 quarters.

For assessing credit risk, one of the models bank uses is the Credit Portfolio View (CPV) model based on Blaschke et al (2001)[110]. Under this approach, in case of Pakistan, it is assumed that the GNPLR is a function of growth in output (GLSM index), growth in exports (GEXP), developments in stock markets (PSE index) and monetary policy or discount rate (DR). The model estimated is as follows:

$$GNPLR_t = \alpha + \sum_{i=1}^{4} \beta_i GLSM_{t-i} + \sum_{i=1}^{4} \gamma_i GEXP_{t-i} + \sum_{i=1}^{4} \eta_i PSE_{t-i} + \sum_{i=1}^{4} \delta_i DR_{t-i} + \epsilon_t \ldots (1)$$

Variables in equation (1) are in logs and non stationary variables (the dependent variable, GNPLR, and explanatory variable, PSE) are made stationary by taking the first difference. In addition, the dependent variable GNPLR is logit transformed to avoid non-Gaussian errors[111] and Inverse Hyperbolic transformation is performed for GEXP and GLSM to handle non-positive values. The model is estimated using step-wise OLS regression on quarterly data from June, 2002 to December, 2015.[112]

The market risk is analyzed based on *dynamic* sensitivity approach. In the baseline and stress

[108] Financial Stability Review 2007-08.

[109] For instance, Financial Stability Review 1st Half 2011, Quarterly performance review of the Banking System (September 2008, December 2008, March 2009).

[110] Blaschke, W., M. T. Jones, G. Majnoni, and S.M. Peria (2001), "Stress testing of Financial System: An Overview of Issues, Methodologies, and FSAP Experiences" IMF Working Papers WP-01/88.

[111] Vazquez, F., Tabak, B. M., & Souto, M. (2012). A macro stress test model of credit risk for the Brazilian banking sector. *Journal of Financial Stability*, *8*(2), 69-83.

[112] The results of the model and its diagnostics are given in "Technical Appendix".

scenarios, it is assumed that the risk sensitive investments, at the end of March, 2016 quarter, evolve till June, 2018 quarter based on the assumptions of the respective scenarios. The exposure at risk over this horizon is then adjusted to the corresponding changes in the interest rate. The combined effect of estimates of credit risk (GNPLR forecast) and market risk are then used for computing impact on banks' earnings and consequent calibration on sector's CAR.

Baseline Scenario

Baseline scenario assumes business as usual i.e. current macro-economic environment continuing its course from 2016 through first half of 2018[113]. During the past few quarters, Pakistan economy's major macroeconomic indicators have improved. Specifically, inflation remains subdued, large scale manufacturing has started picking up, external sector, despite difficulties, continues to perform well and private sector credit off take is gradually improving.

The gains can be explained in terms of low oil/commodity prices, improved energy availability, higher disbursements from bilateral and multilateral agencies, CPEC factor and better law and order situation.

In the baseline scenario, it is assumed that improvements on the macroeconomic front would continue to support positive trends in banks risk taking, market developments and earnings. More specifically, there would be an increase in credit disbursements, LSM would perform better, the stock exchange will register gains and the external sector will grow positively.

Stressed Scenario

Stress scenarios are, generally, hypothetical extreme events designed with the objective to assess resilience of the banking system in case of a severe and prolonged stressed period.[114]

The stress scenario has taken into consideration the forecasts of weak and uncertain global output growth[115]. According to World Economic Outlook (WEO) April, 2016, world economy is expected to expand by 3.2 percent if the challenges of slow and fragile recovery in advanced economies such as US and EU and a general slowdown in developing and emerging markets such as China and commodity exporting countries, are managed successfully.

Particularly, China's ongoing economic transition has global implications. Being one of the key trading partners of 100 countries which account for 80 percent of world GDP, a deceleration in China has resulted in subdued outlook for global trade and international commodity markets.

While designing stress scenario, it is assumed that the global economy would derail from the recovery path. The postulation is in line with projections of adverse scenarios considered by other central banks such as Bank of England[116]. They assume that around 2 percent contraction will take place in world GDP in the first year of stress and that it will remain below baseline during the remaining years.

Pakistan's economy is, to some extent, vulnerable to the developments in the international economies. With forecasts of possible slowdown or contraction in Pakistan's largest trading partner economies: US, EU, China and some Gulf countries, the downside risks to external sector is assumed to materialize.

[113] Baseline forecasts for LSM, PSE indices and growth in exports are made using the exponential smoothing methodology. While for the monetary policy variable, discount rate, discretion is applied.

[114] The data for March 2016 was not completely available at the time of analysis hence the data set used is till Dec, 2015.

[115] By April 2016 WEO world forecasts have been revised downward twice since October, 2015.

[116] Stress testing the UK banking system: Key elements of the 2016 stress test, Bank of England, March 2016.

The stress is assumed to transmit through trade and financial linkages that may spread to the rest of the economy.

Given that export industry is already passing through a difficult phase[117] and exports have been falling for the last four quarters, stress scenario assumes further drop in foreign demand and thus exports. For the stressed scenario, it is assumed that export growth would follow the same trend as observed in the past during the Global Financial Crisis (GFC) of 2007-08. Due to assumed increasing external vulnerability, downward pressure on exchange rate is also assumed.

Under the stressed scenario, global slowdown may shake investor's confidence. While the domestic investors might put investment decisions on hold till things improve, foreign investors are assumed to disinvest and leave for safe havens. In the short to medium term, significant withdrawals of foreign portfolio investment from the stock market are assumed which would partially erode stock market capitalization and may dent the sentiments of local investors. The equity market losses are assumed to result in stock market becoming bearish throughout the span of the adverse scenario.

Waning global demand and declining exports is assumed to slowdown production activity in the related industries in the LSM sector. The movements in LSM index during the stress scenario are derived from variation in LSM series. Under these considerations, it is assumed that the LSM will contract and would remain less than the baseline forecasts throughout the stressed period.

During the stressed period, it is assumed that inflationary pressures would come from hypothetical depreciation of domestic currency resulting in increase in the cost of imported goods and inflation expectations. Therefore, the threats to the country's growth prospects remain predominantly external in nature and global in dimension in the stressed scenario.

On the fiscal front, it is assumed that a decline in industries' profits will affect government's revenue collection. Government's taxation revenues from corporates, excise and custom is assumed to fall resulting in a higher budget deficit. To bridge the gap, stressed scenario assumes borrowings from both banking and non-banking channels. In this case, private sector credit disbursements are assumed to come under renewed pressure.

Decrease in revenues of LSM industries, listed on the stock market, is assumed to add additional pressures on the stock market.

In order to ease pressure on external account and ease inflationary pressures, it is assumed that there might be some monetary adjustments in the stressed scenario. In such a case, banks would be facing credit and market risks. The magnitude of the losses would depend on the profile of bank's risk sensitive assets and liabilities.

Given this hypothetical extreme scenario, it is expected that the repayment capacity of borrowers across the horizon will be affected which may lead to increase in non-performing loans. Box 3.1 explains some technical assumptions.

[117] Baseline export projections are also lower to account for stress on exports.

Box 3.1: Key Technical Assumptions:

- The growth in risk weighted assets (RWA) would correspond to the growth in advances in both the baseline and stressed scenarios on quarterly basis. For baseline, average growth in advances (since 2002Q2) has been applied (3.4%). For stressed scenario it is assumed that risk weighted assets would rise by 0.8% per quarter. The assumption is consistent with the growth observed during the historical stress period of GFC.
- In the baseline scenario as bank's earnings would rise, banks' capital base is projected to grow by 4.0% on quarterly basis (consistent with last nine quarters' growth rate). While during stressed period the growth in capital base is assumed to be lower compared to the baseline (2%).
- For impact on asset quality, provisions against stock of NPLs, in both scenarios, is assumed to be 90% which is based on the current level. We also assume 100% pass through to Capital from increase (decrease) in profits (losses) arising from credit and market risks.
- For estimation of market risk:
  - Only interest rate exposure is being considered for banks' risk sensitive investment portfolio.
  - The stress scenario assumes an upward parallel shift of the yield curve in every quarter. In the baseline and stressed scenarios, interest rates along the yield curve would change by the same magnitude as assumed for the discount rate.
  - The growth in risk sensitive investments during the stressed period would be by the same rate as observed during the stress period of GFC.

Stress Test Results

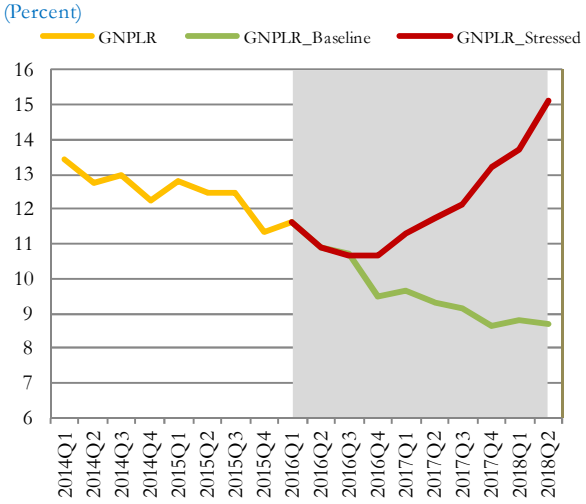
Under the baseline scenario, forecasts of the banking performance indicator, GNPLR, over the next nine quarters shows a declining trend. This implies, if supportive macro environment persists, infection ratio might gradually fall to 9.5 percent by end 2016. As the economic fundamentals further strengthen, the ratio would drop further by 800 bps to reach 8.7 percent by June 2018; a fall of 2.9 percentage points from the level of 11.7 percent in March, 2016 (**Figure 3.17**). Furthermore, market risk would remain subdued in a largely stable interest rate scenario.

Figure 3.17

Infection Ratio Rises under Stress Scenario

Forecasts for Baseline and Stressed GNPLR

(Percent)



Source: FSD, SBP

As the economy follows its growth path and credit to private sector rises, the RWA of the banking sector would also rise proportionately. In the baseline scenario, therefore, it is anticipated that the industry's CAR could fall to15.4 percent by June 2018; which is well above the required benchmark CAR of 11.275 percent at that time[118] (**Figure 3.18**). This lower level of CAR indicates better utilization of capital in case the private sector credit picks up.

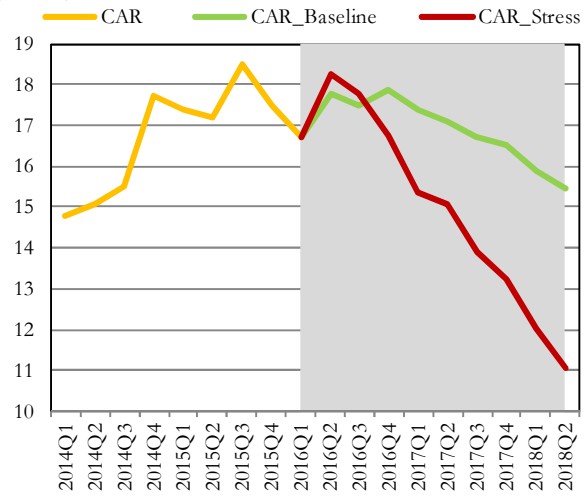
[118] BPRD circular # 06 dated August 15, 2013 on 'Instructions for Basel III Implementation in Pakistan'.

Figure 3.18

CAR declines under Stress Scenario

Forecasts for Baseline and Stress CAR

(Percent)



Source: BPRD and FSD, SBP

On the contrary, stressed scenario would result in significant losses due to higher credit risk materialization together with repricing of banks' assets and liabilities. In the stressed scenario, the CPV model predicts GNPLR rising gradually. The ratio is projected to climb to 15.1 percent by June 2018 from the existing level of 11.6 percent as of March 2016 (**Figure 3.17**).

As the impact of global shocks become widespread, banking industry's CAR is anticipated to experience a steady decline. In the prolonged adverse scenario, banks' CAR would decline and is estimated to end up at 11.1 percent by June 2018 (**Figure 3.18**). While the drop is significant, the stressed CAR is still close to benchmark of 11.275 percent required by 2018.

In the stress scenario, reduction in CAR is due primarily to banks' suffering credit losses compounded by losses due to adverse movement in market interest rates. The seemingly large capital cushion currently available to absorb shocks might shrink in the face of extreme credit and market shocks.

Conclusion of Macro Stress Testing Exercise

Stress tests performed to gauge industry's resilience reinforces the view that if economy continues on the current growth path, higher capital charge on private sector credit would start utilizing the capital buffers industry is maintaining. Yet, positive trends would enable overall industry to sustain CAR noticeably above the minimum benchmark. However, banks may have to generate additional capital to provide cushion for expected growth in private credit.In case of economic distress, however, current capital cushion might be inadequate to absorb losses. In such a scenario, banks would need to prop up their capital base for complying with the minimum capital requirements.

Outlook

In an environment of low interest rates and falling yield on public debt, profitability of the banking system is expected to come under pressure in future. Though lower provisioning charge, low interest expense on deposits and off take of high yielding private credit might partially offset the downward pressure on income, yet growth in profitability is expected to decelerate in CY16[119]. Parallel to this, the growth in credit may take its toll in the form of high capital charge and may impact CAR of the industry. As such banks need to closely review the situation and plan for augmenting capital generation ahead of time for enhancing their resilience.

[119] Forecast generated on the basis of exponential smoothing methodology.

Box 3.2: A framework for the assessment of bank's earnings

The strength of earnings has a strong bearing on an institution's long term sustainability. It also provides information about distribution of risk among different activities. As per framework for the assessment of bank's earnings suggested by Cuoto (2002)[120], the income of an institution can be distributed between structural[121] and secondary sources. Net interest income, fee income and operating expenses; being core income and expense items, are the structural determinants of profitability while provisions and exposures affected by interest rate and FX movement are considered secondary determinants of profitability. The reliance of an institution on non-recurring income is a sign of earning weakness and signals that the bank is engaging in risky practices in an attempt to boost earnings.

As per this framework, the traditional profit and loss statement of a financial institution can be presented as follows:

Table 1

Proposed structure for the income statement(PKR billion)

		CY12	CY13	CY14	CY15
Structural	Interest earned on loans	428	396	437	404
	Interest earned on investments	353	361	450	545
	Interest earned-others	19	20	33	33
	Total interest income	801	777	920	982
	Total Interest expense	461	444	505	486
	Net interest income	340	332	415	496
	Fee income	54	62	70	83
	Operating expenses	253	268	305	330
	Total structural income	**141**	**127**	**181**	**249**
Secondary	Provision for loan losses	32	36	25	39
	Other secondary expenses	5	3	6	7
	Treasury results	84	78	97	126
	Other secondary income	0.8	0.0	0.0	0.0
	Total secondary income	**45.8**	**38.6**	**65.9**	**80.0**
	Profit/(loss) from banking activities	187	165	247	329
	Results of non-banking subsidiaries	0	0	0	0
	Profit/(loss) before taxes	187	165	247	329
	Income taxes	65	54	83	130
	Net profit/(loss)	**121**	**111**	**163**	**199**

Source: FSD, SBP

As per the above structure, the profitability of our banking system is quite stable as share of income from core business sources is higher (76 percent). Income arising from these sources is sufficient to cover operating expenses, provisions and taxes, and to provide an adequate return on capital. Though income from secondary sources has also increased over the years, yet reliance of industry on non-structural sources is not that high (24 percent).

[120] Couto, R. L. R. (2002). "Framework for the assessment of bank earnings". Bank for International Settlements, Financial Stability Institute.

[121] The structural determinants of profitability are those items of income and expense that satisfy three conditions: they arise from the operational activities of a bank, can properly be considered sustainable, in the case of income, or recurring, in the case of expenses, and are not particularly subject to misrepresentation.