# An Assessment of Financial Stability in the Banking Sector: An Empirical Analysis

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**Abstract**

The objective of the paper is to evaluate the financial stability in the banking sector of Bangladesh on the basis of Macro-Financial Indicator (MFI) and Macroeconomic variables (MEV) of the IMF. The time period 1997 to 2012 has been taken in analyzing MFI while in analyzing MEV, the time period 1990-2012 has been considered. The analysis of trend in MFI indicates that banking sector in Bangladesh demonstrated a moderate level of stability in the recent years despite of dismal performance of State Own Commercial Banks (SCBs) and Development Financial Institutions (DFIs). The Private Commercial Banks (PCBs) and Foreign Commercial Banks (FCBs) stand on sound footing in resilience in terms of MFI's performance. The paper finds that correlation coefficient between Nonperforming Loan (NPL) and Gross Domestic Product (GDP) is -0.67 for the sample period 1991-2012 implying that increase of GDP pushes down NPL that ensures financial stability in banking system in Bangladesh. The correlation coefficient between real lending rate and GDP is -0.52 and the correlation of real lending rate with NPL are 0.63 which implies that prevailing high lending rate is distressing for the banking system. An estimated correlation coefficient between Current Account Balance (CAB) and NPL is -0.72 which implies a good position or surplus in CAB leading to decrease NPL in the banking system which helped financial stability in the recent time.

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## I.0 Introduction

Financial stability is the most important ingredient for macroeconomic management towards sustainable economic growth. In the face of global financial crisis, financial stability issues have been receiving priority attention among policy makers around the world. Following the global financial crisis, financial stability has emerged as an important objective of central banks along with traditional objectives (the long period of macro-economic stability in terms of growth and inflation) across countries– developed, developing and emerging market economies.[2] Global financial crises of the recent past and sovereign debt crises of a number of European countries and of the US provoked policy makers to appraisal financial stability because central banks have to be the forefront in combating, neutralizing the crisis and restoring financial stability and economic growth whenever a financial crisis occurs which threatening a possible financial meltdown.

The term 'financial stability' is usually interpreted conceptually as a persistent state of robust functioning of various financial system components i.e., markets, institutions, market infrastructure and bestowing the system to face any endogenous or exogenous financial shock with minimal disruptive impact. There is no unanimous agreement on a working definition of this concept. Some define financial stability in terms of what it is not, i.e., the absence of financial instability. Others take a macro-prudential view and specify financial stability in terms of limitation of risks of significant real output losses in the presence of episodes of system- wide financial distress. Financial stability is a situation in which the financial system is capable of satisfactorily performing its three key functions simultaneously. First, the financial system is efficiently and smoothly facilitating the inter-temporal allocation of resources from savers to investors and the allocation of economic resources in general. Second, forward-looking financial risks are assessed and priced reasonably accurately and are relatively well- managed. Third, the financial system is in such a condition that it can comfortably, if not smoothly, absorb financial and real economic surprises and shocks. If any one or more of these key functions are not being satisfactorily performed. It is likely that the financial system is moving in the direction of becoming less stable, and at some point might exhibit instability (RBI, 2008-09).

Globally, financial stability / instability have assumed significance because of the tendency of financial turbulence to spill across borders. This is amply illustrated by the ongoing crisis which has brought the issue of financial stability to the forefront. What started as a sub-prime crisis in the US housing mortgage sector has turned successively into a global banking crisis, global financial crisis and now a global economic crisis? Apart from the current one, in recent years, crises in Mexico (1994), Asia (1997), Turkey (1999) and Argentina (2001) entailed significant costs to the countries concerned and also exerted serious corollary damage on neighboring countries, which induced Governments and multilateral institutions to be more proactive in preventing and resolving financial crises. The World Bank and the International Monetary Fund (IMF) introduced the Financial Sector Assessment Program (FSAP) in 1999, aimed at assessing regularly the strengths and weaknesses of financial systems in their member countries.

2 See RBI Report on Trend and Progress of Banking in India, 2008-09.

To detect financial instability and to take appropriate measures / policies, several international forums are active such as the Financial Stability Forum, Basele Committee on Banking Supervision, Financial Stability Institute, Committee on Global Financial System, Committtee on Payment and Settlement Systems, International Association of Insurance Supervisors, International Accounting Standards Board, International Organization of Securities Cimmissions and the International Association of Deposit Insurers. There is also the Counterparty Risk Management Policy Group, a private sector organization devoted to fostering financial stability. At country level, many central banks and regulatory authorities have also taken financial stability more seriously, establishing Financial Stability Departments and introducing the regular publication of Financial Stability Reports, focused on assessing potential risks to financial stability. Bangladesh Bank has started publishing Financial Stability Report (FSR) since 2010 and Financial Stability Department created in 2012.

The recent experience of global financial crisis shows that financial stability and macroeconomic performance are intimately linked. A vast of literature indicates that without a healthy stable macroeconomic situation, achieving a sound and robust financial system is quite impossible. Conversely, if a country has a weak financial system-particularly a weak banking system-it becomes much more difficult for the authorities to pursue sound monetary, financial and even fiscal policies. Therefore, any central bank should be included fostering a sound financial system as core function of their functions.

In order to maintain financial stability in Bangladesh especially in the banking sector, many prudential measures have been taken. The relevant issues associated with the financial stability are being addressed by the Bangladesh Bank as part of its supervisory practices and implementation of Basel frameworks. The main measures are: (1) introducing Risk Based Capital Adequacy (RBCA) framework for banks from 2010 as a regulatory compliance, (2) maintaining CAR at greater than or equal to 10 percent of Risk Weighted Assets (RWA) from July 2011, (3) issuing a revised guideline on 'Risk Based Capital Adequacy in line with Basel-II', (4) issuing several prudent guidelines on risk management for the banks which include risk based capital adequacy, stress testing and six sore risk management, and (5) ensuring good corporate governance in banks for overcoming liquidity and solvency problems caused by poor governance. Besides, in order to understand and appreciate the risks the banking industry is exposed to, ensure the soundness and sustainability of the banking industry and make the banks more shock resilient, guidelines on stress testing was issued in April 2010. Since banking is the main component of the overall financial system in Bangladesh, the health of the economy is closely related to the soundness of its banking system. A sound banking sector cannot develop without adequate handling of the various risks that banks face in their business. While risk management is the primary responsibility of individual banks, its effective supervision is indispensable to ensure financial stability.

The financial system of Bangladesh is made-up of Banks, Non-Bank Financial Institutions (NBFIs), Insurance Companies, Securities & Exchange Commission and Micro-credit

Organizations. It is an important responsibility of Bangladesh Bank to discharge its responsibilities as regulator of banks and NBFIs in coordination with regulators of other financial institutions with a view to maintaining stability and public confidence in the financial system. In light of global economic turmoil and in considering the rapid-growing and evolving financial sector in Bangladesh, Bangladesh Bank (BB) established the Financial Stability Department (FSD), which started functioning from June 2012 (FSR, 2011). The FSD will examine the stability of the financial system of Bangladesh through macro-prudential analysis. It will assess and quantify financial system risk and vulnerability, analyze their outlook and make appropriate policy recommendation for safeguarding financial stability.

In the face of global financial crisis, ensuring financial stability has emerged a key policy in conducting monetary policy both in developed and developing countries. In pursuing financial stability, BB has adopted many prudential policies for maintaining stability in the banking sector. Thus, an assessment of the aggregate impact of the reforms and the present soundness of the banking system is important to identify the weaknesses of the system and determine future policy directions. In this backdrop, the paper takes an attempt to evaluate the financial stability in the banking sector of Bangladesh. The paper assesses the financial stability on the basis of IMF's Macro-Financial Indicator (MFI) and Macro-Economic Variable (MEV) developed by the International Monetary Fund (IMF, 2000). The time period 1997 to 2012 has been taken in analyzing MFI while in analyzing MEV, the time period 1990-2012 has been considered. The annual data have been collected from Economic Trends of Bangladesh Bank, Annual Report of Bangladesh Bank, Bangladesh Bank Quarterly, Economic Review of Ministry of finance and World Development Indicators, World Bank (2012).

The remainder of the paper is organized as follows: Following the introduction in section I, review of literature portraits in section II, development and performance of banking sector in Bangladesh discuss in Section III, and section IV sketches the analysis of the financial stability of banking sector in Bangladesh. Finally, the section V gives the conclusion.

**Section II: Review of Literature**

Many studies have been found on financial stability with reference to the global financial crisis. Sinclair (2000) finds the central banks and financial stability by presenting details of 37 central banks' functions and powers as they stood in March 2000. The sample consists of 13 industrial, 16 developing and 8 transition countries. He concludes that safeguarding financial stability is a core function of the modern central bank, no less than market operations and the conduct of monetary policy.

Nier (2009) examines the financial stability frameworks and the role of central banks: lessons from the crisis. The paper suggests that an expanded role of the central banks that goes beyond the tools already typically at their disposal-monetary policy, lender of last resort and payment oversight-could enhance the overall effectiveness of financial regulation, allowing synergies to be exploited with new regulatory tools to mitigate systemic risk.

Yamora et al (2010) find the role of central banks in sustaining economic recovery and in achieving financial stability. They found that a strong and resilient financial system in times of crisis is important to continue the intermediation between borrowers and lenders. But normally, strengthening the soundness of the financial system must be accorded priority with

emphasis given to improving corporate governance, risk management and internal control practices and processes in banks through enhancing banking supervision and surveillance processes.

Cheang (2004) investigates the relationship between financial stability and economic growth of Macao and he finds that although the financial stability in Macao is not a direct contributor to the economic growth, it is undeniable that the Special Administrative Region (SAR's) stable financial system has played a significant role in underpinning the growth of the economy in the good years.

Okereke et al (2009) examines the financial deepening and economic development in Nigeria and he concludes that the financial system has not sustained an effective financial intermediation, especially credit allocation and a high level of monetization of the economy. He also argues that the regulatory framework should be restructured to ensure good risk management, corporate governance and stemming systemic crisis in the system.

Martin (2006) reviews the central bank's role in financial stability based on survey report of 160 Financial Stability Reports (FSRs) published in 47 countries central bank. He noted that FSRs provide useful insights into how central banks analyze financial stability, but there are areas for improvement. These include clarifying the aims of the reports, providing an operational definition of financial sector soundness, clarifying the "core analysis" that is presented in FSRs consistently across time and making available the underlying data. The survey also suggests that the quality of an FSR is positively correlated with the economic development, approximated by GDP per capita, which may be a proxy for factors such as relative amount of resources available for the analysis of financial stability or the availability of market-based information.

Hanning et al (2010) analyses the importance of financial inclusion to enhance the financial stability. They argue that greater financial inclusion presents opportunities to enhance financial stability. Their study suggests that innovations aimed at countering financial exclusion may help strengthen financial system rather than weakening them. Bepari et al (2007) analyses the Macroprudential Indicators (MPI) framework of IMF to evaluate the current soundness and stability of the banking system of Bangladesh. Their analysis shows that the banking system of Bangladesh remains vulnerable to future crisis emanating from three pronged risks: macroeconomic epidemic, microeconomic epidemic and endemic crisis of entrenched government permeation. Though foreign commercial banks (FCB) and some private commercial banks (PCB) stand on sound footing, crisis may start from nationalized portion of commercial banks (NCB), Development Financial Institutions (DFIs) and from a few problems inflicted private banks. In terms of macroeconomic indicators the country's banking system may encounter instability emanating from asset price and lending boom, high inflation and volatility exchange rate, deteriorating terms of trade and continuous adverse trade and current account balance.

Anwar et al (2010) investigates efficacy of bank governance measures in improving asset performance and capital adequacy standard for private commercial banks of Bangladesh during (1999-2008). The study suggests that board size and board meeting powerfully explain NPL of the banks. On the other hand, board size and institutional shareholding have strong predictive power to explain the improvement of capital adequacy ratio.

Uddin (2010) examines the causes of the global financial crisis and its remedies. The study highlights the operation of the existing financial system and its performance in Bangladesh. It also recommends a sustainable financial system for Bangladesh with some key factors, which are required for its well being in particular and the economy at large.

Nimalathasan (2008) analyses the performance of banking sector in Bangladesh by applying CAMELS rating system. His study shows that according to CAMELS rating system, 3 banks was 01 or strong, 31 banks were rated 02 or unsatisfactory, rating of 07 banks were 03 or fair, 5 banks were rated 4 or marginal and 2 banks got 05 or unsatisfactorily rating. One NCB had unsatisfactorily rating and NCBs had marginal rating.

**Section III: Development and Performance of Banking Sector in Bangladesh**

Banking system of Bangladesh comprises of four categories of scheduled Bank, i.e., state-owed commercial banks (SCBs), state-owned development financial institutions (DFIs), private commercial banks (PCBs), and foreign commercial banks (FCBs). The banking sector is the dominant sector in the financial system of Bangladesh. Banking sector play an import role to fostering economic growth and poverty reduction in the country by mobilizing resources from surplus unit (depositor) and allocating resources (lending) efficiently to deficit unit (borrower). Presently, four SCBs, four DFIs, thirty PCBs, and nine FCBS are operating in Bangladesh through 7961 branches.

After liberation, the banks operating in Bangladesh were nationalized. These banks were merged and grouped into six commercial banks. Of the total six commercial banks, Pubali Bank Limited and Uttara Bank Limited were subsequently transferred to the private sector with effect from January 1985. Rupali Bank was transferred as public limited company from December 1986. Sonali, Janata and Agrani state owned banks were as public limited company from December 2007. Besides, to bring competition and dynamism in banking sector, private banks were allowed to operate in 1980s. In order to finance to agriculture sector, Bangladesh Krishi Bank (BKB) was established in 1973. Another specialized bank emerged as Rajshahi Krishi Unnayan Bank (RAKUB) for financing in agriculture sector in the northern part of Bangladesh. In order to accelerating industrialization and to finance to set up new industry and modernization, expansion , replacement, and balancing existing industry Bangladesh Shilpa Bank (BSB) and Bangladesh Shilpa Rin Shongstha (BSRS) were established in 1972 to BSB and BSRS were merged and renamed as Bangladesh Development Bank Limited (BDBL) in March 2010.

Structure of the banking sector with breakdown by type of banks is shown in Table-1. The share of SCBs in industry asset has been declining over time while the same is increasing for PCBs. At the end of December 2011, the share of PCBs stood at 60 percent from 35 percent at the end of December 2001 while SCBs share declined to 28 percent at the end of December 2011 from 46 percent at the end of 2001.

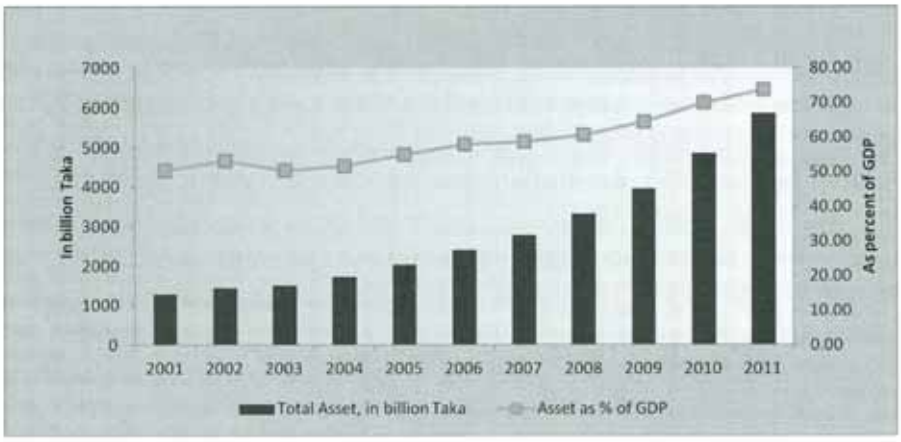
**Table 1 : Industry Asset and Share in Banking System in Bangladesh (in billion Taka)**

| Bank Type | 2010 | | | | | | 2011 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of banks | Number of Branches | Total Assets | Percent of industry assets | Deposits | Percent of Deposits | Number of banks | Number of Branches | Total Assets | Percent of industry assets | Deposits | Percent of Deposits |
| SCBs | 4 | 3404 | 1384.3 | 28.5 | 1044.9 | 28.1 | 4 | 3437 | 1629.2 | 27.8 | 1235.6 | 27.4 |
| DFIs | 4 | 1382 | 295.4 | 6.1 | 183.4 | 4.9 | 4 | 1406 | 328.8 | 5.6 | 214.4 | 4.8 |
| PCBs | 30 | 2810 | 2854.6 | 58.8 | 2266.5 | 60.9 | 30 | 3055 | 3524.2 | 60.0 | 2787.5 | 61.8 |
| FCBs | 9 | 62 | 320.8 | 6.6 | 227.1 | 6.1 | 9 | 63 | 385.4 | 6.6 | 272.2 | 6.0 |
| **Total** | **47** | **7658** | **4855.1** | **100.0** | **3721.9** | **100.0** | **47** | **7961** | **5867.6** | **100.0** | **4509.8** | **100.0** |

*Source: Bangladesh Bank, Annual Report (Various Issues).*

Total asset of banking sector has been growing steadily over time. Total asset grew on an average about 30 percent during 2001-2011. Total asset as percent of GDP increased to 74 percent in 2011 from 50 percent in 2001 (Chart 1).

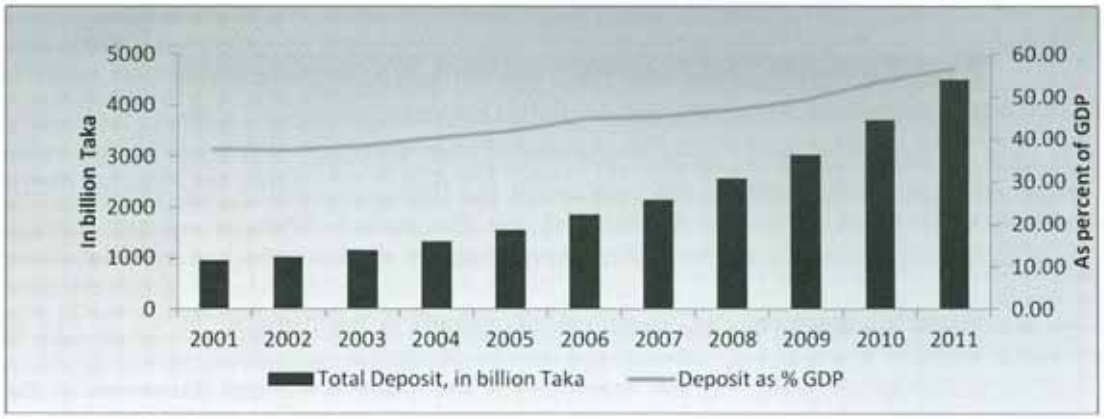
**Chart 1: Trend In Banking Industry Asset During 2001-2011**




*Source: Bangladesh Bank, Annual Report (Various Issues).*

Total deposit mobilization by the banking industry increased by 31 percent, on an average, to Tk. 4509.7 billion in 2011 from Tk. 1023.53 in 2001. Total deposit as percent of GDP increased to 46.60 percent in 2011 from 37.68 percent in 2001 (Chart 2). The share of deposit in total deposit for SCBs declined to 27 percent in 2011 from 51 percent in 2001 while the share of PCBs increased to 62 percent in 2011 from 36 percent in 2001. The analysis of liabilities of aggregate industry indicates that deposit constitutes more than 75 percent. Deposit in 2011 accounted for 76.9 percent of aggregate liabilities which was about 75 percent in 2001.

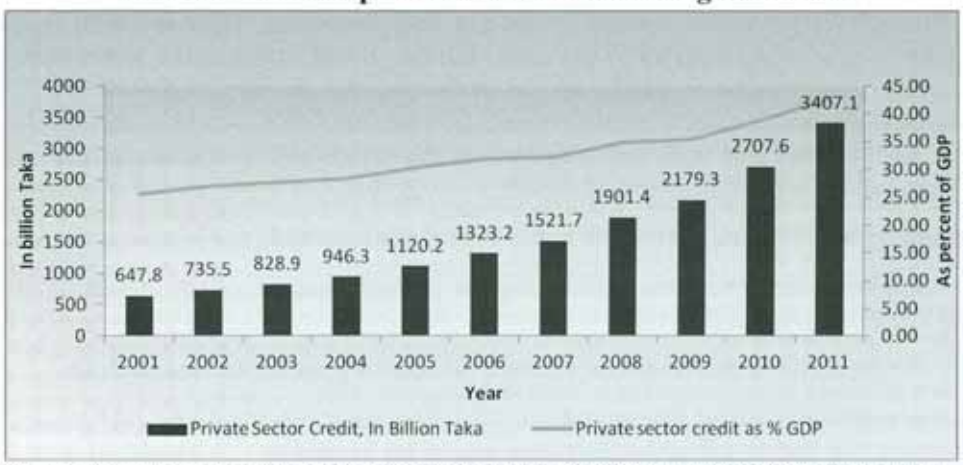
**Chart 2: Trend in deposit mobilization by banking industry during 2001-2011**




*Source: Bangladesh Bank, Annual Report (Various Issues).*

Total credit disbursement in private sector by the industry increased by 35.50 percent, on average, to Tk. 3007.1 billion in 2011 from Tk. 647.8 billion in 2001. Private sector credit as percent of GDP increased to 42.77 in 2011 from 25.55 percent in 2001 (Chart 3). An analysis of aggregate asset of industry indicates that the share of loan and advances to total asset varies between 58 percent and 65 percent during 2001-2011. Loan and advances constituted about 60 percent in 2001 which increased to 64.6 percent in 2011.

**Chart 3: Trend in private sector credit during 2001-2011**




Source: Bangladesh Bank, Annual Report and Bangladesh Bank Quarterly (BBQ) (Various Issues).

In response to the recent global financial melt-down, BB strengthened its attention to macro-prudential actions as a complement to applying micro-prudential policy tools towards addressing systemic risks[3] (Chowdhury, 2012). BB has initiated the following policy

[3]Systemic risk refers to a disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy. The mandate of maintaining financial stability almost inevitably compels Bangladesh to give special focus on mitigating systemic risk.

measures with a view to maintaining soundness, solvency, efficiency and stability in the financial system:

- BB initiated two Basel III-liquidity standards, namely the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) to the banks as a reporting requirement in 2011. An introductory period is continuing and will last for no more than one year;
- in light of global economic turmoil and considering the rapidly-growing and evolving financial sector in Bangladesh, BB established the financial Stability Department (FSD) with a view to examine the stability of the Bangladesh financial system through macro-prudential analysis, assess and quantify financial system risks and vulnerabilities, design and conduct stress-testing exercises, oversee the means of payments and settlement systems operating in the country, monitor developments in the insurance sector, as well as capital markets participants, recommend macro-prudential regulation and engage in macro-prudential oversight, thereby strengthening the macro-prudential framework of the country; • BB has also initiated a process to adopt a tailor-made Financial Projection Model (FPM), under the technical assistance from the World Bank, to improve its risk assessment framework in individual banks and the banking system as a whole;
- With the existing supervisory tools like CAMELS rating, Stress Testing, Financial Projection Model etc., Bangladesh Bank started determining financial position of the bank's quarterly through quick review report. This report focuses on major risks existing in the bank and provides the possible way out in brief;
- BB created a new department titled "Deposit Insurance Department" for exclusively expediting the issues of implementing an effective deposit insurance system in Bangladesh in accordance with international best practices. A Deposit Insurance Trust Fund (DITF) has been created for providing limited protection (not exceeding Taka 100,000) to a small depositor in case of winding up of any bank. BB has already advised the banks to bring the Deposit Insurance Scheme (DIS) to the notice of the public through displaying key information about it on their display board. In addition, BB is working to introduce this system to the NBFIs as well and proposed to the concerned ministries to make it more risk-based and more expansive in coverage;
- imposing limits on banks' exposures to the capital market; and
- developing an Enterprise Data Warehouse for prompt analysis of the systemic risks and taking correcting/remedial actions.

**Section IV: Analysis of the financial stability of banking sector in Bangladesh**

A vast literature on financial system indicates that the development of a sound banking sector is important for the sustainable development of an economy. A range of quantitative indicators can be used to analyze the health and stability of the banking system, including Financial Soundness Indicators (FSIs), market-based indicators of financial conditions, structural indicators and macroeconomic indicators. Macro Prudential Indicators (MPI)-defined broadly as indicators of the health and stability of the financial system-have been encouraged by the G7 countries, the IMF and the World Bank. The MPIs are divided into two broad categories: (1) aggregated micro-prudential indicators of the health of individual financial institutions, also known as Macro-Financial Indicators (MFI)/FSIs, and (2) macroeconomic variables associated with financial system soundness (Annexure 1).

## Capital Adequacy

Capital adequacy focuses on the total position of banks' capital and protection of depositors and other creditors from the potential shocks of losses that a bank might incur. It helps absorbing all possible financial risks[4]. Under Basel-II, banks in Bangladesh are instructed to maintain Minimum Capital Requirement (MCR) at 10.0 percent of the Risk Weighted Assets (RWA) or Taka 4.0 billion as capital, whichever is higher, with effect from July-September quarter in 2011.

**Table 2: Capital to Risk Weighted Assets Ratio by type of Banks (in percent)**

| Year/ Bank Type | SCBs | DFIs | PCBs | FCBs | TOTAL |
|---|---|---|---|---|---|
| 1997 | 6.6 | 6 | 8.3 | 16.7 | |
| 1998 | 5.2 | 6.9 | 9.2 | 17.1 | |
| 1999 | 5.3 | 5.8 | 11 | 15.8 | 7.4 |
| 2000 | 4.4 | 3.2 | 10.9 | 18.4 | 6.7 |
| 2001 | 4.2 | 3.9 | 9.9 | 16.8 | 6.7 |
| 2002 | 4.1 | 6.9 | 9.7 | 21.4 | 7.5 |
| 2003 | 4.3 | 7.7 | 10.5 | 22.9 | 8.4 |
| 2004 | 4.1 | 9.1 | 10.3 | 24.2 | 8.7 |
| 2005 | -0.4 | -7.5 | 9.1 | 26 | 5.6 |
| 2006 | 1.1 | -6.7 | 9.8 | 22.7 | 6.7 |
| 2007 | 7.9 | -5.5 | 10.6 | 22.7 | 9.6 |
| 2008 | 6.9 | -5.3 | 11.4 | 24 | 10.1 |
| 2009 | 9 | 0.4 | 12.1 | 28.1 | 11.6 |
| 2010 | 8.9 | -7.3 | 10.1 | 15.6 | 9.3 |
| 2011 | 11.7 | -4.5 | 11.5 | 21.0 | 11.4 |
| 2012(JUNE) | 11.2 | -4.3 | 11.4 | 21.5 | 11.3 |

Source: BB, Annual Report and BBQ (various issues).

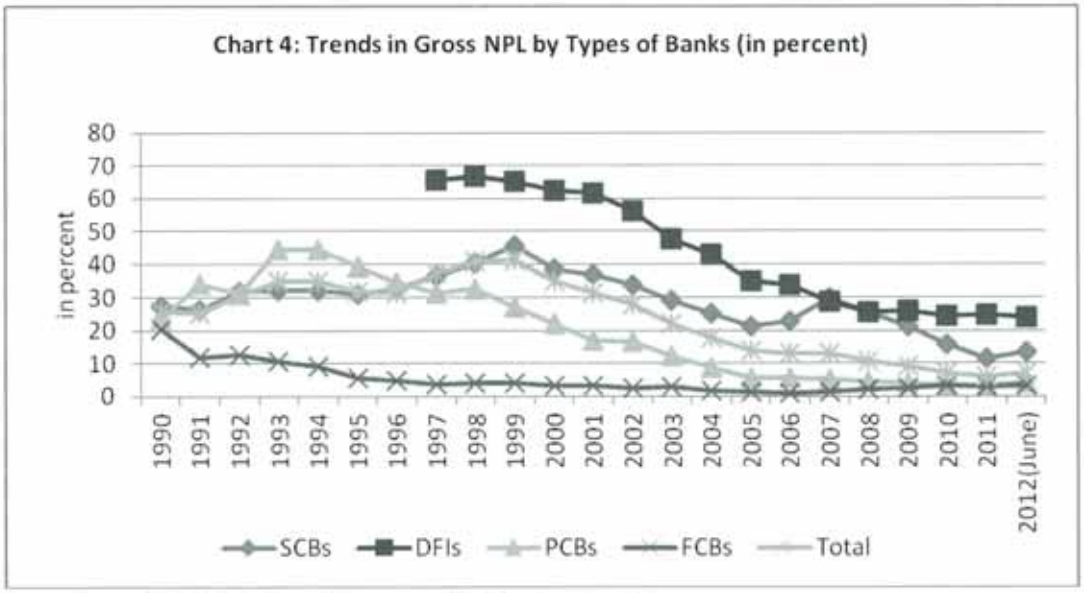
Scheduled banks in Bangladesh are becoming increasingly compliant with the Basel II capital adequacy framework. Data show that CAR for SCBs, DFIs, PCBs and FCBs increased to 11.2 percent, -4.3 percent, 11.4 percent and 21.5 percent respectively at the end of June 2012 from 4.4 percent, 3.2 percent, 10.9 percent, and 18.4 percent respectively at the end December 2000. Total CAR of banking system increased to 11.3 percent at the end June 2012 from 6.7 percent at the end December 2000, reflecting a good health of overall banking system in Bangladesh (Table-2). Although CAR of banking system of Bangladesh has been increasing over time, it is below as compared with that of SARRC countries. It is observed from cross-country scenario that India, Sri Lanka, and Pakistan maintained CAR at 13.5 percent, 14.5 percent, and 14.1 percent respectively in 2011 (Table 2).

[4] The risk are credit risk, market risk, operational risk, residual risk, core risks, credit concentration risk, interest rate risk, liquidity risk, reputation risk, settlement risk, straegic risk, environmental & climate change risk etc.

**Asset quality**

The asset composition of all commercial banks shows the concentration of loans and advances (64.6 percent). The high concentration of loans and advances indicates vulnerability of assets to credit risk, especially because of having significant portion of non-performing assets. A huge non-performing loan portfolio has been the major predicament of banks particularly of the SCBs and DFISs. However, investment of banks in bills, bonds, shares etc. also demonstrates somewhat concentration, which is 14.1 percent of total assets.

The most important indicator intended to identify problems with asset quality in the loan portfolio is the ratio of gross non-performing loans (NPLs) to total loans and net NPLs to net total loans. Data on types of banks show that NPL ratio for PCBs and FCBs have been declining since 1990 while the same for SCBs and DFIs shoed a mixed trend during 1997-2012. The gross NPL ratio for all banks declined to 6.20 percent in 2011 from the peak 41.10 percent in 1999. The ratio again increased to 10.03 percent at the end of 2012 due to sharp increase in NPL of SCBs (Chart 4).




*Source: Bangladesh Bank, Annual Report and BBQ (various issue)*

During the 1970s and 1980s, the SCBs and DFIs experienced a high level of NPLs mainly due to a substantial loan has been disbursement on political considerations other than commercial as well as directed loan. BB took various measures (i.e. loan classification, loan rescheduling, provisioning, and write-off) to recover loan during 1990s-2000s. As results, NPLs position witnessed a significant improvement after 1990s.

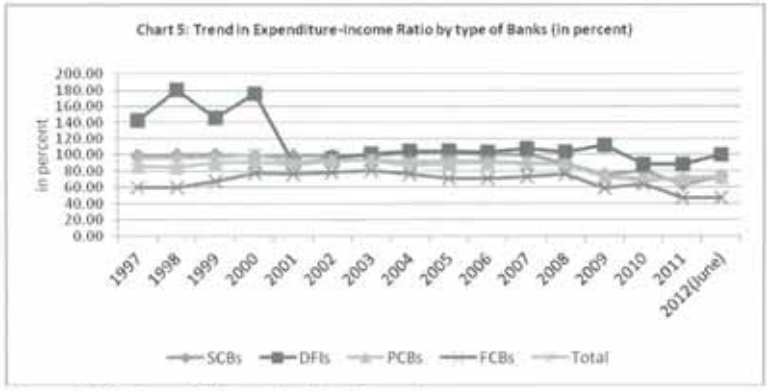
In comparison of cross country NPL data show that Bangladesh crossed a very worst situation in the early 2000s. The improvement in the NPL position implies an improving of assets quality of the banking system. It is observed that among the developed countries, in 2005 USA achieved the lowest NPL to total loan ratio but later on it was on an increasing trend and rose at 5.5 percent in 2010. UK experienced a fluctuation from 2.6 percent in 2002 to 3.5 percent

in 2009. Among the emerging economy, Chain achieved a remarkable progress by reducing its NPL to loans ratio from 26 percent in 2002 to only 1.6 percent in 2009. However, Bangladesh suffered for high NPL to loan ratio 28.1 percent in 2002 but later on succeeded to reduce the ratio at 6.2 percent which is lower than that of Russia in 2011[5] .

### Management Soundness

Sound management is the most important pre-requisite for the strength and growth of any financial institution. The total expenditure to total income, operating expenses to total expenses, earnings and operating expenses per employee and interest rate spread are generally used to portrayed management soundness. Technical competence and leadership of mid and senior level management, compliance with banking laws and regulations, adequacy, compliance of sound internal policies, ability to plan and respond to changing circumstances etc are also taken into consideration to illustrate the quality of management.

In particular high and increasing expenditure to income ratio indicates the operating inefficiency that could be due to flaw in management. Data on expenditure-income (EI) ratio show that the EI for all banks came down to 68.60 in 2011 and 72.8 at end June 2012 from 99.90 in 2000. A mark improvement was pronounced in SCB over PCBs during the recent time. In 2011, the EI ratio of the DFIs was the highest among the bank clusters due to poorer non-interest income and higher operating expenses particularly incurred by BKB and RAKUB. The EI ratio of the PCBs was 71.7, the second highest, which could mainly attributable to high administrative and operating expenses. The EI ratio of SCBs got a fall from 80.7 in 2010 to 62.7 in 2011 mainly due to significant increase (taka 6052.2 crore to Taka 9169.8 crore) in interest income (Chart 5).



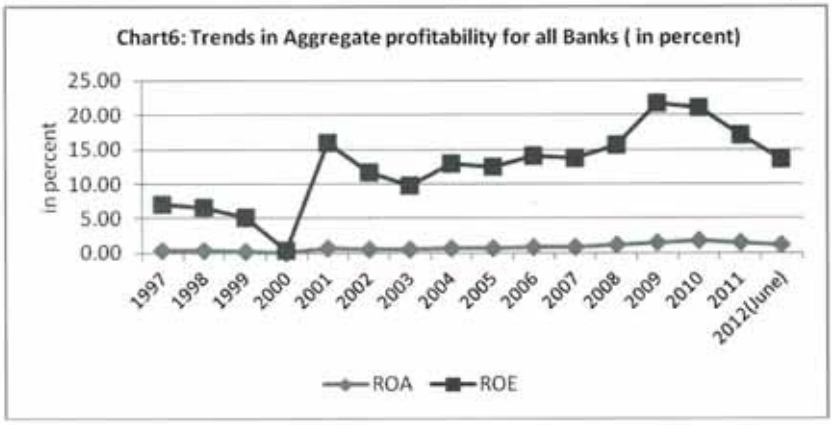

Source: BB, Annual Report (various issues)

### Earnings and Profitability

Strong earnings and profitability profile of a bank reflect its ability to support present and future sound operation, absorb future contingent shocks and strength resilience capacity. More specifically, this determines the capacity to absorb losses by building an adequate capital base, finance its expansion and pay adequate dividends to its shareholders. Although there are various measures of earnings and profitability, the best and widely used indicator is return on assets (ROA), which is supplemented by return on equity (ROE) and net interest margin (NIM).

[5] See World Development Indicates, WB, 2012.

The trend of ROA and ROE for all banks exhibited mixed trend during 1997-2012 (Chart 6). The ROA increased gradually to 1.80 percent in 2010 from 0.70 percent in 2001. Afterwards, it declined to 0.12 percent in 2012. The ROE reached 21.70 percent in 2009 then it fell to 13.5 percent in June 2012. An analysis of these indicators reveals that the ROA of the SCBs was less than industry average, but it is gradually increasing over time. The DFISs' situation is not better due to operating loss incurred by BKB and RAKUB. The ROA of PCBs and FCBs shows an irregular trend but gains a strong position. On the other hand, the ROE of SCBs was 26.2 percent in 2009, but dropped down to 18.4 percent in 2010 as owners' equity had increased comparatively at higher rate than after tax profit. However, it increased to 19.7 percent in 2011 and it turned to negative 11.87. In case of DFIs, the ROE was still negative in 2012. The ROE of FCBs has been showing gradual decline from 2009 due to increase of equity. The ROE of PCBs was mixed trend during 1997-2012 (BB, Annual Report).




Source: BB, Annual Report (various issues).

Aggregate net interest income (NII) of the industry has increased constantly from Taka 16.6 billion in 2003 to Taka 146.7 billion in 2011. However, the NII of the SCBs was a negative amount of Taka 1.2 billion in 2000 and it turned to positive (Taka 7.7 billion) in 2005. In 2011, the NII of SCBs was Taka 34.3 billion. The DFIs had a positive trend since 2000 and it was Taka 4.9 billion in 2011. Since 2005, SCBs have been able to increase their net interest income (NII) by reducing their cost of fund. The NII of the PCBs has been incredibly high over the period from 2003 through 2011. Overall industry NII shows a consistently upward trend. The trend of NII indicates that the interest spread of PCBs and FCBs is higher than that of SCBs and DFISs (Table 3).

Table 3: Net Interest Income (NII) by type of Banks (in billion Taka).

| YEAR | SCBs | DFIs | PCBs | FCBs | TOTAL |
|---|---|---|---|---|---|
| 1997 | 2.7 | -0.1 | 1.7 | 2 | 6.3 |
| 1998 | 2.2 | 0.5 | 2.3 | 2.2 | 7.1 |
| 1999 | 3.1 | -0.1 | 3 | 1.8 | 7.8 |
| 2000 | -1.2 | 1 | 6.1 | 2.5 | 8.4 |
| 2001 | -1.8 | 2.7 | 9.2 | 3.3 | 13.4 |
| 2002 | -1.5 | 1.4 | 10.2 | 3.4 | 13.5 |
| 2003 | -0.3 | 1.3 | 12 | 3.6 | 16.6 |
| 2004 | -1.1 | 1.8 | 13.7 | 4.2 | 18.3 |
| 2005 | 7.7 | 1 | 21 | 5.6 | 35.3 |
| 2006 | 9 | 1.7 | 25.4 | 8.2 | 44.3 |
| 2007 | 7.4 | 1.4 | 36.1 | 9.9 | 54.8 |
| 2008 | 7.9 | 1.9 | 48.5 | 12.6 | 70.9 |
| 2009 | 12.1 | 1.9 | 56.7 | 10.7 | 81.5 |
| 2010 | 19.8 | 6.2 | 82.8 | 13 | 121.9 |
| 2011 | 34.3 | 4.9 | 91.4 | 16.1 | 146.7 |
| 2012(JUNE) | 9.7 | 3.8 | 57.9 | 10.4 | 81.8 |

Source: BB, Annual Report (various issues)

## Liquidity

It is also important indicator for financial stability. On the liability side, indicators should cover funding sources, including interbank and central bank credits. Liquidity indicators should also be able to capture large maturity mismatches in the largest financial institutions or the overall financial sector (Evans et al. 2000). Deposits are the main source of funding for the banking sector, with capital, reserve and borrowings constituting a small portion thereof. Banks mainly use funds to provide loans and invest in debt and equity securities.

The credit deposit ratio is a useful indicator of a bank's liquidity adequacy. The ratio of credit to total deposits (excluding interbank deposits) may give indications of the ability of the banking system to mobilize deposits to meet credit demand. A high ratio may indicate stress in the banking system and a low level of liquidity to respond to shocks (Evans et al. 2000). A low ratio indicates the increasing ability of the banking system to mobilize deposit to meet credit demand. During 1990-2011 credit – deposit ratio showed a mixed trend. During 1990-92 the ratio was more than 100 percent. After 1992, it showed a downward trend during 1993-1995 and again it crossed 100 percent during 1996-1999. The ratio stood higher during 2002, 2008 and 2011. The ratio, on average, was 99.37 in 1990s and 98.42 in 2000s (BB, Economic Trends). In February 2011, Bangladesh Bank instructed to banks to maintain their Credit Deposit Ratio (CDR) within a certain level[6] (BB, FSR, 2011). At the end of December 2012, overall CDR for banking system came down to 76.59 (The Prothom Alo, February 26, 2013).

[6] For conventional banks up to 85 percent and Islamic shariah based banks up to 90 percent.

A large increase in central bank credit to banks and other financial institutions-as a proportion of their capital or their liabilities-often reflects severe liquidity (and frequently also solvency) problems in the financial system (Evans et al. 2000). Data show the decreasing trend in central bank credit to DMBs. The ratio came down to 4.29 percent in 2011from 19.46 percent in 1990.[7]

This indicates an increasing liquidity in the banking system. This proposition is supported by excess liquidity in the banking system. Data show that total liquidity ratio was a range of 23.38 percent and 26.50 percent during 1997-2011 and excess liquidity was a range of 4.46 percent and 9.80 percent during the same period in the banking system[8].

**Sensitivity to Market Risk**

In general, sensitivity to market risk assesses the degree to which a bank might be exposed to adverse financial market conditions. Banks are increasingly involved in diversified operations, all of which involve one or more aspects of market risk. A high share of investments in volatile assets may signal a high vulnerability to fluctuations in the price of those assets. In general, the most relevant components of market risk are interest rate and foreign exchange risk, which tend to have significant impacts on financial institutions' assets and liabilities. Moreover, in some countries, banks are allowed to engage in proprietary trading in stock markets, so it is also of interest to track equity risk (Evans et al. 2000). Similarly, commodity risks derived from the volatility of commodity prices can important in certain countries. In line with Basel-I, BB introduced core risks guideline for banks in 2003 to manage risk in banking sector[9]. In considering distress of global financial crisis, BB further issued risk management guideline in line with Basel-II for banks in February, 2012 to facing various challenges due to increased competition and expansion of diversified business network[10]. According to this guideline, banks are asked to create Risk Management Unit (RMU) to supervise all core risk[11]. It is mentioned that a considerable degree of volatility in the domestic financial markets in Bangladesh during 2011 contributed to the increase in market risk for banks but its impact on their financial performance is likely to be well-contained, given BB's stringent prudential requirements on various market risk exposures (BB, FSR, 2011).

**Interest rate risk**

The first important source of market risk is interest rate risk, which is primarily driven by banks' investments in securities and adverse movement in security prices, in addition to the direct exposure in government securities. Data of end December 2011 indicates that the share of risk weighted assets (RWA) assigned to interest rate risk is only 1.3 percent of total risk weighted assets in the banking system, whereas the RWA related to overall market risk is only 6 percent. The banks' capital charge for interest rate risk is Tk 6.2 billion at end December 2011. Only 5 banks (11 percent of the industry) contain almost 50 percent of industry interest rate risk and 37 banks (79 percent of the industry materially contain no or insignificant interest rate risk (BB, FSR, 2011).

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[7] BB, Monthly Economic Trends (various issues)
[8] BB, Annual Report (various issues).
[9] See BRPD Circular No. 17, 2003.
[10] See DOS Circular No-02, 2012.
[11] The core risks are: credit risk, market risk (interest rate risk, exchange rate risk and equity risk), liquidity risk, operational risk and other risks.

### Exchange Rate Risk

The second important source of market risk is exchange rate risk, which is primarily driven by banks' investments in foreign exchange dealings and adverse movement in exchange rates, in addition to the direct exposure arising from foreign exchange placements in different exchange markets. Data as of end December 2011 indicates that share of risk weighted assets (RWA) assigned to exchange rate risk is less than 2 percent of total risk weighted assets in the banking system, whereas it is 26.8 percent of the market risk. The banks' capital charge for exchange rate risk is Tk 7.8 billion. However, only 10 banks contain almost 82 percent of industry exchange rate risk and 37 banks (79 percent of the industry) contains the remaining 28 percent of exchange rate risk in the banking system (BB, FSR, 2011).

### Equity Price Risk

The third important source of market risk is equity price risk, which is primarily driven by banks investments in equities and adverse movement in equity prices, in addition to the indirect exposure from the quantum of bank loans collateralized by shares. The Dhaka Stock Exchange (DSE) showed mixed trends in CY11, with the General Index reaching a high of 6459.62 in July and low of 5036.50 in October (BB, FSR, 2011). An analysis of share price volatility shows that General share price index, on average, increased by about 29.67 percent per year during 1990s which grew by 23.38 percent during 2000s, and declined by 12.92 percent during 2011-2012. As against the price growth, the volatility measured by standard deviation declined to 17.43 percent during 2011-2012 from 36.43 in 2000s, and 87.13 during 1990s.

Data as of end December 2011 indicate that the share of risk weighted assets (RWA) assigned to equity price risk is a bit higher than 3 percent of total risk weighted assets in the banking system, whereas it is 52.1 percent of the market risk. The banks' capital charge for equity price risk is BDT 15.2 billion at end December 2011. The top ten banks contain more than 50 percent of industry equity price risk and 37 (79 percent of the industry) banks materially contain the remaining 50 percent risk from the movement of equity prices (BB, FSR,2011).

### Aggregate CAMELS Rating of the Banking System

BB had introduced Early Warning System of supervision from March 2005 to address difficulties faced by the banks in any of the areas of CAMELS. Any bank found to have faced difficulty in any area operation, is brought under early warning category and monitored very closely to help improve its performance. Presently 2 banks are monitored under EWS. As of end 2011, CAMELS rating of 2 banks was 1 or "strong"; 33 banks were rated 2 or "satisfactory"; rating of 9 banks was 3 or "fair"; 2 were rated 4 or "marginal" and 1 bank got 5 or "unsatisfactory" rating[12] (Table 4).

[12] CAMELS rating are a supervisory tool to identify those banking companies that are having problems and require increased supervision. Under this rating system, banking companies are assigned two sets of ratings i) performance ratings, based on six individual ratings ii) an overall composite rating, based o a comprehensive assessment of the overall condition of the banking company. Both the ratings are expressed by using a numeriacal scale of "1" to "5" in ascending order of supervisory concern. "1" representing the best rating, while "5" indicating the worst.

**Table 4: Trend in CAMELS Rating of Banks during 2002-2011**

| Year | Number of banks in each category | | | | |
|---|---|---|---|---|---|
| | Strong | Satisfactory | Fair | Marginal | Unsatisfactory |
| As of end 2002 | 9 | 21 | 7 | 10 | 2 |
| As of end 2003 | 15 | 11 | 11 | 10 | 2 |
| As of end 2004 | 12 | 15 | 10 | 8 | 4 |
| As of end 2005 | 13 | 16 | 8 | 6 | 4 |
| As of end 2006 | 3 | 31 | 7 | 5 | 2 |
| As of end 2007 | 6 | 29 | 5 | 6 | 1 |
| As of end 2008 | 2 | 28 | 10 | 4 | 4 |
| As of end 2009 | 3 | 32 | 8 | 4 | 1 |
| As of end 2010 | 5 | 32 | 7 | 2 | 1 |
| As of end 2011 | 2 | 33 | 9 | 2 | 1 |

Source: Annual Report, BB (On the basis of five components of CAMEL banks are rated from 2002-2005 and six components of CAMELS banks are rated from 2006-2011).

### Assessment of Macroeconomic Indicators

The operation of a financial system is dependent on overall economic activity. Financial institutions are significantly affected by certain macroeconomic developments. Recent empirical analysis has shown that certain macroeconomic developments have often predated banking crisis, which suggests that financial system stability assessments need to take into consideration the broad macroeconomic picture, particularly factors that affect the economy's vulnerability to capital flow reversals and currency crisis. The relationship may describe by the following simple schematic view[13] :

(1) GDP ↑→ NPL ↓→ financial stability ↑,
(2) Lending rate↑→ inflation ↑→NPL↑→ financial stability ↓, and
(3) High real interest rate ↑→ BoP crises ↑→ financial stability ↓.

Bank's asset quality depend on economic growth because low or declining aggregate growth rates often weaken the debt-servicing capacity of borrowers and contribute to increasing credit risk. It is observed from Table-5 that over the period aggregate growth rates showed an increasing trend, which indicates increasing debt servicing capacity of borrowers and thus reducing credit risk for banks i.e. reducing NPL. Besides, the risk coming from sectoral growth ( up and down) remains moderate for banking system because a slump or boom in the sectors where financial institutions' loans and investments are concentrated could have an immediate impact on financial system soundness. It deteriorates the quality of financial institutions' portfolios and profitability margins and lower their cash flow and reserves. The trend of growth in agriculture sector exhibited a fluctuation during FY 90-FY11. Industry and service sector's growth showed an increasing trend during FY 90-FY11 (Table 5). In the face of global economic slow down and financial crisis, overall economic growth of Bangladesh registered an impressive growth in the recent time which softens financial distress.

[13] This Schematic is adopted from FSR, BB, 2006, Page-183.

**Table 5: Trend in Sectoral and overall economic growth (in percent)**

| YEAR | GDP | | Agriculture | | Industry | | Service | |
|---|---|---|---|---|---|---|---|---|
| | Mean | S.D | Mean | S.D | Mean | S.D | Mean | S.D |
| 1990S | 4.79 | 0.72 | 3.25 | 2.48 | 6.43 | 1.80 | 4.50 | 0.66 |
| 2000S | 5.83 | 0.67 | 3.31 | 1.53 | 7.51 | 1.05 | 6.10 | 0.55 |
| FY11-FY12 | 6.51 | 0.27 | 3.77 | 1.75 | 8.84 | 0.90 | 6.33 | 0.38 |
| FY90-FY2012 | 5.44 | 0.88 | 3.32 | 1.95 | 7.14 | 1.58 | 5.39 | 1.01 |

Source: Author own calculation based on BBS's data.
Note: S.D = standard deviation which proxies for volatility

An estimated result of correlation coefficient between NPL and GDP of -0.67 for the sample period 1991-2012 indicate that if GDP increases by one percent then NPL decreases by 0.67 percent (Table 6). We may conclude that increase of GDP pushes down NPL which ensures financial stability in banking system in Bangladesh.

**Table 6: Estimate result of Correlation among macroeconomic and financial variable**

| Variable | | Correlation | T-statistic | Probability |
|---|---|---|---|---|
| npl | G_gdp | -0.666479 | -3.997978 | 0.0007 |
| rle | G_gdp | -0.515405 | -2.689734 | 0.0141 |
| Rle | Npl | 0.636798 | 3.693555 | 0.0014 |
| nlr | G_gdp | -0.575199 | -3.144650 | 0.0051 |
| Nlr | Npl | 0.637777 | 3.703130 | 0.0014 |
| Cab | G_gdp | 0.712530 | 4.541539 | 0.0002 |
| Cab | Npl | -0.722995 | -4.680196 | 0.0001 |
| cab | Nlr | -0.563780 | -3.052696 | 0.0063 |

Note: G_GDP= real GDP growth, NPL= nonperforming loan ratio to total loan, RLE= real lending rate, NLR= nominal lending rate, and CAB = current account balance as percent of GDP. Sample period: 1991-2012 and data frequency: yearly Sample size: 22

It is argued that high lending rate both real and nominal pushes inflation up and GDP down which leads to increase NPL and degrade financial stability. Estimated results show that correlation coefficient between RLE and GDP is -0.52 and the correlation between RLE and NPL are 0.63 which implies that prevailing high lending rate is distress for banking system (Table 6).

It is learnt that a large current account deficit (as percent of GDP) could signal vulnerability to a currency crisis with negative implications for the liquidity of the financial system, especially if the deficit is financed by short-term portfolio capital inflows (Evans et al. 2000). Data on current account balance as percent of GDP showed a positive during FY06-FY11[14] . Current account balance as percent of GDP reached positive 0.78 percent, on average, during 2000s from a negative 2.49 percent during 1990s (Table 7). It is quite good position for facing financial vulnerability in future. Estimated result shows that correlation coefficient between CAB and NPL is -0.72 which implies a good position or surplus in CAB lead to decrease NPL in banking system which helps financial stability (Table 6).

A low ratio of international reserves (in the central bank and financial system as a whole) to short-term liabilities (domestic and foreign, public and private) is seen, particularly by investors, as a major indicator of vulnerability (Evans et al. 2000). Another popular indicator of reserve adequacy is gross official reserves in months of imports of goods and services. Data show that official reserve in term of month increased to 3.60 month in 2011 from 1.2 month in 1990. It was 3.05 months coverage during 2000s and 3.99 month during 1990s.

It is more difficult to assess credit and market risks during volatility in inflation. A high volatility in inflation raises portfolio risk and erodes the financial institutions' information base for planning, investment, and credit appraisal. On the other hand, a significant and rapid reduction in the rate of inflation could lead to lower nominal income and cash flows, thereby adversely affecting the liquidity and solvency of financial institutions (Evans et al. 2000). Data show that inflation, on average, increased to 9.71 percent during FY11-FY12 from 5.97 percent in 2000s and 4.83 percent in 1990s. Volatility, as measured by standard deviation, came down to 1.29 during FY11-FY12 from 2.45 in 2000s (Table 7).

**Table 7: Trend and Volatility in inflation, Exchange Rate, CAB and Reserve**

| | | 1990S | 2000S | FY11-FY12 |
|---|---|---|---|---|
| Inflation (%) | Mean | 4.83 | 5.97 | 9.71 |
| | S.D | 2.74 | 2.455 | 1.29 |
| Exchange rate depreciation (%) | Mean | -4.13 | -3.12 | -7.86 |
| | S.D | 2.36 | 3.43 | 2.15 |
| CAB (as percent of GDP) | Mean | -2.49 | 0.78 | 1.11 |
| | S.D | 1.51 | 1.68 | 0.29 |
| Reserve in month of imports (number) | Mean | 3.99 | 3.05 | 3.45 |
| | S.D | 1.62 | 0.94 | 0.21 |

Source: Authors' own calculation. Note: S.D = standard deviation which proxy volatility

[14] BB, Annual Report (Various Issues).

A large real exchange rate appreciation could weaken the export sector to service debt. On the other hand, a large depreciation could improve the capacity of the export sector to service its debt but, at the same time, it could weaken the debt-service capacity of non-export related domestic borrowers. Moreover, large changes in the exchange rate could put pressure on the financial system either directly by changing asset values or indirectly via possible effects on the real economy (Evans et al. 2000). During FY11-FY12, exchange rate depreciated, on average, about 7.86 percent which was 3.12 percent in 2000s and 4.13 percent in 1990s. The volatility in exchange rate also lowered during last a couple of year as compared with that of in 2000s (Table 7).

## V. Conclusion

The analysis indicate that total CAR of banking system increased to 11.4 percent at the end of December 2011 and declined to 10.46 percent in December 2012 from 6.7 percent at the end of December 2000, reflecting a good health of overall banking system in Bangladesh. Although CAR of banking system of Bangladesh has been increasing over time, it is below as compared with that of SARRC countries. It is observed from cross-country scenario that India, Sri Lanka, and Pakistan maintained CAR at 13.5 percent, 14.5 percent, and 14.1 percent respectively in 2011.

The analysis of non performing loan shows that NPL ratio for PCBs and FCBs have been declining since 1990 while the same for SCBs and DFISs showed a mixed trend during 1997-2012. The gross NPL ratio for all banks declined to 6.20 percent in 2011 from the peak 41.10 percent in 2000. The ratio again increased to 10.03 percent at the end of 2012 due to sharp increase in NPL of SCBs.

Data on expenditure-income (EI) ratio show that the EI for all banks came down to 68.60 in 2011 from 99.90 in 2000 reflecting a mark improvement was pronounced in SCB over PCBs during the recent time. The trend of ROA and ROE for all banks exhibited mixed trend during 1997-2012. An analysis of these indicators reveals that the ROA for all banks declined to 0.64 percent at the end of 2012 from the peak of 1.78 percent at the end of 2010 due to dismal performance of SCBs and DFISs. The ROA of PCBs and FCBs shows an irregular trend but gains a strong position. The ROE for all banks declined to 8.20 percent at the end 2012 from the peak of 21.72 percent at the end of 2009 due to a substantial dropped in ROE of SCBs to negative 11.87 in 2012 from the peak of 26.2 percent in 2009.

The CDR, on average, was 99.37 percent in 1990s and 98.42 percent in 2000s. In February 2011, Bangladesh Bank instructed banks to maintain their CDR within a certain level[15] (BB, FSR, 2011). At the end of December 2012, overall CDR for banking system came down to 76.59 (The Prothom Alo, 26 February 2013). An analysis of data show that total liquidity ratio was within the range of 23.38 percent and 26.50 percent during 1997-2011 and excess liquidity was within the range of 4.46 percent and 9.80 percent during the same period.

The analysis of trend in MPI indicates that banking sector in Bangladesh demonstrated a moderate level of stability in the recent year despite of dismal performance of SCBs and DFISs. The PCBs and FCBs stand on sound footing in resilience in terms of MPI's performance.

[15] For Conventional Banks up to 85 Percent and Islamic Shariah based banks upto 90 Percent.

In the face of global economic slow down and financial crisis, overall economic growth of Bangladesh registered an impressive growth in the recent time which softens financial distress. An estimated result of correlation coefficient between NPL and GDP is -0.67 for the sample period 1991-2012 which indicate that if GDP increase one percent then NPL decrease by 0.67 percent. We may conclude that increase of GDP pushes down NPL which ensures financial stability in the banking system in Bangladesh.

It is argued that high lending rate both real and nominal pushes inflation up and GDP down which leads to increase NPL and degrade financial stability. Estimated results show that correlation coefficient between RLE and GDP is -0.52 and the correlation of RLE and NPL are 0.63 which implies that prevailing high lending rate is distress for banking system.

An analysis of data on current account balance as percent of GDP showed a positive during FY06-FY11. Current account balance as percent of GDP reached positive 0.78 percent, on average, during 2000s from a negative 2.49 percent during 1990s. It is quite a good position for facing financial vulnerability in future. Estimated result shows that correlation coefficient between CAB and NPL is -0.72 which implies a good position or surplus in CAB leading to decrease NPL in banking system which helps financial stability.

**References:**


Anwar, G.M Javed and Sheikh Tanzila Deepty (2010)," Bank Governance Effectiveness towards Regulatory Compliance: Evidence from private Commercial Banks of Bangladesh." Unpublished paper, University of Dhaka and American International University of Bangladesh.

Abayomi A., Alawode and Mohammed Al Sadek (2008)," What is Financial Stability?" Financial Stability Paper Series No. 1/March 2008, Central Bank of Bahrain.

BB: Bangladesh Bank, Annual Report ( various issues).

BB: Bangladesh Bank, Bangladesh Bank Quarterly ( various issues).

BB: Bangladesh Bank, Financial Stability Report, 2011.

BB: Bangladesh Bank, BRPD Circular No. 09, 16 November 2011.

BB: Bangladesh Bank, BRPD Circular No. 17, October 07,2003.

BB: Bangladesh Bank, DOS Circular No. 02, February 15, 2011.

BB: Bangladesh Bank, Financial Soundness indicators: Compilation Guide, March 2006.

BB: Bangladesh Bank, Financial Sector Review, Policy Analysis Unit, BB, 2006.

BB: Bangladesh Bank, Major Economic Indicator: Monthly Update, Volume 06/2012 June 2012.

BBS: Bangladesh Bureau of Statistics, National Accounting Statistics (various Issues).

Bepari, M. Khokan and Abu Taher mollik (2007)," Banking System in Bangladesh: Stable or vulnerable?-A Macroprudential Assessment" Unpublished paper, CQU University and La-Trobe University, Australia.

Chowdhury S.k.Sur, (2012) "Macroprudential Aspects for Strengthening Financial Stability of Bangladesh" the paper presented at Seminar held at BB, on 15, July, 2012, Dhaka.

Cheang, Nicholas (2004)," Financial stability and Economic Growth of Macao" Monetary Authority of Macao.

Evans, Owen, Alfredo M. Leone, Mahinder Gill and paul Hilbers (2000)," Macroprudential Indicators of Financial System Soundness". IMF Occasional paper 192.

Hanning, Alfred and Stefan Jansen (2010)," Financial Inclusion and Financial Stability : Current Policy Issues", Working Paper Series, Asian Development Bank Institute.

IMF: International Monetary Fund, Bangladesh: Financial System Stability Assessment, IMF Country Report No. 10/38, February 2010.

IMF: International Monetary Fund, Financial Sector Assessment: A Handbook IMF September, 2005.

Iqbal Md. Jahid (2012)," Banking Sector Performance in Bangladesh- an Application of Selected Camels Ratio" A thesis submitted in partial fulfillment of the requirements for the degree of Professional master in banking and Finance, Unpublished paper.

Jame Caruana (2011)," The Role of Central Banks after the Crisis" Bank for International Settlements, 2011.

Martin, Cihak (2006)," Central Banks and Financial Stability: A survey of Financial Stability reports" present in the seminar on Current Developments in monetary and Financial Law Washington, D.C., October 2006.

Nimalathasan, B (2008), "A comperative Study of Financial performance of banking Sector in Bangladesh- An Application of CAMELS rating System", Annals of university of Bucharest, Economic and Adminstrative Series, nr. 2(2008) 141-152.

Nier, Erlend Walter (2009)," Financial Stability Frameworks and the Role of Central banks: lessons from the crisis" IMF Working paper No. 09. 70.

OECD: Fifth Conference on Financial Sector Development in the Central Asian Countries, Azerbaijan and Mongolia, 8-9 March, 2001, Paris.

Okereke, Emeka. J. and Samuel Mbadike Nzotta (2009)," Financial Deepening and Economic Development of Nigeria: An Emperical Investigation" African Journal of Accounting, Economics, Finance and Banking Research Vol. 5.No. 5. 2009.

RBI: Reserve Bank of India, Financial Stability Report, March, 2010.

RBI: Reserve Bank of India, Report on Trend and Progress of Banking in India, RBI, 2008-09.

Rahman, Md. Mustafizur (2012)," Banking Sector reforms in Bangladesh and its Impact" A thesis submitted in partial fulfillment of the requirements for the degree of Professional master in banking and Finance, Unpublished paper.

Sinclair, P J N (2000),"Central Banks and Financial Stability" Bank of England Quarterly Bulletin, November, 2000.

The daily " Prothom Alo", Dhaka, 26 February 2013.

Tanbir Ahmed chowdhury and Kashfia Ahmed (2009)," Performance Evaluation of Selected Private Commercial Banks in Bangladesh" International Journal of Business and Management, Vol.4, No.4 April, 2009.

Uddin, S.M.Sohrab (2010)," Development of a sustainable Financial System for Bangladesh with Reference to the Global Financial Crisis: An Evaluation" Unpublished paper, University of Chittagong, Dhaka.

WB: World Bank, Strategy for Establishing a Sound and Competitive Banking Sector, Finance and Private Sector Unit, South Asia Region, WB, 1998.

Yamora, Siregar, Reza and Lim, C.S.Vincent (2010)," The Role of Central Banks in Sustaining Economic Recovery and in Achieving Financial Stability" , The South East Asian Central Banks (SEACEN) research and Training Centre, Malaysia, Staff Paper No.74.

**Annexure-1**

## Summary of Macro-prudential Indicators

| | |
|---|---|
| **Aggregate Micro-prudential Indicators**<br>Capital adequacy<br>Aggregate capital ratio<br>Frequency distribution of capital ratios | **Macroeconomic Indicators**<br>Economic growth<br>Aggregate growth rates<br>Sectoral slumps |
| **Asset quality**<br>Lending Institution<br>Sectoral credit concentration<br>Foreign currency -denominated lending<br>Nonperforming loans and provisions<br>Loans to loss making public sector entities<br>Risk profile of assets<br>Connected lending<br>Leverage ratios<br>Borrowing entity<br>Debt-equity ratios<br>Corporate profitability<br>Other indicators of corporate conditions<br>Household indebtedness | **Balance of payments**<br>Current account deficit<br>Foreign exchange reserve adequacy<br>External debt(including maturity structure)<br>Terms of trade<br>Composition and maturity of capital flows |
| **Management Soundness**<br>Expense ratios<br>Earnings per employee<br>Growth in the number of financial institutions | **Inflation**<br>Volatility of inflation |
| **Earnings and Profitability**<br>Return on asset<br>Return on equity<br>Income and expense ratios<br>Structural profitability indicators | **Interest and exchange rates**<br>Volatility of interest and exchange rates<br>Exchange rate sustainability<br>Exchange rate guarantees |
| **Liquidity**<br>Central bank credit to financial institutions<br>Segmentation of interbank rates<br>Deposits in relation to monetary aggregate(M1, M2)<br>Loans –to-depositors ratios<br>Maturity structure of assets and liabilities (liquid asset ratios)<br>Measures of secondary market liquidity | **Lending and asset price boom**<br>Lending booms<br>Asset price booms |
| **Sensitivity to market risk**<br>Foreign exchange risk<br>Interest rate risk<br>Equity price risk<br>Commodity price risk | **Contagion effects**<br>Trade spillovers<br>Financial market correlation |
| **Market based indicators**<br>Market price of financial instruments, including equity<br>Indicators of excess yields<br>Credit ratings<br>Sovereign Yield spreads | **Other factors**<br>Directed lending and investment<br>Government recourse to the banking system<br>Arrears in the economy |

Source: Evans et al (2000), IMF Occasional paper-192, p- 4